

## CONSUMPTION RESPONSE TO GOVERNMENT TRANSFERS: BEHAVIORAL MOTIVES REVEALED BY SAVERS AND SPENDERS

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*This article surveyed recipients of one-off government transfers in Singapore to investigate to what extent different behavioral motives might have affected their consumption response. It also investigates how the recipients' personal characteristics might have affected their consumption response and the appeal of different motives. In the sample surveyed, savers were mostly motivated by precautionary saving, followed by Ricardian equivalence, whereas spenders were mainly driven by rule of thumb and present bias. The bequest motive turned out to be unimportant. Older, better educated, and economically better-off individuals facing no liquidity constraint were more likely to be savers. (JEL D91, E21, E62, H31)*

### I. INTRODUCTION

In his budget speech on February 17, 2006, the Prime Minister and Minister for Finance of Singapore Mr. Lee Hsien Loong announced that “we have managed to accumulate some reserves over this term of Government” and “in view of the good economic performance last year and the positive outlook, I have decided to share part of these surpluses with Singaporeans this year” by giving a number of one-off transfers and rebates to all Singaporeans in Financial Year 2006 under the so-called progress package, with larger transfers to the less well-off to achieve specific social objectives.<sup>1</sup>

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1. See [http://www.mof.gov.sg/budget\\_2006/index.html](http://www.mof.gov.sg/budget_2006/index.html) for the speech. “Progress” is an acronym for Providing Opportunities through Growth, Remaking Singapore for Success. Specifically, in his budget speech, Mr. Lee said: “After the last general election in 2001, we ran budget deficits for several years. We now have a modest budget surplus in Financial Year 2005 and project another surplus (before Special Transfers) for Financial Year 2006. We also

Following survey studies on price stickiness (Blinder 1994), wage stickiness (Bewley 1998), and inflation aversion (Shiller 1997), this article uses a survey to empirically investigate the extent to which competing behavioral motives might have influenced the consumption and saving decisions of real-world decision makers with regard to these transfers.

### II. POLICY BACKGROUND

The total package amounted to S\$2.6 billion, most of which was distributed as cash transfers.<sup>2</sup> It contained six different schemes, of which three—Growth Dividends, National Service bonus, and Workfare bonus—involved cash

have some capital receipts from our Statutory Boards, as well as investment income from the transition year of 2001, a portion of which accrued to the current government when it took office. Thus we have managed to accumulate some reserves over this term of Government. In view of the good economic performance last year and the positive outlook, I have decided to share part of these surpluses with Singaporeans this year.” However, the opposition party had accused the government of using the transfers as a ploy to get votes in the upcoming general election, which was eventually held on May 6, 2006.

2. The average exchange rate during 2006 was S\$1 = US\$0.63.

#### ABBREVIATIONS

ERS: Economic Restructuring Shares  
GST: Goods and Services Tax  
HDB: Housing and Development Board  
NSS: New Singapore Shares

transfers.<sup>3</sup> The survey focused on these three transfers, which accounted for 78% of the total value of the package.

#### A. Growth Dividends

This scheme gave all citizens above the age of 21 a one-off transfer ranging from S\$200 to S\$800, depending on their income and wealth as measured by their annual assessable income and the estimated annual rent of their home (as assessed by the tax authority). Specifically, it made larger transfers to lower income individuals who lived in homes with lower rental value, as shown in the table below.<sup>4</sup> These transfers were expected to amount to S\$1.43 billion.

	Estimated Annual Rent of Home ≤ \$6,000	\$6,000 < Estimated Annual Rent of Home ≤ \$10,000	Estimated Annual Rent of Home > \$10,000
Annual assessable income ≤ \$24,000	\$800	\$600	\$200
Annual assessable income > \$24,000	\$600	\$400	\$200

#### B. Workfare Bonus

This scheme made cash transfers to older low-wage workers to reward regular and productive work.<sup>5</sup> To qualify, the workers must be at least 40 years old, had an average monthly income of S\$1,500 or less, lived in a property with an estimated annual rent of S\$10,000 or less, and had worked for at least six continuous

3. For more details, see <http://www.progress.gov.sg>. For example, a family of four could receive up to S\$3,780 in cash under the progress package. The median household income in year 2005 was S\$3,830. In general, the transfers were given out on May 1, 2006. The three other schemes that did not involve cash transfers were utilities and rental rebates, top-ups of social security funds and accounts, and subsidies to public schools and self-help groups.

4. An annual assessable income of S\$24,000 was chosen as the cutoff because this was roughly the median wage. Generally, an annual value of home of S\$6,000 would include the one, two, three, and four-room Housing and Development Board (HDB) flats, which are public flats built by HDB, a statutory board that is responsible for the building and maintenance of public housing estates in Singapore. It is worth noting that more than 80% of the Singaporean lives in HDB flats that they own (not rented).

5. Ninety percent of the bonus would be paid in cash. The remaining 10% of the bonus would be credited into the recipients' Medisave account to help build up their savings to take care of their healthcare needs.

months in the calendar year.<sup>6</sup> The actual amount received would depend on the worker's average monthly income, as shown in the following table. These transfers were expected to amount to S\$0.4 billion.

Average Monthly Income	Amount of Workfare Bonus
0–\$400	1.5 months salary with a minimum bonus of \$75
\$401–\$900	\$600
\$901–\$1,200	\$400
\$1,201–\$1,500	\$200

#### C. 40th Anniversary National Service Bonus

This scheme made cash transfers to all national servicemen who were serving or had served their national service to recognize their contributions to national defense.<sup>7</sup> The actual amount received would depend on the recipient's national service status, as shown in the table below. These transfers were expected to amount to S\$0.2 billion.

