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How Much Did the 2009 Australian Fiscal Stimulus Boost Demand? Evidence from Household-Reported Spending Effects

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How Much Did the 2009 Australian Fiscal Stimulus Boost Demand? Evidence from Household-Reported Spending Effects*

Andrew Leigh

Abstract

Using survey evidence, I estimate the impact of $21 billion in household payments delivered in Australia between December 2008 and May 2009. Forty percent of households who said that they received a payment reported having spent it. This is a higher spending rate than has been recorded in surveys assessing the 2001 and 2008 tax rebates in the United States. One possible explanation for this is that individuals are more likely to spend "bonuses" (as the Australian payments were described) than "rebates" (as the US payments were described). Using an approach for converting spending rates into an aggregate marginal propensity to consume (MPC), the Australian results are consistent with an aggregate MPC of 0.41-0.42. Since this estimate is based largely on first-quarter spending, it may understate the longer-run impact of the package on consumer expenditure.

KEYWORDS: fiscal stimulus, marginal propensity to consume, household expenditure

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1. Introduction

In response to the global financial crisis of 2008-09, Australia put in place one of the largest fiscal policy packages in the developed world. According to the OECD (2009), Australia's fiscal package over the period 2008 to 2010 amounted to 4.6 percent of its 2008 GDP. Of the 30 OECD members, only the United States and Korea initiated larger fiscal stimulus packages (OECD 2009, 109-110).

The impact of this fiscal stimulus on aggregate spending in Australia and elsewhere has been hotly debated. While some claimed that putting additional cash in the pockets of householders would be an effective means of stimulating the economy, others argue that if handouts are funded by increased government debt, rational households will simply save the money. In the pithy words of George Mason University economist Russell Roberts, fiscal policy is akin to 'taking a bucket of water from the deep end of a pool and dumping it into the shallow end.' Similar arguments have been made in the Australian policy debate.[1]

Some analysis of the impact of the fiscal stimulus on expenditure has focused on analyzing the time series patterns of retail spending or household savings. Such an approach suffers from the limitation that it is difficult to know the counterfactual – what would have happened to expenditure and savings patterns in the absence of the policy change? With only monthly or quarterly data, it is extremely difficult to separate the impact of the government's policy response from the shock caused by the global downturn.

In this paper, I use evidence from a survey that asked households whether they spent or saved the money that they received from the household stimulus package. This strategy follows the approach that that Shapiro and Slemrod (2003a, 2009) and Sahm, Shapiro and Slemrod (2009) have taken to analyzing United States fiscal stimulus packages. While economists are sometimes skeptical of surveys of this nature, the approach is grounded in similar theory to hypothetical choice problems, and provides a useful supplement to time series analysis. Indeed, even if households systematically underreport or over-report their propensity to save a government payment, it is possible to use survey data to make comparisons across nations, so long as the misreporting patterns remain the same. Another advantage of the survey approach is that it produces a relatively quick answer (which is often important to policymakers), and allows analysis of the demographic and attitudinal questions that best predict whether individuals spend their household payments.

To preview the results, I find that 40 percent of respondents said that they spent the household stimulus payments. On reasonable assumptions about the distribution of marginal propensities to consume (MPC) across the population,

[1] See for example the quotes from Liberal Party parliamentarians Julie Bishop and Malcolm Turnbull in section 4.

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this translates into an average MPC of 0.41−0.42. The share of respondents who reported spending the Australian payment is higher than the share of US respondents who said that they spent the 2001 and 2008 tax rebates (though the difference in the MPCs is not as large). One plausible explanation for this is that the Australian payments were described as 'bonuses', while the US payments were described as 'rebates'.

I also explore the relationship between self-reported spending patterns and answers to various demographic and attitudinal questions. Age and income appear to be weak predictors of spending patterns. However, respondents who are more worried about government debt (and therefore perhaps more concerned that government payments now will lead to tax increases in the future) are significantly less likely to spend the rebate. In addition, respondents with a political allegiance to the governing Labor Party were more likely to have spent the rebate.

The remainder of this paper is structured as follows. In section 2, I outline the Australian fiscal stimulus package that is the subject of this analysis. In section 3, I discuss the survey instrument, present aggregate results, and compare them with earlier estimates from the United States. In section 4, I analyze the cross-sectional variation in the survey, as a way of checking that the variation in the survey is somewhat reasonable. The final section concludes with a discussion of the results and some caveats.

2. Australia's Fiscal Response to the Global Financial Crisis

According to calculations by the OECD, about two-fifths of Australia's fiscal package consisted of reduced taxes and transfers to households. This money was largely delivered in two tranches: late-2008 and early-2009. Since the survey instrument did not ask respondents to distinguish between the two packages, it is possible that they might have answered the question with respect to either the 2008 or 2009 household payments. I therefore describe each in turn.

The 2008 package (termed the 'Economic Security Strategy') was announced on 14 October 2008. Because it was supported by the Liberal-National opposition, the enabling legislation passed parliament quickly. The key household payments in this package were:

- *Pensioner payments* of $1400 for single pensioners and $2100 for pensioner couples. The Australian aged pension is subject to income and assets tests. Other pensions include the disability support pension and the service pension.
- *Carer payments* of $1000 for every recipient of Carer Payment, which is a payment provided to people providing constant care to a person with a disability.

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- *Child payments* of $1000 per child for families eligible for Family Tax Benefit A (FTB-A). FTB-A eligibility depends on family income and the number of children, and ceases at around $100,000 for a one-child family, or at about $125,000 for a three-child family. Child payments were also provided for dependent children receiving Youth Allowance and certain other means-tested study payments.

