Partitioned Pricing: Implications to Taxation

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December 2011

Key words: mental accounting, tax policy, consumption taxes, consumer purchasing, partitioned-pricing

Data availability: contact the authors

Acknowledgements: This paper has benefited from reviewer, discussant and participants at the Behavioral Tax Symposium, the Accounting, Behavior, and Organization Mid-Year Meeting; the Northeast Regional Meeting of the AAA; and the University of Rhode Island.
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INTRODUCTION

The total amounts of federal, state, and local taxes paid are significant in comparison to total Gross Domestic Product (GDP). The Tax Foundation (2011) reports that taxpayers must labor 102 days to pay taxes annually; representing 26.9 percent of GDP. People typically encounter multiple forms of tax requirements every day. For example, income and Social Security taxes are applied as income, in the form of wages and salaries, is earned; sales taxes are applied to most consumer purchases. Due to the assessment structure, some taxes may be more observable to taxpayers. For instance, direct taxes may be more observable than indirect taxes because they are generally paid by the taxpayer to the government. Typical examples of direct taxes are income and transfer tax. Indirect taxes include consumption taxes, such as sales and excise tax, which are typically collected by vendors and remitted to the government. Prior marketing literature has found the manner in which prices are presented influences the demand and total recalled price of consumer goods. Specifically, decision-makers increase demand and recall lower prices in response to a partitioned pricing structure in comparison to an equivalent all-inclusive price (Morwitz, Greenleaf and Johnson 1998; Chakravarti, Krish, Paul and Srivastava 2002; Xia and Monroe 2004). Partitioned pricing means to divide the price charged for a product or service into two mandatory parts. An example of partitioned pricing would be the on-line purchase of a $32 shirt plus a mandatory $4.95 shipping and handling charge. The structure of state sales tax is an example of a partitioned pricing structure. The two mandatory parts are the underlying item (or service) being purchased and the sales tax charge.

In the United States, sales tax is generally added to the base price at check-out so that the price initially presented to the consumer does not represent the total amount to be paid for it.
That is, the sales tax charged is partitioned, or priced as a mandatory additional amount, from the price of the underlying product or service. Not all consumption taxes are presented in accordance with a partitioned pricing structure. Excise taxes are generally included in the purchase price.¹ That is, an all-inclusive price is initially presented to consumers. The excise tax, federal and/or state, may represent a substantial portion of the total purchase price. The federal excise tax applied to a package of cigarettes currently is $1.01. The state excise tax applied to a package of cigarettes varies substantially from a low of $.17 in Missouri to a high of $4.35 in New York (Federation of Tax Administrators 2011). In many instances, states apply an excise tax and sales tax to the same item (Federation of Tax Administrators 2010). When both taxes apply, the excise tax is presented as part of the item cost and the sales tax is partitioned as a separate pricing element.

One difference between a partitioned pricing structure versus an equivalent (dollar value) all-inclusive pricing structure relates to visibility. In prior marketing research, partitioning (i.e. identifying separately) a mandatory charge has been found to increase the saliency of the components (Chakravarti et al. 2002). Because people generally have a negative affect toward taxes (Tax Foundation 2009a), and if partitioning increases the saliency of the charge, people may not respond to a partitioned tax in the same manner as a partitioned non-tax item. Specifically, people may attend to partitioned tax items more than an equivalent (value) non-tax charge. On the other hand, it is also possible consumers may pay less attention to a partitioned tax charge in comparison to a mandatory non-tax charge because they frequently encounter sales tax and the additional sales tax charge is expected, i.e., consumers may have adapted to it. If

¹ Excise taxes are commonly referred to as “sin” taxes because the underlying base (i.e. product or service) is often viewed as a vice, such as cigarettes and alcohol. Excise taxes are a relatively popular mechanism for generating state revenues, particularly in response to budgetary shortfalls, because they are easily accepted by the public at large and apply only to product users. Furthermore, they are levied by government to discourage behavior without making consumption illegal.
adaptation occurs, consumers may discount the tax element. At the extreme, people may ignore
the tax element completely. Thus, Krishna and Slemrod (2003) observed:

It would be insightful to apply the standard marketing research tool of laboratory
experimentation to questions such as determining whether people respond
differently when the issue is framed as a tax one or a price one, or to how exactly
the tax is presented.