National Service Status	Amount
Full-time national servicemen	\$100
Operationally ready national servicemen who have not completed their Operationally Ready National Service training cycle <sup>a</sup>	\$400
National servicemen who have completed their Operationally Ready National Service training cycle	\$400
National servicemen who are above statutory age (i.e., 40 years old for non-officers and 50 years old for officers)	\$400

<sup>a</sup>For details, see [http://www.mindef.gov.sg/imindef/mindef\\_websites/topics/nsmen/home.html](http://www.mindef.gov.sg/imindef/mindef_websites/topics/nsmen/home.html).

### III. LITERATURE REVIEW

The standard theoretical benchmark for thinking about tax cuts or transfers is the Ricardian equivalence proposition, which states that holding constant current and future government

6. A monthly income of S\$1,500 corresponded roughly to the 30th percentile of the income distribution. An eligible worker could receive Workfare bonus twice: eligible workers who had worked continuously for at least 6 months in 2005 would receive a cash transfer on May 1, 2006. Similarly, if they had worked for at least six consecutive months in 2006, they would receive another cash transfer on May 1, 2007.

7. National service is compulsory for all male Singaporeans.

spending, tax cuts, or government transfers simply change the timing of taxation and shift the tax burden to the future, leaving individuals' lifetime budget constraint and hence consumption unchanged.<sup>8</sup>

Because the transfers in Singapore have been framed as attempts to share past accumulated public sector surpluses, one could argue that Ricardian equivalence should not apply in this case.<sup>9</sup> Nevertheless, the opposition party has questioned the timing of these transfers, arguing that these transfers were an election ploy to get votes because the transfers were given out in a year of budget deficit.<sup>10</sup> More importantly, in contrast to most Western industrialized countries that aim to balance their budgets over the long term, the Singapore government has consistently pursued budget surpluses and reserve accumulation, arguing that they are important for a small open economy with no natural resources because of its extreme vulnerability to external shocks. Some believe that despite the large stock of foreign reserves already accumulated, the optimal fiscal position for the country may still be in the direction of more structural surpluses (Hoon 2005).<sup>11</sup> Thus, despite the rhetoric behind the transfers, Ricardian equivalence could still apply

8. See Ricciuti (2003) for a review of literature on Ricardian equivalence. See Romer's (2006) *Advanced Macroeconomics* for the standard textbook treatment of this topic.

9. As alluded to earlier, in his budget speech, the Prime Minister and Minister for Finance concluded that even though the progress package and other special transfers led to an overall budget deficit of S\$2.86 billion and even though the government had run budget deficits for several years after the last general election in 2001, "the Government is able to finance this from funds accumulated in its current term and will not need to draw on past reserves."

10. See <http://wpsgnews.blogspot.com/2006/02/straits-times-wp-chief-draws-fire-for.html>.

11. In his discussion of the future job prospects in Singapore the year before the transfers were announced, Hoon (2005) wrote: "Others might argue: since the country has already accumulated such a large stock of foreign reserves, isn't it time to adopt a consistently expansionary fiscal policy now through both a substantial cut in tax rates and a steady increase in government spending? What reason is there for the country to continue to run structural fiscal budgetary surpluses in the future? Although common sense suggests that it cannot be right that we aim to increase government assets through running surpluses without bound, three considerations suggest that our optimal fiscal position is in the direction of more structural surpluses. The first consideration is that our commitment to remain integrated into the world economy through free international capital flows means that we are vulnerable to currency crises. To develop an immunity against currency crises, . . . a country needs to increase its international liquidity position in the sense of increasing its foreign exchange reserves as a ratio to its short-term foreign liabilities. This stock of foreign reserves can be built up gradually through generating fiscal surpluses" (Hoon 2005,

if taxpayers believe that the government has a long-term goal of running a small or modest surplus, instead of merely balancing the budget. This expectation could be rational given Singapore's budgetary records and how the government has been harping on the importance of fiscal prudence and reserve accumulation.

There are also many theoretical reasons why the standard theoretical benchmark of Ricardian equivalence may be violated. First, with population turnover and the entry of new households, some of the future tax burden will be borne by new households who are not alive at the time of the transfers.<sup>12</sup> Thus, the transfers increase the lifetime resources of the individuals who are currently living, thereby raising their consumption. However, Barro (1974) argues that if individuals care about the welfare of their descendants, instead of consuming the transfers, they may simply save them as bequests for their descendants to pay for the higher future tax liability.<sup>13</sup>

Second, there may be liquidity or borrowing constraints. With tax cuts or transfers, the government is effectively borrowing on the household's behalf. If household either cannot borrow on its own or can only borrow at a higher interest rate than the government, then the transfers relax the household's budget constraint, making higher consumption feasible (Hubbard and Judd 1986).<sup>14</sup>

Third, Ricardian equivalence may also be violated because of the non-lump-sum nature of taxes (Barsky, Mankiw, and Zeldes 1986). Many households have a small amount of saving that they use in the event of sharp falls in income or emergency spending needs, that

69–70). The second consideration is saving for Singapore's aging population. The third consideration is the need for precautionary saving by the government because of Singapore's openness to the world economy and vulnerability to external shocks as "a country has to have additional resources to distribute to those who are hurt by the country's openness in order to maintain the social cohesion necessary to stay open" (Hoon 2005, 70).

12. The arguments apply equally to a tax cut and a government transfer. However, this article focuses on the case of a transfer henceforth.