Together, these payments totaled around $8.8 billion, and the payments were largely delivered in December 2008.[2] They were not taxed, and they did not affect eligibility for other income support payments. At the time the 2008 payments were delivered, it was not generally known that there would be a second Australian stimulus package, but global events between October 2008 and February 2009 (e.g. large falls in world share prices, increases in unemployment, banking crises) prompted the Australian government to devise a second stimulus package.

The 2009 package (termed the 'Nation Building and Jobs Plan') was announced on 3 February 2009. It was opposed by the Liberal and National Parties, leading the government to revise the package on 13 February 2009 following negotiations with non-government Senators. The package included a range of measures, but the three key household payments – totaling around $12 billion – were:[3]

- *Tax Bonus for Working Australians*: A payment based on taxable income in the 2007-08 tax year. The payment was $900 for individuals with taxable incomes of $80,000 or less, $600 for individuals with taxable incomes of $80,001-$90,000, and $250 for taxpayers with incomes of $90,000-$100,000. In Australia, tax is assessed on an individual basis, so it was possible for both adults in a family to receive the payment. This payment was estimated to cover 8.7 million taxpayers (about three-quarters of all taxpayers).
- *Back to School Bonus*: $950 per child for low-income and middle-income families receiving Family Tax Benefit A who have school-aged children (ages 4-18). This payment was estimated to cover 2.8 million children.
- *Single-Income Family Bonus:* $900 per family to those families entitled to Family Tax Benefit B (around 1½ million families). FTB-B eligible

[2] Unless otherwise stated, all figures are in Australian dollars. To put these figures into perspective, the exchange rate from mid-2008 to mid-2009 averaged 1 AUD=0.75 USD. Australian GDP per capita in the 2008-09 tax year was $58,000 per capita (about US$44,000).

[3] The two other household payments were the *Farmer's Hardship Bonus* and the *Training and Learning Bonus*. These were substantially smaller than the three payments detailed above. Together, they constituted only around half a billion of the $12 billion in family payments announced in the overall *Nation Building and Jobs Plan* package

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families are single parents or couples where the primary earner has an income of less than about $150,000, and the secondary earner has an income below about $20,000 (both thresholds vary according to the number of children).

The *Tax Bonus for Working Australians* was delivered by the Australian Taxation Office in April and May 2009 (to taxpayers who had filed the previous year's tax return), while the *Back to School Bonus* and the *Single-Income Family Bonus* were delivered by Centrelink in March 2009. As with the 2008 payments, the 2009 payments were not taxable, and were ignored for the purposes of calculating other income support payments. It was also possible for households to receive multiple payments. For example, a husband and wife who each earned $40,000 and had two school-aged children would each have received a *Tax Bonus* of $900, plus $1900 in *Back to School Bonus*, resulting in an overall non-taxable bonus of $3700 for the household, or about 4 percent of that household's annual market income. Note too that such a household would also have received $2000 ($1000 per child) in December 2008.

3. Using a Survey to Assess the Impact of the 2009 Payments on Consumption

From 17-30 June 2009, the Social Research Centre in Melbourne conducted a telephone survey of 1201 individuals on the topic of the economy and the global financial crisis. The survey was conducted on behalf of the Australian National University (ANU), and had a response rate of 32 percent. Although the primary focus of the survey was on attitudes towards taxation, it also included two questions about the fiscal stimulus. Respondents were asked whether they received a payment from the government 'as part of the household stimulus package'. Of the 1201 individuals surveyed, 817 (68 percent) said that they did receive a payment. This is less than the official estimate from the Australian government that 'just under 80 percent' of families and singles would receive a payment under the 2009 package (Swan 2009), a figure that would likely be higher still if one accounts for the 2008 payments. Conceivable explanations for the discrepancy are that some individuals were yet to receive their payment at the time of the survey (for example, because they had not yet filed their 2007-08 tax return); that some respondents did not regard family payments as theirs (perhaps because they were paid into a spouse's bank account); or that some respondents forgot about the payment or did not realize that they had received it. Another factor is that the Australian survey (unlike some US surveys of its ilk) did not have a lead-in question that reminded respondents about the stimulus payments.

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However, while the mean receipt rate is likely understated, the differences across households are consistent with the policy design. For example, at least 80 percent of households with children who have incomes below $60,000 reported receiving a payment, but only around 50 percent of childless households with incomes over $150,000 reported having received a payment. (Since the survey did not ask about individual incomes, it is difficult to be sure about a given household's eligibility, but many households with a combined income over $150,000 would likely be eligible for the *Tax Bonus for Working Australians*).

Another issue is that the survey did not state whether it was referring to the 2008 payments or the 2009 payments. Because the 2009 package was larger and more recent, it is likely to have been the package that most respondents had in mind, but it is also possible that some respondents answered in respect of the 2008 payments.

Subject to the limitations of the demographic questions in the survey, it is possible to identify a subgroup of respondents who were likely to have received only the 2008 payment (retirees aged over 65 with household incomes below $40,000) and a sample of respondents who were likely to have received only the 2009 payment (childless people aged 25-54, in employment, and with a household income below $80,000).[4] Among those likely to have received only the 2008 payment, 66 percent answered that they did receive a payment from the government as part of the household stimulus package, and among those likely to have received only the 2009 payment, 76 percent told the interviewer that they received a payment.

[4] Precisely separating eligibility for the two payments would require knowing pension status, carer status, farming status, ages and study status of all children, and precise individual and household incomes for all adults in the household in tax years 2007-08 and 2008-09.

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Table 1: What Did Australian Households Do with Their Stimulus Money?

