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Discounting in International Markets and the Face Value Effect: A Double Edged Sword?

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ABSTRACT

Consumer response to price is often subjective and prone to systematic perceptual biases, such as the “face value” effect, whereby consumer perceptions of willingness to pay are systematically biased by the nominal value of a new currency. That is, prices presented in higher denomination currencies are perceived to be more expensive and prices presented in lower denomination currencies are perceived to be less expensive. The results from two separate experiments suggest that for high-price products, when a substantial enough discount is invoked, *the face value effect can reverse* and becomes a double edged sword. Whilst existing research implies that the face value effect becomes stronger for high-price products, the findings from this research suggest this is the case only when the product is not being promoted. The findings also reveal that the face value effect is robust for low-price products, *even when there is a discount*, providing further evidence of the effect in new contexts. Consistent with earlier research this is because in real terms the discount for a low-price product is not perceived as substantial enough. The experiments also suggest that for high-price products, discounts framed as absolute amounts in higher denomination currencies are perceived to be more substantial than discounts framed as percentage amounts. These findings extend existing theory on the face value effect and have several important managerial implications for pricing management in international markets.

Key Words: Price promotions; denomination; face value effect; framing.

Research on pricing in international markets has remained remarkably sparse, despite repeated calls in the literature for more research in this area (Cavusgil, 1988; Cavusgil, 1996; Li & Cavusgil, 1995). Specifically, how consumer perceptions of price and discounting manifest in international contexts has been under studied and subsequently remains unclear. Recent research has shown that consumers' willingness to pay in international markets is systematically biased by the face value of the foreign currency. With theoretical underpinnings in anchoring and adjustment theory (Tversky & Kahneman, 1974) and the "money illusion effect" (Shafir, Diamond & Tversky, 1997), in an international pricing context this has been labeled the "face value" effect (Raghubir & Srivastava, 2002), whereby individual judgments about the price of products in a foreign currency are systematically biased by the nominal value of that currency.

Consider, for example, Europe's transition to the euro. In a short period of time many countries with their own currencies began adopting a new, relatively unfamiliar, common currency. Despite several months of transition and preparation in some countries, consumer perceptions of willingness to pay were still anchored by the initial home currency's face value (Desmet, 2002; Gaston-Breton, 2006). This suggests an anchoring effect based on the new currency, even though consumers had knowledge about the currency changes. In more day-to-day circumstances, travelers and tourists are often faced with unfamiliar purchase situations that may confound their usual decision making processes. In particular, when currencies are not simple multiples of other currencies (e.g., two times or ten times) one would expect a greater degree of consumer confusion about prices and value. For instance, research in education suggests that multiples in the hundreds and the presence of decimals affect problem solving (Bell, 1981). Research in psychology suggests that such anchoring effects are robust even with familiar numbers, where judgments about distance (e.g., 7300 meters or 7.3 kilometers) are biased towards the higher nominal value (Wong & Kwong, 2000).

Whilst some research has focused on establishing the existence and presence of the face value effect (Raghubir & Srivastava, 2002), and other research has examined the face value effect in the field (Desmet, 2002; Gaston-Breton, 2006), there has been less research on boundary conditions to the face value effect, even though in some cases the face value effect has been shown to reverse (Wertenbroch, Soman & Chattopadhyay, 2007). This suggests the importance of studying the face value effect in different situations to ascertain its generalizability.

So far, research has not yet examined how the face value effect interacts with other components of the marketing mix. Some research shows that price promotions carry information that consumers use to make inferences about the purchase (e.g., Raghubir, 2004a; Raghubir, 2004b). This implies the face value effect may transfer to the discount in some circumstances, which may dilute and even reverse the face value effect of the product's price. How does discounting moderate the face value effect? Does a discount carry a face value effect of its own? The answers to these questions are unclear and have not been empirically studied in the literature. Given that price promotions account for such a large proportion of marketing expenditure (Kotler & Keller, 2009) and the effectiveness of price promotions varies by factors such as promotional size and framing (DeVecchio, Krishnan & Smith, 2007) this implies the need for more research in this area. The price promotions literature remains relatively silent on the issue of consumer perceptions of price promotions *internationally*, but is more advanced in terms of the factors that can affect consumer perceptions of sales promotions.

As stated in the seminal article in this area "There is relatively little literature that examines individuals' spending behavior across countries and currencies". (Raghubir & Srivastava, 2002, p. 347). This study therefore adds to the debate and extends understanding of the face value effect by integrating literature in the area of price perceptions internationally with literature in the area of price promotions. Specifically, this research examines how price promotions alter the face

value effect. It is proposed that a price promotion carries its own face value effect, and integrating the international pricing literature with literature in the area of price promotions, also propose that a price promotion, if substantial enough can act as a double edged sword, reversing the face value effect. This is justified on the basis of differences in consumer response to price promotions for low versus high priced products, and differences in consumer response to the way price promotions are framed (Chen, Monroe & Lou, 1998; Darke & Freedman, 1993; Darke, Chaiken & Freedman, 1995).

Experiment 1 shows that the face value effect is robust for low-price products - despite the fact that the product is being promoted. This lends credence and generalizability to the face value effect in different circumstances. However, Experiment 2 shows that for high-price products the discount is perceived to be more substantial (because economically it is more meaningful) and thus *reverses* the face value effect, implying an important boundary condition. To-date, the effect of price promotions on the face value effect has not been tested. Studying the moderating impact of price promotions is important because if price promotions can counteract the face value effect, this will have important implications for pricing management and consumer decision making in international markets.

CONSUMER PERCEPTIONS OF DIFFERENT DENOMINATIONS AND THE FACE VALUE EFFECT

A growing amount of research has examined consumer perceptions of price in different denominations. For instance, as European countries moved over to the euro, Desmet (2002) observed an increase in purchase intention among German consumers as prices changed from Deutsche Marks to euros. This provides an illustration of the face value effect, whereby lower

(higher) nominal prices are perceived as cheaper (more expensive) because consumers use the foreign currency, which is more salient, to anchor their judgments. Interestingly, even though consumers knew that they were converting one currency to another, there still seems to have been a systematic bias, signifying the robustness of this effect, though the effect was not found for all countries studied suggesting the influence of other factors.