13. Nevertheless, these intergenerational links would break down for individuals with no offspring (Tobin and Buiter 1980).

14. However, take into account the households' higher tax liabilities in the future because of the bond issue, rational lenders should reduce the amount they are willing to lend. In some cases, the amount of lending falls one-for-one with government bond issues and Ricardian equivalence may hold even with liquidity constraint (Hayashi 1987; Yotsuzuka 1987).

is, they exhibit buffer-stock saving behavior (Deaton 1991). This type of saving can be explained by a combination of high discount rate and precautionary saving (Carroll 1992, 1997).<sup>15</sup> With taxes as a function of income, a combination of government transfers today and higher taxes in the future raises a household's lifetime after-tax income if its future income is low, and vice versa, thereby reducing the variance of its after-tax incomes. As a result, precautionary saving falls; the household indulges its high discount rate and consumes the transfers.<sup>16</sup> However, the motive of precautionary saving can also cause the household to save the transfers if the transfers are given in times of greater economic uncertainty, just when the household expects greater variance in its future income. Whether precautionary saving causes the household to save or spend the transfers is an empirical question that this article investigates.

Fourth, consumers may not re-optimize their saving or consumption plans in the face of small income shocks that are caused by government transfers or tax cuts. This is because having optimized their lifetime consumption plans, the utility foregone from not re-optimizing in the face of a small shock may be even smaller (only second order in magnitude) because the first-order term from utility maximization is zero in the neighborhood of the optimal plans. Thus, such behaviors are near rational (Akerlof and Yellen 1985). However, because the utility foregone is very small, even a small cost may prevent a fully rational and utility-maximizing consumer from re-optimizing.<sup>17</sup>

Near rationality can explain why the permanent income hypothesis describes consumption behavior well for predictable movements in income that are large and regular (Browning and Collado 2001; Hsieh 2003; Paxson 1993), whereas predictable changes in income that are small and irregular are associated with substantial predictable changes in consumption (e.g., Parker 1999; Shapiro and Slemrod 1995; Shea

1995; Souleles 1999). This is because for large and regular changes in income, the utility lost from repeated failures to re-optimize is more likely to exceed the optimization cost than for small and irregular changes in income.

However, not re-optimizing can mean either sticky (or unchanged) consumption—which leads to Ricardian equivalence with tax cuts or transfers—or sticky saving—which causes current consumption to depend on current income. This article argues that the latter is the more likely outcome. Campbell and Mankiw (1989) show that as long as there are *some* rule-of-thumb consumers who spend out of their current income, Ricardian equivalence will be violated.<sup>18</sup> They estimate that about half of the income goes to rule-of-thumb consumers who simply spend their current income. Such a rule may be driven by mental accounting, where there is a hierarchy of money locations depending on how tempting it is for a household to spend the money in each, resulting in higher marginal propensity to consume out of cash or check receipts and lower propensity to consume out of planned savings, home equity, and future income (Shefrin and Thaler 1988). It may also arise from the types of income that the consumers think they *should* or *should not* indulge in spending, say because of norms on prudent financial planning (Akerlof 2007).<sup>19</sup>

Excess sensitivity of consumption to current income may also arise from the saliency of current consumption, leading to present bias and self-control problem (Laibson 1997). Even if the consumers fully anticipate the future increase in tax burden and are fully aware of their self-control problem, the consumers will still spend the transfers if the cash transfers relax their pre-imposed liquidity constraint aimed at self-control. Excess sensitivity may also arise from myopia. The myopic consumers may feel

18. Mankiw (2000) emphasizes that there are various ways to view the rule-of-thumb behavior. For example, it may also reflect the way people process information to form their estimate of permanent income.

19. As Akerlof (2007) explains, "any model of mental accounting can be translated into a model of norms: just replace the rules of mental accounting as the norms that people think they should follow." While giving the same outcome, the difference matters to the persistence of rule-of-thumb behavior because mental accounting tends to be thought of as a heuristic for quick decisions (in light of frictions such as optimization cost and bounded rationality) that results in cognitive error and therefore can be corrected over time because people are smart, but norms are embedded in the preferences that results in loss of utility from its deviation and can persist even in the absence of frictions.

15. Precautionary saving can arise because of the combination of a positive third derivative of the utility function and uncertainty about future income (Leland 1968). More uncertainty raises the expected marginal utility for a given level of expected consumption, giving more incentive to save.

16. In Singapore, the individual taxpayers face two main tax burdens: income tax (which depends on income) and the goods and services tax (GST; which depends on expenditure).

17. In reality, finding the optimal level of consumption often involves complex calculations and a great deal of uncertainty that is difficult to quantify.

**TABLE 1**  
Evidence on Spending and Liquidity Constraint

Question Number	Question	Number "Yes"	Percentage (%) "Yes"
B1 (i)	Have you spent the progress package?	320	64.6
B1 (ii)	If you have not, do you plan to spend it in the near future?	58	36.3
B2	Did you have any savings when you received the progress package?	429	86.7
B3	At that time, were your savings more than the amount you received under the progress package?	403	81.4

*Notes:* The percentage with a "yes" response in the last column is calculated as a percentage among those who responded to that particular question.

wealthier and consume more because they fail to foresee the future increase in tax burden.