Panel A: Detailed Categories

'Thinking of the money you received from the household stimulus package, did you spend it, use it to pay bills, save it, or invest it?'	*%*
Spent it [on things other than bills or other debts]	39.8
Used it to pay bills [utilities (phone, electricity etc), medical, other services]	30.2
Credit cards	1.5
Mortgage	2.9
Personal/short-term loans [e.g. car payment]	0.3
Saved it	18.7
Invested it	4.9
Don't know / Not sure	1.2
Refused	0.4
Total	100.0
Sample size	*817*

Panel B: Collapsed Categories

% Spent	40.5
% Saved	24.0
% Paid off debt	35.5

Panel C: Respondents Likely to have Received Only One Payment

	2008 Payment Only	2009 Payment Only
% Spent	55.0	27.1
% Saved	13.0	24.3
% Paid off debt	32.0	48.6
Sample size	*60*	*71*

Note: All percentages use population weights. In Panel B, 'Saved' includes 'Invested it', and 'Paid off debt' includes all answers from 'Used it to pay bills' to 'Personal/short-term loans'. Shares in Panel B exclude respondents who answered 'Don't know/Not sure' or who refused to answer the question. In Panel C, those likely to have received only the 2008 payment are retirees aged over 65 with household incomes below $40,000, while those likely to have received only the 2009 payment are childless people aged 25-54, in employment, and with a household income below $80,000 (as with panels A and B, the question was only asked of those who reported receiving the payment).

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Among respondents who said they had received the payment, the survey then asked 'Thinking of the money you received from the household stimulus package, did you spend it, use it to pay bills, save it, or invest it?'[5] Table 1 shows the distribution of responses. In Panel A, I show the precise tabulation from the survey, which included seven possible responses, plus 'Don't know/ Not sure' and 'Refused'. In Panel B, I drop the unsure/refused respondents, and collapse the seven categories into three standard responses: spent (40.5 percent), saved (24 percent), and used it to pay off debt (35.5 percent).[6]

In Panel C, I restrict the sample to those who are likely to have only received the 2008 payment, and those who are likely to have only received the 2009 payment. The spending rate is higher for those who received only the earlier payment, but it is difficult to know whether this is due to the demographic differences between the two groups, or because the MPC is higher when measured six months after receipt than when measured one to three months after payment receipt.[7]

[5] The ANU survey's question wording followed a CBS News/New York Times Poll conducted in the United States on 25-27 April 2008 and 18-22 February 2009 (see e.g. CBS News/New York Times 2009). In the April 2008 CBS survey (which would have been prospective for most respondents), the spent/save/pay debt percentages were 19/28/53, suggesting a spending rate well below Australia (the ANU poll recorded figures of 41/24/35). While some other studies have asked respondents to nominate the *percentage* of the payment that they spent, the drawback of that approach is that some respondents may baulk at answering such a specific question.

[6] Perhaps the most questionable category is 'Used it to pay bills', which I classify as paying off debt. This classification follows the treatment by Sahm, Shapiro and Slemrod (2009) of similarly-worded surveys fielded by the Pew Research Centre, CNN/Opinion Research Corp, and CBS News / New York Times (see their Table 16). Classifying bills as paying off debt also accords with the findings of Sahm, Shapiro and Slemrod's own survey, which first offered respondents three categories (increase spending, increase savings or pay off debt), and then asked those who answered 'pay off debt' which particular debts that they paid off. Of those who identified particular debts, 40 percent nominated paying bills. Nonetheless, as the authors note, the issue is not clear-cut: 'If 'pay off debt' or 'pay bills' refers to paying medical bills or student loans that, in the absence of rebates, would have been deferred or financed with other sources of credit, then the rebates led people to pay off debt. However, if these households would have otherwise cut back on their spending to pay those bills or pay off debt, then the rebates led to an increase in spending.' (Sahm, Shapiro and Slemrod 2009, p.8).

[7] Applying the methodology set out below, the implied MPC for those who received only the 2008 payment is 0.47–0.49, while the implied MPC for those who received only the 2009 payment is 0.35–0.38.

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Table 2: Comparing Spending Propensities Across Countries (Survey Method)

	US 2001	US 2008 (MSC)	US 2008 (CEX)	US 2008 (SIPP)	Australia 2008-09
% Spent	21.8	19.9	31.2	28.9	40.5
% Saved	32.0	31.8	18.2	17.6	24.0
% Paid off debt	46.2	48.2	50.7	53.6	35.5
Sample size	*1,444*	*2,245*	*5,192*	*54,402*	*805*
Implied MPC	0.33–0.36	0.32–0.35	0.37–0.39	0.36–0.38	0.41–0.42

Notes:

