

14/07/14

# **The effect of currencies' face value on consumer behavior, product valuation and willingness-to-pay**

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## **Abstract**

In this paper, the influence of the nominal value of a currency, also known as the face value, on one's willingness-to-pay is being examined. Two studies were conducted both in Israel and the Netherlands to detect patterns in consumer decision making considerations when attaching one's willingness-to-pay for a certain product. Additionally, the sources of these pricing mechanisms are presented. The studies show that as the currency in use is a multiple of another, people tend to underspend, while using this currency; On the other hand, consumers tend to overspend when the currency in use is a fraction of the other.



## Introduction

More than one trillion Dollars exchanged hands worldwide by tourists during the year of 2012 (The World Bank, 2014). One important factor that was proven to have a salient effect on tourism volume and expenditures is currency exchange rates (Kester, 2011). This substantial amount of money transferred by individuals in different currencies often lacks of rational decision making and is prone to calculation mistakes that bias final transaction results. Additionally, the “Euro effect”, suggested by Raghubir et al. (2012), claims that according to data from 1993 to 2008, increasing touristic spending was observed in 11 out of 12 European countries that have changed their currency to the Euro from one that had a higher nominal value before the change has been done. Although people involved in these transactions are aware of the exchange rate between two currencies and are familiar with the calculation should be done to convert prices correctly, under spending and overspending phenomena are still abundant (Raghubir, Morwitz, & Santana, 2012).

Under spending and overspending phenomena are observed when one attaches a price to a good or service in a certain currency compared to another. In cases where a currency is a multiple of the other (1 Euro = 4.9 Israeli Shekels), people tend to under spend when using the currency which is higher in face value (4.9 in this case). On the other hand, there is a tendency to overspend when the currency used is presented as a fraction of the other (1 Israeli Shekel = 0.2 Euros) and the consumer is using the currency with the lower face value. In this case, money is treated as ‘play money’, which drives people to overspend (Raghubir & Srivastava, 2002).

This bias is caused mainly by framing effects in pricing decisions, the ‘Money illusion effect’, anchoring and adjustment biases, bounded rationality, the tendency to manipulate and round exchange rates as a way of simplification and disregarding changes in inflation and wage levels (Raghubir, Morwitz, & Santana, 2012).

Consumption tendencies and perceptions are influenced by numerous effects that are eventually translated into consumers’ willingness-to-pay. Some of the most essential tendencies derive from the way one captures the face value of a currency, which is defined as the nominal (absolute) value of a currency rather than its real one (Raghubir & Srivastava, 2002). In the process of pricing a certain product, individuals often misconceive the real value of a product due to the ‘Money Illusion effect’. The money illusion effect is a consequence of the tendency to think in a nominal, rather than real terms, meaning that people tend to attach inaccurate prices to products in a certain currency relative to another, due to insufficient attention to exchange rates and changes in prices (Shafir, Diamond, & Tversky, 1997). This creates a bias in which

consumers estimate prices in relative term and may cause overconsumption or under consumption due to the currency's face value that is being used (Raghubir & Srivastava, 2002).

The relevance of this paper lies in the understanding of two main aspects that are interrelated. First and more basic is the influence of the face value of a certain currency on individuals' perceptions towards different currencies. Those effects will be further explained in the theoretical part of the paper and will be then examined in an empirical manner through two randomized field experiments. These, in turn, will be then related to the aggregate, macroeconomic level in the general discussion, to show that not only the segment of students in both the Israeli and International groups are influenced by the face value effect, but also other segments of different countries.

Therefore, this paper will discuss both the individual level, to first give some evidence to the mentioned claims and then support it with some macroeconomic evidence to provide additional external validity to these hypotheses. As expenditure choices of individuals seem to be affected by the face value of a currency relative to another, it is crucial for marketers, workers of the tourism industry, 'duty-free' stores, which are constantly working with different currencies and politicians who are engaged with economical and touristic issues to be aware of the phenomenon.

The research question of this paper is as follows:

***“Does the use of currencies, represented by different face values, influence individuals' willingness-to-pay?”***

Derived from the paper's research question, these are the hypotheses that will be examined:

***H1: Israeli Individuals tend to underspend when the 'Home' (the Shekel) currency's face value is a multiple of the 'Foreign' (the Euro) currency ( $IS-S < IS-E$ ).***

***H2: International Individuals tend to overspend when the 'Home' (the Euro) currency's face value is a fraction of the 'Foreign' (the Shekel) currency ( $IN-E > IN-S$ ).***

## Theoretical Framework

The area of consumers' spending tendencies due to currencies' face value variations and exchange rate effects is not yet a developed one. Still, a ray of available literature in the matter is provided by Raghurir and Srivatrava, who examined the systematic differences in peoples' spending behavior when using foreign currencies (Raghurir & Srivastava, 2002). In their article, they first present the concepts of a multiple and fraction currencies. A multiple currency is the term given to a currency which is higher in relative value compared to another. A fraction currency is one which its relative value is less than the other. In their article, the Malaysian Ringgit is used as the multiple Foreign currency, compared to the Home currency, the American Dollar (4 Malaysian Ringgits equals 1 American Dollar) and the Bahraini Dinar as the fraction currency (.4 Bahraini Dinar equals 1 American Dollar).

The main argument being claimed is that although consumers are often aware of the exchange rate and the calculation needed to be used to attain the correct conversion between two currencies, there are still significant differences between the accurate price of a good and one's willingness to pay. According to Raghurir and Srivastava (2002), these systematic discrepancies are a result of people's biased subjective valuation of goods' prices when given in foreign currency terms. Valuations tend to be biased towards the nominal face value of the currency in use with an inadequate adjustment to the exchange rate (Raghurir & Srivastava, 2002). Furthermore, it was found that consumers consistently underspend when using a currency that is a multiple of the Home currency and overspend when the currency in use is a fraction of the Home currency. These results are consistent with the two studies conducted in Israel and the Netherlands as part of this paper and will be further elaborated in the next section.

This paper differs from Raghurir and Srivastava's article in a couple of aspects. Firstly, and most importantly, the two studies presented in the next section were conducted in two different countries and both discrepancies of WTP of the two currencies, between and within the two groups, can be attained. This is due to the fact that both studies are identical in design so that a comparison between the two can be made. In contrary, Raghurir and Srivastava perform six studies of which five were taken in the United States and one in Hong Kong, and each one is aiming to satisfy a different purpose of the whole study. Therefore, results of individual studies cannot be compared. Nevertheless, it is important to be aware of purchasing power and possible preference differences between respondents, when comparing two groups

from different countries who are using dissimilar ‘home currencies’, such as the ones being investigated in this paper.

Secondly, the two papers differ in the composition of their studies’ samples. Whereas in this paper’s students from various studies were questioned for their WTP, Raghurir and Srivastava’s surveys were taken from a uniform group of students (study 1 questioned business students and studies 2, 3, 4, 5 and 6 surveyed marketing students). Questioning respondents who are engaged with a similar studying degree might pose the problem of external validity, due to the lack of representation of a wider ray of preferences that is present in the total population. Internal validity “addresses whether or not an observed covariation can be considered a causal relationship” whereas external validity “examines whether or not an observed causal relationship should be generalized to and across different measures, persons, settings, and times” (Calder, Phillips, & Tybout, 1982). In contrary to Raghurir and Srivastava’s article, this paper examined students from various studies in two different countries, this potentially raises the external validity within and between the two studies.

Thirdly, the possible problem of ‘state dependence’ can be an issue in studies 1 and 2 at Raghurir and Srivastava’s article. This problem takes place when surveys promote the tendency to give the same answers for consecutive questions, independent of the item content in question (de Jong, Lehmann, & Netzer, 2012). This could originate due to the fact that the same respondents are asked to attach their WTP to two goods (tie and scarf) in different currencies. Therefore, one answer in terms of a certain currency might affect another answer regarding the other currency given by the same respondent. In this paper, each respondent states his WTP to 6 different goods in only one currency. Furthermore, each good is separated from the other on the survey. These actions were taken to decrease potential state dependence problems.

Lastly, the number of respondents participating in studies 1 and 2 (mainly 1) of this paper is higher than in Raghurir’s and Srivastava’s article. Therefore, it can be assumed that as the hypotheses are in line with the correctness of the surveys’ outcomes, results are less prone to be affected by outliers, on average, as the samples are larger in size (Van & Jolicoeur, 1994).

A few effects are taking place when one attaches her willingness to pay for a certain good. The “money illusion effect” was proposed by Shafir et al. (1997) and presents the tendency of consumers to refer a greater weight to the nominal rather than real values of the foreign currency towards a certain product. An individual is being said to be influenced by this effect when exercising excess demand functions

that do not only depend on relative prices and real wealth. For example, a person whose wage was raised by 2 percent in times of 4 percent inflation will not act the same way in times of a 2 percent cut in wage and no inflation. This person's loss in real terms is tempered by the nominal gain of the raise in wage (Shafir, Diamond, & Tversky, 1997).

In relation with this paper, individuals tend to underweight the effect of the inflation and exchange rates, overweighting the importance of the foreign currency's nominal face value when pricing a product. Regarding more to the absolute increase in prices and wages is done to simplify the process of price calculations. The results of this paper are consistent with these assumptions and raise an additional intriguing aspect of the different influence money illusion has when dissimilar products of different prices are being evaluated (high and low value).

In a paper discussing the influence of anchoring on consumers' willingness-to-pay and willingness-to-accept by Simonson and Drolet (2004), the authors present a bias driven by irrelevant subjective consumer perceptions. These tend to appear when one is confronted with buying and selling decisions, which were found to have a similar effect on consumers' decisions. Furthermore, respondents were found to be highly susceptible to anchoring and adjustment effects where uncertainty was involved to a certain degree. As the respondent has an approximation of a product's price in mind, WTP will be manipulated towards the market price or the one of which the consumer had in mind (Simonson & Drolet, 2004).

In another paper, by Ariely et al. (2003), respondents were asked to state the last two digits of their social security number and then mentioned whether they would buy each of the six products and provided their WTP without being exposed to the products' real prices. Anchoring in valuation of the products was found to be positively correlated with the two social security number digits respondents first stated (Ariely, Loewenstein, & Prelec, 2003). Lastly, Rahubir and Srivastava (2002) claim that individuals form an initial judgement which is anchored to a prominent attribute and then assume the same judgement for the remaining attributes (Raghubir & Srivastava, 2002). Empirical evidence for this effect were found in Germany, where five different experiments showed that people tended to attach different prices to the same goods when they did so in the Euro and the DM currencies, due to anchoring. These findings took place only when the prices were given in German stores and not in foreign ones (Jonas, Greitemeyer, Frey, & Schulz-Hardt, 2002).

These findings have a few important implications with respect to both the manner of constructing a survey and to the data analysis part. First, when constructing

the surveys, no prices should be given prior to the provision of one's WTP (willingness-to-pay) for the presented products. Second, when conducting the survey, respondents should be well informed about the individuality of the survey to neglect anchoring as a result of one respondent communicating with another, while taking the survey. Thirdly, every individual should be participating in only one of the questionnaires (Shekel or Euro) to neglect anchoring due to the provision of WTP of two different currencies one after the other. Fourthly, when comparing the data of both studies, one should regard the differences in purchasing power and preferences between the two samples. This should be done by not making too decisive conclusions based on the results as they are not fully corrected for these differences. As those aspects risk the credibility of the results of both samples (Israeli and International), the responses of the studies were first analyzed separately and were only then compared with each other.

The rounding effect is an additional issue that should be taken into account when providing one's WTP according to a certain exchange rate. Raghurir and Srivastava (2002) state that due to the substantial cognitive efforts required attaching a price for product in a foreign currency, respondents tend to create shortcuts leading to rounding to the closest round number. In their study, one of the questions asked respondents to rank the degree of which they used rounding in the process of pricing. A correlation was found to be significant between the self-report of respondents ranking the effort of calculation as 'high' and the actual bias that had been measured (Raghurir & Srivastava, 2002). As the Euro-Shekel exchange rate of 4,9 being prone to be biased due to the rounding effect, measures were taken to reduce possible biases in the research design process. A more elaborative explanation will be presented in the methodology section.

