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**The Consumer Response to
House Price Falls**

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Abstract

Movements in house prices and consumer spending are closely correlated in many developed nations. Much debate exists on whether this relationship is in any way causal arising from either wealth effects or collateral effects. This paper uses a unique survey question on self-reported responses to house price falls to explain the relationship between house price movements and consumer spending among households in the United Kingdom. 30% of households report they would cut back their spending as a direct response to house price falls. Econometric analysis suggests that among homeowners this response is driven by collateral effects. However, perhaps surprisingly, one third of those reporting they would cut back their consumption are renters. We argue this reaction is also driven by credit availability: both renters and homeowners who report they face credit constraints are more likely to cut back their consumption when house prices decrease, suggesting they perceive house price movements as indicative of aggregate financial market conditions.

Keywords: consumer spending, housing wealth, wealth effects, collateral effects

JEL classification: D12 D14 R21

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THE CONSUMER RESPONSE TO HOUSE PRICE FALLS

1. Introduction

The strong aggregate correlation between house prices and consumer spending in many OECD economies has attracted much interest from policymakers. What causal links, if any, exist between movements in housing wealth and aggregate consumption? To what extent is the decline in consumption during the current recession due to the housing market bust? Does the housing market drive the business cycle even to the extent that house price movements should guide monetary policy? (Leamer, 2007). Understanding the causal link between house prices and consumption is a central to the implications of the housing market cycle of the last decade and the likely outlook for household consumption after the recession.

This paper provides new results on the housing-consumption relationship. It uses a unique dataset from the United Kingdom in which a representative sample of households were asked directly about changes to their spending behaviour in response to house price falls. 30% of households responded that they cutback their spending when house prices fall. Evidence suggests the main cause of this response is the effect of falling house prices on the availability of mortgage credit. Results indicate there is a causal relationship between house prices and consumption driven by the impact of house price movements on borrowing constraints, but no evidence for a housing wealth effect.

It is generally understood that house prices can affect consumption either through wealth effects or via their impact on borrowing constraints, the collateral effect. Wealth effects arise because house price rises and falls impact on overall household wealth and households respond by adjusting their non-housing consumption. When house prices increase, older homeowners typically experience a wealth gain and younger owners a wealth loss as the cost of future upsizing housing increases but benefit to future downsizing increase. In aggregate therefore there may be no overall effect (as in Buiter, 2008; and in Sinai and Souleles, 2005).

Collateral effects arise because changes in household wealth also alter the availability of mortgage credit to the individual household and the scope for housing equity withdrawal, also potentially giving rise to changes in non-housing consumption. The collateral effect affects only households facing a binding, or future binding, borrowing constraint (as in Zeldes, 1989). Recent empirical evidence suggests that without the house price boom of the

last decade households would not have been able to extract a sizeable proportion of their housing equity to finance consumption spending (Mian and Sufi, 2009).

House prices and consumption spending are strongly correlated at the aggregate level across many western nations and across U.S. states (Case, Quigley and Shiller, 2004). However, differentiating these two effects in aggregate data is severely hindered by the possibility that one or both of these channels might be at work. Furthermore the observed aggregate correlation might be spurious if both house prices and consumption are co-driven by income expectations, which cause consumers to revise their demand for both housing consumption and non-housing consumption simultaneously, and so give rise to the correlation in aggregate data (King, 1990; Poterba, 1991). A recent aggregate data study on the Case-Quigley-Shiller dataset by Calomiris, Longhofer and Miles (2009 NBER) finds that, controlling for permanent income, there is only a very weak relationship between house prices and consumption.

Beginning with the work of Attanasio and co-authors (1995, 2009), an alternative approach to understanding what, if any, causal links might exist between house prices and consumer spending has been based on the observed heterogeneous impact of house price movements on the consumption of old and young, homeowners and renters in periods of housing market boom and bust. If wealth effects are at work, house price increases should give rise to higher consumption for older homeowners and lower consumption growth for younger homeowners. If instead a common causality is at work, house price increases should give rise to higher consumption for the young (both owners and renters) whose longer planning horizon increases the benefits of higher future income and hence induces a stronger consumption response. If a collateral mechanism is at work, house price rises should give rise to a stronger consumption response among those households who are borrowing constrained, most likely younger owners.