1. All percentages use population weights, except for the MSC and SIPP, which are unweighted. All surveys except the CEX were conducted by telephone. Implied MPC is calculated using the methodology set out in Shapiro and Slemrod (2003b).
2. The 2001 US survey (the University of Michigan Survey Research Center's Monthly Survey) asked 'Earlier this year a Federal law was passed cutting income tax rates and expanding certain credits and deductions. The tax cuts will be phased in over the next ten years. This year many households will receive a tax rebate check in the mail. In most cases, the tax rebate will be $300 for single individuals and $600 for married couples. Thinking about your (family's) financial situation this year, will the tax rebate lead you mostly to increase spending, mostly to increase saving, or mostly to pay off debt?'. Source: Shapiro and Slemrod (2003a).
3. The 2008 US MSC survey (the Reuters/Michigan Survey of Consumers) asked 'Under this year's economic stimulus program tax rebates will be mailed or directly deposited into a taxpayer's bank account. In most cases, the tax rebate will be $600 for individuals and $1200 for married couples. Those with dependent children will receive an additional $300 per child. Individuals earning more than $75,000 and married couples earning more than $150,000 will get smaller tax rebates or no rebate at all. Thinking about your (family's) financial situation this year, will the tax rebate lead you mostly to increase spending, mostly to increase saving, or mostly to pay off debt?'. Source: Shapiro and Slemrod (2009).
4. The 2008 US CEX (the Consumer Expenditure Survey) asked: '[Earlier in this interview/Last interview/Previously] you or your Consumer Unit reported receiving a one-time tax rebate that was part of the Federal government's economic stimulus package. Did the rebate lead you or your Consumer Unit mostly to increase spending, mostly to increase savings, or mostly to pay off debt?'. Source: BLS (2009).
5. The 2008 US SIPP (the Survey of Income and Program Participation) asked respondents whether they received the payment, then about its timing and amount. Respondents were then asked: 'Did the federal rebate lead… mostly to increase spending, mostly to increase savings, mostly to pay off debt?'. Source: US Census Bureau (2011).

In Table 2, I compare these responses with survey responses from the 2001 and 2008 US stimulus payments, as reported in Shapiro and Slemrod (2003a, 2009), BLS (2009) and US Census Bureau (2011). While there is some variation across the US estimates, all show a lower spending rate than in the Australian

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survey.[8] The share of Australians who said that they spent the 2008-09 payments is 1½ to 2 times larger than the share of US respondents who said that they spent either the 2001 or 2008 tax rebates.

A key parameter in understanding the impact of a fiscal stimulus on the macroeconomy is the MPC. Shapiro and Slemrod (2003b) propose a formula for translating the share of respondents who report spending a payment into the aggregate MPC, using the assumption that respondents will tell a survey researcher that they mostly spend if their individual MPC exceeds 0.5.[9] Specifically, converting individual responses into an aggregate MPC is based upon certain assumptions about the probability density function of the MPC across the population: most importantly, that the probability density function increases linearly until some maximum point and decreases linearly thereafter, and that each individual has the same weight in calculating the aggregate MPC. For precise detail on the methodology, see the Appendix to Shapiro and Slemrod (2003b).

Using the Shapiro-Slemrod approach, Figure 1 charts the relationship between the aggregate MPC and the share of survey respondents who respond that they spent a payment. The chart shows two bounds, using the two sets of parameters that produce the most extreme results at the tails of the distribution.[10] While the Shapiro-Slemrod approach produces reasonable results in the middle of the distribution, it is somewhat less reasonable at the tails. When the share of respondents who report spending a payment is 1 percent, the implied aggregate MPC is 0.26−0.29. When the share of respondents who report spending a payment is 100 percent, the implied MPC is 0.62−0.80. This suggests that the approach is most reliable when spending rates do not approach the extreme bounds.

[8] It is difficult to know what explains the differences across the three surveys that asked about the 2008 US stimulus payments, but one plausible answer is that when respondents are asked about payments they have not yet received (as in the MSC survey), they are more inclined to say that they will save them. But when asked what they actually did with a payment (as in the CEX and SIPP surveys), respondents are more likely to say that they spent the money. This would be consistent with hyperbolic discounting, and the practical success of programs like 'Save More Tomorrow' (Benartzi and Thaler 2004). However, other researchers have found smaller differences between prospective and retrospective surveys. For example, Sahm, Shapiro and Slemrod (2009) survey a sub-sample of respondents both before and after the 2008 rebate is delivered, and find that the share of people who switched from spending to saving was about the same as the share who switched from saving to spending (Table 2a).

[9] Although the Australian survey does not include the word 'mostly', I show below that the share of US respondents who choose the 'spend' option is quite similar if the question omits the word 'mostly'.

[10] Specifically, using the variable names described in the Appendix to Shapiro and Slemrod (2003b), *Bound 1* is a=1.643, b=1.643, c=0.967, and *Bound 2* is a=0, b=2.314, c=0.864.

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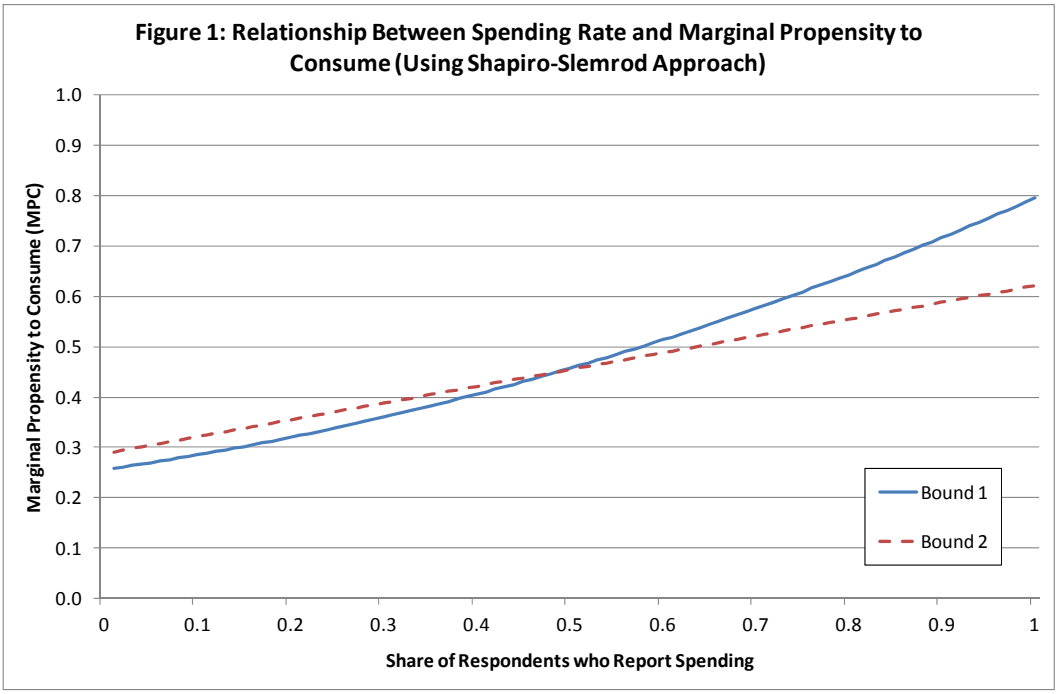
In the bottom row of Table 2, I use the Shapiro-Slemrod approach (and the same bounds as in Figure 1). Averaging across the two US packages, this implies an aggregate short-run MPC of 0.36 (range: 0.32−0.39), and an MPC for the 2008-09 Australian payments of 0.41−0.42. However, it is important to remember that the Australian estimates are likely to be mostly estimated among respondents who had received the payment in the previous quarter, and that the long-run MPC is likely to be higher.