According to Simon (1979), rational human behavior, as applied in classical theories does not fit economic research. The human mind does not follow perfectly rational patterns and is prone to computational mistakes. Therefore, regarding human beings as agents who are bounded in their rational decision making, fit better with economic phenomena. These rely on the assumptions that human capabilities are far weaker than those of classical theory. Thus, expectations of agents' computational abilities and general knowledge are weakened, especially under uncertainty (Simon, 1979). More specifically, agents often tend to fail having sufficient information about all alternatives, are uncertain about relevant exogenous events and are unable and calculate consequences (Simon, 1979). Thus, bounded rationality of agents should be taken as a biasing factor, as their decisions tend to be considerably different than those suggested by stylized classical theories.

In an additional paper concerning judgement and choice perspectives, Kahneman (2003) describes the human mind as a set of two systems, system 1 and 2. System 1 is being used for the simpler, intuitional choice making, while system 2 is used for more complicated tasks, such as complex computations (Kahneman, 2003). Raghunbir and Srivastava (2002) tested the effect of time pressure on respondents' WTP and its influence on face value biases (study 5). Additionally, these differences were compared between US and non-US residents to show whether a better acquaintance with the US dollar requires less time to implement a complex calculation and come up with a more accurate approximation of the product's real price (price on the market). Time pressure was found to be significant when it was high (when short time was given for calculation) and non-significant when it was low. Moreover, being a non-US resident exacerbated the face value bias (Raghubir & Srivastava, 2002). These results are in line with Kahneman's theory, as they show that when system 1 is activated when one is asked to make a calculation and provide an accurate price under time pressure, pre-knowledge of the Home country's value can assist one to be less prone to calculation mistakes and face value biases.

## **Experiment**

To examine the face value effect of different currencies on consumers' willingness to pay, two similar studies were conducted in two Universities in Israel and one university in The Netherlands. In the studies, respondents were requested to first provide their WTP for six international products (appendix A). None of the experiments' respondents received any monetary incentive for participating in the experiment.

The list of these products consists of both high value products: an iPhone 5s, 16GB and a Samsung Galaxy, 8 inch, 16 GB tablet, and low value products: a pack of 6 Heineken beer bottles, a 500g package of Barilla's farfalle pasta, A can of 250g Illy's ground espresso coffee and a pack of 6 Coca-Cola, 1.5L bottles. The two different groups of goods aim to reveal possible variations of WTP when one attaches a price to a high value or a low value good. Additionally, the goods chosen are all international products, so that both respondents from Israel and The Netherlands are familiar with them. This is to make a comparison between the two studies possible.

At the core of the survey, respondents were asked to note their WTP without having any additional information about the real price of the products in the market or using any electronic calculation device. Furthermore, respondents revealed whether they bought the product in the past and if they possess any approximation of the real price



of the product at the country in which the survey took place. Those questions are to give a better understanding of the knowledge respondents have on each of the products. Lastly, participants were asked to provide general information regarding their age, gender, nationality, average monthly expense (four different levels), and whether they have been to the country or ever used the currency in question before. The last question was given, depending on the version of the survey. Only if a respondent provided answers to a survey that was formalized in terms of the Foreign currency, this question was asked. These data will be further analyzed to show the effect of individuals' characteristics on their WTP, using multiple regressions.

In both studies, the exchange rate of the Israeli Shekel-European Euro of 4.9 to 1 was given to respondents at the introduction part of the survey. This was only when individuals were asked to provide their WTP in the foreign currency, E.g. Israeli respondents providing their answers in Euros and Internationals providing their answers in Shekels. In traditional finance terms, it is accepted to present the exchange rate as the amount of 'Home' currency that could be exchanged for one unit of the 'Foreign' currency. Therefore, a European will set the Euro-Shekel exchange rate as  $\frac{1}{5} = \text{€}0.2$  per Shekel and an Israeli will set the exchange rate as  $\frac{0.2}{1} = \text{₪}5$  (Berk & Demarzo, 2011). This is the most basic way of exchange rate representation and is regarded as the 'bilateral exchange rate' method (Copeland, 2008). Contrary to the accepted way of representation discussed above, a different approach was taken in this article. In both Israeli and International studies, an exchange rate of 4,9 was shown to both Israeli and International respondents. This is for two reasons: First, Israelis are much more familiar with the Euro currency than do Internationals with the Shekel (this assumption is in accordance with the findings of the research). Hence, it is important to neglect any unfamiliar exchange rate that would bias the results of the Israeli study. Second, and in addition to the first argument, in the aim of keeping both studies identical in structure, one way of representation was chosen for both studies.

Additionally, the Euro-Shekel average exchange rate over the last five years (2010-2014) is 4,9 Shekels per one Euro (OZFOREX - Foreign Exchange Services, 2014) answers of respondents are prone to rounding up to the closest number (5). Therefore, in addition to reduce the effect of rounding biases on the studies' results, the exchange rate used for analysis purposes was 5. The choice of using the exchange rate of 5 instead of 4,9 stems from the assumption that as individuals aspire to make the calculation process more salient, they tend to raise or decrease the exchange rate to the closest round number (Raghubir & Srivastava, 2002).

One central bias that was taken into account and treated during the implementation of both the Israeli and International studies is the self-selection

problem. Self-selection takes place when respondents are allowed to decide for themselves whether or not they want to participate in a survey. Therefore, it is more probable that the respondents who eventually answer the survey have a more extensive knowledge regarding the topic being examined. This bias can hinder the external validity of a study and was treated within the design of both studies (Lavrakas, 2008).

A couple of measures were taken to reduce the influence of the self-selection bias. First, students from various areas and studying disciplines within the three universities were surveyed during different times along the day, to create a more diverse sample of respondents. Second, the pictures and identity of the products were presented to respondents only after their approval of answering the survey. Therefore, even having an extensive knowledge of the goods' prices will not assist a respondent to give a more accurate answer due to self-selection, since she is not exposed to the products' identity before agreeing to participate. Lastly, as both of the studies were randomized, participants were approached without any preceding planning. These terms were taken to create a more reliable and valid approach.

Study 1 consisted of 147 Israeli students from the universities of Ben-Gurion, (Be'er Sheva) and Tel-Aviv. These students were randomly given one out of six different surveys consisting of the same questions, which were organized in a different order for each survey type. A different order of questions for each version aimed to decrease anchoring biases due to the large differences in the products' prices (examples for survey types are presented in appendix B). The six versions were then divided again into three forms that required respondents to provide WTP in the Israeli currency (Home currency), the Shekel, and the other three in the Euro currency (Foreign currency).

The second study consisted of 102 international students of the Erasmus University of Rotterdam. Once again, the students were randomly assigned to one out of the six different questionnaires to cancel out potential self-selection bias to a certain type of survey provided in terms of a specific currency. Additionally, the products were randomized within the questionnaires in the same way that was done in the former study (appendix C). Respondents gave their answers in the same currencies as in study 1, whereas the only difference was that this time, the Euro was regarded as the Home currency and the Shekel as the Foreign one.

In the analysis of the experiment, responses of Israelis, who gave their answers in the Israeli currency (Shekel), are denoted as IS-S, Israelis who answered in terms of the Euro currency are denoted as IS-E, Internationals who provided their answers

in the Israeli currency are denoted as IN-S and Internationals who revealed their WTP in the Euro currency are denoted as IN-E. Therefore, the first hypothesis of this paper states that as the Israeli currency is a multiple of the Euro, Israelis will tend to attach lower prices to products in the Home currency, the Shekel, i.e. underspend. This expected result is denoted by  $IS-S < IS-E$ . The second hypothesis states that International students will tend to attach higher values to products in their Home currency, the Euro i.e. overspend. This expected result is denoted by  $IN-E > IN-S$ .

Finally, as the coefficient results provided by the Wilcoxon Mann-Whitney nonparametric test which is used in both studies are always negative, additional evidence is needed to show the direction of the difference between the WTP of individuals, provided in the two currencies. Thus, appendices E and K present the medians of all six products of studies 1 and 2, respectively. The Wilcoxon Mann-Whitney test relies on the median ranks of the samples and therefore the tables are used to show whether the direction of significance is towards the right (larger than) side or the left (smaller than) side.

## **Study 1: The relative face value effect of a currency – Israel**

A sample of 147 respondents took part in the first study. The study was conducted in Israel and included students from the universities of Ben-Gurion (113 respondents) and Tel-Aviv (34 respondents). Four individuals of the total sample claimed to have a different nationality than Israeli (however, living and studying in Israel for more than a year). Three responses were eliminated, due to incomplete information. Of the whole sample, 72 of the respondents were males and 75 females.

In this study, the Israeli currency, which is a multiple of the Euro (5 shekels = 1 Euro), is regarded as the Home currency and the Euro is considered to be the Foreign currency. The main aim of this study is to show the effect on one's tendency to underspend in cases where the used currency is a multiple of another and overspend when the currency being used is a fraction of the other. This is a reasonable assumption to make, as people tend to regard currencies with smaller absolute values as 'play money' that could be easily spent (Raghubir & Srivastava, 2002).

As the universities of Ben-Gurion and Tel-Aviv both provide classes for a large range of disciplines, it is highly important to capture the responses of the different groups within the sample, due to possible variations in their preferences. To increase the external validity of the study, the survey was taken in different areas within the universities and in different times of the day. This way, students from

various faculties and with different preferences (e.g. spending their free time sitting on the grass or in the library) were included in the sample.

## **Results**

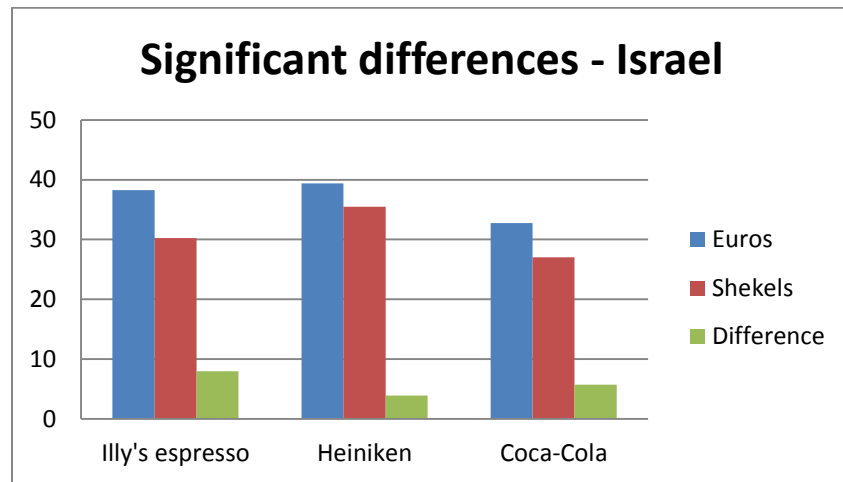
As a first step, the data was converted to the same scale, meaning that answers given in the Euro currency were multiplied by five. The input data columns of each product were then checked for their distribution. None of the WTP data for any of the products was found to have a normal distribution and therefore, the Wilcoxon Mann-Whitney, non-parametric test was used to analyze the data. Before executing the test itself, average price differences between the prices provided in the two currencies of all six products were calculated, to check whether the initial results are in accordance with the paper's hypotheses.

### **Price Differences – Willingness-to-pay**

After multiplying the results received in Euros by 5, the averages of both IS-S and IS-E were compared. It was found that for five out of six products, average prices given in the Shekel currency were lower than the average prices in Euros.

Figure 1 presents the differences in WTP among Israeli respondents that are significant. The average difference for Illy's Espresso coffee was found to be 8 shekels higher when given in Euros, where the average price given for IS-S was 30,24 and for IS-E 38,24. In the case of the six pack Heineken bottles, the IS-S average price was 35,45 Shekels and for IS-E 39,38, which is a difference of 3,92 Shekels on average. The IS-S average price given to the pack of six Coca-Cola bottles was 27 Shekels compared with an average price of 32,74, given by IS-E respondents. The difference between the two was found to be 5,74 Shekels higher for the IS-E sample. Lastly, though not a significant difference, the WTP average for the iPhone 5 was found to be 79,75 Shekels higher for the IS-E sample (results are presented in appendix D). As the Wilcoxon Mann-Whitney test considers the median rather than mean rankings of both samples, appendix E presents the medians of samples IS-S and IS-E. Nevertheless, price differences were shown above in the form of means, to provide a clearer view of the differences between the average prices of both samples.

