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THE BENEFITS OF DCC IMPLEMENTATION FOR RETAILERS

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THE BENEFITS OF DCC IMPLEMENTATION FOR RETAILERS

Research in Progress

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Abstract

Retailers recently adopted dynamic currency conversion (DCC) techniques in which they offer their international clients the possibility to pay in their local currency. As retailers generally share in conversion revenues, it is relevant to gain insights in customers' attitudes towards different forms of presenting the conversion option. It is found that the likelihood of using DCC decreases with conversion margins, but increases once DCC is presented as a default option. The findings provide guidance to retailers when to deploy DCC efficiently.

Keywords: Dynamic Currency Conversion; Currency Choice; Retailing; Amazon.com

1 Introduction

Retailers can provide international customers paying with debit or credit cards the option to proceed a transaction in a customer's home currency, rather than in the retailer's native currency. This process is generally known as dynamic currency conversion (DCC), and was introduced in 1996.¹ By now, DCC has found its way to not only physical stores such as Harrods in the UK or Galeries Lafayette in France, but also to online stores such as Amazon.² The option to choose the currency used for a transaction is provided during the point of sale, either on the payment terminal for physical stores or during checkout on the website of an online store. When proceeding in the retailer's native currency, customers get to know the costs in their home currency on the bank statement issued after the transaction. When using DCC, the costs in home currency are presented to consumers during the point of sale. Instead of the home bank or credit card company, the DCC operator determines the exchange rate applied to the transaction. The presented price to a customer includes, in addition to the converted product price, a margin for both the DCC operator and the merchant. Benefits of DCC are additional margin to the retailer³ and instant clarity for consumers regarding the purchasing price in terms of home currency. Anecdotal evidence points at the downsides of this ambiguity reduction for consumers, as, due to applied margins, DCC often appeared to be more costly than a regular transaction in the retailer's native currency. West (2015) documented that DCC fees constitute "typically 5 per cent or more of the transaction value".

¹ Fexco.com, <https://fexco.com/merchant-services/introduction/>

² Gerritsen et al. (2015) state that DCC is now also implemented at ATM machines.

³ According to Worldnet (<http://www.worldnetmerchant.com/dcc/>), extra revenues for retailers equal "typically 1% of the value of the transaction".

As one motivation for retailers of using DCC could be an increase in revenues, a solid understanding of the determinants of DCC usage by consumers is critical for an efficient DCC deployment. In a DCC setting, consumers are confronted with a choice between paying in home currency or foreign currency. During such a process, consumers typically compare a displayed price to another price (e.g., a comparable, known alternative). The latter one is usually referred to as the reference price (Monroe, 1973). Whereas the advertising literature generally uses this approach to evaluate the effectiveness of price discounts, we apply this framework to a comparison of the costs of identical products while one offer is quoted in terms of home currency and the other in terms of foreign currency. In an attempt to understand determinants of DCC usage by consumers, we investigate psychological variables as to provide greater insight into this under developed domain. Suggested psychological variables include consumers' risk aversion, cognitive abilities, propensity to trust, and conscientiousness (Kimeldorf, Meyer, Prasad & Robinson, 2006; Pratt, 1964; Thaler & Sunstein, 2008). First, the usage of DCC links to a consumer's risk aversion tendency due to the trade-off between the known price of the consumer's home currency with the DCC option versus the unknown price of the home currency when the home bank does the conversion (Ellsberg, 1961; Pratt, 1964). As a result risk or uncertainty may be present in converting currencies, hence the usage of DCC may be influenced by a consumers' risk aversion. Second, Lemaire and Lecacheur (2001) identify a gap in the current behavioral economics (pertaining to currency conversion) literature regarding consumers' cognitive processes (abilities) when confronted with currency conversion payment decisions and computations. As such, greater insight into cognitive abilities as a determinant in DCC usage may be valuable for retailers. Third, it has been suggested that a consumer's propensity to risk may also influence DCC usage as the conversion system's exchange rate and calculations may be unknown, hence a consumer may rather trust their home bank more to do such conversions (Thaler & Sunstein, 2008). Fourth, consumer conscientiousness may constitute to online buying behavior and in particular payment option selection as this personality trait demonstrates the careful deliberation of situations and the tendency to side with a more cautious option (Bosnjak, Galesic & Tuten, 2006; Tan & Sutherland, 2004). As such, to gain a greater understanding of DCC usage, determinants of consumer conscientiousness should be investigated.