In addition to the fact that the long-run MPC is typically larger than the short-run MPC, the survey measure tends to estimate a smaller MPC than the direct expenditure approach. Studies that have relied on direct measures of expenditure (exploiting the random timing in the payment of the 2001 and 2008 US tax rebates) have estimated higher MPCs. In their analysis of the 2001 rebate, Johnson, Parker and Souleles (2006) use the Consumer Expenditure Survey, which asks households a set of detailed questions about their recent purchases. Restricting the analysis to non-durable goods, they estimate an MPC of 0.37 in the quarter of receipt, or 0.69 if expenditure in the following quarter is also included. Similarly, in an analysis of the 2008 rebate using AC Nielsen Homescan data, Broda and Parker (2008) estimate a first-quarter MPC of about 0.6 and a

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two-quarter MPC of about 1.[11] And analyzing the 2008 rebate using Consumer Expenditure Survey data, Parker et al. (2011) estimate a first-quarter MPC of between 0.5 and 0.9.

Although the survey approach seems to imply a higher MPC for the 2008-09 Australian payments than for the 2001 and 2008 US rebates, it is worth considering whether this is merely due to differences in question wording. In particular, one might be concerned that the US questions asked respondents whether the rebate would lead them *mostly to increase spending*, while the Australian question asked respondents whether they would *spend the money*. There are two differences here (and the potential biases run in opposite directions). The first is the use of the word 'mostly', which could have meant that a consumer who planned to spend 51-99 percent of the payment would have opted for the 'spend' option in the former wording, but not with the latter wording. The second difference is the use of the word 'increase spending'. Suppose a respondent had in mind cash flow rather than net expenditure, they might have chosen the 'spend' option with the latter wording than the former wording.

However, US questions that are worded in a more similar manner to the Australian question appear to have recorded similar results to those set out in Table 2. For example, a Gallup Poll released on 24 July 2001 found that only 17 percent of respondents said that they would spend that year's tax rebate. Similarly, a CBS News/New York Times Poll conducted in the United States from 18-22 February 2009 asked respondents 'If you receive money from a tax cut, will you spend it, or use it to pay bills, save it, or invest it?' 19 percent of US respondents answered 'spend it', compared with 40 percent in the Australian poll. Moreover, it is not the case that US surveys of this kind invariably show low spending rates: polls following the 1964 tax cut and prior to the 1982 tax cut both recorded a 50 percent spending rate, while a poll following the 1992 change in tax withholding recorded a 43 percent spending rate (cited in Shapiro and Slemrod 2003b).

The only other publicly reported Australian survey of which I am aware is a poll conducted by Westpac and the Melbourne Institute in August 2009, which asked respondents 'If you received a one-off payment from the Federal Government over the last 6-12 months how much of it have you spent?'. The two key differences between that survey and the one analysed in this paper is that the Westpac survey explicitly referred to any payments received in the previous year (thereby reminding respondents of the December 2008 package), and that it asked

[11] Since the Homescan data include only a subset of non-durable goods, and covers only a one-month interval, Broda and Parker scale up their results using the estimates in Johnson, Parker and Souleles (2006). The MPCs reported in the text above are based on the reported impact on personal consumption expenditure (PCE) of a tax rebate equivalent to 4 percent of PCE: +2.4 percent in the first quarter, and +4.1 percent in the first two quarters.

