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Abstract

Utilizing the microdata from a first cross-section of a new household survey at the University of Hamburg, we analyze if consumers respond to their own inflation expectations and economic news that they have observed recently when they plan to adjust their savings portfolio in the next year. We extract three factors to control for consumers' socio-demographic and personality characteristics. Our estimates from the socio-demographic factors suggest that high education and personal income matter most for a planned savings portfolio adjustment. Interestingly, higher inflation expectations only affect planned savings adjustments due to higher interest rates, suggesting that consumers have a Taylor-rule-type relation in mind. Disentangling the effects of economic news, we find that news on higher inflation lead consumers to consider protection against inflation, safety of the portfolio and higher interest rates as reasons for a savings adjustment. In addition positive news on the business cycle and on the Euro crisis increase the likelihood that consumers consider a savings adjustment to protect against inflation or due to higher expected interest rates, respectively. Overall, it seems that economic news observed are incorporated into decisions regarding a planned savings portfolio adjustment, while inflation expectations play an indirect role.

Keywords: Consumers' savings adjustment; inflation expectations; economic news; survey microdata

JEL Classification: C21, D14, D84.

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I

1 Introduction

Consumers' inflation expectations matter for monetary policy as they may affect consumption and savings decisions and feed back into wage negotiations. Via these channels, consumers' economic choices can influence actual prices. Using household survey data, the link between consumers' inflation expectations and their planned or actual consumption has been evaluated in a number of recent papers (Armantier et al., 2011; Bachmann et al., 2012; Burke and Ozdagli, 2013). However, the relation between consumers' inflation expectations and their planned savings decisions still remains under-researched.

In this paper, we reduce this research gap by evaluating a new consumer survey cross-section obtained at the University of Hamburg, which includes information on consumers' quantitative inflation expectations as well as their planned savings portfolio adjustment over the next 12 months. If consumers report a planned change in savings, the survey also includes information on their reason to do so, where consumers are asked to rate the importance of "higher interest rates", "protection against inflation" and "safety of their savings" for their decision. In addition, the survey includes a question asking consumers about any economic news that they heard recently. Hence, our analysis accounts for both a direct link between stated inflation expectations and planned savings adjustment, and an indirect link via news on inflation or monetary policy actions observed by the consumer.

On theoretical grounds, the relation between expected inflation and savings is somewhat unclear: On the one hand, Krugman (1998), Eggertson and Woodford (2003) as well as Eggertson (2006) argue that in periods of very low nominal interest rates central banks can boost the economy by creating higher inflation expectations and therefore reducing the real interest rate. Romer and Romer (2013) also emphasize the role of expectations. On the other hand, higher inflation expectations might be associated with higher uncertainty in general and higher inflation uncertainty in particular, following the argumentation of the discussion on the inflation-savings-nexus in the 1970s (Deaton, 1977; Bachmann et al., 2012). This would increase savings due to uncertainty effects, rather than boost consumption. Moreover, if the central bank follows an inflation targeting policy, higher inflation could be expected to lead to higher nominal interest rates, thus reducing the effect on the real interest rate. We contribute to this discussion by providing results of a first attempt to relate the link between consumers' inflation expectations and their savings decisions to the underlying reasons for a planned portfolio adjustment.

Accounting for a large number of socio-demographic and personality characteristics by extracting three main factors, we find that the individual likelihood of planning a savings portfolio adjustment is higher for the part of the cross-section with higher education and personal income. Interestingly, we find no link between consumers' own inflation expectations and a planned savings adjustment to protect against inflation.

Instead, higher inflation expectations are related to a higher likelihood of planning a change in the savings portfolio due to higher expected interest rates. It thus seems that consumers associate rising inflation with an increase in interest rates, in line with a Taylor-type rule-based monetary policy.

While we find only little effects of stated inflation expectations on savings, economic news observed seem to play a more pronounced role. Our results suggest an asymmetric effect of positive economic news in general on planned savings changes due to higher interest rates or to protect against inflation. However, disentangling different news types, we also find a prominent effect of negative news on inflation (i.e. news on higher inflation rates), as these increase the likelihood of consumers wanting to protect their savings against inflation, increase the safety of their portfolio, but also expect higher interest rates. Positive news on the business cycle, i.e. on an upswing in the economy and booming labour and stock markets, observed by the consumer increase her likelihood of planning a savings adjustment in order to protect against inflation, while positive news on the Euro crisis lead consumers to adjust their portfolio because of higher expected interest rates. Overall, our results suggest that economic news are incorporated quite rationally into planned savings portfolio adjustments. While the direct role of their inflation expectations stated in the survey is limited, they may play an indirect role via observed news on inflation.