#### IV. METHODOLOGY AND RESULTS

A number of articles have used surveys to empirically distinguish behavioral motives that may have driven price stickiness (Blinder 1994), wage stickiness (Bewley 1998), and inflation aversion (Shiller 1997). Their methodology is based on the belief that even though a person may not be cognitively conscious of the chain of reasoning that he or she uses to arrive at his or her decision or be able to give an intellectually coherent explanation of his or her behavior, if the idea is explained to him or her in simple terms, he or she should recognize and agree with it. Sharing this belief, this article extends the methodology to this study of consumption and saving in response to government transfers.

The survey was anonymous. It contained three short sections. Section A collected some personal characteristics, including the respondents' age (in range), sex, educational attainment, income (in range), marital status, type of dwelling, and the amount of cash transfers they had received under each scheme. Section B first asked the respondents whether they had spent the transfers (Table 1). It then summarized eight standard behavioral motives governing saving and consumption decision in response to tax cuts or transfers in plain English (Table 2) and asked the respondents to choose

the statements that best described how they felt about the transfers.<sup>20</sup> The respondents could, and sometimes did, choose more than one statement. Finally, this section explored mental accounting further with a few questions (Table 3). Section C elicited the respondents' expectations on future government taxes and spending given the transfers.<sup>21</sup> The survey was presented in hardcopy to people on the streets during late February to late March 2007, roughly 1 year after the transfers were announced.<sup>22</sup> All 495 respondents were adult Singaporeans who had received some cash transfers.<sup>23</sup>

It is natural to ask to what extent the sample resembles the population from which it is drawn. Comparing the distributions of age, educational attainment, monthly income, and dwelling type between the sample and the population, the evidence suggests that the survey over-sampled respondents who were more educated (with polytechnic and university degrees), in the younger age groups (between 21 and 35 years old), in the middle income groups<sup>24</sup> (with monthly income between S\$2,000 and S\$4,999), and living in the larger public flats (HDB four-room, five-room, and executive flats).<sup>25</sup> In what follows, I will first report the results for the sample surveyed. I will then investigate how the above characteristics may have affected the consumption response and the appeal of different motives (Table 4).

Most respondents reported that they had either spent the transfers or planned to do so

20. See, for example, Romer's (2006) *Advanced Macroeconomics* for a standard textbook treatment. The list of explanations appears to be quite exhaustive: only 3.4% of the respondents could not find any statements to describe how they felt about the transfers; they selected "others."

21. Specifically, the respondents were asked to answer two questions:

1. Because of the progress package, taxes will probably be \_\_\_\_ in the future.  
 lower  unchanged  higher  don't know
2. Because of the progress package, government spending will probably be \_\_\_\_ in the future.  
 lower  unchanged  higher  don't know

22. See Appendix 1 for the actual survey form (available upon request).

23. Of the 495 survey forms collected, 190 were collected from different HDB neighborhoods (the public housing estates where more than 80% of Singaporeans live), 184 were collected at Raffles Place (the financial district in Singapore), and 121 were collected at Orchard Road (the popular shopping district in Singapore). The responses collected from different locations are pooled because they yield similar conclusions.

24. The median household income in year 2005 was S\$3,830.

25. A corollary is that the survey under-sampled the other groups. See Tables A1–A4 for details.

**TABLE 2**  
Behavioral Motives Tested and Brief Descriptions Presented to the Respondents

Underlying Theory	Brief Description Presented to the Respondents	Percentage (%)		
		Total	Savers	Spenders
Ricardian equivalence	I will probably have to pay more taxes in the future because of the progress package. So I saved it for the future.	18.0	38.5	11.6
Bequest motive	The future generations will probably have to pay more taxes because of the progress package. But not for me. But I am worried for my sons and daughters. So I saved it for them.	7.9	12.8	6.3
Liquidity constraints	I spent it because I have already spent all my money. If I could borrow some money, I would have borrowed it and spent it.	7.1	0	9.3
Entry of new households	The future generations will probably have to pay more taxes because of the progress package. But not for me. So I do not worry about it and I spent it.	9.9	0.9	12.7
Non-lump-sum taxes	Other people may have to pay more taxes in the future because of the progress package. But not for me. My tax burden will be lower in the future because I will be earning less or spending less when that happens. <sup>a</sup>	9.3	2.6	11.4
Precautionary savings	I do not know what my taxes will be in the future. But with so much uncertainty, I saved it for the rainy days.	29.3	62.4	19
Present bias	I will probably have to pay more taxes in the future because of the progress package. But I do not worry about the future. I spent it while I could.	19.6	0.9	25.4
Rule of thumb	I do not know what my taxes will be in the future. As a general rule, I just spend whatever I receive in cash or in check, like the progress package. But I try not to touch my savings.	32.5	5.1	41
Others	Others	3.4	5.1	2.9
Sample size	Number of respondents ( <i>N</i> )	495	117	378

<sup>a</sup>In Singapore, two main tax burdens on the individuals are income tax (which depends on income) and the GST (which depends on expenditure).

in the near future.<sup>26</sup> Table 1 shows that out of the 495 respondents, 320 persons (64.6% of total) had already spent the transfers. Among 175 respondents who had not spent the transfers, 58 persons (36.3% of them) planned to spend them soon. In other words, 378 persons (76.4% of total) reported having spent the transfers or planning to do so soon.<sup>27</sup> The remaining 23.6% reported that they had not spent the transfers and they had no plan to spend them in the near future. Most were not liquidity constrained: 86.7% of the respondents reported that they had some savings at the time of the transfers,

26. The survey did not distinguish between those who had spent all or part of the transfers. The focus was on the tendency to consume versus the tendency to save.

