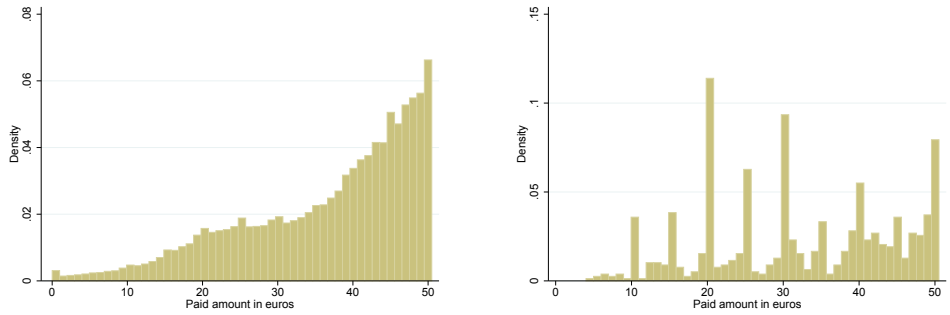
P(l)aying at the Pump

Proposal for 2017 NBER Household Finance Working Group Small Grants

Gert-Jan Romensen and Adriaan R. Soetevent

Driving a car is expensive, with fuel consumption being a recurring and salient cost for households and firms alike. Behavior at the gas station, however, may be very different depending on whether the driver arrives in a private or corporate vehicle. Fuel expenditures are a natural category for which private drivers may have a (mental) budget and this could induce them to target pre-determined transaction amounts on the pump display. Corporate drivers, in contrast, face no budget concerns and have an incentive to fill the tank completely. This difference in purchasing behavior has the potential to inform us about the reasons why consumers use heuristics such as reference points in consumption decisions. Figure 1 illustrates this potential. We observe that a large share of private drivers bunch their transactions at small five-euro multiples. Further analyses reveal that fill ratio's (purchased number of liters divided by the liter size of the tank) decrease in car resale value, suggesting that many budget-concerned drivers don't fill the tank completely but stop filling at the target amount instead. The observed absence of such behavior among corporate drivers is indicative of a (mental) budget motive. Importantly, we observe little switching between gasoline grades (unlike Hastings and Shapiro (2013)) and thus hypothesize that mental accounting mainly operates through consumers targeting a preferred fixed amount when visiting the gas station. This raises several questions: what are the implications for fuel price sensitivity (as it would imply, at least locally, much sharper responses to price changes than commonly estimated)? Do consumers update their target amounts in light of persistent fuel price changes? Under what circumstances might this heuristic benefit or harm the consumer?

Figure 1: Fueling Transactions from Private and Corporate Drivers ($\leq$ 50 euros)



(a) Corporate drivers

(b) Private drivers

Notes: The fueling transactions from corporate drivers are obtained from a leading national lease car company ($n = 13,847,616$). Data on private drivers come from an on-site survey ($n = 1,964$) conducted at gas stations in the city of Groningen, the Netherlands. License plate registrations allowed us to identify private drivers in this survey.

This research project aims to map the use and implications of financial heuristics in gasoline consumption among private and corporate drivers. Importantly, we have already secured three large databases to achieve this task:

- *Fueling transactions from the corporate clients of a large lease car company*: about 15,000,000 transactions from corporate drivers.
- *Regular price quotes from more than 4,000 Dutch gas stations*: continuously updated based on fleet card transactions.
- *License plate registry RDW (Netherlands Vehicle Authority)*: contains all license plates and car-related information from on-the-road vehicles in the Netherlands.