Our paper relates to the recent analyses of the link between consumers' inflation expectations and their spending attitudes or actual consumption expenditure. Armantier et al. (2011) investigate whether consumers act on their inflation expectations regarding investment or consumption for U.S. consumers, employing both an experimental setting and survey data. The authors find evidence for a systematic relationship between expecations and spending in an investment experiment, where future inflation affects the payoffs. While the survey inflation expectations are correlated with consumers' choices in the experiment, the authors find no significant link between expectations and survey-reported readiness to spend. Similarly, Bachmann et al. (2012) find only weak evidence for a positive effect of inflation expectations on consumers' readiness to spend in the Michigan Survey of Consumers. By contrast, the authors report either insignificant or negative relations. However, for those consumers which form more accurate inflation expectations than the average consumer, the connection becomes positive and significant. In line with their results, Burke and Ozdagli (2013) find only weak evidence for linkages between inflation expectations and actual consumer spending, whereas Ichiue and Nishiguchi (2013) report somewhat stronger evidence for Japan.

In addition, earlier papers evaluate the relation between inflation, inflation expectations and personal savings: Wachtel (1977) reports findings that inflation, and more importantly inflation uncertainty, increases savings through a reduction in the propensity to incur liabilities. Interestingly, however, the same study of Wachtel (1977) shows no clear evidence for an effect of inflation uncertainty on financial asset acquisitions. Similarly, Howard (1978) reports empirical evidence that inflation influences the per-

sonal savings rate directly by encouraging the holding of real assets rather than assets fixed in nominal terms and indirectly by uncertainty and distribution effects.[1] Finally, Doepke and Schneider (2006) analyze nominal asset positions of different groups of households by combining flow of funds accounts and data from a survey of consumer finances. Based on inflation episode simulations, the authors argue that the main losers from inflation episodes are rich, old households (the main bond holders), whereas the main winners are young, middle-class households.

The rest of the paper is organized as follows: Section 2 explains the features of the data set. Section 3 contains the results of the factor analysis and binary as well as multinomial logit models to analyze the questions of interest. Section 4 concludes.

2 Data

This analysis uses the second wave of the Hamburg-BUS Survey (acronym for ***B**evölkerungs-**U**mfrage der **S**ozialwissenschaften*). Starting at the University of Hamburg in 2012, a representative cross-section of the population in the city (and the federal state) of Hamburg is interviewed via telephone on political and economic topics as well as self-reported personality characteristics and socio-demographic background.[2] In the second wave of the survey between May, 8th, and June, 24th 2013, 636 inhabitants of the city of Hamburg were interviewed. In addition to previous waves, the second wave of the survey includes questions on consumers' quantitative inflation perceptions and expectations, on any economic news that they recall as well as on their past and future saving decisions and reasons to adjust their savings portfolio.[3]

The questions regarding consumers' quantitative inflation assessment were asked in two different wordings, specifying the question either in terms of "increasing/decreasing prices" or in terms of "inflation/deflation". The effects of survey wording on consumers' inflation perceptions or expectations were evaluated in detail in a companion paper, see Dräger and Fritsche (2013). For this analysis, we pool the quantitative answers across wording types and account for any additional effects of question wording on the link between reported inflation assessment and reported saving decision with the dummy *DummyPrice*. The dummy takes on the value of one when the question is asked in terms of price changes and zero if it is phrased in terms of inflation. Following a qualitative question asking whether the respondent thinks prices in general (inflation) in Germany over the next 12 months have decreased, stayed the same or increased, a question for a quantitative point estimate follows:

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[1]The empirical analysis in both papers was mainly based on flow of funds data as well as national accounting data.

[2]The households were selected using the Häder-Gabler approach (Häder et al., 2009). Unfortunately, the BUS Survey does not have a panel dimension, but only repeated cross-sections.

[3]For general background information on the Hamburg-BUS project refer to the project page: `http://www.wiso.uni-hamburg.de/forschung/forschungslabor/telefonlabor/aktuelle-projekte/hh-bus/` The full survey questionaire is available here (in German): `http://www.wiso.uni-hamburg.de/fileadmin/einrichtungen/forschungslabor/HH_BUS_WP_20130507.pdf`.