Studies utilising this methodology for the United Kingdom based on the Family Expenditure Survey return markedly conflicting results. Attanasio et al (1995, 2009) find house price increases give rise to a stronger positive consumption response among young renters and owners, indicating a common causality, with a slightly stronger effect for young owners compared with renters, consistent with a collateral effect. This conclusion is further supported by a simulation study which suggests that a common causality is the most likely explanation (Attanasio et al, 2008). However, using the same data Campbell and Cocco (2007)

find the opposite: they find a positive effect of house price increases on the consumption of the old and a negative effect on the consumption of both young owners and renters, concluding that a strong wealth effect is at work. Disney et al (2010) estimate the impact of house price shocks on household saving using the British Household Panel Survey. They attempt to control directly for household income expectations using a survey question. Their results lend support to the common causality hypothesis. They find a negative relationship between house price increases and household saving among young owners and renters, however, this diminishes when controlling for the positive subjective income expectations of the young.

This paper uses a unique and previously untested approach to understand the causal link between house price movements and consumer spending. It exploits a survey question asked in late-2008, in the context of the current housing market recession, about how consumers would alter their consumption spending faced with the prospect of further falls in house prices. Consumers were asked directly about whether their consumption spending would increase, decrease or be unaffected by a fall in house prices of 10%.

This approach has some distinct features compared to the previous literature based on observed movements in house prices at consumption at the aggregate and individual level. Firstly, this direct survey approach effectively avoids the issue of a ‘common causality’ as respondents are asked directly about the causal impact of house prices on their spending. Econometrically estimating the relationship between house prices and consumption using observational data is hampered by unobserved income expectations. Secondly, the question asks about the consumer response to a specific magnitude of house price decline – 10%. This raises the issue of whether such a decline was anticipated or not on the part of households. Theory suggests that whether or not respondents were expecting a decline in house prices of this magnitude will have a strong bearing on their responses about contemporaneous changes in their consumption. Thirdly, the question is hypothetical in nature, but consistent with the level of house price declines recently experienced in the U.K. Fourthly, the question is asked both of renters and homeowners. Finally, the question is asked within a survey which includes information on household income and debts plus a set of demographic data.

2. Data and Results

The data is drawn from the 2008 wave of the Bank of England / NMG survey, an annual survey of a representative sample of the U.K. population. The survey focuses on

household finances, especially household debt and arrears, with a few ancillary questions asked each year about individual saving and consumption behaviour. Of 2,411 households interviewed in 2008, 215 respondents chose not to answer the question on housing and consumption. The study is based on the remaining sample of 2,196 households. Summary statistics for the sample are given in Table 1. The following question was asked relating to whether respondents' consumption spending would be affected by falling house prices:

“Over the past year the average price of a home has fallen by about 10%. How would your household spending on items such as clothes, leisure and groceries be affected if house prices were to fall 10% in the next year? Would you say i) ‘I would probably cut back spending’; ii) ‘I would probably increase spending’; iii) ‘My household spending would not be affected’; iv) ‘Don’t know’.

This was the only question asked about the impact of house price falls on respondents' consumption behaviour, with no follow-up question about the magnitude of the consumption response or the reasons for changing consumption spending. The question asks about household spending in general, but the three examples of expenditures are all non-durable consumption goods and services. Of the 2,196 respondents, 654 (30%) said they would probably cut back spending, 1261 (57%) said their spending would be unaffected, just 65 (3%) said they would probably increase spending and 216 (10%) said they did not know how they would respond.

Summary statistics for each of these groups are shown in Table 2. Respondents stating that their consumption spending would be unaffected by the house price falls are typically older, less likely to be part of an ethnic minority group, have fewer children and more likely homeowners. Those reporting that their consumption would increase – of which there are notably very few – typically have higher household income, but are less likely to be homeowners. The group reporting that they would probably cut back on their consumption are typically younger, have the lowest income among the groups and the greatest level of average unsecured debt.