Figure 1 – significant differences in WTP – Israel (exchange rate = 5)



### Statistical analysis – Wilcoxon Mann-Whitney test

The P-values presented in table 1 are one-sided, as the experiment investigates the whether underspending takes place when one uses the Home currency and not simply the differences of respondents' WTP between the two currencies.

The WTP for a Coca-Cola six pack is significantly lower for IS-S among the two groups. Furthermore, Illy ground espresso coffee is significantly lower for IS-S as well. Lastly, the six-pack of Heineken bottles was found to be significantly lower for IS-S compared to IS-E (Results are presented in appendix F). The results presented above show that respondents (and potentially consumers) tend to underspend when the currency being used (Home currency) is a multiple of the Foreign currency.

Table 1 – Coefficients, P-values and level of significance study's 1 significant variables

Name of the product	Z-value coefficient	P-value	Level of significance
Coca-Cola	-2,190	0,014	5%
Illy's Coffee	-1,746	0,04	5%
Heineken	-1,456	0,073	10%

## Discussion – study 1

A couple of interesting implications can be drawn from these results. First, it is clear that WTP for some of the products was found to be significantly lower for the Home currency compared with the Foreign one, while not for others. A good starting point to have a better understanding of the reasons for these results would be to observe whether the answers given for parts b and c of each question (asking whether the respondent ever bought or is familiar with an approximation of the price of each product) are positive or negative. By doing so, it is possible to show the effect of the aggregate familiarity of respondents with a certain product on the significance of the difference of WTP between the two currencies. To attain these results, the sum of all negative answers was deducted from all positive ones and the aggregate difference between the two was derived. Finally, the Spearman nonparametric correlation test was implemented.

Table 2 presents the aggregate sums of the three products that were found to be significant. In the case of both Coca-Cola and Heineken, the aggregate sums of questions b and c were found to be positive. These positive aggregate answers are in line with the statistical results, as the customers made their decisions based on a pre-knowledge of the market price. In contrary, even though respondents attributed a significantly higher WTP for Illy's coffee in Euros than in Shekels, the sum of both aggregate answers for questions b and c was found to be negative. A probable explanation for this discrepancy to take place (since on one hand it is significant but on the other hand most respondents did not purchase or are not familiar with the product) is that students do tend to consume coffee, but it might be the case that this specific brand and kind of coffee is consumed less by this segment of customers. As a result, students may have a certain, similar anchor of the price of a coffee package that they eventually provide as their WTP.

Table 2 – aggregate sums for the answers of questions b and c – study 1

Name of the product	Question b	Question c
Coca-Cola	29	71
Heineken	3	61
Illy's coffee	-111	-83

Among the three non-significant products, the two with the highest monetary differences compared to the others (iPhone and Samsung tablet) were not significant. Additionally, for both products, the aggregate sum of question b was negative (-88 for the iPhone 5 and -115 for the tablet). A possible reason for those differences not being

significant is the fierce competition within these markets. A user of a different smartphone or tablet might not be aware of the prices of other companies' products.

As a final step, the Spearman nonparametric correlation test was implemented between the answers for questions b and c and the WTP provided by the Israeli respondents. None of the results was found to be significant (results are presented in appendix G).

The findings of study 1 are in line with the literature presented above, as the same patterns of under spending, using the Home currency, were found to be significant in three of the six products. Additionally, the higher WTP for five of the six products in the Foreign currency (which is a fraction of the Home currency), in nominal terms, points out that there is a general pattern of the above-mentioned effects on one's pricing and possibly consumption decisions. Even though the answers for question b and c are quite ambiguous for some of the products, there are solid statistical evidence to show that there is more in it rather than just a mere coincidence. Moreover, the statistical results are in line with hypothesis 1 and therefore, it can be rejected.

## **Study 2: The relative face value effect of a currency –The Netherlands**

102 students from the Erasmus University of Rotterdam were questioned about their WTP for the same six products discussed in study 1. The sample consisted of respondents from 27 countries and 3 different continents; this is to make the results as diverse as possible and to give them a stronger basis of external validity. 55 of the individuals taking the survey were females and 47 were males.

In this study, the Euro currency is regarded as the Home currency, as the respondents participating this study are using it in their daily lives. The Shekel is regarded as the Foreign currency. According to the same reasoning mentioned in study 1, it is expected that individuals will tend to overspend when using the Home currency and underspend when using the Foreign one, Meaning that  $IN-E > IN-S$ .

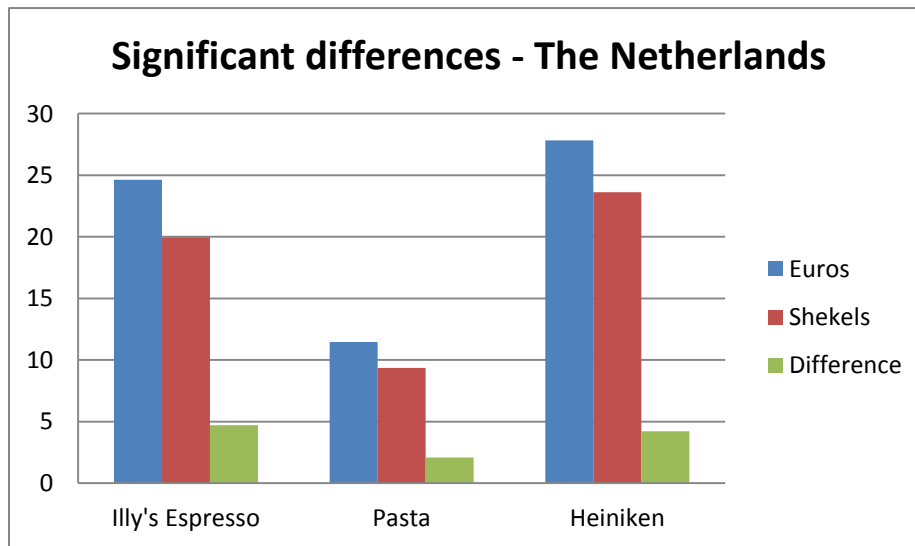
## Results

### Price Differences – Willingness-to-pay

As responses were acquired in terms of both Euros and shekels (each respondent provided WTP values in only one currency per survey), a comparison between the two averages of WTP could be achieved. To begin with, five out of the six products were given a higher average value in the Home currency than in the Foreign one (results are presented in appendix H).

Figure 2 and 3 present the four differences in WTP (in terms of Shekels) that are significant among international students at the Erasmus University of Rotterdam. The average differences (in terms of 0,2 Euros per Shekel) for a 500g package of Barilla's pasta was found to be 0,42 Euros higher, when answers were provided in the Euro currency. The average price given for IN-E surveys was 2,29, whereas for IN-S it was 1,87 Euros. Furthermore, the difference between IN-E and IN-S for a six pack of Heineken bottles was found to be 0,84 Euros. The average price given for IN-E surveys was 5,56, while for IN-S the average WTP was 4,72 Euros. Additionally, the average WTP for Illy coffee on IN-E was 4,93 compared to 3,99 Euros for the IN-S sample. Finally, the average difference in WTP for Samsung's tablet was found to be 73,2 Euros higher for IN-E surveys than for IN-S ones. That was the highest difference among all products within the results of study 2 and these of study 1.

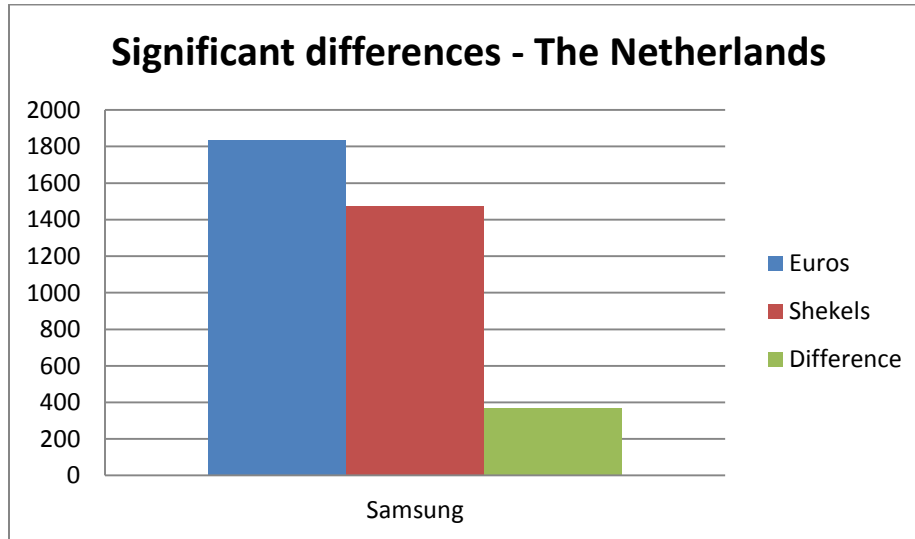
Figure 2– significant differences in WTP in Shekels – International students (exchange rate = 5)





Though not significant, the difference for a six pack of Coca-Cola bottles was 0,57 Euros higher for IN-E surveys. The average WTP given for IN-E was 6,106 while that of IN-S was 5,536.

Figure 3 – significant differences in WTP in Shekels – International students (exchange rate = 5)



### Statistical analysis – Wilcoxon Mann-Whitney test

Four of the six products were found to have significantly higher WTP when prices were provided in the Euro than in the Shekel currency. Additionally, the P-values presented below are one-sided, as the experiment investigates the values for overspending when using the Home currency and not simply the differences of respondents' WTP between the two currencies.

Table 3 presents the significant results of study 2. The average WTP for Barilla's pasta was significantly higher for the IN-E sample. Moreover, the WTP for a Samsung's tablet was found to be significantly higher for IN-E compared to that of IN-S. Furthermore, a six pack of Heineken beer was found to be significantly higher when prices were given at the IN-E survey. Finally, Illy's coffee was found to be significantly higher for IN-E (statistical results are presented in appendix I). The results presented above show that respondents (and potentially consumers) tend to overspend when the currency being used (Home currency) is a fraction of the Foreign currency.

Table 3 - Coefficients, P-values and level of significance study's 2 significant variables

Name of the product	Z-value coefficient	P-value	Level of significance
Barilla's pasta	-2,845	0,002	1%
Samsung's tablet	-2,468	0,007	1%
Heineken	-2,215	0,013	5%
Illy's coffee	-1,532	0,063	10%

## Discussion – study 2

Similar to study 1, it can be observed that WTP for some of the products was found to be significantly higher for the Home currency over the Foreign one, while not for others. By using the same method as in the discussion of study 1, the sum of all negative answers was deducted from all positive ones and the aggregate difference between the two was derived. This way, a better understanding can be derived regarding the reasons for a product's price to be significantly higher or lower in one currency or the other. Additionally, the Spearman, nonparametric correlation test was applied to have a better view and understanding of the results.

Table 4 presents the aggregate sums of the four products that were found to be significant. For Heineken's product, both the aggregate sum of questions b and c were found to be positive. On the other hand, both the aggregate sums of Barilla's pasta and Samsung's tablet were found to be negative. Lastly, the outcomes for Illy espresso coffee were both negative for questions b and c.

Table 4 – aggregate sums for the answers of questions b and c – study 2

Name of the product	Question b	Question c
Heineken	18	34
Barillia's pasta	-50	-5
Samsung's tablet	-88	-31
Illy's coffee	-70	-45

Among the two non-significant products, the sums for the six pack of Coca-Cola bottles were both positive (27 and 53). In contrary to the negative values of the products mentioned above, it might be the case that due to the familiarity of students with this product, a more accurate calculation has decreased the discrepancy between WTP provided in IN-E and IN-S (Raghubir & Srivastava, 2002). Furthermore the results for iPhone 5 were ambiguous, with a positive value for question b (53) and a

negative one for question c (-62). It could be assumed that even though part of the sample did not purchase the product, many are still familiar with the product and its price on the market due to its popularity.

The Spearman correlation test was implemented to indicate whether the WTP provided by respondents is correlated with the answers to questions b and c. The results that were found significant are presented in table 5. First, the WTP for Illy’s coffee is positively correlated with both the answers for b and c, meaning that as a person is more familiar with the product, she will be willing to pay more for it. Moreover, the WTP for Samsung’s tablet was found to be negatively correlated with the answers to question c, i.e. as a person is more familiar with the product, he will be willing to pay less for it (statistical results are presented in appendix J).