- *"How many percent do you think prices (inflation) will increase on average over the next 12 months?"*

Next, the survey asks for whether consumers plan to adjust their savings portfolio in the next year, and then asks for the reasons of an adjustment. Specifically, the questions read as follows:

- *"Do you plan to adjust the type of your savings in the next 12 months?"*

    – Yes

    – No

    – I have no savings

    – Don't know

    – No answer

The question follows after a similar question on actual changes in the savings portfolio over the previous five years, where it is specified that the question relates for instance to portfolio re-allocations from savings in deposits to savings in stocks or bonds. If respondents answer "Yes" to the previous question, a follow-up question is asked next:

- *"And why do you plan to change the type of your savings? Please tell me for each of the following reasons whether it applies to you completely, quite well, not so much, or not at all."*

    – Protection against inflation

    – Safety of my savings

    – Higher interest rates

From the first savings question, we define a dummy variable which takes on the value of one if the respondent answered "Yes" and zero if she answered "No". We thus exclude non-answers and consumers who do not save from the analysis. The answers to the reasons for a savings adjustment are coded into categorical variables taking on values from 1 to 4, where 1 means "applies not at all" and 4 "applies completely".

Moreover, we capture whether consumers heard any economic news, where we specifically concentrate on news regarding the business cycle, inflation, and the Euro debt crisis. This is measured with an open question asking consumers:

- *"In the past three months, did you hear or read positive or negative news about the economy in general?"*

If consumers answer "Yes, positive", "Yes, negative" or "Yes, both", an open question follows asking them what they heard. Consumers in the BUS Survey gave at most six answers to the open question, which were consecutively coded into categories,

thereby generally distinguishing between positive and negative news heard according to the answers given above. We thus construct dummy variables *News heard (pos)* and *News heard (neg)*, which take on the value of one if the respondent heard only positive or only negative economic news in order to distinguish between asymmetric news effects. After the general question on news heard, an open question follows asking what the consumer recalls from the news. Answers are coded into several categories, from which we construct the dummy variables *News busin. cycle (pos)* and *News busin. cycle (neg)* which take on the value of one if the consumer reports positive or negative news on business cycle, labour market and stock market developments. Moreover, we define similar dummies *News inflation (pos)* and *News inflation (neg)*, indicating respondents who reported positive or negative news on inflation or prices, as well as *News Euro crisis (pos)* and *News Euro crisis (neg)* capturing news on the Euro debt crisis. Note that good news on inflation generally imply observed news on falling or lower inflation and *vice versa* for bad news.

In addition, the survey contains questions regarding political preferences, self-assessments of personal characteristics such as happiness, risk attitude and stress factors as well as socio-demographic background questions. Further questions deal with trust in local, national and supra-national institutions.

Regarding the socio-economic background, we make use of questions concerning sex, age, marital status, education, personal income as well as employment status of the respondents. The dummy variables *male* and *female* account for consumers' gender. *Age* is measured in years. The marital status of respondents is captured by the variable *marital*. The degree of education of consumers is given by the categorical variable *educ* in six categories, ranging from *1 – no highschool* to *6 – PhD*. Personal income is grouped into 8 groups in the variable *pers_income* ranging from below 500 € per month to above 5000 € per month. Finally, we account for consumers' employment status, where we differentiate between consumers out of the labour force (including, *inter alia*, pensioners, students, housewifes and people on parental leave), the unemployed, consumers working in so-called mini jobs (wage of max. 450 € per month), part-time and full-time working respondents. These are grouped into the categorical variable *employ*, which gives the lowest value of 1 to the category *non-working* and the highest value of 5 to the category *full time*.

Moreover, we employ a number of self-assessment questions on personality traits, where all questions are measured on a scale from 0 to 10. First, we measure the degree of happiness in general (*happy_general*) with the question: *"All in all, how satisfied are you with your life these days? Imagine a ladder where the lowest rung means the worst possible life and the highest rung means the best possible life. How do you rank your life on the ladder?".* We further include questions measuring the degree of life satisfaction with regard to different aspects of life: financial situation (*happy_money*), friends (*happy_friends*), own health (*happy_health*), the area you live in (*happy_area*) and your free time (*happy_freetime*). Additionally, we use questions measuring the

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degree of life satisfaction yesterday (*"All in all, how satisfied were you yesterday with your life in general"* – *happy_yester*) and the degree of stress yesterday (*"All in all, how stressed were you yesterday?"* – *stress_yester*). Respondents' were further asked about their risk attitude (*"How would you rate your willingness to carry a risk?"* – *risk*).