Raghubir and Srivastava (2002) formalize the mechanism and call it the face value effect. Using a series of controlled lab experiments they found that subjects tended to use both the nominal and real value of the currency, but with a systematic bias to the nominal value. In other words, when spending in currencies with a nominal value less than the domestic currency (e.g., US\$1 = £0.60) then consumers perceive the product to be cheaper, even though they are aware of the exchange rate. Likewise, when spending in currencies with a nominal value more than the domestic currency (e.g., US\$1 = HK\$7.7), consumers perceive the product to be more expensive.

This bias tends to increase with the nominal value of the currency. For instance, suppose a American consumer was considering purchasing a product that cost HK\$7500, the equivalent cost in the domestic currency would be around US\$965. Now suppose the consumer was in a different country such as Australia, with a lower denomination currency. This time they may see the same computer advertised for AU\$1275. According to the face value effect consumers from America would view the Australian computer as being cheaper than the equivalent computer at the same *real* price in Hong Kong. Raghubir and Srivastava (2002) provide support for this assertion by showing that respondents' willingness to pay for a silk tie increased as the face value of the currency decreased. For example, respondents' willingness to pay for a tie was \$10.77 in the Turkish lira condition and \$15.85 in the Norwegian kroner condition – the pattern was consistent for currencies in between these two extremes (i.e., Luxembourg francs, Japanese yen, Korean won, and Romanian leu).

These findings are justified on the basis of a “money illusion” (Shafir, Diamond & Tversky, 1997), whereby individuals think in terms of nominal, rather than real terms because of the simplicity of nominal values. For example, Shafir, Diamond and Tversky (1997) show that individuals perceive a 2% pay rise when inflation is 4%, differently to a 2% pay cut when inflation is 0%; in real terms the two situations are economically equivalent. This is explained by an anchoring and adjustment model where individuals make judgments based on information most salient to them. For instance, using an obscure question that subjects were unlikely to know the answer to, Tversky and Kahneman (1974) asked subjects to estimate the number of African countries in the United Nations. Responses to the question were consistently biased towards a random number that varied amongst different treatments that were used by the researchers as an anchor. Subjects’ estimates were higher if the random number they were given was higher, and lower if the random number they were given was lower. In the case of consumer perceptions of foreign currency, the most salient information is likely to be the nominal value of the foreign currency.

Many examples of anchoring effects have been observed in pricing studies, including consumer response to price histories (Mazumdar, Raj & Sinha, 2005), external reference prices (Howard & Kerin, 2006), and for “new currencies” like air miles (Dreze & Nunes, 2004). As such, response to price can be subjective (Raghubir, 2006) and this is even more likely to be the case when consumers respond to price in different currencies where they have less knowledge, and where there is greater confusion about prices. Whilst the research outlined so far has begun to examine consumer perceptions of foreign currencies based on denomination, few studies have empirically examined how consumers perceive price promotions in foreign currencies. Callow and Lerman (2003) have addressed the issue of discounting in international markets, and the problem of interpreting currencies of different denominations. In particular they found that

consumers respond more favorably to price discounts when the denomination is in similar units to the denomination of their domestic currency. Yet their research specifically examined changes in consumer perceptions based on a simple discounting procedure and did not consider research in the area of price promotions that may moderate the results, such as how the discount is framed.

In this research this gap is addressed by examining how consumers evaluate economically equivalent deals that vary on i) denomination, ii) framing, and iii) category price level. Consumers' evaluations are examined in terms of reference price perceptions, transaction value (Thaler, 1985) and purchase intention - a well-established conceptual model that has been empirically validated in the reference price literature using survey based experiments (Grewal, Monroe & Krishnan, 1998; Lowe & Alpert, 2010; Lowe & Barnes, 2011; Sinha & Smith, 2000; Thaler, 1985; Urbany et al., 1997). Based on theories of decision making from social psychology (Helson, 1964; Parducci, 1965; Sherif, 1963; Sherif, Taub & Hovland, 1958) the reference price literature suggests that instead of evaluating a purchase by accurately assigning costs and benefits to a product, consumers attribute value by referring to a reference price and comparing this with the actual price to reduce the cognitive effort required to judge expensiveness. This has been termed "sticker shock" (Winer, 1986) or transaction value (Thaler, 1985), and is a component of value representing the notion of a deal. Transaction value shares a positive relationship with purchase intention.

CONSUMER RESPONSE TO PRICE PROMOTIONS AND THE FACE VALUE EFFECT

Price Promotions and the Face Value Effect for Low-Price Products

Research has shown several factors that moderate consumers' evaluations of price promotions, including the product's price level (Chen, Monroe & Lou, 1998; Darke & Freedman, 1993; Darke, Freedman & Chaiken, 1995; DelVecchio, 2005; Sinha & Smith, 2000) and how the promotion is framed (DelVecchio, Krishnan & Smith, 2007). These factors may alter and even reverse the face value effect if consumers are affected by the face value of the price promotion. So far, research on the face value effect has been confined to *low-price* products. For example in Raghurir and Srivastava's research, ties and scarves were used as product categories and subjects' willingness-to-pay estimates ranged from US\$10-15 (ties) and US\$15-20 (scarves). These price levels are similar in scope to other consumer behavior research where low-price products were represented by categories of around US\$15 (Kahneman & Tversky, 1984) and US\$8 (Chen, Monroe & Lou, 1998).

The face value effect predicts that individuals' valuations of prices in a higher denomination currency will be inversely related to the face value of the currency. In other words, higher denominations are associated with a lower willingness-to-pay in real terms; that is, once the willingness-to-pay figures have been converted back into the domestic currency. As shown in Raghurir and Srivastava's (2002) study, mean willingness-to-pay was highest for the lowest denomination currency (Norwegian krone) and lowest for the highest denomination currency (Turkish lira). Furthermore, and consistent with prior research on advertised reference prices, recent research shows that consumers rely on an advertised reference price to adjust their internal reference price (Chandrashekar & Grewal, 2006).

This suggests that a consumer's internal reference price in the foreign currency will be anchored by the advertised reference price (also in the foreign currency), which will increase in *nominal* terms as denomination increases, but will decrease in *real* terms as the denomination increasingly activates the face value effect and the product appears increasingly expensive. Thus

a consumer who sees a computer in Japan that costs ¥600000 (US\$650) may initially be surprised by the high *nominal* value (even if they are broadly aware of the exchange rate) and this may anchor their *nominal* reference price to a lower value such as ¥550000 (in real terms this would mean a lower reference price). Consequently, the lower reference price is associated with lower transaction value and purchase intention. Therefore when consumers view a price in a high denomination currency, though they may be aware of the different denomination, their responses may be anchored by the most salient information (i.e., the price in the foreign currency), and this effect increases with the currency's face value.