The purpose of the current study is to extend the prior marketing literature regarding
pricing structure (i.e. partitioned versus all-inclusive pricing) by investigating the effects of a tax
versus non-tax partitioned surcharge fee. In addition, we examine how consumers respond to a
tax versus non-tax surcharge that is presented as a percentage add-on to the base price or as an
add-on amount expressed as additional dollars.

A uniquely diverse sample of two hundred and eight (208) adults, participated in a
consumer purchasing decision experiment. The results indicate consumer demand is higher as a
result of partitioned pricing versus all-inclusive pricing—not only for mandatory consumer add-
ons but also when the partitioned element is a consumption tax. Further, we find the effect is
greater for the consumption tax than for the consumer add-on. The effects for consumption taxes
are even more pronounced when the partitioned tax is presented as a percentage of the base price
instead of an additional dollar amount. We also demonstrate the underlying mental accounting
mechanisms behind this behavior: (1) participants recall a lower price when the price is
partitioned into a sales tax added on to a base price versus one all-inclusive price, (2) they use
math processing less when the partitioned tax is presented as a percentage, and (3) they use
heuristic processing (anchor and adjust or ignore) more when the partitioned tax is presented as a
percentage.
The results of this investigation should be of interest to policy-makers at federal, state, and local levels. Any effect that pricing strategies and presentation format has on consumer demand affects the economy. On a federal level, the current administration seems dedicated to stimulating the economy. The results of this study may prompt policy-makers to consider the structure of future federal tax legislation regarding its influence as an economic stimulus or hindrance. Our findings are also relevant to discussions that crop up periodically about adding a national consumption tax such as a sales tax or value-added tax (VAT) to reduce the federal budget deficit. On a state and local level, sales taxes are a significant source of revenue, much more so than to the federal government. State sales tax revenue account for approximately one-third of state funding (Federation of Tax Administrators 2010). Any increase in consumer spending directly produces additional sales tax revenues for state and local governments.

The following section provides the prior literature, theory and hypotheses. Subsequent sections provide the research methodology, results and discussion – including conclusions, limitations and suggestions for future research.

PRIOR LITERATURE, THEORY AND HYPOTHESES

Tax Burden and Structure

Taxes represent a significant expense in the U.S. As shown in Figure 1, Americans spend approximately 102 days working per year to pay for their total tax burden (Tax Foundation 2011). The primary types of taxes are identified on Figure 1 as well as the number of days spent laboring per year to pay for each type. There are five primary types of taxes: income (individual and corporate), social insurance, sales/excise, property, and transfer tax. Figure 1 further reports the federal and state tax burden, in days spent laboring, for each type of tax.
The structure of the tax burden is different depending on the type of tax. Income tax is assessed on the income of individuals or corporations on an annual basis. The federal tax rate applied to the income base is progressive in that higher levels of income are taxed at higher percentages. Income tax is collected on a pay-as-you-go system through employer withholding or estimated tax payments. Social insurance tax includes Social Security, Medicare and unemployment tax. Like income tax, Social Security and Medicare tax are assessed on individual income and the tax is collected on a pay-as-you-go system of withholding and/or estimated tax payments.\footnote{Social insurance taxes are assessed on the earned income of the taxpayer. The base for Social Security is statutorily limited each year.} Unemployment tax is assessed on income, but paid by employers rather than employees.

Sales tax is a consumption tax that is derived when a purchase transaction takes place. It is a flat, or proportionate rate, tax on the sales price of a product or service. Businesses charge sales tax on consumer purchases and remit the tax to the government. Excise tax is similar to sales tax as it is a flat tax imposed on products and services. Excise tax is based on the quantity rather than value of a purchase. Property tax, also known as ad valorem tax, is imposed on the assessed value of property, real or personal, owned by the taxpayer. Property tax is assessed annually but usually paid in installments for real property (e.g. building or home) and through a licensing fee for personal property (e.g. automobile or boat). Finally, wealth transfer tax is assessed on the transfer of property. While most taxes are paid by the recipient (of at least some benefit), transfer tax is paid by the transferor. That means that gift tax is the responsibility of the donor and estate tax is the responsibility of the decedent’s estate. The tax is based on the fair market value of the transferred property. Due to certain exclusions, transfer taxes affect very
few taxpayers and, as shown in Figure 1, represent an average of 18 hours of taxpayer labor to pay annually.