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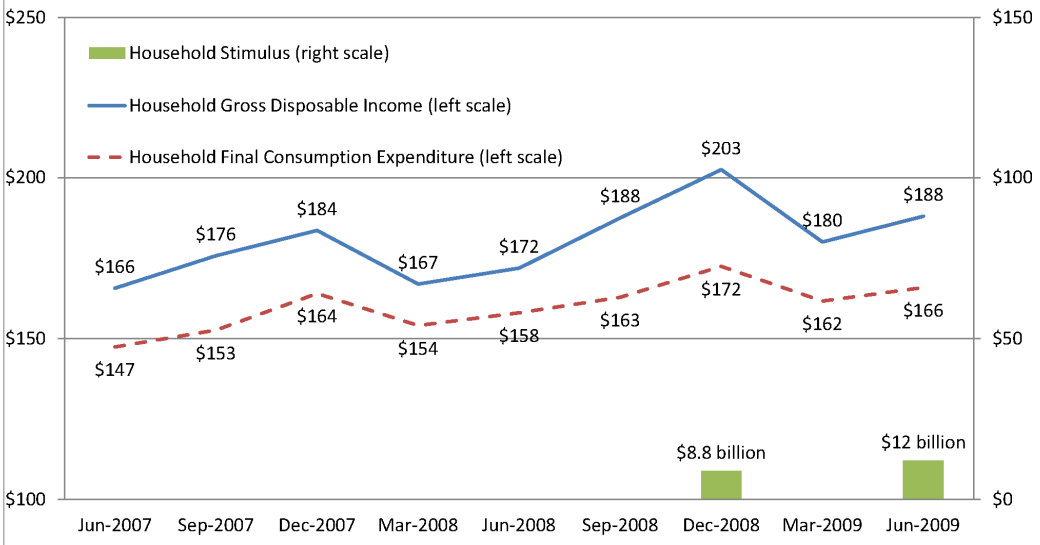
about the *share* of the payment that was spent, rather than for the primary purpose to which the money was put. However, the Westpac survey is consistent with the ANU estimate in that it estimated a very high expenditure rate. Of those respondents who said that they had received a payment, only 20.2 percent said they had spent none of it, 9.8 percent said they had spent less than half of it, 7.8 percent said they had spent more than half of it, and 62.2 percent said they had spent all of it. Assuming that spending is normally distributed around the range midpoints, and that the money was evenly spread across those respondents who said that they received a payment, the researchers estimate an MPC of 0.7 (Westpac Group 2009). Although it is difficult to attribute this estimate to a particular time horizon, it is consistent with a higher MPC for the 2008-09 Australian payments than the 2001 and 2008 US payments.

Figure 2: Household Expenditure and Household Stimulus Payments (Billions of dollars, original)



Source: Australian Bureau of Statistics, *Australian National Accounts: National Income, Expenditure and Product*, Cat No 5206.0, Table 14

It is perhaps useful also to see how the stimulus payments match up against aggregate household consumption. Figure 2 charts the two series, using quarterly data. Although it is impossible to precisely separate the impact of fiscal policy from other temporal shocks (eg. fluctuations in consumer sentiment), the uptick in household final consumption expenditure is $9 billion after the $8.8 billion of household payments in the December 2008 quarter, and $4 billion after the $12 billion of household stimulus in June 2009 quarter. Focusing on the June 2009 increase (which is less likely to be affected by seasonal factors), it is possible to

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compare the change in expenditure with the size of the household stimulus. Dividing the June 2009 quarter stimulus by the increase in consumption produces a first-quarter MPC of \$4b/\$12b=0.3 (assuming second-round multiplier effects are minimal).[12]

4. Who Spends? Who Saves?

Given concerns about whether surveys of this kind accurately capture true expenditure patterns, it is useful to analyze the cross-sectional variation in the 2009 Australian survey, and see whether it accords with theory and similar empirical studies. Such an exercise is also informative in considering which groups should be targeted by future programs that aim to use household payments to stimulate the economy.

In Table 3, I tabulate the spending rate across five variables: household income, respondent age, degree of worry about government debt ('How worried are you that increasing government debt will harm the financial future of future generations?'), degree of worry about household unemployment ('How worried are you that in the next 12 months you or someone else in your household might be out of work and looking for a job for any reason?'), and voting intention. For each variable, I also estimate an F-test on the hypothesis of equality across the categories, and report the p-value on this F-test. I also report a multivariate F-test, from a regression including all five variables.

The results from the first variable indicate that there is no systematic relationship between household income and spending rates. While this may be surprising at first blush, it is consistent with the results of Shapiro and Slemrod, who argue that 'low-income individuals are needy today, but because they are also likely to be needy in the future, they do not necessarily use the windfall for current consumption' (2009, 376).

By respondent age, the spending rate trends upwards, though the relationship is not monotonic. Among respondents aged under 65, the average spending rate is 40 percent, compared to 45 percent for respondents aged 65 or over. However, while the age differences are consistent with a life-cycle model, they are not statistically significant.[13]

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[12] Using seasonally-adjusted data, the uptick in household final consumption expenditure from the March 2009 quarter to the June 2009 quarter is \$2 billion, producing a first-quarter MPC of 0.15. However, there are considerable limitations in such an exercise, since it ignores the infrastructure element of the stimulus package, and assumes as its counterfactual that expenditure would have flatlined absent the stimulus. For a time series analysis of the Australian package, see also Barrett (2011).

[13] Another possible explanation is that older recipients were more likely to have answered the survey with reference to the 2008 payment, while younger recipients were more likely to have had

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Table 3: Exploring Cross-Sectional Variation in Spending Patterns – Univariate and Multivariate Analysis

	Spending Rate	N	Univariate p-value	Multivariate p-value
Household income				
Less than $20,00	0.40	80	P=0.17	P=0.22
$20,000-$39,999	0.45	119		
$40,000-$59,999	0.31	115		
$60,000-$79,999	0.39	114		
$80,000-$99,999	0.35	106		
$100,000-$149,999	0.49	121		
$150,000 or more	0.44	55		
Don't know/ can't say	0.38	55		
Refused	0.51	40		
Age				
18-24	0.41	56	P=0.86	P=0.42
25-34	0.38	138		
35-44	0.40	191		
45-54	0.35	161		
55-64	0.46	146		
65-74	0.44	78		
75+	0.48	35		
Degree of worry about government debt				
Very worried	0.25	218	P<0.01	P=0.03
Somewhat worried	0.42	312		
Not too worried	0.51	199		
Not at all worried	0.46	71		
Don't know/ not sure	0.17	4		
Refused	0.00	1		
Worry about unemployment				
Very worried	0.30	118	P=0.06	P=0.23
Somewhat worried	0.40	238		
Not at all worried	0.44	436		
Don't know/ not sure	0.15	10		
Refused	0.71	3		

in mind the 2009 payment. Given that long-run MPCs are generally thought to be larger than short-run MPCs, this would lead to a higher spending rate among older survey respondents.