If a product is being promoted, it might be expected that the promotion also carries a face value effect of its own, counteracting the face value effect of the product's price. However, for low-price products the price promotion will be small, limiting the actual amount of money that consumers can save. As stated by Darke and Freedman (1993, p. 961), "It seems highly likely that people's purchasing decisions will be influenced by the amount that they can save... When small amounts are involved, this factor may be relatively unimportant or even ignored." Thus, either a large percentage discount or a large absolute discount may be necessary in getting subjects to search elsewhere.

These findings suggest that for low-price products, consumers will find small absolute savings to be relatively unimportant, and such trivial absolute amounts will not affect their price evaluations in the foreign currency; that is, consumers will not attach a face value to a price promotion when the actual saving is low. Thus the face value effect is first replicated in a new, but similar context. It is therefore hypothesized in H_{1a-c}, that for a low-price product being promoted:

H_{1a}: reference price will be lower (higher) in real terms when prices are presented in a high (low) denomination currency.

H_{1b}: transaction value will be higher (lower) when prices are presented in a low (high) denomination currency.

H_{1c}: purchase intention will be higher (lower) when prices are presented in a low (high) denomination currency.

Price Promotions and the Face Value Effect for High-Price Products

H_{1a} is a fundamental hypothesis to the study of price perceptions overseas and is worth replicating in additional contexts to further validate the face value effect, and its implications for consumer perceptions of value (H_{1b}) and purchase intention (H_{1c}). Raghurir and Srivastava (2002, p.346) suggest that the face value effect could be stronger for higher priced items, although they acknowledge their findings in this regard are inconsistent. In their study, they did not consider the differential impact of product cost *a priori*, instead speculating based on incidental findings between scarves (where willingness-to-pay was US\$10-15) and ties (where willingness-to-pay was US\$15-20).

Rather than illustrating a clear distinction between low and high-price products, these prices represent similarly priced products. Though, consistent with Raghurir and Srivastava (2002) one may expect the face value effect to be stronger for higher priced products due to the nominal value being higher and consumers having more difficulty processing larger numbers. Research in education suggests that for multiplication problems, simple procedures such as direct counting and repeated addition are often accurate and successful strategies for solving numerical problems. Though this is only likely to be a practical strategy for smaller numbers (i.e., like for a small denomination) and numbers which are integers. Mistakes are more likely to be made for larger numbers (Mulligan & Mitchelmore, 1997). Thus the face value effect might be compounded

when denomination and a product's price are *both* high. However, if the product is being promoted and if the promotion is perceived to be substantial enough, the effect may *reverse*.

Research examining consumer response to promotions may shed some light on this assertion and suggests that discounts for high-price products are perceived differently to discounts for low-price products as they require different levels of cognitive effort and have different levels of economic cost to the consumer. For example, Darke, Freedman and Chaiken, (1995) note the discrepancy in findings between some price promotion studies in regards to search behavior and attribute this to the base price of the product, stating "Studies that found that discounts decreased search behavior tended to use relatively inexpensive items ..., whereas the study that found discounts had minimal effects on price search used more expensive items" (p.584). Their research suggests that promoted products with a base price of \$100 tended to reduce search behavior, whereas promoted products with a higher base price of around \$300 tended to have minimal effects on consumers' propensity to search.

This, coupled with their examination of past research examining search behavior for low-price products (Blair & Landon, 1981; Della Bitta, Monroe & McGinnis, 1981) and search behavior for high-price products (Urbany, Bearden & Weilbaker, 1988) seems to suggest that promoted products with a base price of around \$100 exhibit different consumer responses (i.e., search behavior, value perceptions etc.) to products with a base price of over \$100. Darke, Freedman and Chaiken (1995) attribute these findings to the "discount heuristic", where consumer reliance on discounts to reduce cognitive effort varies by the base price of the product because the economic costs differ. This suggests that discounts for low-price products are less economically important to consumers and thus reduce further search as the economic costs of "getting it wrong" are small.

More recent research examining consumer response to the framing of discounts also finds that the price of a product has important implications for how consumers respond to discounts. For example, DelVecchio (2005) found that deal prone consumers for low-price products are less sensitive to the relative value of the promotion than consumers who are less deal prone and the effect reverses for high-price products. More specifically, Darke and Freedman (1993) show that absolute (i.e., a discount with a monetary value) and relative amounts (i.e., a discount framed as a percentage) of money saved in a price promotion tend to influence consumers' motivations to search, though consumers tend to base their evaluations and judgments on the amount of money that can be saved rather than the percentage amount when the product's price is high (e.g, for air tickets). However, for low-price products such as radios, they found that a large percentage discount or a large absolute discount was necessary to influence consumer response (Darke & Freedman, 1993).

Related to the findings of Darke and Freedman (1993), Chen, Monroe and Lou (1998) found that consumer perceptions of discounts for low-price products (i.e., a calculator costing \$7.95) differ to perceptions of discounts for high-price products (i.e., a computer costing \$1595) - depending on whether the discount is framed as an absolute amount or a percentage amount. Specifically absolute discounts are perceived to be more significant than percentage discounts for high-price products. For instance, suppose an American consumer was considering purchasing a computer in a foreign country that cost, say, HK\$7500, reduced from HK\$8500 (i.e., HK\$1000 less, or a 12% discount). The equivalent cost in the domestic currency, US dollars, would be a price of US\$1095 reduced to US\$965 (i.e., US\$130 less, or a 12% discount). Now suppose the consumer was in a different country, such as Singapore, with a lower denomination currency. This time they may see the same computer advertised as S\$1400 reduced from S\$1600 (i.e., S\$200 less, or a 12% discount). Based on the findings by Chen, Monroe and Lou (1998),

consumers would perceive the purchase in Hong Kong more favorably than the purchase in Singapore when the discount is framed as a dollar off amount, rather than a percentage amount, even though the discount is exactly the same. Thus, there is evidence to suggest that consumer search behavior and value perceptions differ based upon how a promotion is framed, the base price of the product (Chen, Monroe & Lou, 1998; Darke & Freedman, 1993; Darke, Freedman & Chaiken, 1995; DeLVecchio, 2005) and the face value effect (Raghubir & Srivastava, 2002).