In order to better understand the relationship between household characteristics and responses to the housing-consumption question multivariate regression analysis is utilised. With so few households reporting that their consumption would increase, the multivariate analysis takes the form of a probit model where the dependent variable is a 1/0 dummy variable which takes a value of 1 for whether the respondent reported their consumption

would be cutback and 0 otherwise. A number of specifications for this model are estimated to understand whether wealth effects or collateral effects best explain the pattern of responses observed in the data.

i) Life-Cycle Effects

The first specification aims to detect life-cycle effects in the pattern of respondents' answers. According to the wealth effects hypothesis, when faced with house price falls older homeowners should be more likely to report they would cut back consumption and younger homeowners more likely to report an increase in consumption. An alternative hypothesis – that of a common causality – should be irrelevant for this data as respondents are asked directly about their consumption response to a change in house prices. However, it is possible that respondents might perceive that housing market declines are demand-driven and hence interpret the 10% fall in house prices as being indicative of a general decline in consumer demand, plausibly caused by falling income expectations. If this mechanism is at work, we would expect to observe younger respondents, both owners and renters, more likely to report that they would cut back their consumption. The pattern of housing tenure-age responses consistent with each hypothesis is summarised in Table 3

Table 4 presents estimates from the probit model where variables are included for household status as old owners (41% of the sample), young owners (28%), old renters (12%) and young renters (19%). Old is defined as over 45 years of age. These terms allow the likelihood of reporting 'cutback' to vary between the four classes of household. Additional control variables are household age, ethnic minority status, dummy variables for employment status, household income, the value of household unsecured debt, dummy variables for educational achievement, gender of the respondents, number of children in the household and regional dummies.

Results indicate that there are no statistically significant life-cycle effects. All of the housing tenure-age dummies are insignificant, implying that variation in life-cycle housing characteristics across households does not explain variation in the propensity of households to cut back their consumption in response to house price falls. Household age, ethnic minority status, income and debt are significant in the regression, but generally weak in magnitude. Against a baseline predicted probability of 29%, a £10,000 increase in household income lowers the probability by 5 percentage points, or 17% of the baseline.

ii) Collateral Effects

The second specification aims to detect the role of borrowing constraints in determining the likelihood that respondents would cut back their consumption. The collateral effect hypothesis implies that homeowners will be more likely to cut back their consumption if they face binding borrowing constraints. To test this idea, Table 5 presents estimates from a model in which homeownership status is interacted with measures of the household loan-to-value ratio (LVR). The LVR is calculated by dividing the value of all mortgage loans outstanding owed by the household by the self-reported value of housing given by the respondent. Outright owners are assigned an LVR of 0. A higher LVR indicates less spare housing equity. This used as a proxy measure of the borrowing constraint. Individual household-specific borrowing constraints are not observed in the data, but households with higher LVRs are more likely borrowing constrained.

Column 1 of Table 5 incorporates a dummy variable for whether the respondent is a homeowner and an interaction term in which this dummy variable is interacted with the LVR. The coefficient on the homeownership variable picks up the difference in likelihood of reporting cutback between renters and owners. The coefficient on the interaction picks up the effect of a higher LVR. The coefficient on the homeownership dummy is statistically insignificant, but the coefficient on the homeownership-LVR interaction is positive and significant at the 1% level. In Column 2, a series of LVR interactions are included for whether the household's LVR is between 0 and 0.2, 0.2 and 0.4, 0.4 and 0.6, 0.6 and 0.8 or over 0.8. The coefficients on the 0.4 to 0.6, 0.6 to 0.8 and over 0.8 interactions, (which include 13% of the sample) are positive and statistically significant at the 1% level whereas the other coefficients are not. The marginal effect on the over 0.8 interaction coefficient implies that households captured by this interaction are 22 percentage points more likely to report cutback compared to renters, equivalent to an 76% increase on the baseline predicted probability.