The current literature mainly studies if and how consumers make conversion computations. Lemaire et al. (2001) studied the euro crossover in France and identified six different strategies used by their respondents. Lemaire and Lecacheur (2001) evaluated the preference among consumers for two different computational conversion strategies (i.e., divide by 3, multiply the outcome by 2, multiply that outcome by 10; or multiply by 6 and add to that 10 percent). They found that consumers favor different kinds of strategies, and the used strategies were different for younger and older respondents. While both groups favored the strategy which they performed fastest, the execution time was higher for older people. Older persons were more accurate when it came to converting small amounts, but were equally accurate when converting larger amounts. Lemaire (2007) repeated their previous experiments 5.5 years after the euro crossover. Interestingly, participants now used fewer strategies, and they performed them faster and more accurate. Consumers comparing different currencies could be prone to money illusion (e.g., Raghurir et al., 2012), coined as 'euro illusion' during the European euro crossover. A lower nominal value of product, in terms of foreign currency, might positively influence the price perception among consumers of products quoted in that currency (Gamble et al., 2002). Callow and Lerman (2003) refer to this concept as high denomination currencies versus low denomination currencies. Especially when the face value of currencies is relatively equal, larger discounts in foreign currency denominated products were associated with a larger influence on purchasing propensity (Callow and Lerman, 2003). Juric et al. (2002) surveyed tourists about the accuracy of the outcome of the currency conversion process used for foreign currencies while on holiday. The respondents indicated ranges of 'close enough' to 'exact', but all of them accepted a margin of error in their calculations. 27 percent of the respondents were unable to indicate a range; a

finding which shows the difficulty of a conversion task. In addition to calculating a price in home currency, Pettigrew et al. (2010) proposed an alternative strategy of avoiding performing conversions altogether. Their interviews with tourists revealed that this strategy was more likely when, among others, there was a perceived information overload when needed to make a decision. One of the drivers of the choice to convert or avoid is the perceived mathematical ability of the interviewee.

Rather than evaluating the consumer's strategy, we focus on the outcome of a situation where consumers are confronted with a choice between two different currencies for the same product. An experiment was designed in which consumers' responses were evaluated to a DCC experiment with different experimental conditions. First, we varied the margins applied to the costs in home currency. Second, we showed some participants a default option. We found that on average 66 percent of the participants opted for DCC, but that this rate decreased in the margin applied. The largest decrease took place when the DCC margin as a percentage of the prevailing exchange rate increased from 0 percent to 10 percent. A margin of 0 percent was associated with 75.6 percent opting for DCC, but this decreased to 61.9 percent when a non-zero margin was applied. An additional increase to 20 percent did not meaningfully decrease the percentage of participants opting for DCC, as this percentage dropped to 59.0 percent only. These findings are robust when controlling for demographic, personality (including a respondent's risk aversion, cognitive abilities, propensity to trust, and conscientiousness), and several experience variables (subject familiarity). In addition, we studied the impact of the default bias on the likelihood of opting for DCC. Regression analysis reveals that the addition of a default screen is associated with more frequent DCC usage. A detailed analysis shows that – in contrast with our main findings – within the treatment group exposed to 20 percent margins, the default effect had a negative effect on the propensity of opting for DCC. Apparently, consumers start to distrust automatically suggested options when the applied exchange is poor. Our findings suggest that, from a profit maximizing standpoint, the optimal strategy for DCC usage is to either increase margins or to introduce a default screen. Combining these two measures, however, leads to decreased usage. Consumers might become suspicious when they are confronted with such a scenario.

The paper is structured as follows. Section 2 starts with an elaboration of the experiment background, participant characteristics, and experimental variables, after which both univariate and multivariate test results are presented. We conclude in Section 3 where we also present limitations and suggestions for future research.