27. That most people would spend the transfers were not unexpected from past experience. The Singapore government had previously made transfers using the New Singapore Shares (NSS) in 2001 to help the lower income group tide over the economic downturn at the time and the Economic Restructuring Shares (ERS) in 2003 to offset the

whereas 81.4% reported that their savings were more than the amount of transfers they received.

To investigate to what extent competing behavioral motives might have affected the propensity to spend, Table 5 regresses the respondents' self-reported spending decision on their chosen explanations and reports the odds ratios estimated using maximum likelihood logistic regression. The dependent variable is

increase in the GST (from 3% to 5%) that year. Under the NSS and ERS, the transfers were in the form of shares, which would earn annual dividends (in the form of bonus shares) for 5 years after their issuance if the recipients did not encash their shares. The annual dividends were 3% plus the real GDP growth rate of the preceding calendar year, with a guarantee of at least 3%. However, many chose to encash their shares early instead of waiting for the dividends, despite the attractive dividend yields that were significantly above the market interest rates. In fact, the government cited the widespread encashment as the reason for giving the progress package in the form of cash checks so that the transfers could be collected immediately on allotment. For more details on the NSS and ERS, see <http://www.ers.org.sg/>.

**TABLE 3**  
Further Evidence on Mental Accounting

	Percentage (%) "Yes"
B6: Did you spend it on things that you would not otherwise spend on had you not received the progress package?	30.2
	Percentage (%) "No"
B7: Do you agree with the following statement? "If I had not received the Progress Package, but if I had instead received the same amount of money from my salary, I would have used the money in exactly the same way as I had used the Progress Package?"	29.1

Note: Percentage "No" refers to the percentage of respondents who answered "strongly disagree" or "disagree."

a dummy variable that equals one for spender (who reported having spent the transfers or planning to do so soon), and zero otherwise. The independent variables are seven dummy variables, each indicating whether a particular explanation was chosen.<sup>28</sup> Although there were few instances of liquidity constraint in the sample, transfers that relaxed the liquidity constraints were always spent. In other words, being liquidity constrained predicted spending behavior perfectly. Thus, the 35 spenders who chose liquidity constraint and the dummy for liquidity constraint have been dropped from the regression.

All estimates are statistically significant at the 10% level except the effect of bequest motive, which also turns out to be the smallest in magnitude. Three motives reduce the probability of spending the transfers. Precautionary saving has the largest negative effect on the propensity to spend, followed by Ricardian equivalence and the bequest motive. The effects of precautionary saving and Ricardian equivalence are statistically significant at the 1% level and 5% level, respectively. Four motives raise the probability of spending the transfers. It turns out that present bias has the largest positive effect on the

28. The odds ratio for the dummy indicating the choice of an explanation tells us that if this explanation is chosen, the odds of being a spender increase by that ratio. Thus, an estimate of odds ratio greater than one or a coefficient estimate greater than zero means that this motive tends to raise the odds of spending.

**TABLE 4**  
Logistic Regression of Spending Decision and Motivations on Individual Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Spender	Ricardian Equivalence	Bequest Motive	Liquidity Constraint	Entry of New Households	Non-lump-sum Taxes	Precautionary Saving	Present Bias	Rule of Thumb
Age group	0.89 (1.72)*	1.15 (1.74)*	1.18 (1.53)	0.96 (0.38)	1.14 (1.42)	1.23 (1.95)*	0.99 (0.13)	1.03 (0.38)	0.81 (2.97)***
Female dummy	1.27 (1.03)	0.69 (1.46)	0.54 (1.61)	0.92 (0.21)	0.57 (1.74)*	1.32 (0.75)	1.26 (1.14)	1.02 (0.06)	1.04 (0.17)
Educational attainment	0.83 (2.29)**	1.11 (1.10)	1.03 (0.23)	0.66 (2.67)***	1 (0.01)	0.9 (0.72)	1.11 (1.37)	1.07 (0.74)	1.04 (0.58)
Income group	0.86 (2.18)**	1.02 (0.18)	1.05 (0.46)	0.91 (0.73)	0.96 (0.35)	0.81 (1.58)	0.99 (0.21)	0.96 (0.52)	0.99 (0.19)
Married dummy	1.04 (0.15)	0.62 (1.49)	3.55 (2.48)**	0.3 (2.07)**	1.22 (0.58)	0.68 (0.79)	1.02 (0.07)	0.62 (1.47)	1.5 (1.63)
Residential type	0.86 (2.19)**	1.01 (0.07)	0.85 (1.23)	0.86 (1.10)	0.84 (1.47)	0.89 (0.93)	1.04 (0.56)	1.12 (1.66)*	0.83 (2.63)***
Ricardian expectation dummy	0.69 (1.20)	2.59 (2.47)**	2.72 (1.61)	0.63 (0.99)	0.85 (0.43)	0.63 (1.09)	0.99 (0.03)	1.92 (1.85)*	1.09 (0.33)
Clueless expectation dummy	0.62 (1.28)	1.46 (0.81)	1.41 (0.45)	0.64 (0.79)	0.64 (0.89)	0.62 (0.84)	0.96 (0.11)	1.17 (0.35)	1.6 (1.42)
N	469	469	469	469	469	469	469	469	469

Notes: Dependent variable = dummy for spending decision and motivations. This table reports the odds ratios. If the odds ratio is greater than one, then it suggests that an explanatory variable raises the probability of spending or choosing a particular motive. Robust z-statistics (for H<sub>0</sub>: odds ratio = 1) are in parentheses.  
\*Significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%.