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Table 3: Exploring Cross-Sectional Variation in Spending Patterns – Univariate and Multivariate Analysis (cont'd)

	Spending Rate	N	Univariate p-value	Multivariate p-value
Voting intention				
Liberal	0.29	259	P<0.01	P<0.01
Nationals	0.24	28		
Labor	0.50	325		
Greens	0.46	110		
Don't know/ not sure	0.44	62		
Refused	0.39	21		

Note: Univariate p-value is from an F-test on a linear probability regression of whether the respondent spent the rebate (0/1) on a set of indicator variables denoting each possible response category. The regression is estimated without a constant, and with all categories included. The null hypothesis in the F-test is that the spending rate is the same across all categories. The multivariate p-value conducts a similar exercise, but includes all variables in the table (again with an indicator for each category), and then conducts an F-test on each variable, again with the null hypothesis being that the spending rate is the same across all categories.

The third variable tabulates the spending rate against respondents' degree of worry about government debt (so far as I am aware, this is the first time that such an interaction has been explored). It is a loose test of Ricardian equivalence – the theory that consumers will only spend a payment if it is accompanied by a reduction in government expenditure. Respondents who are more worried about government debt (and therefore perhaps more concerned that government payments now will lead to tax increases in the future) are significantly less likely to spend the rebate. For example, only 25 percent of respondents who are 'very worried' about government debt spent the stimulus payments, as compared with 46 percent of respondents who are 'not at all worried' about government debt. This difference remains significant even in a multivariate regression.

The fourth question looks at the relationship between spending rates and households' worry that they or a member of their family will become unemployed. Thirty percent of respondents who are 'very worried' about unemployment spent the stimulus payments, as compared with 44 percent of respondents who are 'not at all worried' about household unemployment. Although this is consistent with households adjusting their spending patterns according to their expected future incomes, the difference between categories is only statistically significant in the univariate specification, and not in the multivariate specification.

The final variable against which I tabulate spending rates is voting intention. In the Australian public debate, views over these payments were strongly polarized. For example, the Labor Government's Treasurer stated that:

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'The measures will strengthen the national economy and provide financial assistance to Australian households' (Swan 2009). By contrast, senior spokespeople for the Liberal-National Opposition parties made arguments such as: 'cash handouts, however attractive they might be to Australian people, do not achieve the desired outcome of a fiscal stimulus package' (Bishop 2009), and 'John Taylor from Stanford has made this point eloquently before the US Congress in explaining how the one-off payments were ineffective as a stimulus and why increases in permanent income are more effective.' (Turnbull 2009).

Somewhat surprisingly, those who said that they would vote for Labor (the incumbent party) were much more likely to spend the stimulus payments than those who said that they would vote for the opposition Liberal or National parties. This result is not merely an artefact of the income, age, or debt attitudes of the respondents, since it remains statistically significant (at the 1 percent level) in a multivariate regression. One possible interpretation is that individuals' willingness to respond to government exhortations to spend is partly a function of their political views. Another possibility is reverse causality: respondents with a predisposition towards spending the payments might have been more inclined to think that the payment was good policy, and therefore more inclined to support the government.

Overall, the cross-sectional variation provides weak support for the life-cycle hypothesis and households responding to expected incomes, and strong support for the notion that beliefs in Ricardian equivalence explains differences in spending patterns across individuals. Intriguingly, the cross-sectional variation also suggests some role for partisan beliefs in explaining spending differences.

5. Conclusion

Using survey responses, I estimate the impact of $21 billion in household payments delivered to Australian households between December 2008 and May 2009. According to the survey results, about 40 percent of Australians said that they spent the payment: a share that is 1½ to 2 times larger than for the 2001 and 2008 US tax rebates. (Though the difference in the two countries' implied MPCs is smaller.)

What might explain why the spending rate is higher for a fiscal stimulus in Australia in 2008-09 than for one in the US in 2001 or 2008? In my view, there are five plausible answers to this question: expectations, magnitude, survey timing, liquidity constraints, or framing.

1. **Expectations**: One possible reason for the higher spending rate in Australia is that at the relevant times, Australian households had more bullish expectations for the economy than their US counterparts. While comparable

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measures of expectations are difficult to obtain, one possible approach is to look at the actual change in unemployment. From 2000 to 2002, the US unemployment rate rose from 4 percent to 6 percent. From mid-2007 to mid-2009, the unemployment rate in the US jumped from 5 percent to 10 percent, while the rise in Australia was only from 4 percent to 6 percent. These data suggest that one might have expected Australians in 2008 to be more optimistic than US residents in 2008, but do not explain why US residents in 2001 should have been more pessimistic than Australians in 2008.