Table 5 – Spearman nonparametric significant correlations – study 2

Name of the product	Question	Correlation coefficient	P-value	Level of significance
Illy’s coffee	b	0,176	0,076	10%
Illy’s coffee	c	0,184	0,066	10%
Samsung’s tablet	c	-0,181	0,071	10%

The findings of study 2 are in line with the literature presented above, as the same patterns of overspending were found to be significant in four of the six products (both high and low value products). Additionally, the higher WTP for five of the six products in the Home currency (which is a fraction of the Foreign currency), in nominal terms, points out that there is a general pattern of the above-mentioned effects on one’s pricing and possibly consumption decisions. Moreover, the statistical results are in line with hypothesis 2 and therefore, it can be rejected.

## Comparison of the two studies

Studies 1 and 2 presented the effect of using a certain currency on respondents’ WTP, due to this coin being a multiple or a fraction of the other. In this section, a few interesting remarks will be drawn from a comparison of the two studies.

As all distributions of the six products for both studies 1 and 2 are not normally distributed, the Wilcoxon Mann-Whitney test is used. The differences between the four types of surveys (IS-S, IS-E, IN-E, IN-S) are compared in a way that each

survey, concerning a certain currency of a study, is being tested against the results of the same currency of the other study. Therefore, the tests constructed compare the differences between WTP provided by Israelis in the Shekel currency against the WTP given by internationals in the Shekel currency (IS-S and IN-S) and between internationals' WTP in Euros against that of Israelis' WTP provided in the Euro currency (IN-E and IS-E).

These results will be tested in two different ways. First, a two tailed test will show the differences between the two studies. Secondly, a one tailed P-value of the significant products will be used to discover further information regarding the comparison of WTP according to the country in which the study took place and the currency that was in use, while taking into account the effect of the coin being a Home or a Foreign currency.

In the comparison between IN-E and IS-E, three of the products were found to be significantly different (two tailed P-values). These products are: Illy's coffee (P-value = 0,000), Barilla's pasta (P-value = 0,054) and Heineken's beer (P-value = 0,000) (results are presented in appendix L).

Table 6 – differences in means – IN-E and IS-E

Name of the product	IN-E mean	IS-E mean
Illy's coffee	24,638	38,239
Barilla's pasta	11,452	15,799
Heineken	27,817	39,375
Coca-Cola	30,525	32,743
Samsung's tablet	1.837,963	1.845,694
iPhone 5	2.280,370	2.427,083

The results of both means and medians of the two samples are presented in appendices E and K. The salient differences are intriguing, as for each of the products (apart from an equal median for the iPhone 5 between the two samples), both the WTP medians and means of the IS-E sample are substantially higher than these of the IN-E sample.

When the differences (two tailed P-values) between samples IN-S and IS-S were compared, four out of the six differences were found to be significant. The products of which WTP significantly differed were: Illy coffee (P-value = 0,000), Barilla's pasta (P-value = 0,000) Heineken's beer six-pack (P-value = 0,000) and Samsung's tablet (P-value = 0,006) (the differences are shown in appendix M).

Table 7: differences in means – IN-S and IS-S

Name of the product	IN-S mean	IS-S mean
Illy's coffee	19,940	30,240
Barilla's pasta	9,362	13,093
Heineken	23,604	35,453
Coca-Cola	27,681	27,000
Samsung's tablet	1.471,979	1.904,000
iPhone 5	2.340,500	2.347,333

Interestingly, these prices, presented in table 7 and provided by both groups, show that respondents of IS-S provided substantially higher prices for all products (apart from a lower mean and median for Coca-Cola) compared with their International counterparts (IN-S). The meaning of these findings apply that Israelis' WTP is systematically higher than this of International respondents. The results are true for both the differences of the means and medians of products' prices between the two groups. The differences in WTP between the two countries are presented in appendices E and K.

In the general sense, it can be assumed that more differences were found significant between the IS-S and IN-S surveys, as internationals are less familiar with the Foreign currency (the Shekel) compared to the unfamiliarity of Israeli respondent with the Foreign currency (the Euro). According to question 7, where respondents stated whether they visited or used the foreign currency of the other country, 64 out of 72 Israeli individuals provided a positive response, while only 3 out of 48 international students provided a positive answer. This finding explains the larger differences of the WTP given in the Shekel currency over these of the Euro and is in line with the literature's argument that as one is more familiar with a certain currency and its exchange rate with another currency, the gaps between the average WTP and market prices provided are expected to decline (Raghubir & Srivastava, 2002).

Another optional reason for these discrepancies could be differences in market prices between the two countries. This is a reasonable assumption, as the prices provided and presented in appendices E and K substantially differ between the two samples. Appendix N presents the differences in market prices between the two countries for all six products. Indeed, all products, apart from Coca-Cola and Barilla's pasta (which is equal in price), are more expensive in the Israeli market. It is to be mentioned however that price ranges may largely differ in different sales points around the two countries, therefore, conclusions should be made cautiously.

A comparison of the one tailed P-values regards to whether a sample's WTP is significantly higher or lower than the other. The one tailed comparison between IN-E and IS-E reveals four significant differences (appendix L). These are: Coca-Cola (P-value = 0,074), Heineken (P-value = 0,000), Barilla's pasta (P-value = 0,027) and Illy's coffee (P-value = 0,000). These differences are again in line with the differences in median and mean prices presented in appendices E and I.

A comparison between IS-S and IN-S reveals the one-tailed differences in which a comparison of WTP is conducted (appendix M). Prices were found to be significantly higher for the IS-S sample for the following products: Illy's coffee (P-value = 0,021), Coca Cola (P-value = 0,003) and Heineken (P-value = 0,036) were all significantly higher in study 1 (at the 5% level). These findings suggest that the four products were given significantly higher prices by Israeli respondents, in the Shekel currency, compared to their international counterparts.

As a last remark it is crucial to note that a literal comparison between the WTP of respondents from the two groups may lack credibility due to a couple of reasons such as purchasing power and preference differences between countries. As a result, these outcomes should be taken with a grain of salt.

## **Multiple regressions – the relationship between personal details of individuals and their WTP**

Respondents of both studies 1 and 2 were asked to share a couple of personal details during and after providing their WTP for each of the products. These questions asked for information about one's gender, age, average monthly expense, which is represented by four different expense levels, and the nationality of the individual. Furthermore, in case the respondent was providing his WTP in the foreign currency, an additional question asked whether the person ever visited or used the currency before. Moreover, after pricing each of the products, respondents were asked to state whether they have purchased the product before or have an approximation of the market price of the product in mind.

24 different multiple regressions (one for each product, in every currency and for each study) were used to show the relationship between these independent variables and the dependent variable, WTP. Each of the regressions was in the form of: Price (WTP) = C + Age + Male + Bought + Approximation + Used + expense\_2 + expense\_3 + expense\_4 (whether one used the currency before). The variable 'Male'

represents one's gender with the dummy of 0 being a female and 1 being male. Moreover, the variables 'Bought' and 'Approximation' are represented by a dummy of value 0 if the person has not bought nor possess an approximation of the product's price and 1 if he does. Lastly, the variable 'Expense' is represented by the value of 0 or 1 on an individual basis, for each respondent, depending on one's monthly expenditure. E.g. if a person marked her expense level as A (the lowest expense level), option A will be given the dummy 1 and all other three levels will have received the value 0. Expense level 4 is included only in a few of the regressions due to its infrequent representation in the surveys. The most interesting findings of the products that were found to be significant will be elaborated in this section.

## **Study 1 – Israel**

The results presented in table 8 show all significant variables within study 1. These results will be further investigated in this section. In the IS-S survey (where Israeli respondents provided prices in Shekels) a few variables were found to be significant for some of the products.

To begin with, in Illy's espresso coffee regression, the variable 'Age' was found to be significant, after correcting for heteroskedasticity, by omitting the variable 'Expense\_2'. This finding applies that as one's age is one year higher, her willingness-to-pay for this product will tend to be 0,333 Euros higher, on average (appendix O). Correction for heteroskedasticity can be found in appendix P

Variables of three additional products were found to be significant at first, but after corrections for heteroskedasticity, these variables were not significant anymore. These products are: Heineken, Barilla's pasta and Coca-Cola.

In the IS-E survey (where Israeli respondents provided prices in Euros), the two products including significant variables were the iPhone 5 and Samsung's tablet. Interestingly, 'Expense\_2' and 'Expense\_3' were found to be significant for the iPhone 5 and Samsung's tablet respectively. The literal interpretation applies that respondents who are under the category 'Expense\_2' for the iPhone 5 and 'Expense\_3' for Samsung's tablet provided prices that are 111,238 and 261,868 Euros lower, on average, respectively, than these provided by the respondents who are under category 'Expense\_1'. These results are in contradiction with the expected outcomes, as students who reported higher monthly expenses provided substantially lower WTP for these two high value products.

Additionally, the variable ‘Male’ is significant for Samsung’s tablet. It can be then claimed that males are willing to pay, on average, 114,030 Euros more on Samsung’s tablet than females do. This is the only product in which a difference was found to be significant between males and females (results are shown in appendix Q).

Table 8: Coefficients, P-values of the significant variables of study 1 (in Euros)

Survey type	Name of the product	Variable	Coefficient	P-value
IS-S	Illy’s coffee	Age	0,333	0,0573
IS-E	iPhone 5	Expense_2	-111,238	0,0831
IS-E	Samsung’s tab	Expense_3	-261,868	0,0715
IS-E	Samsung’s tab	Male (gender)	114,030	0,0538

## Study 2 – Internationals in the Netherlands

The results presented in table 9 show all significant variables within study 2. These results will be further investigated in this section. In the survey IN-E (where international respondents provided prices in Euros), a couple of significant results were revealed. First, iPhone 5’s ‘Approximation’ variable was found to be significant (appendix R). It can be concluded that as one has an approximation of the product’s price in mind, he would then be willing to pay 100,764 Euros more, on average, than those who claimed for not having an approximation of the product’s market price.

Furthermore, the variable ‘Expense\_3’ was found significant (at the 5% level) for Samsung’s tablet (appendix R). This finding applies that as one is under the category of ‘Expense\_3’ she would be willing to pay, on average, 240,149 Euros more than those who are under the category ‘Expense\_1’.

In the surveys of IN-S (where international respondents provided prices in Shekels), For Heineken’s beer, both ‘Expense\_2’ and ‘Approximation’ were found significant after correcting for heteroskedasticity (appendix S). The correction was done by omitting the variables ‘Expense\_3’ and ‘Age’ (process of Heteroskedasticity corrections and significant findings can be found in appendix T). The significance of ‘Expense\_2’ applies that as one is under the category ‘Expense\_2’ he would be willing to pay 1,269 Euros less for Heineken’s product than one who is under the ‘Expense\_1’ category. Furthermore, a significant P-value was found for the variable ‘Approximation’. An interpretation of this finding points out that as one holds an approximation of the product’s market price, his WTP decreases by 2,659 Euros (appendix S). Two additional products (Coca-Cola and iPhone 5) were first presented



a few significant variables, but these became insignificant after correcting for heteroskedasticity.

Table 9: Coefficients and P-values of the significant variables of study 2, including Expense\_4 (in Euros)

Survey type	Name of the product	Variable	Coefficient	P-value
IN-E	iPhone 5	Approximation	100,764	0,0931
IN-E	Samsung's tab	Expense_3	240,149	0,0466
IN-S	Heineken	Expense_2	-1,269	0,0809
IN-S	Heineken	Approximation	-2,659	0.0509

As there was only one respondent participating in survey IN-E who stated an expense level 4, some of the results in table 9 might be biased, where 'Expense\_4' is part of the equation. Therefore, table 10 presents the results for IN-E's significant variables when 'Expense\_4' is not part of the regression (appendix U). Both iPhone's 'Approximation' and Samsung's 'Expense\_3' are still significant at the same level. However, the variable 'Age' was found to be significant. This is to say that as one's age is one year higher, his willingness-to-pay for Samsung's tablet will tend to be 18,047 Euros lower, on average.