**TABLE 5**  
The Effects of Different Motives on Actual Behavior

	Dummy for Spender
Dummy for Ricardian equivalence	0.44 (2.51)**
Dummy for bequest motive	0.6 (1.24)
Dummy for entry of new households	8.7 (1.92)*
Dummy for non-lump-sum taxes	5.89 (2.45)**
Dummy for precautionary saving	0.31 (4.03)***
Dummy for present bias	30.23 (3.15)***
Dummy for rule of thumb	14.39 (5.65)***
<i>N</i>	460

*Notes:* The dummy for liquidity constraint and the 35 respondents who chose liquidity constraint are dropped because they predict spending behavior perfectly. This table reports the odds ratios. If the odds ratio is greater than one, then it suggests that an explanatory variable raises the probability of spending. Robust *z*-statistics (for  $H_0$ : odds ratio = 1) are in parentheses.

\*Significant at 10%; \*\*significant at 5%; \*\*\*significant at 1%.

propensity to spend, followed by rule of thumb, the entry of new households, and non-lump-sum taxes, respectively. The effects of present bias and rule of thumb are both statistically significant at the 1% level, whereas the effects of entry of new households and non-lump-sum taxes are statistically significant at the 10% level and 5% level, respectively. Overall, precautionary saving, present bias, and rule of thumb appear to be the most economically and statistically significant motives in the saving and consumption decisions of transfer recipients.

Thaler (1999) proposes that with mental accounting, funds to spend are labeled both as flows (regular income vs. windfalls) and as stocks (cash, home equity, pension wealth, etc.) with different marginal propensity to consume from each. Expenditures are also grouped into categories and spending is sometimes constrained by implicit or explicit budgets, resulting in non-fungibility and non-neutrality. Table 3 reports the results from two additional survey questions that investigate this proposition further.<sup>29</sup> There is some evidence for non-fungibility and non-neutrality because of mental accounting: 30.2% of the respondents agreed that they had spent the transfers on things that they would not otherwise spend on had they

29. These questions were only presented to the respondents after they had selected the statements that best described how they felt about the transfers so that these questions would not affect their choice of the statements.

not received the transfers.<sup>30</sup> Furthermore, 29.1% disagreed or strongly disagreed that if they had received the same amount of money from their salary, they would have spent it in the same way as they had spent the transfers.

Finally, Table 4 regresses the respondents' spending decision and choice of explanations on their personal characteristics.<sup>31</sup> Column (1) investigates how the respondents' personal characteristics might have affected their consumption decisions. The dependent variable is a dummy variable that equals one for spender, and zero otherwise. Columns (2) to (9) explore how the respondents' personal characteristics might have affected their consumption decision through the appeal of different motives. The dependent variable in each column is a dummy variable that equals one if a particular explanation was chosen, and zero otherwise. The estimates reported are the odds ratios from maximum likelihood logistic regressions. All regressions control for the respondents' budgetary expectations by including a dummy for the Ricardian expectations—the expectations that taxes would be higher because of the transfers—and a dummy for those who answered that they did not know how taxes and government spending might change because of these transfers.

30. Theoretically, if there are secondary markets for used durables, then the respondents could save the transfers by spending on durables, and they could sell the durables when taxes are raised. So without knowing what the consumers spent on, one could argue that the responses to this question may not necessarily indicate mental accounting. However, in reality, spending on durables is really an inefficient form of saving with significantly negative returns. The resale values of most consumer durables (consider, e.g., cars) drop sharply as soon as they leave seller's door.

31. For details on the categories used in the survey, please refer to the survey form in Appendix 1. Age group ranges between "1" and "9," where a higher value indicate older respondent: "1" corresponds to those aged between 21 and 25, "2" to those aged between 26 and 30, and so forth. Educational attainment ranges between "1" and "8," where a higher value indicates higher educational attainment and years of schooling: "1" corresponds to those with less than primary education, "2" to those with primary education, and so forth. Monthly income ranges between "1" and "11," where a higher value indicates higher income: "1" corresponds to those who earned less than SGD1,000 in year 2005, "2" to those who earned between SGD1,000 and SGD1,999, and so forth. Residential type ranges from "1" to "9," where higher value generally indicates more expensive residential unit: "1" corresponds to one-room public flat, "2" corresponds to two-room public flat, and so forth. Values "1" to "7" indicate government-built public housing and values "8" to "9" indicate private housing. Those who chose "Others" as residential unit are assigned a missing value.

The estimates in column (1) suggest that older, more educated, higher income individuals dwelling in more expensive residences were less likely to spend the transfers. The age effect is only marginally statistically significant at the 10% level, whereas education, income, and dwelling type are statistically significant at the 5% level. Female and married persons were more likely to spend the transfers but the effects are not statistically significant at the conventional levels. Both budgetary expectations reduced the propensity to spend the transfers but the effects are not statistically significant at the conventional levels. In fact, the estimate for those who expected taxes to be higher appears to be no different from the estimate for those who reported not knowing the budgetary implications of these transfers.

The estimates in columns (2), (6), and (9) suggest that older transfer recipients were more likely to choose Ricardian equivalence and non-lump-sum taxes to describe how they felt about the transfers (both effects are statistically significant at the 10% level), but they were less likely to choose rule of thumb (the effect is statistically significant at the 1% level). The strong appeal of Ricardian equivalence and the weak appeal of rule of thumb to older recipients reduced their propensity to spend, whereas the strong appeal of non-lump-sum taxes had the opposite effect.<sup>32</sup> Nevertheless, the net effect is that older recipients were less likely to spend the transfers, as noted above based on the estimate in column (1).