2 Experiment

2.1 Background

We conducted a DCC experiment in the Netherlands. Internet penetration and consumer's willingness to conduct online transactions are relatively large in the Netherlands as this country ranks 3rd on 'technology adoption and consumer behavior' on the Global Retail E-commerce Index (AT Kearney, 2015). According to Statistics Netherlands (Statistics Netherlands, 2016), 71 percent of the population has conducted at least 1 online purchase during 2015. While most online shoppers (i.e., 93 percent) conducted purchases on Dutch web shops, 30 percent indicated that they used web shops in other EU countries, and 20 percent indicated that transactions was conducted at a web shop outside the EU. One of the available options for online shopping is Amazon. Amazon is a global retailer and ranks highest as non-store retailer in the NRF top 250 global retailers ranking (National Retail Federation, 2016). Although Amazon has a limited presence via the Dutch domain extension .nl⁴, Amazon's other domains are frequently visited by Dutch consumers. Based on a combination of website visits and page views, Alexa (Alexa.com, 12 October 2016) ranks Amazon.com 38th, Amazon.de 80th, and Amazon.co.uk 132nd in the Netherlands. Of these

⁴ Up till 2016, Amazon only sells e-books via this domain.

domains, only the German site shows product prices in the Dutch native currency (e.g., Euro); the US version shows prices in US dollar, while the UK version displays them in UK pound. Amazon offers Dutch consumers using the US and the UK sites the option to convert the payment currency into Euros using the Amazon currency converter.

2.2 Participant characteristics

Given the familiarity of the Dutch with online shopping in general, and with the Amazon brand in particular, the Netherlands proves to be an adequate environment for conducting an experiment on DCC usage during an online transaction. During a period of two weeks in May 2015, public areas such as parks, libraries, train stations, airports, etc. were visited to find respondents. In our field experiments the participants were asked to respond to questions in a natural everyday environment (in parks, train stations), resulting in high external validity. Field experiments fit the purpose of our study, since, due to the exploratory nature of the study, we would like to research a large number of potential respondents. However, field experiments have the disadvantage that researchers have little control over extraneous variables that may influence results and may make this study hard to replicate (Ritter, Kim, Morgan & Carlson, 2013). Participants did not get compensation for taking part in the experiment. Execution over a multi-day period allowed to compose similarly sized experimental groups. After excluding respondents which had US dollars as home currency and persons which did not fill in the full questionnaire (19 cases), the final sample consisted of 403 respondents. Table 1 (see next page) displays summary statistics for this sample.

Columns 1 to 7 of Table 1 show the variable name, its mean, median, standard deviation, minimum value, maximum value, and the number of participants. The average age of the respondents was nearly 29 years, with the youngest participant being 15 years old and the oldest 68 years old. Gender was coded as a dummy variable, taking on the value of '1' when the participant was female. The sample consisted of 208 females and 195 males. A 'high income' dummy was included, which took on the value of '1' if the monthly pre-tax income exceeded EUR 3000, and '0' if either income was lower, or the income was non-disclosed (n=36). 17.9 percent of the sample qualified for High income. High education was coded as '1' when a participant held a Bachelor degree or higher; its value was 0 otherwise. 67.0 percent of the sample was higher educated.

In addition to standard demographic characteristics, additional personal traits (including a respondent's risk aversion, cognitive abilities, propensity to trust, and conscientiousness) are considered. The values for these traits are computed based on different survey questions. The survey is displayed in the Appendix. On a scale of 1 to 6, participants scored on average 3.49, which means that the average respondent scored right in the middle of the risk aversion scale. With respect to cognitive abilities, the participants answered on average 1.18 out of 3 questions rightly. Regarding propensity to trust, the average of the participants equaled 3.03 on a scale of 1 to 5. Participants' self-evaluation of conscientiousness was also scored on a scale from 1 to 5, with the average equaling 3.56.