3 Results

3.1 Factor Analysis of Socio-Demographic Characteristics

This section presents the results of the factor analysis conducted in order to extract the main factors explaining the correlations between a set of socio-demographic variables and personal characteristics.[4] These include consumers' sex, age, employment and marital status, personal income, education, risk attitude, happiness in general and with respect to the own financial situation, friends, health, the area they live in and own free time, as well as the level of happiness and stress felt the day before. We run a principal factor decomposition with these variables and evaluate the eigenvalues of the resulting factors in order to infer the optimal number of factors used in the analysis. Overall, 15 factors are obtained in total. Figure 1 shows a screeplot of the resulting eigenvalues. The first three factors have eigenvalues above one and we observe a "kink" in the screeplot after the third factor. Additionally, the first three factors cumulatively explain 105% of the variables' variance.[5] We thus use the first three factors for our analysis.

Figure 1: Screeplot of Factor Eigenvalues

Scree plot of eigenvalues after factor

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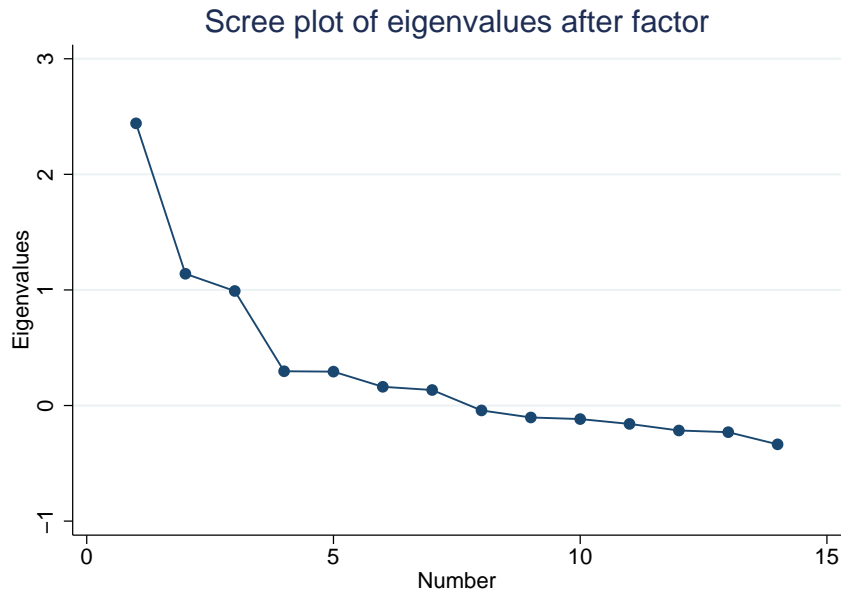
[4]For an extensive treatment of factor analysis methods, see Hartmann (1976).

[5]Note that the factors after the 8th factor have negative eigenvalues, therefore the cumulative variance explained reaches values above 100% and is consequently reduced to exactly 100%.

After choosing the number of relevant factors, we rotate the loadings in order to interpret the factor loadings. The rotation is obtained using the quartimin criterion. While this criterion can in principle lead to the same result as its orthogonal counterpart, the quartimax criterion, it has the advantage of not imposing orthogonality on the factors *ex ante*.[6]

Rather, we can test whether the resulting factors are correlated with each other. The rotated factor loadings are shown in Table 1. The first factor correlates strongly with the personality trait variables, namely the happiness and stress indicators. Happiness is positively correlated with the factor, while the stress level correlates negatively. The second factor correlates strongly negatively with age and positively with the respondents' employment status. Additionally, we find somewhat smaller positive correlations with risk attitude and happiness regarding one's health as well as a negative correlation with happiness regarding one's own free time. This factor thus seems to be related to the group of consumers who are relatively young and healthy, rather risk loving, and work full time in demanding jobs. Finally, the third factor is strongly positively correlated with personal income and education, and also positively with respondents' employment status, age, happiness regarding one's own financial situation as well as being male. This factor thus seems to capture the well-off and well educated part of the cross-section, who are somewhat more likely to be male, older and working full-time.