Generally, there is little evidence that men and women differed in their spending decisions or motivations except that women seemed marginally less likely to choose the entry of new households to explain their behavior and the effect is marginally statistically significant at the 10% level, as column (5) suggests.

The more educated individuals were less likely to spend the transfers because they were much less likely to be liquidity constrained and the effect is statistically significant at the 1% level, as column (4) suggests. However, educational attainment has no statistically significant effect on the appeal of the other behavioral motives such as Ricardian equivalence, rule of thumb, or present bias.

32. They thought that by the time the government finally increased the taxes to finance the transfer, their tax burden would be lower because they would be earning (thus paying less income taxes) and spending less (thus paying less GST).

As noted above, a higher income reduced the propensity of spending the transfers significantly. Nevertheless, income level has no statistically significant effect on the appeal of any of the motives.

Naturally, married couples were much more concerned with bequest than singles. It turns out that they were also less likely to be liquidity constrained. Both effects are statistically significant at the 5% level.

Respondents residing in more expensive types of dwelling were presumably wealthier. It turns out that they were marginally more likely to be affected by present bias (the effect is only statistically significant at the 10% level) and less likely to be affected by rule of thumb (the effect is highly statistically significant at the 1% level). Nevertheless, the net effect is that they were significantly less likely to spend the transfers.

As expected, respondents with the Ricardian expectations—those who expected taxes to be higher because of the transfers—were more likely to choose Ricardian equivalence and the effect is statistically significant at the 5% level. However, it turns out that they were also more likely to choose present bias and the effect is statistically significant at the 10% level. The net effect is that they were not significantly more likely to save the transfers. In comparison, respondents who reported to be clueless about the budgetary implications of the transfers did not find any of the explanations to be particularly appealing.

Finally, despite its overwhelming popularity, it is worth pointing out that the appeal of precautionary saving is not significantly correlated with any of the personal characteristics included. This finding suggests that precautionary saving may be an appealing motive that transcends personal characteristics.

#### V. POTENTIAL LIMITATIONS OF THE METHODOLOGY

The survey allows us to directly investigate many different behavioral motives behind people's consumption and saving decisions, which is not possible by looking at actual consumption choices. Nevertheless, asking people about their behavior instead of looking at their actual choices does have limitations. For example, a respondent might say that he or she spent the transfers fully, but he or she might also have reduced spending out of his or her regular income flow by an equivalent amount, resulting

in no actual change in total consumption. I have presented some evidence that suggests that this is unlikely to be the main reason behind the findings; for example, close to a third of the respondents disagreed that if they had received the same amount of money from their salary, they would have spent it in the same way as they had spent the transfers. Nevertheless, it is worth keeping these limitations in mind when interpreting the results.

VI. CONCLUSION

Using survey responses to a number of real one-off transfers by the Singapore government, this article empirically investigates to what extent different behavioral motives might have affected the propensity to spend the transfers, and how the relative appeal of these motives might be related to the personal characteristics

of transfer recipients. It turns out that the most economically and statistically significant motive that promotes saving is precautionary saving, whereas those that drive consumption are present bias and rule of thumb. It is possible that the relative appeal of different motives and the propensity to consume may be sensitive to the specific context of government policy and the larger economic environment. Investigating the robustness of results reported here to other episodes of government transfers or tax cuts is a natural next step.

APPENDIX 1: THE QUESTIONNAIRE

We are researchers from National University of Singapore. We are interested in issues related to the progress package in budget 2006. The survey is completely anonymous. There are no right or wrong answers to the following questions. We just want your honest answers. Please tick (✓) the appropriate boxes. Thanks much!

Section A

Age:	<input type="checkbox"/> Below 21	<input type="checkbox"/> 21–25	
	<input type="checkbox"/> 26–30	<input type="checkbox"/> 31–35	
	<input type="checkbox"/> 36–40	<input type="checkbox"/> 41–45	
	<input type="checkbox"/> 46–50	<input type="checkbox"/> 51–55	
	<input type="checkbox"/> 56–60	<input type="checkbox"/> >60	
Sex:	<input type="checkbox"/> Male	<input type="checkbox"/> Female	
Highest Education Attained:	<input type="checkbox"/> < Primary	<input type="checkbox"/> Primary	
	<input type="checkbox"/> Secondary	<input type="checkbox"/> Vocational	
	<input type="checkbox"/> Junior college	<input type="checkbox"/> Polytechnic	
	<input type="checkbox"/> University graduate	<input type="checkbox"/> Postgraduate	
Monthly Income (in 2006):	<input type="checkbox"/> <\$1,000	<input type="checkbox"/> \$1,000–\$1,999	<input type="checkbox"/> \$2,000–\$2,999
	<input type="checkbox"/> \$3,000–\$3,999	<input type="checkbox"/> \$4,000–\$4,999	<input type="checkbox"/> \$5,000–\$5,999
	<input type="checkbox"/> \$6,000–\$6,999	<input type="checkbox"/> \$7,000–\$7,999	<input type="checkbox"/> \$8,000–\$8,999
	<input type="checkbox"/> \$9,000–\$9,999	<input type="checkbox"/> >\$10,000	
Marital Status:	<input type="checkbox"/> Single	<input type="checkbox"/> Married	<input type="checkbox"/> Others
Current Residential Unit:	<input type="checkbox"/> HDB 1 room	<input type="checkbox"/> HDB 2 room	
	<input type="checkbox"/> HDB 3 room	<input type="checkbox"/> HDB 4 room	
	<input type="checkbox"/> HDB 5 room	<input type="checkbox"/> HDB executive	
	<input type="checkbox"/> HUDC	<input type="checkbox"/> Private condominium/apartment	
	<input type="checkbox"/> Landed property	<input type="checkbox"/> Others	
How much did you receive under the progress package?			
Growth Dividends \$ _____	Workfare bonus \$ _____	National Service bonus \$ _____	