These results strongly suggest that the consumer response to house price falls is driven by a collateral effect. To further test the idea that the likelihood of responding cutback is driven by homeowner concerns about borrowing constraints, Table 5 presents re-estimates of the model with interaction terms for whether the respondent currently has problems paying household bills and whether the respondent has problems paying unsecured debts. Both questions are asked in the survey, to owners and renters, and invite a yes/no response. 8% of

homeowners report they struggle to pay household bills, compared to 15% of renters. 17% of homeowners report they have problems paying their unsecured debts, compared to 24% of renters.

In the context of the current recession, homeowners struggling to meet their bills or credit commitments may fear house price falls as they lead to borrowing constraints tightening and the availability of mortgage credit falling, limiting their ability to meet other commitments. If homeowners are concerned about borrowing constraints, we might expect a cutback response for those struggling to meet payments, as well as for those with low housing equity. Interaction terms of renters are also included. Results indicate that homeowners reporting problems paying for bills and problems paying for unsecured debts are more likely to respond they would cutback consumption, but the same is not true of renters reporting problems paying bills or unsecured debts. These results further indicate that concern about borrowing constraints on the part of homeowners most likely gives rise to them reporting they would cut back their consumption.

3. Extensions

i) What if consumers anticipated a 10% fall in prices?

The housing-consumption question specifically asks about how respondents would alter their consumption if house prices fell by 10% in 2008/9. However, if respondents expected house prices to fall by 10% in 2008/9, the question would be a poor instrument for understanding wealth effects as the question is tantamount to asking how respondents would alter their consumption if house prices fell in accordance with their expectations. The canonical life-cycle/permanent income hypothesis implies that consumers adjust their consumption spending at the point in time at which their expectations are revised, such that predictable changes in income or asset prices have no contemporaneous impact on consumption spending. In the context of this question, wealth effects may exist, but not be identified by the question due to its construction. Borrowing constrained consumers, by contrast, do respond to predictable changes in income or asset values. One possible explanation for the findings of the above analysis is that consumers expected a 10% fall in prices and this explains why only borrowing constrained consumers report they would cutback consumption.

Two pieces of evidence suggest this is not the case. Firstly, at the time of the survey (September 2008), consensus forecasts for house price growth reported by Her Majesty's Treasury in its monthly forecast for the U.K. economy stood at -14.9%. On this basis, if respondents did indeed on average hold the expectation that prices would fall by 10%, the question actually asks how their consumption would respond to an unanticipated increase in prices. Under the wealth effects hypothesis, this would generate heterogeneous responses from young and old owners, which we would see in the data if wealth effects were driving the pattern of responses.

Secondly, there is much regional variation in house price growth in the U.K. and this can be exploited as a source of variation in forecasts for house prices. It is well known that the U.K. housing market exhibits marked regional variation in price levels and movements. For example, in the calendar year 2008 house prices fell in the U.K. on average by 7.8%, but within this national figure there was much variation with house prices in Northern Ireland falling 19% and house prices in Scotland falling by only 2%. It would be expected that in September 2008 respondents' expectations of house price growth for the coming year varied across regions and was unlikely to be a uniform figure of -10%. By this reasoning, under the life-cycle wealth effects hypothesis we would expect the likelihood of young and old, owners and renters cutting back on their consumption to vary across regions.

To test the latter idea, Table 7 presents the life-cycle specification used in Table 4, but with the young / old, owner / renter terms interacted with a series of 1/0 dummy variables for the respondent's region of residence. The survey covered households in 10 regions of the U.K. Nearly all of the coefficients on the interaction terms are statistically insignificant in the model. A series of F-tests for the equivalence of coefficients on the homeownership / age interaction terms shows that there is no region in which the coefficients on the young/old dummy statistically significantly differ from one another. Given that it is implausible that respondents across all regions anticipated a 10% fall in prices and hence that the 10% figure asked about in the question would have implied an unanticipated rise/fall in prices in at least some regions, this pattern of results is taken to be further evidence for the absence of wealth effects across young and old, homeownership and renting households.

ii) Do falling house prices reflect worsening credit conditions?