Table 10: Coefficients and P-values of the IN-E significant variables of study 2, excluding Expense\_4 (in Euros)

Survey type	Name of the product	Variable	Coefficient	P-value
IN-E	iPhone 5	Approximation	99,150	0,0867
IN-E	Samsung's tab	Expense_3	241,553	0,0417
IN-E	Samsung's tab	Age	-18,047	0,0958

## General Discussion

The main focus of this paper was to reveal the effects of various biases on systematic differences in consumers' spending behavior. The biases of anchoring and adjustment, bounded rationality, money illusion effect, the rounding effect, the tendency to simplify complex calculations and the overreliance on the nominal (face value), rather than real value of a currency eventually affect people's WTP.

Due to these effects, individuals tend to attach inadequate prices to the same goods in different currencies. More precisely, people tend to underspend when the currency in use (Foreign currency) is a multiple of their Home currency, e.g. when an International student who lives in a European country uses the Israeli Shekel. In the same manner, one would be inclined to overspend when the Foreign currency in use is a fraction of her Home currency, e.g. an Israeli student who uses the Euro currency. According to Raghubir and Srivastava (2002), this tendency increases as the difference of the exchange rate between the two currencies expands (Raghubir & Srivastava, 2002)

Several conclusions can be derived from the findings of this paper. To begin with, any of the significant results of studies 1 and 2 are in line with the literature and with both hypotheses 1 and 2. In study 1, under spending took place when the Home currency was used, compared to the values given in the Foreign currency. On the other hand, study 2 presented the opposite, showing that respondents overspent, using the Home currency compared to the Foreign one. Thus, according to the statistical analysis and the support of the median WTP data presented in appendices E and I, the two hypotheses can be rejected.

Study 1 revealed that the face value effect causes Israeli respondents to reduce the influence of the exchange rate with the foreign currency on their pricing decisions, due to anchoring and adjustments to the nominal values of the currencies involved.

One example for anchoring and adjustments to take place is Illy's espresso coffee achieved low familiarity among students in questions b and c; however, it was one of the significant results of study 1. It can be assumed that as students tend to consume products which are relatively lower in price than other groups in the population, it is less common that students purchase a branded product such as Illy's coffee. However, as students usually use coffee quite often, it may be the case that as individuals within the sample hold similar preferences, their focal point of the same kind of a different product (the anchor) brought this product to be significant.

Study 2 showed that International respondents are anchored by the face value of their Home currency as a fraction of the Foreign currency. This resulted in four significant differences between the prices attached to the same goods in different currencies. The adjustments from the products' valuations according to nominal considerations to the exchange rate between the two currencies are again, similar to study 1, inadequate and cause discrepancies in WTP.

In study 2, more products were found significant compared to study 1. A possible explanation for this difference is the extent to which Israelis are familiar with the Euro currency, compared to the degree to which International students are familiar with the Shekel. It is then assumed that better acquaintance with a currency and its exchange rates with other currencies will tend to have an effect on the accuracy of the calculations being done by consumers.

In the comparison between the two studies, differences and similarities in preferences between the two groups may have been the reason for the highly significant results. These differences can be further explained by the regressions constructed.

A few significant findings of the regressions performed raise some question marks regarding people's consumption behavior. First, Israeli females are willing to pay significantly more than males for Samsung's tablet, while the opposite takes place in The Netherlands, where males are willing to pay significantly more for the same product. This could be an example for differences in tastes and preferences between the two groups that encourage a separation between the two when comparing their results (studies 1 and 2). Second, while Internationals tend to set higher WTP to the high value products (in this case, Samsung's tablet) as their expense level rises, Israelis tend to decrease their WTP for iPhone 5 and Samsung's tablet. Again, it is assumed that differences in tastes, preferences and possibly purchasing power cause these outcomes.

Not much of this paper was dedicated to the macroeconomic effects of the face value phenomenon. Nevertheless, two findings raise the option of a global influence. First, a sample consisting of 12 European countries of which the former currency in use was a multiple of the Euro, before the introduction of the latter currency. In the study, the 'Europolity effect' is presented. It investigated consumption volumes of 12 countries before and after the introduction of the Euro currency and found that 11 out of 12 countries started consuming more after the introduction of the Euro (Raghubir, Morwitz, & Santana, 2012). Therefore, the paper suggests that the face value influence on individuals had an effect on the aggregate differences in WTP figures.

Additionally, five experiments conducted in Germany found that consumption patterns within Germany have changed after the introduction of the Euro, causing people spend more compared to the DM that was used before (Jonas, Greitemeyer, Frey, & Schulz-Hardt, 2002). There are then reasons to believe that the findings presented in this paper concern much more than only the effect of face value on individuals from The Netherlands and Israel.

## **Limitations and Recommendations**

During the writing process of this paper, a couple of limitations arose and will be presented below. First and most general is the degree of external validity of this paper. As the group being researched consists of only students, the extent to which the results can be attributed to the real world phenomena is limited. Though, as seen in the literature, the ‘Europoly effect’ suggests that consumption is actually affected also in the macroeconomic level due to the face value effect (Raghubir, Morwitz, & Santana, 2012). Additional reasoning for external validity can be imported from Reiss (2013), who claims that if one learns that C causes E in situation X (an experiment, for example), and there is a reason to believe that C has a stable tendency to produce E, then it can be inferred that C will also cause E in situation Y (a policy, for instance) (Reiss, 2013). Therefore, if tendencies of students represent the tendencies of others in the population and these tendencies are stable among other products, the importance of this limitation may be reduced.

Secondly, a comparison between the two studies was made without correcting for differences in purchasing power and preferences of Israeli and International students as these corrections are beyond the scope of this paper. Further research can be made by finding out whether outcomes still significantly differ after controlling for these exogenous differences between the two samples.

Thirdly, the choices of the six products presented to respondents were made according to the paper’s author view of ‘commonly used international products’. This definition is open to a wide interpretation that may substantially vary between individuals and samples.

Additionally, it was mentioned above that for some products, many of the answers for questions b and c, regarding one’s experience with a certain product, were negative (e.g. Illy’s espresso coffee). Still, as one of the ‘randomized block design research’ assumptions suggests, the variability within each of the blocks is less than the variability between the two groups. In this paper the blocks can be regarded as the group of Israeli students or International students who study and live in the same area. Individuals within these blocks will tend to be more homogeneous, on average. It is

then assumed that the outcomes within the two groups present a higher degree of internal validity (or external validity in case each of the studies is examined separately) (Stat Trek, 2014).

Lastly, the surveys of studies 1 and 2 were constructed and presented to respondents in a very simplistic way that did not strive to create any realistic situation from one's daily life (such as these presented in Raghurir and Srivastave (2002)). This could decrease the external validity of the research, as individuals stating their WTP are just giving a number (price) without connecting it to a real-life situation. A similar issue is the one of monetary incentives in behavioural economics experiments that could be given to provide the researcher with a more controllable and reliable environment. Nevertheless, even in the existence of monetary incentives, motives can be influenced powerfully by reasons other than profit-maximization (Loewenstein, 1999).

Therefore it is first recommended to conduct future research in a way that represents in a better way more segments of the population and not exclusively students. Furthermore, a more realistic situation created by the researcher may bring to a higher degree of external validity. Moreover, in a more macroeconomic perspective, further research can focus on finding the actual effect of purchasing power and preference differences between different countries and by doing so, revealing the universal influence of the face-value effect on a global-aggregate scale. This could be found by capturing a constant that represents all exogenous properties that affect one's pricing decisions and then, by observing the effect of only internal considerations one could detect the degree to which WTP differ in different currencies and compare this effect across countries.

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**Appendix A – The six international products**

**A six pack of 330ml Heineken bottles**



**Box of 500g Barilla Farfalle pasta**





**250g ground Illy espresso coffee**



**iPhone 5s, 16GB**



A six pack of 1.5L Coca-Cola bottles



Samsung tab, 8 inch, 16GB, no Sim slot



## Appendix B – example for questionnaire IS-E of study 1

### Thesis survey



Dear respondent,

Thank you for participating in this survey. Your responses are appreciated and will be used in an academic (non-business) research.

In this survey, 6 pictures of international brand products will be shown to you. You will be asked to look closely at the product and make your closest estimation of its price in the Euro currency (The value of 1 Euro is 4.9 Israeli Shekels). Additionally, you will be asked to state the degree of how familiar you are with each of the products.

\*Please do not use any electronic devices (e.g. computers, cell phones, etc.)

1. A six pack of 330ml Heineken beer bottles
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
2. A 500g Barilla Farfalle pasta bag
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
3. An iPhone 5s, 16GB
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

4. Illy 250g ground Espresso coffee canned package
  - a. How much would you pay for this product? €\_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
5. Samsung Galaxy tab 3.0, 8 inch, 16GB, no cellular sim slot, with Wi-Fi
  - a. How much would you pay for this product? €\_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
6. A pack of 6 1.5L Coca-Cola bottles
  - a. How much would you pay for this product? €\_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

General questions:

1. What is your gender? M/F
2. What is your age? \_\_\_\_\_
3. Are you a student in a higher education institute? Yes/No
4. Have you ever been to Europe or used the Euro currency? Yes/No
5. What is your average monthly expense (including rent, groceries, etc.)?
  - a. <2425 Shekels
  - b. 2426 – 4850 Shekels
  - c. 4851 – 9700 Shekels
  - d. >9701 Shekels
6. What is your nationality? \_\_\_\_\_
7. Date\_\_\_\_\_ Time of the day\_\_\_\_\_

## Example for questionnaire IS-S of study 1

### Thesis survey



Dear respondent,

Thank you for participating in this survey. Your responses are appreciated and will be used in an academic (non-business) research.

In this survey 6, pictures of international brand products will be shown to you. You will be asked to look closely at the product and make your closest estimation of its price in the Israeli Shekel currency. Additionally, you will be asked to state the degree of how familiar you are with each of the products.

\*Please do not use any electronic devices (e.g. computers, cell phones, etc.)

1. Samsung Galaxy tab 3.0, 8 inch, 16GB, no cellular sim slot, with Wi-Fi
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
2. A pack of 6 1.5L Coca-Cola bottles
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
3. A six pack of 330ml Heineken beer bottles
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

4. Illy 250g ground Espresso coffee canned package
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
5. An iPhone 5s, 16GB
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
6. A 500g Barilla Farfalle pasta bag
  - a. How much would you pay for this product? ₪ \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

General questions:

1. What is your gender? M/F
2. What is your age? \_\_\_\_\_
3. Are you a student in a higher education institute? Yes/No
4. What is your average monthly expense (including rent, groceries, etc.)?
  - a. <2425 Shekels
  - b. 2426 – 4850 Shekels
  - c. 4851 – 9700 Shekels
  - d. >9701 Shekels
5. What is your nationality? \_\_\_\_\_
6. Date \_\_\_\_\_ Time of the day \_\_\_\_\_

## Appendix C – example for questionnaire IN-E of study 2

### Thesis survey



Dear respondent,

Thank you for participating in this survey. Your responses are appreciated and will be used in an academic (non-business) research.

In this survey 6 pictures of international brand products will be shown to you. You will be asked to look closely at the product and make your closest estimation of its price in the Euro currency. Additionally, you will be asked to state the degree of how familiar you are with each of the products.

\*Please do not use any electronic devices (e.g. computers, cell phones, etc.)

1. A six pack of 330ml Heineken beer bottles
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
2. A 500g Barilla Farfalle pasta bag
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
3. An iPhone 5s, 16GB
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

4. Illy 250g ground Espresso coffee canned package
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
5. Samsung Galaxy tab 3.0, 8 inch, 16GB, no cellular sim slot, with Wi-Fi
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No
  
6. A pack of 6 1.5L Coca-Cola bottles
  - a. How much would you pay for this product? € \_\_\_\_\_
  - b. Have you ever bought this product before? Yes/No
  - c. Do you know the approximate price of this product from your own experience? Yes/No

General questions:

1. What is your gender? M/F
2. What is your age? \_\_\_\_\_
3. Are you a student in a higher education institute? Yes/No
4. What is your average monthly expense (including rent, groceries, etc.)?
  - a. <500 Euros
  - b. 501 – 1000 Euros
  - c. 1001 – 2000 Euros
  - d. >2001 Euros
5. What is your nationality? \_\_\_\_\_
6. Date \_\_\_\_\_ Time of the day \_\_\_\_\_



## Example for questionnaire IN-S of study 2

### Thesis survey



Dear respondent,

Thank you for participating in this survey. Your responses are appreciated and will be used in an academic (non-business) research.