What implications does this have for the generalizability of the face value effect? Suppose there is a face value effect that occurs. Reiterating H_{1a} to H_{1c}, for very low-price products the discount that is offered will not be all that meaningful for customers (i.e., for low-price products large actual savings or high percentage discounts are needed). For higher price products though, a somewhat different effect may occur as the absolute value of the discount becomes more economically meaningful to consumers.

Because the size of the discount is much larger in absolute terms for a high-price product (e.g., a 5% discount would save you \$0.50 on a product of \$10, yet a 5% discount would save you \$15 on a product of \$300) the discount becomes more meaningful to consumers and the face value of the new discount may override the face value of the product's price. That is, for a high-price product, despite the product appearing more expensive due to the face value effect, the discount may also seem more attractive, biasing consumer reference prices and perceptions of value *in the opposite direction*. This is the double edged sword of the face value effect based on the counter effects of discounting.

Therefore, in the presence of a large discount, one may expect reference prices, transaction value and purchase intention to change in the opposite direction as consumers attach a face value to the discount. Integrating the face value literature with the literature on price promotions, this suggests H_{2a-c}, that for high-price products with a substantial enough discount:

- H_{2a}:** reference price will be higher (lower) in real terms when prices are presented in a high (low) denomination currency.
- H_{2b}:** transaction value will be lower (higher) when prices are presented in a low (high) denomination currency.
- H_{2c}:** purchase intention will be lower (higher) when prices are presented in a low (high) denomination currency.

To further examine the mechanism for the reversal of the face value effect, equivalent discounts should be perceived differently when presented in different denominations. In particular, consistent with the face value effect reversing, discounts in higher denominations should be perceived as more significant than equivalent discounts in lower denominations. However, as predicted by H_{1a} to H_{1c}, this outcome is only anticipated for high-price products because discounts for low-price products are often perceived as being too trivial (Darke & Freedman, 1993; Darke, Freedman & Chaiken, 1995). Consistent with the literature in the area of price promotions and framing, one would also expect consumers to exhibit differences in perceptions of how substantial the discount is, based on how it is framed. Specifically, as noted by Darke and Freedman (1993), amounts become more important at higher nominal values than percentages. Though, again, these effects are only anticipated for high-price products. It is therefore hypothesized in H₃ and H₄, that for high price products:

- H₃:** a discount is perceived to be more substantial in a high denomination currency, than in a low denomination currency.
- H₄:** a discount is perceived to be more substantial if it is framed as an absolute amount, than if framed as a percentage amount.

METHOD

Experimental Design

The hypotheses were examined using an experimental framework with two separate experiments. Experiment 1 was a cross sectional experiment simulating a shopping experience overseas. In particular it was about how consumers perceive prices and discounts for *low-price* products in different denominations. Experiment 2 replicated Experiment 1 in the context of a *high-price* product. Repeated calls to conduct pricing research under controlled experimental conditions such as these have been made in the literature (Chang, Siddarth & Weinberg, 1999, p. 190; Rajendran & Tellis, 1994, p. 31). Therefore an experimental study with realistic stimuli is suitable for this study on consumer perceptions relating to international pricing because of the ability to control consumer experiences and other confounding influences that the stimuli subjects are exposed to.

The purpose of the study is to better understand how consumers respond to prices and discounts presented in different denominations with equivalent *real* prices. Following on from the hypotheses, and consistent with other experimental studies (Chen, Monroe & Lou, 1998; Dreze & Nunes, 2004; Raghurir & Srivastava, 2002), subjects evaluated a product that varied on i) denomination (high versus low), ii) discount size (small versus large) and iii) the framing of the discount (percentage versus absolute amount), creating a 2x2x2 experimental design in the context of a low-price product (Experiment 1) and further replicated for a high-price product (Experiment 2).

The Instrument

Concept Statements. Subjects were asked to imagine they were on holiday, either in Japan or Australia, and asked to consider purchasing a product to make their holiday more enjoyable. They were presented with a realistic product description, obtained from a company's actual website, and the price of the product in the foreign currency. They were either exposed to a Sony digital camcorder, simulating the high-price condition, or a pair of Sony earphones, simulating the low-price condition. The products chosen have price levels consistent with the conceptualization offered by Darke, Freedman and Chaiken (1995), where consumers seem to respond to discounts differently if priced less or greater than \$100, and are largely consistent with those chosen in Chen, Monroe and Lou (1998) to represent high and low-price products. Brand names were kept the same to eliminate potential brand name effects between the high and low-price product categories. Consistent with earlier research (Wright, Gendall & Lewis, 1999), the product descriptions included photos to enhance their realism (see Appendix A and B).

The locations were chosen to simulate the high and low denomination conditions. As such, subjects were exposed to one of the products in Japanese Yen or Australian Dollars. These currencies were chosen for several reasons. First, their relative value to the domestic currency was the same at the time the research took place (i.e., 1 : 2.41 and 1 : 241). This provided a unique way to control for differences in rounding strategies that subjects may use (Raghubir & Srivastava, 2002). Second, the denomination of the Japanese Yen was around 100 times higher than the Australian dollar at the time of the experiment, reflecting a large difference in denomination that was consistent with the experiment's objectives and earlier research (Callow & Lerman, 2003; Raghubir & Srivastava, 2002).

Third, unlike previous research, the currencies of comparison in this study came from OECD countries, which is useful to control for possible differences in living cost which may bias subjects' price and value perceptions. Other studies have compared denominations from countries

with vastly different incomes (for instance, Luxembourg and Romania). This could lead to confounds from consumer perceptions about product costs in those countries. Fourth, the numbers are not integers which can be more easily converted by respondents (Bell, 1981), and for which the face value effect is likely to be weaker.

Price levels in the concept statements were set with reference to current market prices at the time of the study. These were then converted into the foreign currency and rounded for price endings with the left digit unchanged to control for the left digit effect (Thomas & Morwitz, 2005). To enhance realism, the products and price levels presented to respondents were based on real advertisements from a large chain store. The exchange rate was then presented to respondents both in terms of the domestic currency and in terms of the foreign currency to control for possible presentation effects, identified as a confound by Raghubir and Srivastava (2002). Congruent with Chen, Monroe and Lou (1998), subjects were then told that after browsing a little longer, there was another more advanced option available, which was on promotion. To control for within-subject brand effects, the promoted product had the same brand name as the original product. This product was on promotion, either at a small discount from the original price or a large discount from the original price, and was framed as an absolute amount or a percentage amount.