Falling house prices might, in part, reflect a reduction in the availability of credit in the economy. If this is the case, we would expect falling house prices to be correlated with

reduced consumption among both homeowners and renters who face borrowing constraints. As evidence for this effect, Campbell and Cocco (2007) find that predictable changes in house prices at the national level are correlated with predictable changes in consumption among both homeowners and renters, reflecting, they argue, changes in aggregate financial market conditions. One possibility is that answers to the survey question on housing and consumption were in part affected by the consideration that falling house prices in the year ahead would further reflect the weakness in aggregate financial market conditions and respondents might incorporate this into their response on how their consumption would change.

To explore this idea, the probit model is re-estimated incorporating information provided in the survey on whether the respondent reported that they faced an (actual or perceived) liquidity constraint. Respondents were asked two questions relating to borrowing constraints based on those suggested by Japelli (1990): ‘Have you been put off spending because you are concerned that you will not be able to get credit when you need it?’ (yes/no) and ‘Would you like to borrow any more at the moment but find it too expensive or difficult to do so?’. From these answers a 1/0 dummy variable is constructed which takes a value of 1 if the respondent answered ‘yes’ to either of these questions. This variable is then interacted with the renter and homeowner dummy variable to allow the slope coefficient in the probit model to vary according to whether the respondent is an owner facing an actual or perceived credit constraint, or a renter facing an actual or perceived credit constraint. 16% of owners and 25% of renters report they face an actual or perceived credit constraint.

Results are provided in Table 8. The first row indicates that, conditional on covariates, owners are no more likely to report that they would cut back their consumption compared with renters. The second and third columns show that, relative to renters, both owners and renters facing an actual or perceived credit constraint and statistically significantly more likely to report cutback. The effect for owners is stronger than for renters, which is to be expected. It is likely that those owners reporting an actual or perceived credit constraint also face a negative housing-collateral effect, whereas for renters a direct housing-collateral effect does not exist. These results indicate that changes in aggregate financial market conditions, which impact on house prices via the availability of credit, may be responsible in part for driving the negative consumption response to falling house prices among both renters and owners.

4. Conclusion

This paper has utilised a unique survey question on how consumers respond to house price falls included in a survey of a representative sample of U.K. households conducted in fall 2008. The attractions of the sample question are that it effectively removes the common causality problem by asking consumers directly about their consumption response to a change in house prices. The main drawback of this study is that the question asked only the direction of respondents' reactions to house price falls and not on the magnitude of their consumption response.

The results presented here indicate that the response of consumers sampled to house price falls is best understood as being driven by the impact of house price movements on borrowing constraints, and the correlation between house price movements and aggregate financial market conditions. The propensity of respondents to cut their consumption in response to house price falls does not vary across homeownership/age groups. However, home owners with higher loan-to-value ratios, taken as indicative of their proximity to a borrowing constraint, are much more likely to report that they would cut back on their consumption spending. Both home owners and renters who report they face an actual or perceived borrowing constraint are also more likely to report they would cut back on consumption, suggesting that falling house prices are taken as symptomatic of weak credit conditions by both owners and renters.

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Table 1: Summary Statistics for NMG Survey 2008	
N	2196
Age	47.6
Male Head=1	0.48
Ethnic Minority=1	0.12
Couple=1	0.60
Number of Children	0.58
Educated to GCSE=1	0.10
Educated to A-Level=1	0.10
In paid employment=1	0.62
Self-employed=1	0.03
Unemployed=1	0.03
Annual Post-Tax Income (£)	16,900
Home Owner	0.70

Notes: Total sample size for the survey was 2,411. 215 respondents chose not to answer the housing-consumption question and are dropped from the sample. All summary statistics are means for the sample of 2196 remaining households.