In this survey 6 pictures of international brand products will be shown to you. You will be asked to look closely at the product and make your closest estimation of its price in the Israeli Shekel currency (The value of 1 Euro is 4.9 Israeli Shekels and its symbol is ₪). Additionally, you will be asked to state the degree of how familiar you are with each of the products.

\*Please do not use any electronic devices (e.g. computers, cell phones, etc.)

1. An iPhone 5s, 16GB

- a. How much would you pay for this product? ₪ \_\_\_\_\_
- b. Have you ever bought this product before? Yes/No
- c. Do you know the approximate price of this product from your own experience? Yes/No

2. A 500g Barilla Farfalle pasta bag

- a. How much would you pay for this product? ₪ \_\_\_\_\_
- b. Have you ever bought this product before? Yes/No
- c. Do you know the approximate price of this product from your own experience? Yes/No

3. A pack of 6 1.5L Coca-Cola bottles

- a. How much would you pay for this product? ₪ \_\_\_\_\_
- b. Have you ever bought this product before? Yes/No
- c. Do you know the approximate price of this product from your own experience? Yes/No

4. A six pack of 330ml Heineken beer bottles
  - a. How much would you pay for this product?    ₪ \_\_\_\_\_
  - b. Have you ever bought this product before?    Yes/No
  - c. Do you know the approximate price of this product from your own experience?    Yes/No
  
5. Samsung Galaxy tab 3.0, 8 inch, 16GB, no cellular sim slot, with Wi-Fi
  - a. How much would you pay for this product?    ₪ \_\_\_\_\_
  - b. Have you ever bought this product before?    Yes/No
  - c. Do you know the approximate price of this product from your own experience?    Yes/No
  
6. Illy 250g ground Espresso coffee canned package
  - a. How much would you pay for this product?    ₪ \_\_\_\_\_
  - b. Have you ever bought this product before?    Yes/No
  - c. Do you know the approximate price of this product from your own experience?    Yes/No

General questions:

1. What is your gender?                                    M/F
2. What is your age?                                        \_\_\_\_\_
3. Are you a student in a higher education institute?                                    Yes/No
4. Have you ever been to Israel or used the Israeli currency?    Yes/No
5. What is your average monthly expense (including rent, groceries, etc.)?
  - a. <500 Euros
  - b. 501 – 1000 Euros
  - c. 1001 – 2000 Euros
  - d. >2001 Euros
6. What is your nationality?                                \_\_\_\_\_
7. Date \_\_\_\_\_    Time of the day \_\_\_\_\_

**Appendix D – absolute differences in prices of products in – study 1 (In terms of Shekels)**

currency	iPhone	Samsung	CocaCola	Heiniken	Pasta	Espesso
Euros	2.280,37	1.837,963	30,525	27,81667	11,45185	24,63796
Shekels	2.340,5	1.471,979	27,68125	23,60417	9,361875	19,94021
Difference	60,1296	365,9838	2,84375	4,2125	2,089977	4,697755

**Appendix E – Mean and median values of the six products – IS-E and IS-S**

**Means and medians of IS-E surveys**

		Statistics					
		IS_E_Coffee	IS_E_Pasta	IS_E_Heineken	IS_E_Coca_Col a	IS_E_Samsung	IS_E_iPhone5
N	Valid	71	72	72	72	72	72
	Missing	76	75	75	75	75	75
Mean		38.2394	15.7986	39.3750	32.7431	1845.6944	2427.0833
Median		30.0000	15.0000	40.0000	30.0000	1575.0000	2500.0000

**Means and medians of IS-S surveys**

		Statistics					
		IS_S_Coffee	IS_S_Pasta	IS_S_Heineken	IS_S_Coca_Col a	IS_S_Samsung	IS_S_iPhone5
N	Valid	75	75	75	75	75	75
	Missing	72	72	72	72	72	72
Mean		30.2400	13.0933	35.4533	27.0000	1904.0000	2347.3333
Median		30.0000	10.0000	35.0000	30.0000	1800.0000	2500.0000

**Appendix F - statistical results of study 1 (Israel)**

Ranks				
	Group_IS	N	Mean Rank	Sum of Ranks
Coffee_IS	1.00	75	67.60	5070.00
	2.00	71	79.73	5661.00
	Total	146		
Pasta_IS	1.00	75	72.31	5423.00
	2.00	72	75.76	5455.00
	Total	147		
Heineken_IS	1.00	75	69.04	5178.00
	2.00	72	79.17	5700.00
	Total	147		
Coca_Cola_IS	1.00	75	66.51	4988.50
	2.00	72	81.80	5889.50
	Total	147		
Samsung_IS	1.00	75	76.49	5736.50
	2.00	72	71.41	5141.50
	Total	147		
iPhone5_IS	1.00	75	72.49	5436.50
	2.00	72	75.58	5441.50
	Total	147		

Test Statistics <sup>a</sup>						
	Coffee_IS	Pasta_IS	Heineken_IS	Coca_Cola_IS	Samsung_IS	iPhone5_IS
Mann-Whitney U	2220.000	2573.000	2328.000	2138.500	2513.500	2586.500
Wilcoxon W	5070.000	5423.000	5178.000	4988.500	5141.500	5436.500
Z	-1.746	-.500	-1.456	-2.190	-.726	-.442
Asymp. Sig. (2-tailed)	.081	.617	.145	.029	.468	.658
Exact Sig. (2-tailed)	.081	.619	.146	.028	.469	.660
Exact Sig. (1-tailed)	.040	.309	.073	.014	.235	.330
Point Probability	.000	.001	.000	.000	.001	.001

a. Grouping Variable: Group\_IS

**Appendix G – Spearman nonparametric correlations – study 1**

Coca-Cola

**Correlations**

			Qb_IS_Coca_C ola	Qc_IS_Coca_Co la	Price_IS_Coca_ Cola
Spearman's rho	Qb_IS_Coca_Cola	Correlation Coefficient	1.000	.661**	.094
		Sig. (2-tailed)	.	.000	.255
		N	147	147	147
	Qc_IS_Coca_Cola	Correlation Coefficient	.661**	1.000	-.009
		Sig. (2-tailed)	.000	.	.916
		N	147	147	147
	Price_IS_Coca_Cola	Correlation Coefficient	.094	-.009	1.000
		Sig. (2-tailed)	.255	.916	.
		N	147	147	147

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Heineken

**Correlations**

			Qb_IS_Heineke n	Qc_IS_Heineke n	Price_IS_Heinek en
Spearman's rho	Qb_IS_Heineken	Correlation Coefficient	1.000	.656**	-.058
		Sig. (2-tailed)	.	.000	.489
		N	147	147	147
	Qc_IS_Heineken	Correlation Coefficient	.656**	1.000	.036
		Sig. (2-tailed)	.000	.	.669
		N	147	147	147
	Price_IS_Heineken	Correlation Coefficient	-.058	.036	1.000
		Sig. (2-tailed)	.489	.669	.
		N	147	147	147

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Illy's Coffee

**Correlations**

			Qb_IS_Coffee	Qc_IS_Coffee	Price_IS_Coffee
Spearman's rho	Qb_IS_Coffee	Correlation Coefficient	1.000	.708**	-.010
		Sig. (2-tailed)	.	.000	.905
		N	147	147	146
	Qc_IS_Coffee	Correlation Coefficient	.708**	1.000	-.072
		Sig. (2-tailed)	.000	.	.389
		N	147	147	146
	Price_IS_Coffee	Correlation Coefficient	-.010	-.072	1.000
		Sig. (2-tailed)	.905	.389	.
		N	146	146	146

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Samsung's tablet

**Correlations**

			Qb_IS_Tablet	Qc_IS_Tablet	Price_IS_Tablet
Spearman's rho	Qb_IS_Tablet	Correlation Coefficient	1.000	.465**	.031
		Sig. (2-tailed)	.	.000	.714
		N	147	147	147
	Qc_IS_Tablet	Correlation Coefficient	.465**	1.000	.023
		Sig. (2-tailed)	.000	.	.781
		N	147	147	147
	Price_IS_Tablet	Correlation Coefficient	.031	.023	1.000
		Sig. (2-tailed)	.714	.781	.
		N	147	147	147

\*\* . Correlation is significant at the 0.01 level (2-tailed).

iPhone 5

**Correlations**

			Qb_IS_iPhone	Qc_IS_iPhone	Price_IS_iPhone
Qb_IS_iPhone	Correlation Coefficient		1.000	.417**	.052
	Sig. (2-tailed)		.	.000	.529
	N		147	147	147
Spearman's rho Qc_IS_iPhone	Correlation Coefficient		.417**	1.000	-.041
	Sig. (2-tailed)		.000	.	.619
	N		147	147	147
Price_IS_iPhone	Correlation Coefficient		.052	-.041	1.000
	Sig. (2-tailed)		.529	.619	.
	N		147	147	147

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Appendix H – absolute differences in prices of products – study 2 (in terms of Euros)**

Currency	iPhone	Samsung	CocaCola	Heiniken	Pasta	Espesso
Euros	485,416666	369,138888	6,548612	7,875	3,147722	7,647888
Shekels	469,466666	380,8	5,4	7,090666	2,618666	6,048
Difference	15,95	11,6611112	1,148611	0,784333	0,541056	1,599887

**Appendix I –statistical results of study 2 (Internationals - The Netherlands)**

**Ranks**

	Group_IN	N	Mean Rank	Sum of Ranks
Coffee_IN	1.00	53	55.24	2927.50
	2.00	48	46.32	2223.50
	Total	101		
Pasta_IN	1.00	54	59.31	3203.00
	2.00	48	42.71	2050.00
	Total	102		
Heineken_IN	1.00	54	57.59	3110.00
	2.00	48	44.65	2143.00
	Total	102		
CocaCola_IN	1.00	54	53.85	2908.00
	2.00	48	48.85	2345.00
	Total	102		
Samsung_IN	1.00	54	58.29	3147.50
	2.00	48	43.86	2105.50
	Total	102		
iPhone_IN	1.00	54	50.78	2742.00
	2.00	48	52.31	2511.00
	Total	102		

**Test Statistics<sup>a</sup>**

	Coffee_IN	Pasta_IN	Heineken_IN	CocaCola_IN	Samsung_IN	iPhone_IN
Mann-Whitney U	1047.500	874.000	967.000	1169.000	929.500	1257.000
Wilcoxon W	2223.500	2050.000	2143.000	2345.000	2105.500	2742.000
Z	-1.532	-2.845	-2.215	-.853	-2.468	-.263
Asymp. Sig. (2-tailed)	.125	.004	.027	.394	.014	.793
Exact Sig. (2-tailed)	.126	.004	.026	.396	.013	.795
Exact Sig. (1-tailed)	.063	.002	.013	.198	.007	.398
Point Probability	.000	.000	.000	.001	.000	.001

a. Grouping Variable: Group\_IN



**Appendix J – Spearman nonparametric correlations – study 2**

Coca-Cola

**Correlations**

			Qb_IN_Coca_C ola	Qc_IN_Coca_Co la	Price_IN_Coca_ Cola
Spearman's rho	Qb_IN_Coca_Cola	Correlation Coefficient	1.000	.734**	-.094
		Sig. (2-tailed)	.	.000	.350
		N	101	101	101
	Qc_IN_Coca_Cola	Correlation Coefficient	.734**	1.000	-.072
		Sig. (2-tailed)	.000	.	.472
		N	101	101	101
	Price_IN_Coca_Cola	Correlation Coefficient	-.094	-.072	1.000
		Sig. (2-tailed)	.350	.472	.
		N	101	101	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Heineken

**Correlations**

			Qb_IN_Heineke n	Qc_IN_Heineke n	Price_IN_Heine ken
Spearman's rho	Qb_IN_Heineken	Correlation Coefficient	1.000	.845**	-.155
		Sig. (2-tailed)	.	.000	.120
		N	102	102	102
	Qc_IN_Heineken	Correlation Coefficient	.845**	1.000	-.144
		Sig. (2-tailed)	.000	.	.150
		N	102	102	102
	Price_IN_Heineken	Correlation Coefficient	-.155	-.144	1.000
		Sig. (2-tailed)	.120	.150	.
		N	102	102	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Illy's Coffee