Discount levels were justified on the basis of past research. For instance, Chen, Monroe and Lou (1998) used a discount level of 10%; above the Just Noticeable Difference (JND) to guard against the discount being perceived as too trivial. This is also consistent with Darke, Freedman and Chaiken's (1995) conceptualization of a small discount and other pricing research which indicates that a 10% discount for a brand named product is above the Just Noticeable Difference (Gupta & Cooper, 1992). Other research suggests that discounts higher than 30% do not evoke a large marginal change in preference, as consumers tend to "discount the discounts" (Della Bitta

& Monroe, 1980; Gupta & Cooper, 1992; Nunes & Park, 2004). With this in mind the discount levels were set at 10% and 20%, and framed either as percentages or absolute amounts. If a discount higher than 20% was used, then the price of the more advanced model would quickly approach the price of the less advanced model detracting from the realism of the experiment and confounding subjects' evaluations. A 20% discount level has been used to represent a large discount in other promotions research (Darke & Dahl 2003).

The discount levels used in this experiment are also consistent with those used in recent research; that is “close to 10%” and “close to 20%” (Chandrashekar & Grewal 2006). For the earphones, the price of the promoted product was either \$34.99 (¥3499) or \$30.99 (¥3099), reduced from \$38.99 (¥3899). For the video camera, the price of the promoted product was either \$584.99 (¥58499) or \$519.99 (¥51999), reduced from \$649.99 (¥64999). After seeing the promoted product, subjects were then asked to evaluate the product in terms of their price and value perceptions.

Measures. Measures of transaction value were adapted from Urbany et al. (1997) and consisted of three seven point scales with bipolar adjectives (low-high, inexpensive-expensive, underpriced-overpriced) following the statement “Compared to what I expect [brand name] would normally sell for, the advertised price of [brand name] is.....”. Cronbach's Alpha for the transaction value items was 0.88, well above the 0.7 cut off recommended by Nunnally and Bernstein (1994).

Recent research presents compelling evidence for carefully selecting a reference price measure (Garbarino & Slonim, 2003) and highlights the importance of price fairness (Xia, Monroe & Cox, 2004). Therefore, the measure of reference price, was an open-ended question asking respondents, “What is your best estimate of a fair price for the promoted product?”. To examine

H₃ and H₄, following Chen, Monroe and Lou (1998) subjects were asked how substantial the discount was, on a 7-point scale from trivial to very significant.

To overcome the other unexplained influences on a purchase intention measure, subjects were asked about their intention to *switch* from purchasing the initial brand they saw, to purchasing the promoted product, via a 7-point scale from very unlikely to very likely. This measure is consistent with other research in this area (Chen, Monroe & Lou, 1998) and is consistent with Rossiter's (2002) practical advice on the use of single-item scales where relevant.

Product category knowledge was measured as a possible covariate using the multi-item scales of Cowley and Mitchell (2003). Respondents were asked how much knowledge they had about the category and how familiar they were with it, anchored by one (not very knowledgeable/familiar) and seven (very knowledgeable/familiar).

Data Collection. The instrument was first pilot tested on a small sample of 15 subjects who were individually interviewed and extensively probed about their understanding of the questions and the task. After making some minor modifications to the instrument reflecting respondents' qualitative comments, the research instrument was pretested on a larger sample of 32 respondents from the target group. No further issues were raised by respondents and the main study proceeded.

The two experiments were administered with subjects studying business and management at two large, metropolitan universities. Participation was voluntary, but encouraged with incentives. Subjects completed the experiment in a carefully controlled environment and were allocated randomly and evenly to experimental treatments. For consumer experiments, student samples are often used (e.g., Dreze & Nunes, 2004; Grewal, Monroe & Krishnan, 1998) because of sample homogeneity (Kardes, 1996). For instance, Lemaire and Lecacheur (2001) observe differences in ability between younger and older adults when converting currencies. Respondents who had not

lived in the domestic country for more than two years were deleted to control for their home country influence. In total 353 subjects took part in the study, 171 in Experiment 1 and 182 in Experiment 2.

RESULTS, ANALYSIS AND FINDINGS

To assess the realism of the stimuli, subjects were asked a question about whether or not they found the price promotions to be unusual. On a scale of 1 (Common) to 7 (Unusual) the median was two, suggesting that the price promotions were perceived as being realistic. In a three way ANOVA for each product category, using the treatments as independent variables and the scale as the dependent variable, no significant difference in means was found, indicating no difference in perceptions across treatments. Heterogeneity between respondents in each treatment was also assessed by measuring product category knowledge. A separate three way ANOVA for each category, with the product category knowledge scale as the dependent variable and the treatments as independent variables revealed no significant difference between the groups.

Multivariate Tests for Both Product Categories

Hypotheses H_{1a} to H_{1c} and H_{2a} to H_{2c} involve simultaneous comparisons of the dependent variables (i.e., the reference price term, transaction value and purchase intention) by denomination, discount framing and discount size. To control for Type I error, a MANOVA was used to distinguish differences in the reference price term, transaction value and purchase intention as a result of these factors. The data for the earphones did not deviate significantly from any of the MANOVA assumptions, so further multivariate testing was conducted using *Wilks' Lambda* (Hair et al. 2006). The multivariate tests for denomination and discount size were

statistically significant (Denomination: *Wilks' Lambda* = .948, $p = .034$; Discount size: *Wilks' Lambda* = .887, $p = .000$) but the results for framing were not (Framing: *Wilks' Lambda* = .987, $p = .563$).

The data for the video cameras did not deviate significantly from any of the MANOVA assumptions either, so further multivariate testing was conducted. The multivariate tests for denomination, framing and discount size were all statistically significant (Denomination: *Wilks' Lambda* = 6.389, $p < .001$; Framing: *Wilks' Lambda* = 4.536, $p = .004$; Discount size: *Wilks' Lambda* = 4.992, $p = .002$). In light of the statistically significant multivariate results for both experiments, differences in the dependent variables were examined by each of the factors with univariate tests from the MANOVA (except for framing with the earphones data as it was statistically insignificant).