The factor loadings across the three factors are shown graphically as scatter plots in Figure 2. Comparing factor 1 to factor 2 or 3 shows that the happiness and stress variables are almost only related to the first factor, where as mentioned above *happy_health* and *happy_freetime* relate also somewhat to the second factor and *happy_money* is somewhat correlated with the third factor. Comparing the second to the third factor, personal income, age, employment status and education stand out, where personal income and education are primarily correlated with the third factor, while age and employment status are more strongly correlated with the second factor.

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[6]We checked for the robustness of our results to orthogonal rotation methods, such as rotation under the quartimax or the varimax criterion. This leads to qualitatively very similar results. However, the signs of the loadings in the second factor are reversed so that instead of identifying the young, full-time working population it identifies the old, non-working population.

Figure 2: Scatter Plot of Rotated Factor Loadings
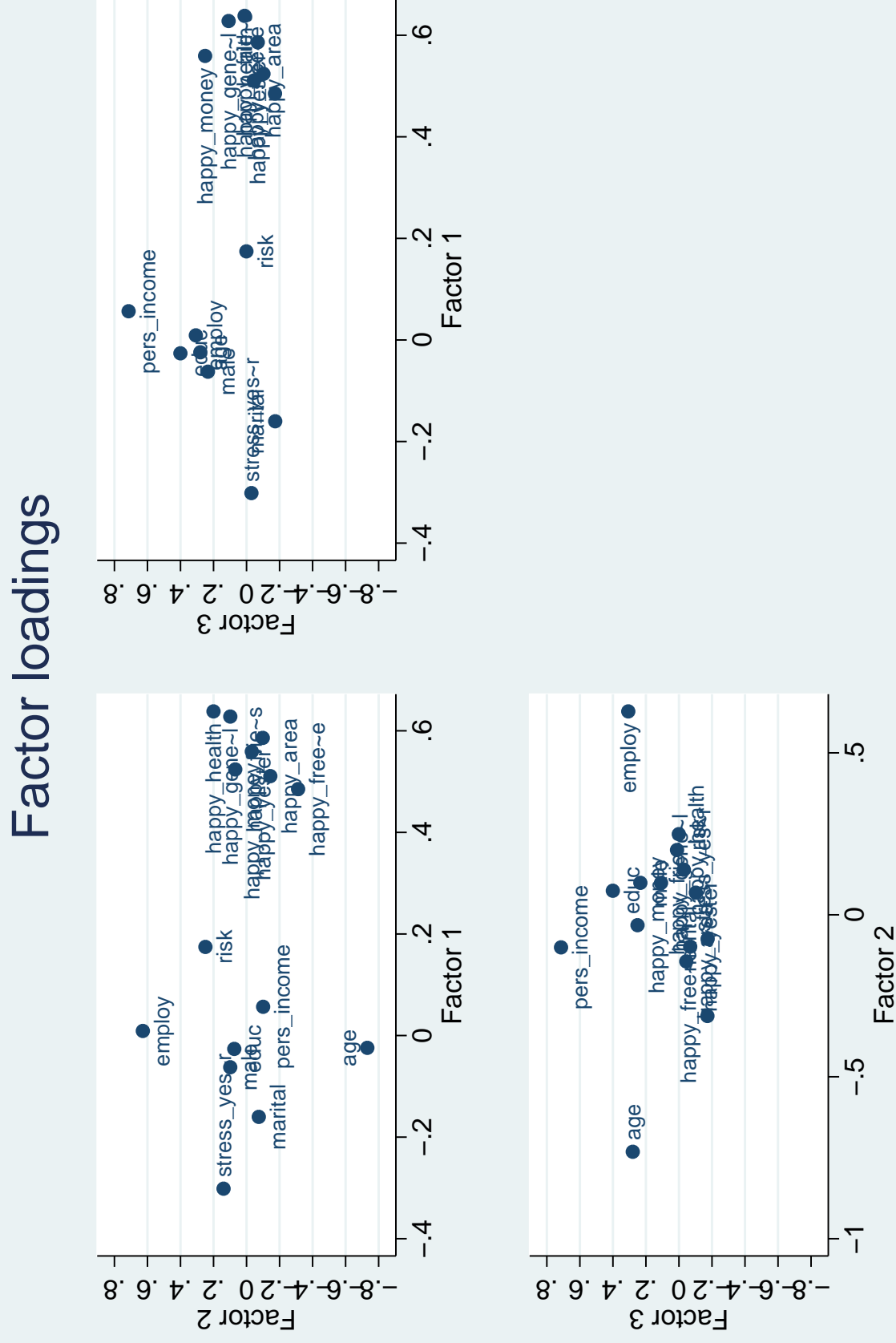
Factor loadings