Participants were also asked questions to measure their familiarity with the subject of this study. They indicated that they, on average, made 13.6 online purchases during the past year. In terms of familiarity with shopping at Amazon specifically, participant answers ranged from 1 to 5 with 2.42 as average. Finally, around half of the participants had experienced a form of currency choice or dynamic currency conversion prior to the experiment.

2.3 Main experimental variables

As Mahapatra (2013) reported that books have the highest online penetration globally, the experiment contained a simulated book purchase.⁵ The full purchasing cycle from selecting a (preselected fictive) book to placing the order to paying the book has been programmed on a tablet. The price of the book was set at USD 48.43 so that conversion markups have sizeable effects on the converted price, without compromising the credibility of the fictive transaction. The base exchange rate equaled 1.12 USD/EUR (e.g., 0.893 EUR/USD) as this was the average exchange rate occurring in the ten business days prior to the start of the experiment. During the execution of the experiment, the actual exchange rate remained at 1.12 USD/EUR on average.

To be able to test differential behavior to changing conditions, different respondents were randomly assigned to different experimental conditions. First, the existence of a default effect in online transactions was tested by pre-selecting the EUR payment at a group of respondents while refraining from this at the other group. Table 1 reveals that a proportion of 0.501 of all respondents were exposed to a default option (i.e., 202 cases). The other 201 participants proceeded without this option. Secondly, to determine the effect of exchange rate markups, these varied for different groups of respondents. The markup equaled either 0 percent, 10 percent, or 20 percent for 135 respondents, 134 respondents, and 134 respondents, respectively.

Ultimately, a fraction of 0.655 (i.e., 264 respondents) opted during the fictive payment for a payment in Euro, in other words, for a transaction DCC. The other participants proceeded without currency conversion as they paid in US dollar.

2.4 Univariate tests

One of the aims of this study is to document which consumers opt for DCC, and under which conditions they do so. To shed light on the first aim, Columns 8 – 11 of Table 1 show the outcome of a univariate test. For each variable, these columns show the average for the participants who did not opt for DCC (e.g., Column 8), and the average for those who opted for DCC (e.g., Column 9). Column 10 indicates the difference between these two groups, and Column 11 shows the corresponding t-value of this difference. Noteworthy findings are that high income participants opt less for DCC than lower income participants. More risk averse persons opt more frequently for DCC relative to less risk averse persons. Both cognitive abilities and trust are negatively related to choosing DCC. All measures for experience are negatively related to DCC. Participants who make less online purchases, have less familiarity with Amazon, and have no DCC experience, all have a significantly higher likelihood of enabling DCC during their transaction.

Of the main experimental variables, participants more often opt for DCC once they were confronted with a DCC default screen. However, this difference is not statistically significant. Interestingly, when comparing the values for the different markup categories, 38.6 percent of the participants opting for DCC were offered a transaction with an implied markup of 0%. 31.4 percent of the ones choosing DCC were confronted with a 10 percent markup, and 29.9 percent of the ones choosing DCC were exposed to a 20 percent markup. Apparently, the higher the markup, the lower the likelihood that shoppers select the DCC option. However, the marginal effect from 10 percent to 20 percent is limited, an issue we will explore in more detail in the next section of this paper.

⁵ 40 percent of online shoppers purchased books in the Netherlands in 2015 (Statistics Netherlands, authors' calculations). (<http://statline.cbs.nl/Statweb/publication/?DM=SLNL&PA=83430NED&D1=0,5-25&D2=0,3-6&D3=0&D4=a&HDR=T&STB=G1.G2.G3&VW=T>)