Table 2: Summary Statistics by Response to Question on How Consumption Would be Affected by Falling House Prices				
	<i>Don't Know</i>	<i>Cutback</i>	<i>Unaffected</i>	<i>Increase</i>
N	216 (10%)	654 (30%)	1261 (57%)	65 (3%)
Age	41.3	44.3	50.5	44.3
Male Head=1	0.46	0.46	0.49	0.56
Ethnic Minority=1	0.23	0.17	0.08	0.23
Couple=1	0.41	0.60	0.62	0.67
Number of Children	0.58	0.68	0.52	0.68
Educated to GCSE=1	0.12	0.10	0.10	0.08
Educated to A-Level=1	0.11	0.10	0.10	0.10
In paid employment=1	0.64	0.66	0.59	0.64
Self-employed=1	0.03	0.03	0.03	0.06
Unemployed=1	0.03	0.03	0.03	0.05
Annual Post-Tax Income (£)	17,978	15,128	19,021	21,848
Unsecured Debt	364	2,108	1,928	715
Home Owner	0.53	0.68	0.73	0.54
House Value (if homeowner)				

Notes: Precise question asked was: 'Over the past year, the price of an average home has fallen by about 10%. How would your household spending on items such as clothes, leisure and groceries be affected if house prices were to fall another 10% in the next year. Would you say i) I would probably cut back spending; ii) I would probably increase spending; iii) My household spending would not be affected; iv) Don't know; v)Refused.

Table 3: Effect of House Price Falls on Consumption of Young and Old, Owners and Renters under ‘Life-Cycle Wealth Effects’ Hypothesis and ‘Common Causality’ Hypothesis		
<i>Life-Cycle Wealth Effects Hypothesis</i>		
	Owners	Renters
Young	Increase	Unchanged
Old	Fall	Unchanged
<i>Common-Causality Hypothesis</i>		
	Owners	Renters
Young	Stronger Decrease	Stronger Decrease
Old	Weaker Decrease	Weaker Decrease

Table 4: Probit Analysis of Likelihood of Responding ‘Cutback’ by Life-Cycle Characteristics		
<i>Variable</i>	<i>Coefficient (T-statistic)</i>	<i>Marginal Effect</i>
Young*Owner	0.19 (0.47)	0.07 (0.46)
Old*Owner	0.20 (0.47)	0.07 (0.47)
Young*Renter	0.16 (0.40)	0.06 (0.39)
Old*Renter	0.08 (0.18)	0.03 (0.18)
Age	-0.07 (-2.14)	-0.02 (-2.14)
Ethnic Minority=1	0.16 (2.81)	0.09 (2.71)
In paid employment=1	0.03 (0.33)	0.009 (0.33)
Self-employed=1	-0.17 (-0.89)	-0.05 (-0.94)
Unemployed=1	0.03 (0.14)	0.009 (0.14)
Annual Post-Tax Income £'000s	-0.005 (-3.29)	-0.002 (-3.29)
Unsecured Debt £'000s	0.01 (2.09)	0.004 (2.09)
N	2196	
Pseudo R-squared	0.03	
Prob>chi ²	0.0000	
Log Likelihood	-1284.91	
Mean predicted y	0.29	

Notes: ‘Young’ defined as aged 45 or young, ‘Old’ defined as aged over 45. Regression includes dummy variables for respondent region of residence, educational achievements (gcse,a-level), gender of household head and number of children in the household . T-statistics in parenthesis.

Table 5: Probit Analysis of Likelihood of Responding ‘Cutback’ by Household Loan-To-Value Ratio (LVR)				
	Column 1		Column 2	
<i>Variable</i>	<i>Coefficient</i> <i>(T-statistic)</i>	<i>Marginal</i> <i>Effect</i>	<i>Coefficient</i> <i>(T-statistic)</i>	<i>Marginal</i> <i>Effect</i>
Owner	-0.01 (-0.19)	-0.002 (-0.19)	-0.04 (-0.62)	-0.01 (-0.62)
Owner * LVR	0.52 (4.55)	0.18 (4.56)	-	-
Owner*LVR<0.2	-	-	0.15 (1.08)	0.05 (1.04)
Owner*0.2<LVR<0.4	-	-	0.19 (1.47)	0.07 (1.42)
Owner*0.4<LVR<0.6	-	-	0.42 (3.24)	0.15 (3.07)
Owner*0.6<LVR<0.8	-	-	0.48 (3.13)	0.18 (2.97)
Owner*LVR>0.8	-	-	0.58 (3.97)	0.22 (3.78)
N	2196	-	2196	-
Pseudo R-squared	0.04	-	0.04	-
Prob>chi ²	0.0000	-	0.0000	-
Log Likelihood	-1274.99	-	-1272.33	-
Mean predicted y	0.29		0.29	-

Notes: Regression includes additional regressors as described in Table 4. T-statistics in parenthesis.