Face Value Effects for Low-Price Products: The Earphones Data

The reference price term¹, transaction value and purchase intention by denomination and by product category are shown in Figures 1 to 3. For the earphones the results indicate the presence of a face value effect, as predicted by H_{1a}. That is, for products presented in a higher denomination currency Figure 1 shows respondents seem to have a lower reference price than products presented in a lower denomination ($M_{\text{high}} = -2.39$; $M_{\text{low}} = -1.08$). This effect is statistically significant ($F = 6.893$, $p = .009$), confirming the face value effect for the earphones data and acceptance of H_{1a}.

<INSERT FIGURE 1 ABOUT HERE>

<INSERT FIGURE 2 ABOUT HERE>

¹ The reference price term was calculated by subtracting the reference price from the product's actual price. As such, a more negative value indicates a lower reference price.

<INSERT FIGURE 3 ABOUT HERE>

As expected, further down the hierarchy of effects, transaction value seems to be lower when the product is presented in a high denomination currency than when it is presented in a low denomination currency as shown in Figure 2 ($M_{\text{high}} = 3.82$; $M_{\text{low}} = 4.14$). These differences are statistically significant ($F = 4.421$, $p = .037$), suggesting that the face value effect influences consumer perceptions of value, confirming H_{1b} . The results for purchase intention are partially supportive of H_{1c} because the differences are as predicted (see Figure 3), with purchase intention for the low denomination treatment higher than purchase intention for the high denomination treatment ($M_{\text{high}} = 4.46$; $M_{\text{low}} = 4.73$). However, the effects are not statistically significant ($F = 1.006$, $p = .317$), and it appears therefore that the face value effect may not be strong enough to influence purchase intention. Thus, whilst the difference in means is indicative of the hypotheses, the results are not statistically significant for purchase intention. In summary there is strong evidence to suggest that the face value effect influences consumer price perceptions and value perceptions, and there is some evidence to show that the face value effect influences purchase intention too, though the evidence is not statistically confirmed.

Face Value Effects for High-Price Products: The Video Camera Data

Hypotheses H_{2a} to H_{2c} suggest a reversal of the face value effect for high-price products in the presence of a discount that is substantial enough to elicit a response. The data seems to confirm this conjecture. In particular, the reference price term is lower for the low denomination treatment and higher for the high denomination treatment, as shown in Figure 1 ($M_{\text{high}} = -15.45$; $M_{\text{low}} = -28.88$). This effect is statistically significant ($F = 8.105$, $p = .005$), confirming H_{2a} and suggesting

the face value effect *reverses* for higher-price products when there is a substantial enough discount.

These results perpetuate down the hierarchy of effects. For instance, transaction value is higher for the high denomination currency and lower for the low denomination currency in Figure 2 ($M_{\text{high}} = 4.11$; $M_{\text{low}} = 3.91$), though this effect is not statistically significant at the 5% level ($F = 2.154$, $p = .144$). Likewise, and as expected, in Figure 3 purchase intention is higher in the high denomination currency and lower in the low denomination currency ($M_{\text{high}} = 5.10$; $M_{\text{low}} = 4.31$) and this difference is statistically significant ($F = 13.404$, $p < 0.001$). These findings provide strong support for hypotheses H_{2a} and H_{2c}, and some support for H_{2b}. Thus for high-price products, in the presence of a substantial discount, the face value effect reverses.

Perceptions of Discount Substantiality for a High Cost Product

Hypotheses H_{2a} to H_{2c} present a departure from the existing literature about the nature of the face value effect. As such the nature of this difference is examined in more depth with hypotheses H₃ and H₄. H₃ suggests that for high-price products, consumers will perceive the discount to be more substantial in a higher denomination currency and less substantial in a lower denomination currency. This hypothesis was examined using a two-way ANOVA with perceptions of how substantial the discount is as the dependent variable and denomination and framing as the independent variables.

<INSERT FIGURE 4 ABOUT HERE>

Figure 4 shows that discounts presented in Yen are perceived to be more substantial, regardless of framing and discount size (absolute discounts: $M_{\text{high}} = 4.74$; $M_{\text{low}} = 4.13$; percentage discounts: $M_{\text{high}} = 4.38$; $M_{\text{low}} = 3.61$) and this difference is statistically significant in the ANOVA ($F =$

9.965, $p = .002$), providing support for H₃. No such hypothesis was created for the earphones as it was not expected that a difference would emerge, yet the same analysis was run for the earphones. It is of note that for the low-price product, there was no significant difference in means (which is what one would expect because of the ease with which the calculations could be made relative to the high-price product).

Hypothesis H₄ suggests that framing matters for high-price products presented in different denominations. From Figure 4 it can be seen that absolute discounts are perceived to be more substantial than percentage discounts, and the difference is statistically significant ($F = 4.029$, $p = .046$), providing support for the hypothesis. These results are consistent with prior research (Darke & Freedman, 1993; Chen, Monroe & Lou, 1998), yet how substantial the discount is perceived to be is also clearly influenced by the denomination as shown in testing H₃.

DISCUSSION AND CONCLUSIONS

Two experiments were used to examine the face value effect and extend existing theory about consumer perceptions of price internationally. Experiment 1 examined the face value effect for low-price products that were being promoted and Experiment 2 examined the face value effect for high-price products that were being promoted. The findings from Experiment 1 corroborate and strengthen existing theory by providing evidence for the robustness of the face value effect in a new context (i.e., for low-price products that are being promoted). This research found that the face value effect was robust for low-price products, *even when the product was discounted*, extending research on consumer perceptions of price internationally. Using an integrated response hierarchy model, different denominations not only influenced subjects' reference prices but these effects manifested further down the hierarchy of effects by influencing consumer value

perceptions and purchase intentions. This provides further support for the theory in an independent and new context.

For low-price products this has important implications for pricing management. In particular the face value effect seems to hold regardless of the discount. As such, in countries of relatively high denominations, for low-price products, retailers should consider providing extra price information to overseas consumers in order to avoid confusion (for instance, currency conversions from the domestic currency to other major currencies at point of purchase). Furthermore, there is no difference in consumer perceptions of different framing strategies for low-price products. Thus for low-price products it does not seem to matter what kinds of promotions are used.

Interestingly, and as predicted, the results are markedly different for high-price products. Experiment 2 replicated Experiment 1 using a high-price product where it was anticipated the effects would reverse. The findings presented here add to the existing literature by providing evidence of a boundary condition based on the product's price and the way the discount is framed. Previously the face value effect had not been examined in different purchasing contexts and it may well be the case that the effect is stronger with high-price products. However, the results from this study show the effect can act as somewhat of a double edged sword when a product is being promoted because the face value effect extends to the discount also.