Rotation: oblique quartimin
Method: principal factors

Table 1: Rotated Factor Loadings

Variable	Factor1	Factor2	Factor3
male	-0.0624	0.0987	**0.2338**
age	-0.0242	**-0.7316**	**0.2798**
employ	0.0091	**0.6279**	**0.3070**
marital	-0.1601	-0.0743	-0.1736
pers_income	0.0566	-0.1006	**0.7141**
educ	-0.0263	0.0744	**0.4004**
risk	0.1745	**0.2491**	0.0009
happy_general	**0.6280**	0.0986	0.1086
happy_money	**0.5593**	-0.0320	**0.2510**
happy_friends	**0.5240**	0.0683	-0.1024
happy_health	**0.6382**	**0.2001**	0.0118
happy_area	**0.5108**	-0.1440	-0.0443
happy_freetime	**0.4852**	**-0.3124**	-0.1724
happy_yester	**0.5861**	-0.0982	-0.0680
stress_yester	**-0.3015**	0.1392	-0.0297

Table 2: Correlation Matrix of the Rotated Factors

	Factor1	Factor2	Factor3
Factor1	1		
	–		
Factor2	-0.0156	1	
	(0.7328)	–	
Factor3	0.0655	-0.0375	1
	(0.1514)	(0.4112)	–

Note: P-values for significance of pair-wise corre-
lations in parentheses.

Finally, we check the correlation of the rotated factors in Table 2, where the factors are scored with the method in Bartlett (1937). Generally, correlations are very low and insignificant. It thus seems that no problems of multicollinearity are to be expected when we include all three factors in the regressions of the next section.

3.2 The Link Between Consumers' Observed News, Inflation Expectations and their Saving Decisions

In this section, we turn to the evaluation of the link between consumers' planned savings adjustment and their inflation expectations as well as economic news they observed. In a first step, we evaluate marginal effects from a logit model on the likelihood of consumers stating that they plan to adjust their savings over the next 12 months. While controlling for socio-demographic characteristics with the factors derived in the previous section, we test for effects of consumers' quantitative inflation expectations

and of whether they recall any positive or negative economic news. In a second step, we use the same set of regressors to explain consumers' stated importance of different reasons for a planned portfolio adjustment. Since these are measured on an ordinal scale from 1 to 4, we present marginal effects from ordered logit models. Finally, we evaluate asymmetric news effects from positive and negative news in more detail.

Results in Table 3 suggest that the decision of planning a savings portfolio adjustment in the next year is significantly related only to the third factor, which mostly captures consumers' income and education. Thus, although we exclude the respondents who stated that they have no savings from the analysis, wealthier and more educated consumers are still more likely to change their portfolio. This result is as expected, since both financial literacy and the amount of savings should be correlated with education and income. Notably, we find no effect from either inflation expectations or economic news observed on the individual likelihood of planning a savings adjustment. This is related to the results in Bachmann et al. (2012) and Burke and Ozdagli (2013) who find only weak links between survey-reported inflation expectations and consumption.

Table 3: Planned Changes in Savings (Logit)

	(1) Model 1 Mfx / SE	(2) Model 2 Mfx / SE
Factors		
Factor 1	0.006	0.029
	(0.018)	(0.027)
Factor 2	0.015	-0.002
	(0.016)	(0.024)
Factor 3	0.039**	0.047*
	(0.016)	(0.024)
News		
News heard (pos)	-0.023	0.058
	(0.051)	(0.093)
News heard (neg)	0.010	0.019
	(0.044)	(0.063)
Inflation expectations		
Quant. Expectations		-0.001
		(0.008)
Dummy Price		-0.022
		(0.057)
Observations	427	239
Pseudo R^2	0.016	0.025

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Source: Hamburg-BUS survey, own calculations.