Table 6: Probit Analysis of Likelihood of Responding ‘Cutback’ by Self-Reported Financial Distress Measures				
<i>Variable</i>	<i>Coefficient (T-statistic)</i>	<i>Marginal Effect</i>	<i>Coefficient (T-statistic)</i>	<i>Marginal Effect</i>
Owner	0.03 (0.37)	0.009 (0.37)	-0.009 (-0.11)	-0.003 (-0.11)
Owner * Problems Paying Household Bills	-	-	0.68 (7.17)	0.25 (6.90)
Renter * Problems Paying Household Bills	-	-	0.20 (1.60)	0.07 (1.54)
Owner * Problems Paying Unsecured Debt	0.54 (4.51)	0.20 (4.28)	-	-
Renter * Problems Paying Unsecured Debt	0.05 (0.37)	0.02 (0.37)	-	-
N	2196	-	2196	-
Pseudo R-squared	0.04	-	0.05	-
Prob>chi ²	0.0000	-	0.0000	-
Log Likelihood	-1275.07	-	-1258.89	-
Mean predicted y	0.29		0.29	-

Notes: Regression includes additional regressors as described in Table 4. T-statistics in parenthesis.

Table 7: Regional Variation in Probability of Reporting ‘CutBack’ by Life-Cycle Category					
<i>Region / Life-Cycle Group</i>	<i>Young Renter</i>	<i>Old Renter</i>	<i>Young Owner</i>	<i>Old Owner</i>	<i>P-value from F-test</i>
Region 1	0.02 (0.11)	-0.12 (-0.50)	0.15 (0.78)	0.26 (0.33)	
Region 2	0.22 (0.92)	0.21 (0.79)	0.34 (1.72)	0.08 (0.58)	0.78
Region 3	0.23 (2.05)	0.11 (0.42)	-0.08 (-0.39)	0.10 (-0.01)	0.71
Region 4	-0.43 (-1.35)	-0.04 (-0.08)	-0.15 (-0.59)	-0.01 (-1.03)	0.16
Region 5	-0.09 (-0.29)	-0.39 (-0.67)	0.24 (0.90)	-0.23 (1.27)	0.86
Region 6	-0.66 (-2.33)	-0.41 (-1.37)	0.07 (0.04)	0.28 (-0.41)	0.55
Region 7	-0.02 (-0.07)	-0.03 (0.11)	0.02 (0.13)	0.12 (0.68)	0.11
Region 8	0.04 (0.19)	-0.07 (-0.22)	-0.51 (-2.51)	-0.25 (-1.20)	0.94
Region 9	0.16 (0.45)	0.42 (1.50)	0.03 (0.13)	0.20 (1.00)	0.13
Region 10	-0.37 (-1.03)	0.14 (0.41)	0.26 (1.00)	-0.29 (-1.10)	0.70

Notes: Probit regression includes additional regressors as described in Table 4. T-statistics in parenthesis. P-values are for F-test of the equivalence of coefficients across the four life-cycle homeownership groups.

Table 8: Probit Analysis of Likelihood of Responding ‘Cutback’ by Self-Reported Borrowing Constrained Measure		
<i>Variable</i>	<i>Coefficient (T-statistic)</i>	<i>Marginal Effect</i>
Owner	0.005 (0.06)	0.002 (0.006)
Owner * Faces Actual or Perceived Credit Constraint	0.83 (9.04)	0.31 (8.86)
Renter * Faces Actual or Perceived Credit Constraint	0.39 (3.35)	0.14 (3.17)
N	2196	-
Pseudo R-squared	0.07	-
Prob>chi ²	0.0000	-
Log Likelihood	-1238.59	-
Mean predicted y	0.29	

Notes: Regression includes additional regressors as described in Table 4. T-statistics in parenthesis.

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