What is missing at this stage is a panel of private drivers for which we have fueling transactions over time. This would allow us to estimate a model that incorporates reference-dependent purchasing behavior while accounting for individual heterogeneity. In order to construct this panel we seek funding such that we can reach out to ANWB (Dutch Automobile Association), which has a magazine with 3.7 million copies and a reach of 5,4 million readers. Our plan is to place advertisements in two issues of the magazine in which we ask readers to submit their (digital or paper) fuel diaries. Note that given the very large reader base, a low response rate (say 0,001%) would still generate a large panel of private drivers. Funding is required to incentivize readers to submit their diaries and to make the advertisements appealing. Furthermore, we need to hire a research assistant to process and digitize the diaries in a standardized way. Modest travel costs between ANWB headquarters and the University of Groningen also need to be covered in case readers prefer to send their diaries to ANWB. The proposed budget can be found on the next page.

The NBER Household Finance grant would enable us to construct a large comprehensive data set on fueling transactions from both private and corporate drivers, matched with rich data on car characteristics and price quotes from gas stations. We would be willing to share the data set and make it publicly available. Sharing the data on corporate drivers, however, is conditional on getting permission from the lease company.

This research project has the potential to contribute to several strands of literature. First, it explores in detail how consumers adopt reference-dependent behavior and shows what the implications are in terms of actual purchasing behavior and price sensitivity. More in general, it shows how heuristic thinking by consumers affects market outcomes. In doing so, it extends earlier work on reference-dependent behavior in labor economics (e.g., NYC cab drivers) to the realm of household finance. The panel character of the data enables us to study how the use of heuristics evolve over time and offers ample opportunity to address why this might be the case. The benefit of having two detailed panels, private and corporate drivers, is that we can assess the magnitude of budget considerations on the use of financial heuristics. Our willingness to share the data after completion of the research also allows other researchers to work on these important topics, which will further advance our understanding of how households make decisions and manage their finances.

Table 1: Proposed Budget for Data Collection

Expenditure category	Amount
Advertisements (2 x $ 5,000)	$ 10,000
Incentives to submit fuel diaries (suggestion: each ad will have $ 1,500 in prize money)	$ 3,000
Design advertisements (done by external bureau)	$ 500
Research assistant: two months (one or two day(s) per week)	$ 1,000
Travel costs between ANWB headquarters and University of Groningen	$ 500
Requested budget	$ 15,000

Gert-Jan Romensen

Date of birth:	31 January, 1990	**Address:**	Nieuwe Kerkhof 38
Nationality:	Dutch	**Postal code:**	9712 PX, Groningen
Sex:	Male	**Email:**	G.J.Romensen@rug.nl
Languages:	Dutch (native), English (fluent)	**Phone:**	+31653920843

Work experience

University of Groningen, the Netherlands — 2015 -
PhD Candidate in Economics
- Research fields: applied microeconomics and behavioral economics
- Supervisors: prof. Adriaan Soetevent and prof. Marco Haan

University of Groningen, the Netherlands — 2015 -
Lecturer in Economics
- Courses: Microeconomics I and Economics for International Business
- Top 5 lecturer (shared first place) fall semester 2016-2017

University of Groningen, the Netherlands — 2011-2015
Teaching assistant in Economics
- Courses: Microeconomics I, Macroeconomics I, Finance I and International Economics I

Education

University of Groningen, the Netherlands — 2013-2015
Research Master in Economics
- Nominee Best Research Master Graduate 2015
- Grade point average: 8.2/10 (thesis grade: 9/10)

University of Groningen, the Netherlands — 2010-2013
BSc Economics & Business Economics (profile: Economics)
- Graduated with honors (*cum laude*)
- Class ranking: second from my cohort
- Grade point average: 8.7/10 (thesis grade: 9/10)

McGill University, Canada — 2012
Exchange during fall semester
- Grade point average: 8.8/10
- Selected by home university for only university-wide place available

Other education

University of Groningen, the Netherlands — 2013-2015
Honors Master program on leadership
- 15 ECTS extracurricular program
- Co-organizer public lecture on behavioral public economics

University of Groningen, the Netherlands — 2010-2013
Honors Bachelor program
- 45 ECTS extracurricular program
- Co-organizer public lecture on productivity in Europe