Next, we evaluate the reasons for a planned savings adjustment in more detail. Table 4 presents marginal effects from ordered logit models on the three reasons for an adjustment. Interestingly, we find that if consumers have higher individual inflation expectations, they are more likely to put a larger weight on "higher interest rates" as the reason for their planned savings adjustment, rather than "protection against inflation". This implies that consumers might have some sort of Taylor rule in mind where they expect interest rates to increase if inflation goes up as expected, rather than connecting higher expected inflation to lower expected real interest rates or higher inflation uncertainty. In that sense, although we find no direct link between consumers' inflation expectations and their general stated intention of adjusting their savings portfolio, the link seems to be specifically present for those that aim at obtaining higher interest rates for their portfolio.

Regarding an effect of economic news observed by the consumer on planned savings, we find that respondents are more likely to plan an adjustment due to higher interest rates or to protect their savings against inflation if they observed positive economic news recently. This relates to any positive economic news, where the largest number of positive news mentioned related to the positive business cycle development in Germany at the time of the survey. All may be related to both higher inflation and higher interest rates in the future.

Note that we find no significant effects of any of our regressors on a planned portfolio adjustment to increase the safety of savings. The marginal effects of the socio-demographic factors suggest richer and more educated consumers are less likely to plan a portfolio adjustment to protect their savings against inflation, while the young and risk-loving are less likely to plan an adjustment due to higher interest rates. The former result is related to the findings in Dräger and Fritsche (2013) where we find that inflation perceptions and expectations were significantly lower for happier, more educated and wealthier respondents in the same dataset and, hence, fear of inflation is likely less pronounced in these groups.

Since we found an asymmetric news effect from positive economic news on the reasons for a planned portfolio adjustment in Table 4, we investigate this issue further by additionally analyzing the effects of positive versus negative news on business cycle developments, inflation and the Euro crisis explicitly in Table 5.

In line with our previous result regarding positive economic news in general, we find that positive news on the business cycle observed by the consumer increase her likelihood of planning a savings adjustment in order to protect against inflation. Moreover, we find that negative news on inflation increase the likelihood of consumers wanting to protect their savings against inflation, increase the safety of their portfolio, but also expect higher interest rates. Since negative inflation news generally adhere to news on rising inflation, all these effects are reasonable: On the one hand, higher inflation means consumers might want to protect there savings against it and might also be uncertain about the general safety of their portfolio. On the other hand, in the same

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Table 4: Reasons for Planned Changes in Savings (Ordered Logit)

	(1) Inflation Mfx / SE	(2) Safety Mfx / SE	(3) Interest Rates Mfx / SE
Factors			
Factor 1	-0.005	0.019	-0.003
	(0.006)	(0.026)	(0.063)
Factor 2	0.002	0.029	-0.093*
	(0.003)	(0.020)	(0.051)
Factor 3	-0.006***	-0.016	0.046
	(0.006)	(0.019)	(0.044)
News			
News heard (pos)	0.039**	0.047	0.389**
	(0.042)	(0.096)	(0.160)
News heard (neg)	0.001	0.009	0.106
	(0.006)	(0.048)	(0.120)
Inflation expectations			
Quant. Expectations	-0.000	-0.003	0.030***
	(0.001)	(0.009)	(0.010)
Dummy Price	0.004	0.006	-0.085
	(0.008)	(0.056)	(0.125)
Observations	61	61	61
Pseudo R^2	0.096	0.039	0.097

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Source: Hamburg-BUS survey, own calculations.

vein as higher individual inflation expectations, news on higher inflation may imply expectations of higher interest rates in the future, thus giving a rationale for a portfolio adjustment.

Finally, negative news on the Euro crisis often include news on deflationary tendencies in the Euro area, and are thus related to consumers giving a lower weight on inflation protection as the reason for their savings adjustment. At the same time, positive news on the Euro crisis, though few in our sample, express hopes of a turning point towards a recovery of the Southern European economies and, thus, lead consumers to be more likely to plan a savings adjustment due to higher interest rates.

Table 5: Reasons for Planned Changes in Savings (Ordered Logit)