(1) Variable	(2) Mean	(3) Median	(4) Standard deviation	(5) Min	(6) Max	(7) n	(8) Mean if DCC = 0	(9) Mean if DCC = 1	(10) Difference [(9) – (8)]	(11) T-value
<i>Demographics</i>										
Age	28.86	25	9.90	15	68	403	28.2	29.2	0.967	0.93
Gender	0.516	1	0.500	0	1	403	0.475	0.538	0.063	1.20
High income	0.179	0	0.384	0	1	403	0.266	0.133	-0.134***	-3.37
High education	0.670	1	0.471	0	1	403	0.719	0.644	-0.075	-1.53
<i>Traits</i>										
Risk aversion	3.49	3	1.42	1	6	403	3.065	3.712	0.647***	-4.44
Cognitive abilities	1.18	1	1.05	0	3	403	1.554	0.977	-0.577***	-5.43
Trust	3.03	3	0.90	1	5	403	3.278	2.905	-0.373***	-4.02
Conscientiousness	3.56	3.6	0.64	1.4	5	403	3.626	3.525	-0.101	-1.50
<i>Experience</i>										
Purchase online	13.6	8	16.7	0	100	403	20.35	10.04	-10.32***	-6.16
Amazon familiar	2.42	2	1.34	1	5	403	3.072	2.080	-0.992***	-7.49
DCC experience	0.496	0	0.501	0	1	403	0.604	0.439	-0.165***	-3.18
<i>Experimental</i>										
Default	0.501	1	0.5001	0	1	403	0.475	0.515	0.040	0.77
0% Markup	0.335	0	0.473	0	1	403	0.237	0.386	0.149***	3.04
10% Markup	0.333	0	0.472	0	1	403	0.367	0.314	-0.053	-1.06
20% Markup	0.333	0	0.472	0	1	403	0.396	0.299	-0.096*	-1.96
DCC	0.655	1	0.476	0	1	403				

Table 1. Descriptive statistics. The construction of our variable is explained in Section 2. This table gives their main descriptive values in Columns 2 to 7. Columns 8 to 11 present a univariate test; t-values are given in Column 11: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.5 Multivariate tests

We test our presumptions using a linear probit estimation with robust standard errors. Table 2 depicts our results. In Model 1, we regress the choice for DCC during a transaction to the markup applied in the transaction. Coherent with our expectations, applying a markup is associated with a lower propensity to opt for DCC. More specifically, when the markup equaled 10 percent, the propensity to use DCC decreased by 14.5 percent relative to our control group which did not face a markup when opting for DCC. For a 20 percent markup, DCC likelihood decreased with 17.5 percent. Both findings are statistically significant.

Model 2 introduces the impact of a Default option, together with demographic control variables. In this specification, both Markup dummies remain statistically significant. The introduction of DCC as a default option is not significantly associated with a higher propensity of using DCC. Age is positively related to DCC. One year of age is associated with a 0.7% higher likelihood of using DCC. This finding can be explained by Donkers et al. (2001) who found that older people tend to be more risk averse. Higher income individuals are associated with 23.4% less likelihood of DCC usage. Model 3 controls for personality traits as well.

While both Markup dummies retain their significance, Default turns significant at the 10%-level in this specification. This indicates that the introduction of DCC as default option increases the likelihood of using it by 9%. In addition to the findings as reported for Model 2, Risk aversion, Cognitive abilities, and Trust are significantly related to DCC according to our expectations. The more risk averse, the higher the likelihood to accept a given price stated in home currency. Cognitive abilities are negatively related. When a person can compute the implied costs of the conversion, it is more likely that the person will not opt for DCC. Trust is negatively related to DCC as well, a finding which is contrary to our expectations.

Model 4 constitutes our full model. In addition to our previous models, this model takes experience into account. Online purchasing experience is negatively related to opting for DCC. This might be caused by a learning effect: once a person recognizes that DCC has been the more expensive option in previous transaction, the person is less likely to opt for DCC in future transactions. One additional transaction is related to a 0.5% lower likelihood of using DCC. On the other hand, a specific experience with DCC has no effect on the propensity for choosing DCC. Familiarity with Amazon is not associated with the choice for DCC either.

Summarizing Models 1 to 4, we find support for our conjecture that the markup negatively affects the propensity for choosing DCC. In addition, this propensity is positively affected by the so-called 'default effect'. As the markup and the default option are two instruments at hand of DCC providers, it is highly interesting to study the interactions between these two effects. Our final model, Model 5, shows the outcomes. The interaction effect between Markup 20% and Default appears to be highly significant in this estimation. Its coefficient equals -0.405. This indicates that a default effect make the choice for DCC less likely when the markup equals 20%. Apparently, consumers get more suspicious when a DCC provider tries to incorporate to many means to convince a shopper to opt for DCC.