If a discount is present it appears that the discount also has a face value effect and that, for high-price products, the face value effect of the discount may override the face value of the product's price. In other words, the face value effect may appear stronger for high-price products, *but only when there is no discount*. Discounting may interfere with and even reverse the face value effect as demonstrated in this study. However, this is only the case for high-price products.

A retailer in a country with a relatively high denomination could therefore overcome the face value effect for higher priced products by promoting them more aggressively.

To analyze the reasons for these differences, this study also investigated how substantial consumers perceived the discounts to be and examined differences between denomination and framing. For low-price products, denomination and framing had no effect. This makes intuitive sense bearing in mind the numbers are simpler and easier to calculate, even for the high denomination currency. However, for high-price products some important differences emerge. Firstly, discounts were perceived to be more substantial in the higher denomination currency, presenting further evidence of the reversal of the face value effect. Secondly, discounts were perceived to be more substantial when framed in absolute terms, rather than percentage terms.

These findings are consistent with the pricing and promotions literature, where consumers tend to have different perceptions of discounts based on product cost and framing. However, to the authors' knowledge, this is the first time these effects have been empirically examined in an international pricing context. Thus, in countries where the nominal value of the exchange rate is higher, pricing decisions should be made cautiously in environments frequented by tourists. In particular, high-price products should be promoted with absolute amounts rather than percentage amounts, and in such cases the presence of a discount, as long as it is perceived to be substantial enough by consumers, is likely to reverse any negative effects from the face value effect.

On the other hand, countries like America tend to have denominations that are lower than those in other countries and are therefore likely to benefit from higher spending due to the face value effect. However, discounting will not be perceived as attractively in such countries with relatively low denominations and may need to be more substantial to elicit a response from consumers that are used to higher denomination currencies. From the consumer's perspective, tourists and travelers are advised to spend more time evaluating and assessing prices in overseas markets, as

subjectivity and a tendency to inadequately adjust for real prices seems to systematically bias perceptions. Particularly in this era of mobile technology, miscalculations resulting from such perceptual biases are entirely avoidable. In general, these findings strengthen and add to existing theory in the domain of consumer price perceptions internationally and point to the need for retailers operating in international environments to have a clear, coherent and purposeful discounting and pricing policy. In particular this research adds to the debate about the nature of the face value effect by presenting boundary conditions to its existence.

LIMITATIONS AND FURTHER RESEARCH

The findings from this study were insightful for initial research in the area of consumer price perceptions internationally. However, there are some limitations that should be considered. Because of the experimental nature of this study, external validity is limited. Though, the effects examined are largely consistent with, and build on other work in this area (i.e., Desmet, 2002; Gaston-Breton, 2006; Raghurir & Srivastava, 2002), further research should reinforce these findings by replication and extension to other product categories and contexts.

This study was conducted in a lab environment where respondents' past experiences were measured, and to some degree controlled. For instance, 99% of respondents had lived in the domestic currency's country for at least the last two years suggesting some degree of price acclimatization. In the real world, consumers will come from a variety of backgrounds and will have a variety of different price and currency experiences. This research does not directly examine individuals' past experiences and price knowledge, yet this could be important in further understanding the generalizability and robustness of the face value effect.

The findings of this research may also be limited through studying the face value effect when it would appear to be most salient (i.e., at first exposure). One might think that a consumer's mental processes begin to adapt to the new currency after some time, and that behavior converges to its natural state. This seems valid, though Desmet (2002), in his study of changes in price perceptions after the introduction of the euro, suggests the effect might be robust and long lasting. If the face value effect is relatively enduring, how long does it last?

Other research in education presents some interesting artifacts that may need further research attention. For instance, Fischbein, Deri, Nello and Marino (1985) note how placement of the decimal affects problem solving abilities. For instance, they talk of 1.25 and 3.75 as very different numbers because of an "absorption effect" which appears to lead to different rounding effects, congruous to the "left digit effect" in price cognition (Thomas & Morwitz, 2005).

How do perceptions of value differ when the calculation is easy and when the calculation is more complex? One might expect that conversions close to an integer or which require division, rather than multiplication, would be rounded. This may have a negative or positive effect on accuracy and value perceptions depending on whether the currency is 1 : 1.90 or 1 : 2.10. For instance, in this example one might expect that value perceptions would be the same because the consumer may simply round up or round down. For more complex problems and conversions the consumer may use other strategies and heuristics to simplify the process (e.g, use a calculator) and this may affect accuracy and value perceptions.

CONCLUSION

This research extends understanding of consumer response to pricing practices in international markets with two experiments designed to understand how the prices of products are perceived in

different denominations. It extends prior research by considering the role of discounting on the face value effect and examines how this manifests within a new context and alters the face value effect. The findings from this study suggest that the face value effect is robust for low-price products, *even when they are being promoted*. However, for high-price products, when a substantial enough discount is invoked, the face value effect becomes a double edged sword and appears to override the face value effect from the product's price. This is an important finding, because whilst current research in this area suggests that the face value effect becomes stronger for high-price products, this would only seem to be the case when there is no discount. For a high-price product a substantial enough discount reverses this effect as the discount is perceived to be more substantial. Furthermore, and consistent with prior research for high-price products, framing of the discount in absolute terms is more effective than framing the discount in percentage terms. Though as expected, there was no difference in perceptions of value for different ways of framing discounts for low-price products.