	(1) Inflation Mfx / SE	(2) Inflation Mfx / SE	(3) Inflation Mfx / SE	(4) Safety Mfx / SE	(5) Safety Mfx / SE	(6) Safety Mfx / SE	(7) Int. Rates Mfx / SE	(8) Int. Rates Mfx / SE	(9) Int. Rates Mfx / SE
Factors									
Factor 1	-0.001	-0.000	0.000	0.004	0.012	0.013	0.058	0.053	0.046
	(0.002)	(0.002)	(0.002)	(0.013)	(0.016)	(0.015)	(0.042)	(0.043)	(0.046)
Factor 2	0.002	0.002	0.003	0.028**	0.032**	0.033**	-0.013	-0.026	-0.013
	(0.003)	(0.003)	(0.003)	(0.016)	(0.019)	(0.018)	(0.045)	(0.048)	(0.050)
Factor 3	-0.006***	-0.005**	-0.005***	-0.011	-0.005	-0.009	-0.007	0.007	-0.012
	(0.006)	(0.006)	(0.006)	(0.013)	(0.013)	(0.013)	(0.050)	(0.053)	(0.055)
News									
News busin. cycle (pos)	0.012*			0.045			0.029		
	(0.013)			(0.036)			(0.101)		
News busin. cycle (neg)	-0.001			-0.028			0.113		
	(0.006)			(0.031)			(0.180)		
News inflation (pos)		0.006			-0.000			-0.197	
		(0.008)			(0.101)			(0.097)	
News inflation (neg)		0.038*			0.947***			0.721***	
		(0.029)			(0.026)			(0.055)	
News Euro crisis (pos)			0.015			-0.024			0.728***
			(0.046)			(0.037)			(0.056)
News Euro crisis (neg)			-0.008*			-0.014			-0.042
			(0.009)			(0.029)			(0.121)
Observations	68	68	68	68	68	68	68	68	68
Pseudo R^2	0.069	0.052	0.071	0.067	0.071	0.049	0.011	0.028	0.034

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses.

Source: Hamburg-BUS survey, own calculations.

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4 Conclusion

Our findings can be summarized as follows: There is a link between consumers' inflation expectations and their planned savings adjustment, but it is less clear-cut than what might be expected from a theoretical stand point. This is in line with the results regarding the relation between consumers' inflation expectations and their consumption (Bachmann et al., 2012; Burke and Ozdagli, 2013). To a certain extent, this may be due to the fact that survey answers have no direct effect on consumers' economic outcomes, as suggested by the findings in Armantier et al. (2011).

Nevertheless, our investigation yields a number of interesting insights. First, consumers' inflation expectations increase the likelihood of a savings portfolio adjustment due to higher expected interest rates, rather than to protect savings against inflation. Thus, while consumers in our sample seem not to react to inflation expectations when considering a change in savings *per se*, our result suggests that they have a type of Taylor rule in mind when considering the effects of higher expected inflation. This could provide an explanation for the absence of a strong link between expected inflation and current readiness to spend found in Bachmann et al. (2012): If consumers expect nominal interest to rise with rising inflation, it is unclear if and to what extent an decreasing effect on the real interest rates will be realized.

Second, while we find that savings adjustments are mostly affected by positive economic news, there is no evidence of a media bias caused by an asymmetric media effect. Several papers in the literature document an asymmetric effect of negative news on consumers' inflation expectations, which is associated with higher expected inflation levels and, thus, larger forecast errors (e.g. Lamla and Lein, 2010). By contrast, all the media effects on the importance of different reasons for a savings adjustment have the expected sign and when we distinguish between news on specific topics, we find effects of both positive and negative news. Notably, news on higher inflation observed by the consumer increase the importance of all given reasons for a portfolio adjustment, namely protection against inflation, safety of the portfolio and higher interest rates. Overall, it seems that news are incorporated rationally into the decision for a change in savings.

There is one caveat we have to consider due to the way the survey is constructed: Given the way the questions are phrased, we are limited in our analysis to consider only "planned savings adjustments", i.e. a planned re-allocation of the portfolio. We are thus not able to answer the question if and by how much households would shift the level of savings due to changes in inflation expectations or news observed.

When it comes to policy conclusions, the findings of this survey can be seen as a confirmation of the view that the communication of economic policy matters. Those consumers who stated that they heard non-favourable news on inflation show a significantly higher probability to adjust their savings portfolio, either because they worry about the negative consequences of future inflation or because they expect higher inter-

est rates. In addition, news on the business cycle also affect consumers' saving decisions. Therefore, a transparent and unbiased communication of economic developments and policy decisions will improve consumers' decision making process regarding their savings allocation. Further research should focus on appropriate survey data to test whether inflation expectations and news also influence changes in the level of planned savings on the household level. Additionally, it would be interesting to see if our results continue to hold once nominal interest rates increase above the zero lower bound, as Ichiue and Nishiguchi (2013) suggest that the link between inflation expectations and consumption is stronger in a low-interest environment.

5   Acknowledgments

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