	Model 1	Model 2	Model 3	Model 4	Model 5
10% Markup	-0.145** (-2.40)	-0.148** (-2.44)	-0.155** (-2.47)	-0.167** (-2.52)	-0.126 (-1.46)
20% Markup	-0.175*** (-2.89)	-0.170*** (-2.80)	-0.166*** (-2.65)	-0.166** (-2.58)	0.017 (0.20)
Default		0.051 (1.05)	0.090* (1.77)	0.106** (2.03)	0.255*** (2.67)
10% Markup x Default					-0.098 (-0.74)
20% Markup x Default					-0.405*** (-3.00)
Age		0.007** (2.58)	0.006** (2.07)	0.007** (2.54)	
Gender		0.049 (0.99)	0.046 (0.92)	0.013 (0.25)	
High income		-0.234*** (-3.38)	-0.154** (2.15)	-0.088 (-1.15)	
High education		-0.075 (-1.43)	-0.043 (-0.74)	-0.019 (-0.32)	
Risk aversion			0.063*** (3.39)	0.053*** (2.75)	
Cognitive abilities			-0.120*** (-4.84)	-0.101*** (-3.94)	
Trust			-0.055* (-1.90)	-0.019 (-0.64)	
Conscientiousness			-0.001 (-0.02)	0.039 (0.95)	
Purchase online				-0.005*** (-2.64)	
Amazon familiar				-0.024 (-0.44)	
DCC experience				-0.024 (-0.44)	
N	403	403	403	403	403
Pseudo R ²	0.02	0.05	0.14	0.21	0.17

*Table 2. Regression output. This table contains the regression estimates for our probit estimations. The dependent variable is the dummy variable DCC, which takes on the value of '1' if DCC was selected and '0' otherwise. Please see Section 2 for an explanation of the construction of all other variables. Coefficients represent the marginal effects on the dependent variable. The model is estimated using robust standard errors. z-statistics in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

3 Concluding remarks

Retailers recently adopted dynamic currency conversion (DCC) techniques, however a current void in behavioral economic literature is apparent in that the attitude toward the usage of such techniques by consumers are unknown. In particular, this study focused on a combined investigation of the influence of demographic characteristics, personality (including a respondent's risk aversion, cognitive abilities, propensity to trust, and conscientiousness), and several experience variables (subject familiarity). The findings from this study suggest that usage of DCC is negatively related to the margin to the exchange rate applied in the transaction, whereas introducing DCC as default option is positively associated with its usage. In general, both age and risk aversion are positively related to DCC usage, while personal income level and cognitive abilities are negatively related to its usage. We conclude that DCC can be an effective means to increase revenues for retailers. The findings in this experiment shed more light on which type of consumers are more inclined to use DCC at the point of sale. These findings can be used by both online and physical retailers with an international customer base when implementing DCC schemes. The findings suggest that these retailers can apply different DCC schemes to different target groups (pertaining to the specified characteristics). A limitation of the current study is that it is executed in only one country (i.e. the Netherlands) and as such the findings may not be translated one-to-one to other countries. It is therefore recommended that future research looks into DCC usage across different countries. This study considered the case of online retailer Amazon. Given that DCC is also applied in physical stores where customers might behave differently than they do online, a future research angle could be DCC behavior in physical stores.

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Appendix: Survey

Question #1: This survey is intended for people with the Euro (EUR) as home currency. Please indicate below if your home currency is the Euro:

Possible Answers: A. Yes; B. No

Question #2: Do you know the approximate exchange rate between the Euro (EUR) and the US Dollar (USD)?

Possible Answers: A. Yes; B. No

-> (If answer to question 2 was yes)

Question #3: What is your estimation of the exchange rate?

1 EUR = ... USD. Use dot (.) as a separator

-> (If answer to question 2 was no)

Assume that the current exchange rate is 1 USD=1.12 EUR⁶

Question #4: Suppose that you are on the website of internet retailer Amazon.com. You are about to buy a book of your choice. After selecting your book, it ends up in your virtual shopping cart. You now proceed to the checkout at Amazon.com. This is the final part after which the purchasing process is complete. Carefully inspect the screen below.