Section B

1. Have you spent the progress package?  
 Yes                       No  
 If you have not, do you plan to spend it in the near future?  
 Yes                       No

2. Did you have any savings when you received the progress package?  
 Yes                       No

3. At that time, were your savings more than the amount you received under the progress package?  
 Yes                       No

Section B Continued

4. Please choose the statements that best describe how you feel about the progress package (Please choose all that are applicable)<sup>a</sup>
- I will probably have to pay more taxes in the future because of the progress package. So I saved it for the future.
  - I spent it because I have already spent all my money. If I could borrow some money, I would have borrowed it and spent it.
  - I will probably have to pay more taxes in the future because of the progress package. But I do not worry about the future. I spent it while I could.
  - Other people may have to pay more taxes in the future because of the progress package. But not for me. My tax burden will be lower in the future because I will be earning less or spending less when that happens.
  - The future generations will probably have to pay more taxes because of the progress package. But not for me. So I do not worry about it and I spent it.
  - The future generations will probably have to pay more taxes because of the progress package. But not for me. But I am worried for my sons and daughters. So I saved it for them.
  - I do not know what my taxes will be in the future. But with so much uncertainty, I saved it for the rainy days.
  - I do not know what my taxes will be in the future. As a general rule, I just spend whatever I receive in cash or in check, like the progress package. But I try not to touch my savings.
  - None of the above. Please elaborate:
5. What did you spend on? (Please specify)
6. Did you spend it on things that you would not otherwise spend on had you not received the progress package?
- Yes       No
7. Do you agree with the following statement?
- If I had not received the Progress Package, but if I had instead received the same amount of money from my salary, I would have used the money in exactly the same way as I had used the Progress Package.*
- Strongly disagree    Disagree    Agree    Strongly agree    Don't know

Section C

1. Because of the progress package, taxes will probably be \_\_\_\_ in the future.
- lower       unchanged       higher       Don't know
2. Because of the progress package, government spending will probably be \_\_\_\_ in the future.
- lower       unchanged       higher       Don't know

<sup>a</sup>There are two versions. The only difference between the two versions of the questionnaires is the order in which different explanations appear in Section B Question 4 (to control for order effect): the order of Explanations 2–4 and Explanations 5–8 are switched, but Ricardian equivalence always appears first at the top of the list (so that if this were really the explanation, the respondents could not have missed it).

APPENDIX 2: SAMPLE CHARACTERISTICS VERSUS POPULATION CHARACTERISTICS

**TABLE A1**  
Age Groups

	Sample (%)	Population (%)
21–25	23.8	8.5
26–30	24.0	9.7
31–35	14.6	11.6
36–40	8.9	11.9
41–45	7.7	12.7
46–50	7.7	12.0
51–55	6.9	10.0
56–60	3.2	7.7
>60	3.2	16.0
Total	100.0	100.0

**TABLE A2**  
Highest Educational Attainment

	Sample (%)	Population (%)
No qualification	3.8	18.0
Primary	2.2	22.9
Secondary	16.2	22.5
Upper secondary	14.1	14.9
Polytechnic	21.2	8.2
University	42.4	13.5

*Notes:* The population's educational profile refers to that of the citizens only. "Upper secondary" includes (pre-university) junior colleges and vocational education and "University" includes university graduates and postgraduates.

*Notes:* The population's age profile is calculated as a percentage of the adult resident population, which includes both citizens and permanent residents aged 21 and above. Unfortunately, the government does not report the statistics for citizens only.

**TABLE A3**  
Monthly Income (S\$)

S\$	Sample (%)	Population (%)
<1,000	14.8	13.1
1,000–1,999	17.8	26.4
2,000–2,999	29.2	21.0
3,000–3,999	16.6	13.5
4,000–4,999	10.7	7.9
5,000–5,999	4.3	5.2
6,000–6,999	2.8	3.2
7,000–7,999	1.4	2.1
8,000–8,999	0.4	1.7
9,000–9,999	0.8	1.0
>10,000	1.2	4.9

Notes: The population's income profile is calculated using monthly income from work for resident working persons aged 15 years and over (which include both citizens and permanent residents). Unfortunately, the government does not report the statistics for citizens only.

**TABLE A4**  
Residence

Residential Type	Sample (%)	Population (%)
HDB 1 and 2 rooms	0.8	4.4
HDB 3 room	13.7	20.7
HDB 4 room	36.8	32.5
HDB 5 room/executive	33.5	26.9
Private flats/condo	9.3	9.4
Private houses	4.7	5.5
Total	98.8	99.4

Notes: The population's residential profile refers to dwelling type for residential households (which include both citizens and permanent residents). Unfortunately, the government does not report the statistics for citizens only.

#### Sources of Population Statistics

General Household Survey 2005, Statistical Release 1: Socio-Demographic and Economic Characteristics, Department of Statistics, Ministry of Trade and Industry, Republic of Singapore. <http://www.singstat.gov.sg/pubn/popn/ghsr1.html>

General Household Survey 2005, Statistical Release 2: Transport, Overseas Travel, Households and Housing Characteristics, Department of Statistics, Ministry of Trade and Industry, Republic of Singapore. <http://www.singstat.gov.sg/pubn/popn/ghsr2.html>

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