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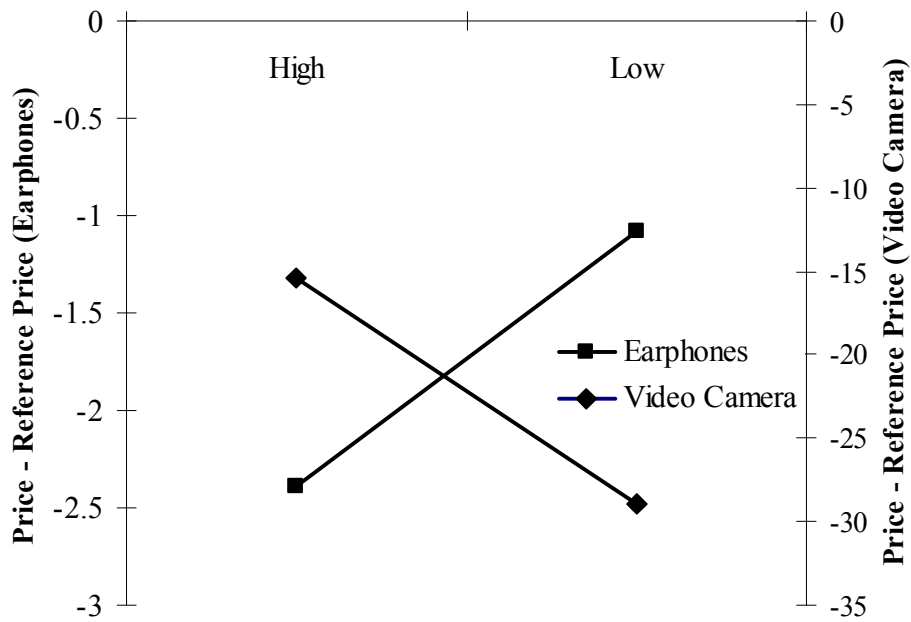


Figure 1: The reference price term by denomination and product category

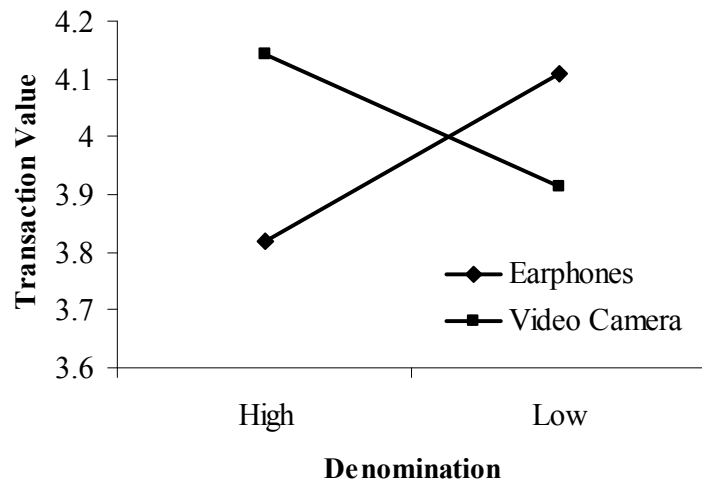


Figure 2: Mean transaction value by denomination and product category

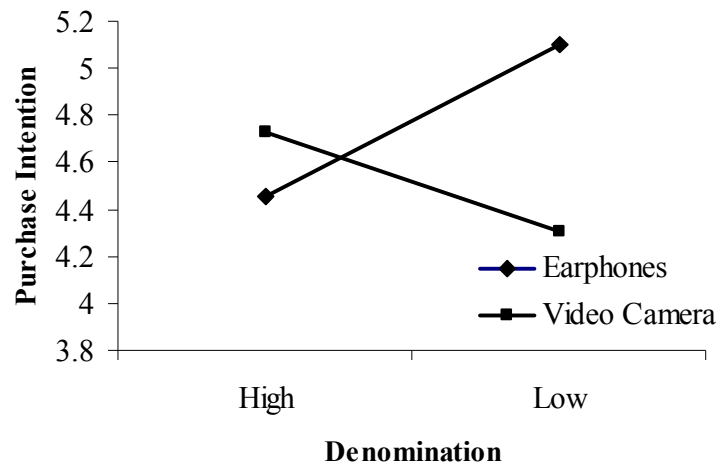


Figure 3: Mean purchase intention by denomination and product category

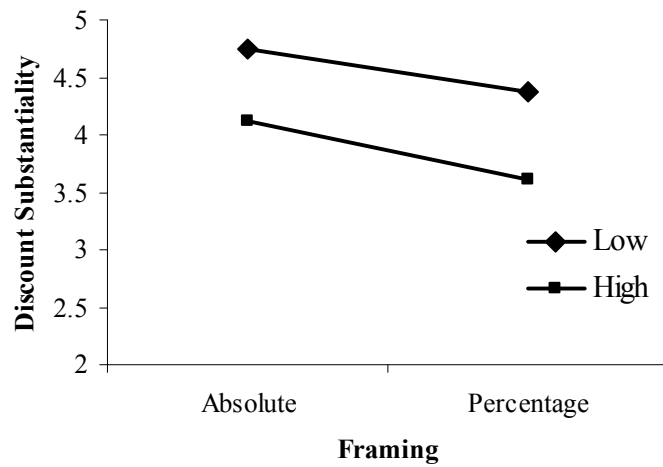


Figure 4: Perceptions of how substantial the discount was by denomination and framing

APPENDIX A

Treatment: High cost product, low denomination, small discount, percentage amount

Sony DCR-DVD306 Camcorder



Save 10%...

\$584.99

Was \$649.99, now \$584.99

Product detail

- Carl Zeiss Vario-Tessar lens
- 1 Megapixel Advanced HAD CCD
- 25x Optical Zoom
- 2000x Digital Zoom
- Image stabiliser
- 5.1 Surround sound recording
- Built-in microphone
- Up to 110 mins continuous recording with DVD+R DL
- Compatible with 8cm DVD-R/-RW/+RW/+R DL
- 2.7" Wide Hybrid LCD screen with touch panel
- Easy-to-use functions
- Super SteadyShot
- Super NightShot Plus
- Memory Stick DUO slot
- 2nd start / stop REC and zoom button on LCD screen
- Hi-speed USB2.0
- 10 Scene Selection
- Battery Info
- PictBridge compatible

APPENDIX B

Treatment: High cost product, high denomination, small discount, absolute amount

Sony DCR-DVD306 Camcorder



Save ¥6500...

¥58499

Was ¥64999, now ¥58499

Product detail

- Carl Zeiss Vario-Tessar lens
- 1 Megapixel Advanced HAD CCD
- 25x Optical Zoom
- 2000x Digital Zoom
- Image stabiliser
- 5.1 Surround sound recording
- Built-in microphone
- Up to 110 mins continuous recording with DVD+R DL
- Compatible with 8cm DVD-R/-RW/+RW/+R DL
- 2.7" Wide Hybrid LCD screen with touch panel
- Easy-to-use functions
- Super SteadyShot
- Super NightShot Plus
- Memory Stick DUO slot
- 2nd start / stop REC and zoom button on LCD screen
- Hi-speed USB2.0
- 10 Scene Selection
- Battery Info
- PictBridge compatible