2. **Magnitude:** Browning and Crossley (2001) present a model in which agents are less likely to smooth consumption when income changes are small.[14] However, this is unlikely to explain the differential response in the US and Australia, since the size of the bonus payments – relative to household income – was quite similar in the two countries.[15]
3. **Survey Timing:** If people generally want to 'save more tomorrow', it might be the case that prospective surveys report lower spending rates than retrospective surveys. However, the evidence on this point is mixed (see footnote 8), and even if we compare the Australian MPC with US estimates derived from similar retrospective questions, the spending rate appears to be higher in Australia.
4. **Liquidity Constraints**: Another possible explanation is that Australian households were more likely to spend a rebate because they were more liquidity-constrained or less indebted than US households. However, according to a review by La Cava and Simon (2003), the only study to have used the same methodology to estimate the share of liquidity-constrained consumers in Australia and the US is Blundell-Wignall, Browne and Tarditi (1995), who find that a higher share of US consumers are liquidity-constrained (a result that predicts the opposite spending pattern to the one I observe). Cross-national differences in household debt also appear unlikely

[14] Analyzing bonuses paid as part of the Alaska Permanent Fund (Hsieh 2000), Browning and Crossley (2001) estimate that agents who fail to smooth a consumption shock equivalent to 5 percent of their annual income suffer a welfare loss equivalent to around 2 percent of annual expenditures. Given that the Australian and US stimulus payments were less than 2 percent of annual income, the implied welfare loss for households who failed to smooth consumption would be less than 1 percent of annual expenditures. On the relationship between consumption smoothing and the magnitude of income shocks, see also Jappelli and Pistaferri (2010).

[15] The 2008 US tax rebate was 1.2 percent of median household income for eligible taxpayers, while the 2009 Australian tax bonus was 1.3 percent of median household income for taxpayers who received the largest bonuses. Child bonuses were larger in the Australian case (1.4 percent of median household income per eligible child in both 2008 and 2009) than the US case (0.6 percent of median household income per eligible child). However, this is partly offset by the fact that the Australian tax bonuses were more stringently means-tested than the US tax rebates.

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to explain differences in the spending rate, since the ratio of household debt to household disposable income in Australia and the United States was quite similar during the 2000s.

5. **Framing**: A further possibility is that the cross-country difference is due to the fact that the stimulus was framed as a 'rebate' in the US and a 'bonus' in Australia. Epley, Mak and Idson (2006) presented experimental evidence demonstrating that subjects were considerably more likely to spend windfall income if it was described as a 'bonus' than if it is described as a 'rebate'. Across their three experiments, the spending rate was at least twice as high for 'bonus' payments as for 'rebate' payments. They hypothesize that the difference is due to the fact that individuals regard rebates as returning them to a previous wealth state, but regard bonuses as an unexpected improvement upon the status quo.[16]

For the Australian payments, the Shapiro/Slemrod approach for converting spending rates into MPCs suggests an MPC of 0.41−0.42. However, there are two important limitations of this estimate. The first is that it is based only on a single survey question. Ideally, one would wish to have both an MPC estimate from expenditure surveys (or scanner data) and another from a survey question of the kind used in this paper. This is the approach taken by Parker et al. (2011), who included a survey question in the US Consumer Expenditure Survey. They found that actual spending was indeed largest for self-reported spenders (though self-reported savers also spent a significant fraction of the payment).

The other limitation of the approach used in this paper is that it only estimates the short-term impact of the Australian payments on household spending, since most receipients would have received a payment only in the quarter immediately preceding the survey. Although it is likely that the total effect of the payments on consumer expenditure exceeds the first-quarter impact, the survey approach is not well suited to estimating the long-run effect, since it relies on households accurately recollecting what they did with a payment that was received six or more months ago. Unless the payment constitutes a large share of household income, long-run estimates are likely to be more noisily measured than short-run estimates.

[16] For an overview of research on behavioral economics and tax policy – including framing effects – see Congdon, Kling and Mullainathan (2009).

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Appendix: Selected Questions from the Australian National University Survey

B3 How worried are you that increasing government debt will harm the financial future of future generations: very worried, somewhat worried, not too worried, or not at all worried?

1. Very worried
2. Somewhat worried
3. Not too worried
4. Not at all worried
5. (Don't know / Not sure)
6. (Refused)

C2 Did you receive a payment from the government as part of the household stimulus package?

1. Yes
2. No
3. (Don't know / Not sure)
4. (Refused)

C3 [IF YES] Thinking of the money you received from the household stimulus package, did you spend it, use it to pay bills, save it, or invest it?

1. Spent it [on things other than bills or other debts]
2. Used it to pay bills [utilities (phone, electricity etc), medical, other services]
3. Credit cards
4. Mortgage
5. Personal/short term loans [e.g. car payment]
6. Saved it
7. Invested it
8. (Don't know / Not sure)
9. (Refused)

E3 How worried are you that in the next 12 months you or someone else in your household might be out of work and looking for a job for any reason—very worried, somewhat worried, or not worried at all?

1. Very worried
2. Somewhat worried
3. Not at all worried
4. (Don't know / Not sure)
5. (Refused)

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E6 If a federal election for the House of Representatives was held today, which one of the following would you vote for? If 'uncommitted' to which one of these do you have a leaning?

1. Liberal
2. Nationals
3. Labor
4. Greens
5. (Don't know / Not sure)
6. (Refused)

Dem5 Would you mind telling me how old you are?

1. Age given (RECORD AGE IN YEARS (RANGE 18 TO 99)
2. (Refused)

(IF RESPONDENT REFUSES TO ANSWER DEM5)

Dem6 Would you mind telling me which of the following age groups are you in? (READ OUT)

1. 18 - 24 years
2. 25 - 34 years
3. 35 - 44 years
4. 45 – 54 years
5. 55 – 64 years
6. 65 – 74 years, or
7. 75 + years
8. (Refused)

Dem9a. What is your total annual household income before tax or anything else is taken out? Would it be… (READ OUT)

1. Less than $20,000
2. $20,000 to less than $40,000
3. $40,000 to less than $60,000
4. $60,000 to less than $80,000
5. $80,000 to less than $100,000
6. $100, 000 to less than $150,000, or
7. $150,000 or more
8. (Don't know / can't say)
9. (Refused)

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