No Default Survey:

The screenshot shows two side-by-side checkout options. The left option is for EUR, with the Amazon Currency Converter enabled. The right option is for USD, with the converter disabled. Both options show an order summary with items, shipping, and taxes, and a selected payment currency of EUR or USD. The order totals are EUR 43,24 and USD 48,43 respectively.

Possible Answers:

- A. Place your order in EUR
- B. Place your order in USD option

Default Survey:

The screenshot shows a single checkout option for EUR, with the Amazon Currency Converter enabled. The order summary and payment options are visible, with the order total being EUR 43,24.

Possible Answers:

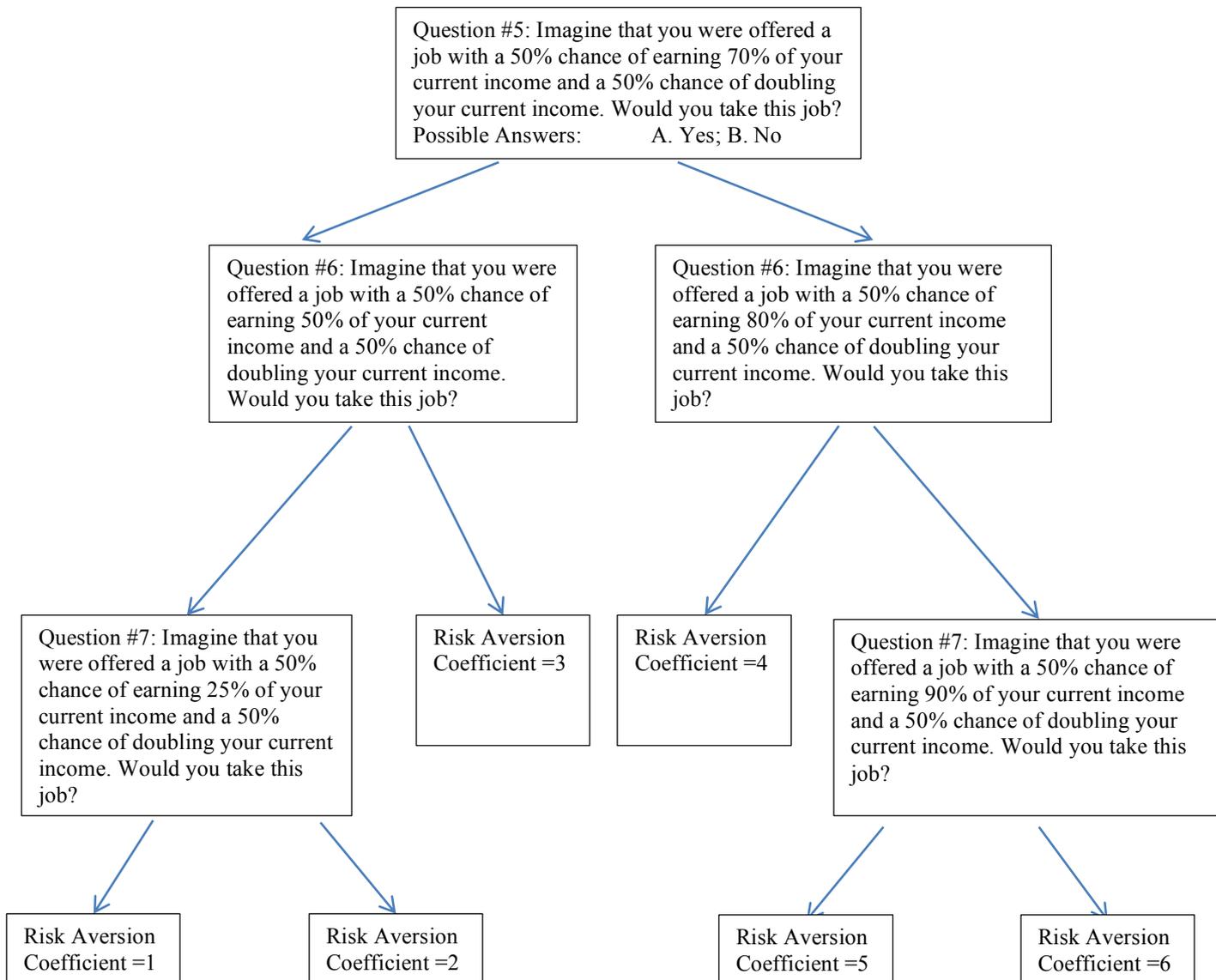
- A. Place your order in EUR
- B. Display alternative payment option