**Correlations**

			Qb_IN_Coffee	Qc_IN_Coffee	Price_IN_Coffee
Spearman's rho	Qb_IN_Coffee	Correlation Coefficient	1.000	.701**	.176
		Sig. (2-tailed)	.	.000	.076
		N	102	101	102
	Qc_IN_Coffee	Correlation Coefficient	.701**	1.000	.184
		Sig. (2-tailed)	.000	.	.066
		N	101	101	101
	Price_IN_Coffee	Correlation Coefficient	.176	.184	1.000
		Sig. (2-tailed)	.076	.066	.
		N	102	101	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Barilla's pasta

**Correlations**

			Qb_IN_Pasta	Qc_IN_Pasta	Price_IN_Pasta
Spearman's rho	Qb_IN_Pasta	Correlation Coefficient	1.000	.619**	.035
		Sig. (2-tailed)	.	.000	.727
		N	102	101	102
	Qc_IN_Pasta	Correlation Coefficient	.619**	1.000	-.103
		Sig. (2-tailed)	.000	.	.307
		N	101	101	101
	Price_IN_Pasta	Correlation Coefficient	.035	-.103	1.000
		Sig. (2-tailed)	.727	.307	.
		N	102	101	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Samsung's tablet

**Correlations**

			Qb_IN_Tablet	Qc_IN_Tablet	Price_IN_Tablet
Spearman's rho	Qb_IN_Tablet	Correlation Coefficient	1.000	.375**	-.052
		Sig. (2-tailed)	.	.000	.602
		N	102	101	102
	Qc_IN_Tablet	Correlation Coefficient	.375**	1.000	-.181
		Sig. (2-tailed)	.000	.	.071
		N	101	101	101
	Price_IN_Tablet	Correlation Coefficient	-.052	-.181	1.000
		Sig. (2-tailed)	.602	.071	.
		N	102	101	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

iPhone 5

**Correlations**

			Qb_IN_iPhone	Qc_IN_iPhone	Price_IN_iPhone
Spearman's rho	Qb_IN_iPhone	Correlation Coefficient	1.000	.268**	.043
		Sig. (2-tailed)	.	.007	.671
		N	102	99	102
	Qc_IN_iPhone	Correlation Coefficient	.268**	1.000	.027
		Sig. (2-tailed)	.007	.	.788
		N	99	99	99
	Price_IN_iPhone	Correlation Coefficient	.043	.027	1.000
		Sig. (2-tailed)	.671	.788	.
		N	102	99	102

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Appendix K – Mean and median values of the six products – IN-E and IN-S**

**Means and medians of IN-E surveys**

**Statistics**

		IN_E_Coffee	IN_E_Pasta	IN_E_Heineken	IN_E_Coca_Col a	IN_E_Samsung	IN_E_iPhone5
N	Valid	54	54	54	54	54	54
	Missing	93	93	93	93	93	93
Mean		24.6380	11.4519	27.8167	30.5250	1837.9630	2280.3704
Median		20.0000	10.0000	25.0000	25.0000	1500.0000	2500.0000

**Means and medians of IN-S surveys**

**Statistics**

		IN_S_Coffee	IN_S_Pasta	IN_S_Heineken	IN_S_Coca_Col a	IN_S_Samsung	IN_S_iPhone5
N	Valid	48	48	48	48	48	48
	Missing	99	99	99	99	99	99
Mean		19.9402	9.3619	23.6042	27.6812	1471.9792	2340.5000
Median		19.5500	8.0000	24.0000	25.5000	1375.0000	2400.0000

**Appendix L – comparison of IN-E and IS-E (significant results are highlighted in yellow)**

Ranks				
	IN_IS_E_Group	N	Mean Rank	Sum of Ranks
	1.00	54	46.44	2507.50
IN_IS_E_Coffee	2.00	71	75.60	5367.50
	Total	125		
	1.00	54	56.37	3044.00
IN_IS_E_Pasta	2.00	72	68.85	4957.00
	Total	126		
	1.00	54	43.55	2351.50
IN_IS_E_Heineken	2.00	72	78.47	5649.50
	Total	126		
	1.00	54	58.09	3137.00
IN_IS_E_Coca_Cola	2.00	72	67.56	4864.00
	Total	126		
	1.00	54	65.30	3526.00
IN_IS_E_Samsung	2.00	72	62.15	4475.00
	Total	126		
	1.00	54	60.79	3282.50
IN_IS_E_iPhone5	2.00	72	65.53	4718.50
	Total	126		

Test Statistics <sup>a</sup>						
	IN_IS_E_Coffee	IN_IS_E_Pasta	IN_IS_E_Heinek en	IN_IS_E_Coca_ Cola	IN_IS_E_Samsu ng	IN_IS_E_iPhone 5
Mann-Whitney U	1022.500	1559.000	866.500	1652.000	1847.000	1797.500
Wilcoxon W	2507.500	3044.000	2351.500	3137.000	4475.000	3282.500
Z	-4.485	-1.923	-5.349	-1.447	-.481	-.725
Asymp. Sig. (2-tailed)	.000	.054	.000	.148	.631	.469
Exact Sig. (2-tailed)	.000	.054	.000	.149	.633	.471
Exact Sig. (1-tailed)	.000	.027	.000	.074	.316	.235
Point Probability	.000	.000	.000	.000	.001	.001

a. Grouping Variable: IN\_IS\_E\_Group

**Appendix M – comparison of IN-S and IS-S (significant results are highlighted in yellow)**

Ranks				
	IN_IS_S_Group	N	Mean Rank	Sum of Ranks
IN_IS_S_Coffee	1.00	48	42.99	2063.50
	2.00	75	74.17	5562.50
	Total	123		
IN_IS_S_Pasta	1.00	48	45.53	2185.50
	2.00	75	72.54	5440.50
	Total	123		
IN_IS_S_Heineken	1.00	48	38.39	1842.50
	2.00	75	77.11	5783.50
	Total	123		
IN_IS_S_Coca_Cola	1.00	48	59.94	2877.00
	2.00	75	63.32	4749.00
	Total	123		
IN_IS_S_Samsung	1.00	48	51.02	2449.00
	2.00	75	69.03	5177.00
	Total	123		
IN_IS_S_iPhone5	1.00	48	61.69	2961.00
	2.00	75	62.20	4665.00
	Total	123		

Test Statistics <sup>a</sup>						
	IN_IS_S_Coffee	IN_IS_S_Pasta	IN_IS_S_Heinek en	IN_IS_S_Coca_ Cola	IN_IS_S_Samsu ng	IN_IS_S_iPhone 5
Mann-Whitney U	887.500	1009.500	666.500	1701.000	1273.000	1785.000
Wilcoxon W	2063.500	2185.500	1842.500	2877.000	2449.000	2961.000
Z	-4.755	-4.140	-5.904	-.516	-2.742	-.078
Asymp. Sig. (2-tailed)	.000	.000	.000	.606	.006	.938
Exact Sig. (2-tailed)	.000	.000	.000	.608	.006	.939
Exact Sig. (1-tailed)	.000	.000	.000	.304	.003	.469
Point Probability	.000	.000	.000	.001	.000	.001

a. Grouping Variable: IN\_IS\_S\_Group

**Appendix N – market prices of the six products in The Netherlands and Israel (in Euros)**

Product	Israel	The Netherlands
Illy's Espresso coffee	10,56 (mysupermarket.co.il)	5,99 (Albert Hein)
Barilla's pasta	1,99 (mysupermarket.co.il)	1,99 (Albert Hein)
Heineken six-pack (250ml)	9,61 (pricez.co.il)	3,49 (Albert Hein)
Coca Cola six-pack	6,99 (mysupermarket.co.il)	8,49 (Albert Hein)
Samsung tablet	279,8 (zap.co.il)	258,09 (bol.com)
iPhone 5	724,5 (zap.co.il)	610 (bol.com)

**Appendix O – IS-S regression – Illy's espresso coffee**

Equation: COFFEE Workfile: ISRAELIES\_SHEKELS\_COFFEE::Untitled\

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
Method: Least Squares  
Date: 07/14/14 Time: 15:15  
Sample (adjusted): 1 75  
Included observations: 75 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-10.96364	21.48756	-0.510232	0.6115
AGE	1.666439	0.861807	1.933658	0.0573
MALE	0.403178	3.426836	0.117653	0.9067
BOUGHT	-6.550785	5.265227	-1.244160	0.2177
APPROXIMATION	11.55072	7.350507	1.571418	0.1207
EXPENSE_3	-9.648251	7.937428	-1.215539	0.2283

R-squared	0.074393	Mean dependent var	30.24000
Adjusted R-squared	0.007320	S.D. dependent var	14.52383
S.E. of regression	14.47057	Akaike info criterion	8.258730
Sum squared resid	14448.43	Schwarz criterion	8.444129
Log likelihood	-303.7024	Hannan-Quinn criter.	8.332757
F-statistic	1.109139	Durbin-Watson stat	1.858834
Prob(F-statistic)	0.363643		

## Appendix P – Heteroskedasticity correction for IS-S Illy's coffee

### Before correction

Equation: COFFEE\_BEFORE Workfile: ISRAELIES\_SHEKELS\_COFFEE:...

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
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Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.964371	Prob. F(6,68)	0.4560
Obs*R-squared	5.881409	Prob. Chi-Square(6)	0.4366
Scaled explained SS	5.691312	Prob. Chi-Square(6)	0.4586

Test Equation:  
 Dependent Variable: RESID^2  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:22  
 Sample: 1 75  
 Included observations: 75

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	473.0458	439.1387	1.077213	0.2852
AGE	-14.82766	17.83097	-0.831567	0.4086
MALE	83.32496	70.09396	1.188761	0.2387
BOUGHT	-80.57463	106.9006	-0.753734	0.4536
APPROXIMATION	-51.62286	154.9163	-0.333231	0.7400
EXPENSE_2	129.3295	74.52012	1.735498	0.0872
EXPENSE_3	236.0054	166.4598	1.417792	0.1608

R-squared	0.078419	Mean dependent var	189.9192
Adjusted R-squared	-0.002897	S.D. dependent var	293.3705
S.E. of regression	293.7952	Akaike info criterion	14.29233
Sum squared resid	5869461.	Schwarz criterion	14.50863
Log likelihood	-528.9623	Hannan-Quinn criter.	14.37869
F-statistic	0.964371	Durbin-Watson stat	2.143492
Prob(F-statistic)	0.455997		

### After correction

Equation: COFFEE Workfile: ISRAELIES\_SHEKELS\_COFFEE:Untitled\

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
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Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.484224	Prob. F(5,69)	0.7869
Obs*R-squared	2.542442	Prob. Chi-Square(5)	0.7701
Scaled explained SS	2.701981	Prob. Chi-Square(5)	0.7458

Test Equation:  
 Dependent Variable: RESID^2  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:20  
 Sample: 1 75  
 Included observations: 75

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	415.0944	464.5373	0.893565	0.3747
AGE	-9.883296	18.63131	-0.530467	0.5975
MALE	67.32936	74.08442	0.908819	0.3666
BOUGHT	-80.56899	113.8284	-0.707811	0.4814
APPROXIMATION	15.81282	158.9099	0.099508	0.9210
EXPENSE_3	162.2320	171.5984	0.945417	0.3477

R-squared	0.033899	Mean dependent var	192.6457
Adjusted R-squared	-0.036108	S.D. dependent var	307.3384
S.E. of regression	312.8378	Akaike info criterion	14.40587
Sum squared resid	6752859.	Schwarz criterion	14.59126
Log likelihood	-534.2200	Hannan-Quinn criter.	14.47989
F-statistic	0.484224	Durbin-Watson stat	2.075353
Prob(F-statistic)	0.786884		



## Appendix Q – Significant variables for IS-E: iPhone 5 and Samsung’s tablet

### iPhone 5

Equation: IPHONES Workfile: ISRAELIES\_EUROS\_IPHONE::Untitled\

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:24  
 Sample (adjusted): 1 72  
 Included observations: 72 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5999.904	2134.519	2.810893	0.0065
AGE	-131.3196	87.00417	-1.509348	0.1361
MALE	380.1826	294.8752	1.289300	0.2019
BOUGHT	398.4247	305.5846	1.303811	0.1970
APPROXIMATION	149.4619	352.3611	0.424172	0.6729
USED	-529.4221	590.9697	-0.895853	0.3737
EXPENSE_2	-556.1908	315.9153	-1.760569	0.0831
EXPENSE_3	-731.6169	723.6760	-1.010973	0.3158