Summer schools

Conference University De Suisse Occidentale, Switzerland — 2016
Winter school on decision making in markets and organizations

University of Groningen, the Netherlands
- *Summer school on long-term perspectives on inequality* — 2015
- *Summer school on empirical methods in microfinance* — 2014

	Barcelona Graduate School of Economics, Spain *Summer school on quantitative methods for policy evaluation*	2014
	Chinese University of Hong Kong, China (SAR) *Summer school on Asian business and Chinese foreign policy*	2013
	GW University and European Parliament, USA and Belgium *Summer school on online corporate social responsibility* • In collaboration with University of Groningen Honors College	2012
Work in progress	"Tailored Feedback and Worker Green Behavior: Field Evidence from Bus Drivers" (with Adriaan Soetevent)	
Presen-tations	IMEBESS, Barcelona (planned)	2017
	SOM PhD Conference, Groningen	2017
	Advances in Field Experiments, Chicago	2016
	Groningen-Venice PhD Workshop, Venice	2016
	SABE/IAREP, Wageningen	2016
Other activities	Member project team ING Think Forward Initiative	2016 -
	Research-assistant prof. Adriaan Soetevent	2015
	Co-author student report EQUIS accreditation	2014
	Delegate Netherlands-Asia Honors Summer School	2013
	Guest-editor FD Outlook (special issue on China)	2013
	Teacher in Economics at Studeer Slim	2013
	Member University of Groningen Honors College activities committee	2011-2013
	Member University of Groningen Honors College program committee	2011-2013

(last updated: 12 March 2017)

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Groningen, 20 March 2017

Subject: Letter for **Gert-Jan Romensen**, applicant HF Research Grant

Dear professor Healy,

It is my great pleasure to write this letter of recommendation for Gert-Jan Romensen who has applied for a NBER HF Small Grant. Gert-Jan is a second year PhD student. The focus of his thesis are the energy consumption decisions of agents, either within the household or as an employee within a firm. With regard to the latter, Gert-Jan has conducted a field experiment in collaboration with a large bus company. In that project, he analyzes the effects of targeted peer-comparison feedback and on-the-road coaching on driving efficiency and determinants of comfort, such as braking and concerning.

Gert-Jan now plans to embark on an empirical project studying the use of reference points (target amounts) in fuel purchases by household members. It is for this project that he applies for a HF Research Grant. The hypothesis is that people without budget considerations will do a complete refill once they are at the gas station whereas people with a mental account for fuel will target 'round' amounts such as €20 or €50. Gert-Jan did some preliminary work to test this hypothesis as part of his research master thesis. At the time, he collected with a team of students data on about 2,000 fuel transactions at a small number of gas stations. He used the license plates to match these transactions with car characteristics, notably whether the car was privately or corporately owned. In the latter case, drivers are likely to be lessees who do not pay the fuel themselves and thus have no need for mental accounts. Indeed, his estimates show a higher frequency of targeting round amounts among the group of privately owned cars.

Gert-Jan wishes to expand this study by using larger samples of fuel transactions of both corporate and private drivers. For the lessees, data on >12 mln. transactions have been secured from a large fleet-car company. To get a data set of similar size for private drivers, he wishes to collect the data of Dutch households who self-register their fuel transactions e.g. in booklets they keep in the car (we know many do). The grant will mainly be used to publish adds in the magazine of the Dutch Automobile Association (3.7 mln. copies) to invite households to submit their data, to offer those who do the possibility to win a monetary prize and to hire student assistants for data processing. Using license plate information, the transaction data will be matched with car characteristics (price, brand, model, size and age). These will serve as proxies for household characteristics such as income. This project nicely expands the empirical study of targeting from labor economics (labor supply of NYT cab drivers) to the domain of budgeting in household finance.

Let me conclude by saying that Gert-Jan is one of most highly talented, creative and enthusiastic PhD students I have supervised in my career so far.

Sincerely yours,



Adriaan Soetevent
Professor of Microeconomics