Questions #5-#7 measured risk aversion of an individual. Every question could be answered with either a “Yes” or a “No”. Arrows heading left indicate a “No” answer and arrows heading right indicate a “Yes” answer. 1= least risk averse person and 6=most risk averse person.

The method for measuring risk aversion was adopted from Kapteyn, A., & Teppa, F. (2002)

⁶ The exchange of 1 EUR=1.12 USD was an average estimate of daily exchange rates from 1 April 2015- 1 May 2015. Over the time of an experiment, the exchange rate did not fluctuate significantly. Hence, the exchange rate approximation was reasonably accurate.

Risk Aversion Measurement Scheme



Questions #8-#10 constituted a cognitive reflection test. Three mathematical problems of varying difficulty were given. 0 correct answers= least cognitive reflection and 3=most cognitive reflection. The method for measuring cognitive reflection was developed by Frederick et. al (2005).

Question #8: A baseball bat and a ball cost € 1,10 in total. The baseball bat costs € 1,00 more than the ball. How much does the ball cost? (Please fill your answer in cents).

Question #9: If it takes 5 machines 5 minutes to make 5 pencils, how long would it take 100 machines to make 100 pencils?

Question #10: In a lake, there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half of the lake? (Please fill in your answer in a number of days)

Questions #11-#13 were measuring person's trust propensity. For this purpose, three 1-5 scale questions were asked. Questions for measuring trust propensity were taken from study by Chen and Barnes (2007).

Question #11: It is easy for me to trust a person/a thing.

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #12: I tend to trust a person/thing, even though I have little knowledge of it

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #13: Trusting someone or something is not difficult.

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Questions #14-18 were measuring person's conscientiousness. Five 1-5 scale questions were asked for this purpose.

Question #14: I am able to make a plan and execute it

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #15: I do things efficiently

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #16: I proceed until the task is finished.

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #17: I am careless.

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Question #18: I tend to be lazy.

Possible Answers: 1 2 3 4 5 (1=strongly disagree; 5= strongly agree)

Questions #19-#22 were measuring respondent's familiarity with online shopping in general and with Amazon specifically.

Questions #19: How many times did you make an online purchase during the last year?

Questions #20: How familiar are you with online shopping?

Possible Answers: 1 2 3 4 5 (1=not familiar at all; 5= very familiar)

Question #21: How familiar are you with the web-shop Amazon?

Possible Answers: 1 2 3 4 5 (1=not familiar at all; 5= very familiar)

Question #22: Have you ever made an online purchase at Amazon?

Possible Answers: A. Yes; B. No

Question #23: Have you ever encountered the choice for a currency during a transaction? (This process is known as currency choice or dynamic currency conversion and is sometimes offered at web shops, hotels, ATMs etc.)

Possible Answers: A. Yes; B. No

Questions #24-28 look at respondent's demographic factors and level of education.

Question #24: What is your year of birth?

Question #25: I am a ...

Possible Answers: A. Male; B. Female

Question #26: My highest completed education is:

Possible Answers: A. Primary School; B. High School; C. Vocational Training; D. Bachelor
E. Master; F: PhD

Question #27: My current occupation is:

Possible Answers: A. Student B. Employed C. Self-Employed D. Unemployed E. Other

Question #28: My monthly before-tax income is between:

Possible Answers: A. 0-1500 EUR B. 1501-3000 EUR C. 3001-5000 EUR D. >5000 EUR E.
I do not know F. Skip this question