R-squared	0.165418	Mean dependent var	2427.083
Adjusted R-squared	0.074135	S.D. dependent var	1176.290
S.E. of regression	1131.848	Akaike info criterion	17.00553
Sum squared resid	81989118	Schwarz criterion	17.25849
Log likelihood	-604.1991	Hannan-Quinn criter.	17.10624
F-statistic	1.812151	Durbin-Watson stat	2.244215
Prob(F-statistic)	0.100136		

### Samsung’s tablet

Equation: TABLET Workfile: ISRAELIES\_EUROS\_TABLET::Untitled\

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:26  
 Sample (adjusted): 1 72  
 Included observations: 72 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5270.913	2079.596	2.534586	0.0137
AGE	-120.7993	83.67954	-1.443594	0.1537
MALE	570.1519	290.2338	1.964457	0.0538
BOUGHT	-21.13861	330.6037	-0.063939	0.9492
APPROXIMATION	-319.9752	488.0608	-0.655605	0.5144
USED	-460.4099	576.1828	-0.799069	0.4272
EXPENSE_2	-402.5732	315.4457	-1.276205	0.2065
EXPENSE_3	-1309.340	714.3806	-1.832833	0.0715

R-squared	0.154768	Mean dependent var	1845.694
Adjusted R-squared	0.062321	S.D. dependent var	1145.135
S.E. of regression	1108.878	Akaike info criterion	16.96452
Sum squared resid	78695086	Schwarz criterion	17.21749
Log likelihood	-602.7229	Hannan-Quinn criter.	17.06523
F-statistic	1.674128	Durbin-Watson stat	2.106806
Prob(F-statistic)	0.131333		

## Appendix R – Significant variables for IN-E: iPhone 5 and Samsung’s tablet

### iPhone 5

Equation: IPHONES Workfile: INTERNATIONAL\_EURO\_IPHONE::Un... \_ \_ X

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:29  
 Sample (adjusted): 1 54  
 Included observations: 54 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2730.478	991.7179	2.753281	0.0084
AGE	400.1724	254.5065	1.572347	0.1227
MALE	-36.70695	46.04424	-0.797211	0.4294
BOUGHT	-183.0443	275.2478	-0.665017	0.5094
APPROXIMATION	503.8197	293.7538	1.715109	0.0931
EXPENSE_2	301.7726	250.7745	1.203363	0.2350
EXPENSE_3	574.8141	514.2060	1.117867	0.2694
EXPENSE_4	-107.1656	869.8075	-0.123206	0.9025

R-squared	0.154883	Mean dependent var	2280.370
Adjusted R-squared	0.026278	S.D. dependent var	818.4228
S.E. of regression	807.5980	Akaike info criterion	16.36196
Sum squared resid	30001870	Schwarz criterion	16.65662
Log likelihood	-433.7729	Hannan-Quinn criter.	16.47560
F-statistic	1.204330	Durbin-Watson stat	1.660925
Prob(F-statistic)	0.319625		

### Samsung’s tablet

Equation: TABLET Workfile: INTERNATIONAL\_EURO\_TABLET\_INTE... \_ \_ X

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:33  
 Sample (adjusted): 1 54  
 Included observations: 54 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3553.608	1149.479	3.091494	0.0034
AGE	113.3029	281.7105	0.402196	0.6894
MALE	-90.04745	53.68262	-1.677404	0.1002
BOUGHT	-181.7832	299.4250	-0.607108	0.5468
APPROXIMATION	186.0777	604.8851	0.307625	0.7598
EXPENSE_2	213.1317	285.2798	0.747097	0.4588
EXPENSE_3	1200.747	587.2397	2.044730	0.0466
EXPENSE_4	-95.81961	961.3218	-0.099675	0.9210

R-squared	0.102469	Mean dependent var	1837.963
Adjusted R-squared	-0.034111	S.D. dependent var	899.1052
S.E. of regression	914.3115	Akaike info criterion	16.61017
Sum squared resid	38454410	Schwarz criterion	16.90484
Log likelihood	-440.4747	Hannan-Quinn criter.	16.72381
F-statistic	0.750247	Durbin-Watson stat	1.269271
Prob(F-statistic)	0.631112		

**Appendix S – Significant variable for IN-S: Heineken**

Equation: HEINEKEN Workfile: INTERNATIONALS-SHEKELS.XLS::U... \_ □ X

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PRICE  
Method: Least Squares  
Date: 07/12/14 Time: 16:48  
Sample: 1 48  
Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.448259	2.464149	2.616830	0.0123
AGE	-0.008501	0.121953	-0.069705	0.9448
BOUGHT	1.485505	1.479707	1.003918	0.3212
APPROXIMATION	-2.659186	1.322992	-2.009979	0.0509
USED	0.680294	1.321845	0.514655	0.6095
EXPENSE_2	-1.268747	0.709266	-1.788818	0.0809

R-squared	0.186916	Mean dependent var	4.720833
Adjusted R-squared	0.090121	S.D. dependent var	2.265320
S.E. of regression	2.160834	Akaike info criterion	4.495335
Sum squared resid	196.1066	Schwarz criterion	4.729235
Log likelihood	-101.8880	Hannan-Quinn criter.	4.583726
F-statistic	1.931042	Durbin-Watson stat	1.828636
Prob(F-statistic)	0.109401		



## Appendix T – Heteroskedasticity correction for IN-S Heineken's beer

### Correction - step 1

Equation: HEINEKEN1 Workfile: INTERNATIONALS-SHEKELS.XLS:U... x

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
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Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.518285	Prob. F(7,40)	0.0304
Obs*R-squared	14.68286	Prob. Chi-Square(7)	0.0403
Scaled explained SS	19.55402	Prob. Chi-Square(7)	0.0066

Test Equation:  
 Dependent Variable: RESID^2  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:41  
 Sample: 1 48  
 Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	301.9841	193.5500	1.560238	0.1266
AGE	0.379097	9.212637	0.041150	0.9674
MALE	80.26235	52.41344	1.531331	0.1336
BOUGHT	7.344430	114.1616	0.064334	0.9490
APPROXIMATION	-113.8721	99.83008	-1.140659	0.2608
USED	-112.4092	102.5342	-1.096309	0.2795
EXPENSE_2	-211.9400	79.47790	-2.666654	0.0110
EXPENSE_3	-204.5971	88.86984	-2.302211	0.0266

R-squared	0.305893	Mean dependent var	91.13940
Adjusted R-squared	0.184424	S.D. dependent var	180.3793
S.E. of regression	162.8992	Akaike info criterion	13.17515
Sum squared resid	1061446.	Schwarz criterion	13.48702
Log likelihood	-308.2036	Hannan-Quinn criter.	13.29301
F-statistic	2.518285	Durbin-Watson stat	2.332392
Prob(F-statistic)	0.030380		

### Correction – step 2

Equation: HEINEKEN2 Workfile: INTERNATIONALS-SHEKELS.XLS:U... x

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
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Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.246280	Prob. F(6,41)	0.0577
Obs*R-squared	11.87511	Prob. Chi-Square(6)	0.0648
Scaled explained SS	24.15800	Prob. Chi-Square(6)	0.0005

Test Equation:  
 Dependent Variable: RESID^2  
 Method: Least Squares  
 Date: 07/14/14 Time: 15:43  
 Sample: 1 48  
 Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	230.4344	258.7136	0.890693	0.3783
AGE	2.392677	12.68217	0.188665	0.8513
MALE	127.7871	70.04790	1.824282	0.0754
BOUGHT	-100.8061	156.1926	-0.645396	0.5223
APPROXIMATION	-145.6308	137.4753	-1.059324	0.2957
USED	-179.9950	141.2035	-1.274721	0.2096
EXPENSE_2	-95.82507	73.73181	-1.299644	0.2010

R-squared	0.247398	Mean dependent var	101.2240
Adjusted R-squared	0.137261	S.D. dependent var	241.5679
S.E. of regression	224.3773	Akaike info criterion	13.79857
Sum squared resid	2064152.	Schwarz criterion	14.07146
Log likelihood	-324.1657	Hannan-Quinn criter.	13.90170
F-statistic	2.246280	Durbin-Watson stat	1.983824
Prob(F-statistic)	0.057671		

### Correction – step 3

Equation: HEINEKEN3 Workfile: INTERNATIONALS-SHEKELS.XLS::U... - x									
View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Heteroskedasticity Test: Breusch-Pagan-Godfrey									
F-statistic	2.130318	Prob. F(5,42)							0.0805
Obs*R-squared	9.710556	Prob. Chi-Square(5)							0.0839
Scaled explained SS	18.79052	Prob. Chi-Square(5)							0.0021
Test Equation:									
Dependent Variable: RESID^2									
Method: Least Squares									
Date: 07/14/14 Time: 11:27									
Sample: 1 48									
Included observations: 48									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	309.8072	250.0378	1.239041	0.2222					
AGE	0.496386	12.37459	0.040113	0.9682					
BOUGHT	-26.31442	150.1462	-0.175259	0.8617					
APPROXIMATION	-175.7408	134.2443	-1.309112	0.1976					
USED	-117.1670	134.1279	-0.873547	0.3873					
EXPENSE_2	-99.62400	71.96938	-1.384255	0.1736					
R-squared	0.202303	Mean dependent var							102.1389
Adjusted R-squared	0.107339	S.D. dependent var							232.0690
S.E. of regression	219.2604	Akaike info criterion							13.73487
Sum squared resid	2019156.	Schwarz criterion							13.96877
Log likelihood	-323.6368	Hannan-Quinn criter.							13.82326
F-statistic	2.130318	Durbin-Watson stat							1.822622
Prob(F-statistic)	0.080462								

## Appendix U - IN-E's regression variables when 'Expense 4' is not part of the regression

### iPhone

Equation: IPHONE5\_NO\_EXP4 Workfile: INTERNATIONAL\_EURO\_IP... - □ X

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: PRICE									
Method: Least Squares									
Date: 07/14/14 Time: 15:31									
Sample (adjusted): 1 54									
Included observations: 54 after adjustments									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	2732.966	981.0694	2.785701	0.0077					
AGE	396.7721	250.3410	1.584927	0.1197					
MALE	-36.92772	45.52477	-0.811156	0.4214					
BOUGHT	-183.7680	272.2868	-0.674906	0.5030					
APPROXIMATION	495.7525	283.3472	1.749629	0.0867					
EXPENSE_2	306.8774	244.7231	1.253978	0.2161					
EXPENSE_3	583.6296	503.8406	1.158362	0.2526					
R-squared	0.154604	Mean dependent var	2280.370						
Adjusted R-squared	0.046681	S.D. dependent var	818.4228						
S.E. of regression	799.0922	Akaike info criterion	16.32525						
Sum squared resid	30011770	Schwarz criterion	16.58308						
Log likelihood	-433.7818	Hannan-Quinn criter.	16.42469						
F-statistic	1.432539	Durbin-Watson stat	1.651948						
Prob(F-statistic)	0.222406								

### Samsung's tablet

Equation: TABLET\_NO\_EXP4 Workfile: INTERNATIONAL\_EURO\_TA... - □ X

View	Proc	Object	Print	Name	Freeze	Estimate	Forecast	Stats	Resids
Dependent Variable: PRICE									
Method: Least Squares									
Date: 07/14/14 Time: 15:34									
Sample (adjusted): 1 54									
Included observations: 54 after adjustments									
Variable	Coefficient	Std. Error	t-Statistic	Prob.					
C	3552.818	1137.281	3.123959	0.0031					
AGE	109.2770	275.8479	0.396150	0.6938					
MALE	-90.23556	53.08136	-1.699948	0.0958					
BOUGHT	-178.7185	294.6884	-0.606466	0.5471					
APPROXIMATION	186.1660	598.4795	0.311065	0.7571					
EXPENSE_2	218.0898	277.9353	0.784678	0.4366					
EXPENSE_3	1207.763	576.8317	2.093788	0.0417					
R-squared	0.102275	Mean dependent var	1837.963						
Adjusted R-squared	-0.012328	S.D. dependent var	899.1052						
S.E. of regression	904.6301	Akaike info criterion	16.57335						
Sum squared resid	38462715	Schwarz criterion	16.83118						
Log likelihood	-440.4805	Hannan-Quinn criter.	16.67279						
F-statistic	0.892432	Durbin-Watson stat	1.266040						
Prob(F-statistic)	0.508207								