**Tax Structure: Direct Versus Indirect**

The economic literature includes a long-standing debate over the optimal tax structure—direct or indirect taxation. A direct tax is levied on the income or wealth of taxpayers. Direct taxes are collected by the government (directly) from the taxpayer on whom it is imposed and cannot be shifted to a different taxpayer. The primary distinction is that a direct tax may be adjusted to the individual characteristics of the taxpayer. Indirect taxes, on the other hand, are levied on transactions and are unrelated to the characteristics of the taxpayer (Atkinson 1977; Atkinson and Stiglitz 1980; Cremer, Pestieu and Rochet 1991). The most common examples of a direct tax and indirect tax are income tax and sales or consumption tax, respectively.

**Structure of Indirect Tax**

Some speculate that policymakers are considering the adoption of a consumption tax to replace or supplement the federal income tax system in the U.S. (Montgomery 2009; Brooks 2009). A consumption tax is believed to discourage spending, reduce consumer debt and encourage savings and investment. Sales tax, excise tax and value add tax (VAT) are indirect consumption taxes in that the government does not collect the tax directly from the taxpayer. The structure of sales tax, however, is presented to taxpayers (as consumers) as a partitioned price. Whereas, the structure of excise or VAT is included in the total price presented to taxpayers. Based on prior marketing literature, discussed below, this structure differential may

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3 While employers are required to withheld and remit income tax on behalf of employees, self-employed taxpayers remit directly to the government. And, all taxpayers must file an annual income tax return which makes the total of their income tax liability fairly visible.

4 Value add tax (VAT), sometimes referred to as goods and service tax (GST) is a consumption tax levied on the valued added. The tax is levied as a constant percentage of the value added at each stage of the economic supply chain.
affect demand and total recalled price of the underlying good or service being purchased. However, it is not clear whether prior results from the marketing literature will extend to a tax context.

**Partitioned Pricing Versus All Inclusive**

Morwitz et al. (1998) introduced the concept of *partitioned pricing* which means to divide the price charged for a product or service into two mandatory parts.\(^5\) Examples of partitioned pricing included a $32 shirt plus $4.95 shipping and handling charge and a Caribbean cruise listed at $1,295 plus $140 mandatory port charge. The larger component is referred to as the base and smaller component as the surcharge.

When compared to an equivalent all-inclusive pricing structure, Morwitz, et al. (1998) found most decision-makers faced with partitioned pricing recalled item cost as being lower than the sum of the base plus surcharge which is consistent with an anchor and adjustment or ignoring strategy (Hogarth and Einhorn 1992; Tversky and Kahneman 1974). Specifically, Morwitz et al. (1998) predicted and found that most decision-makers anchor on the base and adjust (inadequately) for the surcharge. Decision-makers anchor on the base, usually the higher priced item, because it is perceived as being most important (Yadav 1994). Prior literature has consistently reported an increase in demand and reduction in total recalled price related to partition pricing (Morwitz et al. 1998; Chakravarti et al. 2002; Xia and Monroe 2004; and Burman and Biswas 2007).

Xia and Monroe (2004) investigated a partitioned price surcharge of sales tax versus shipping and handling. They suggest that the type of surcharge was difficult to interpret because

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\(^5\)The fact that the price of *one* item is divided into two mandatory parts differentiates partitioned pricing from product bundling which entails pricing together *two or more* distinct products or services (Guiltnan 1987).
shipping and handling was so problematic. That is, consumers are particularly sensitive to shipping and handling which confounds any comparison to sales tax.

There are also some design issues that make the prior literature difficult to generalize to a tax setting. For example, Morwitz et al. (1998) examined partitioned versus all-inclusive pricing using a penny jar auction which, while effective for marketing research, does not easily analogize to a tax setting. In addition, the partitioned surcharge in Chakravarti et al. (2002) was not actually mandatory, it was strongly recommended. Finally, the prior marketing literature is wholly based on responses of college-age students. As discussed in the method section, a diverse sample of adults was obtained for the present study.

As described in the introduction section, the primary purpose of the study is to examine the effects of partitioned versus all-inclusive pricing when the partitioned element consists of a consumption tax. A necessary precondition, however, is to determine whether demand is higher for the partition priced consumer good for our sample of participants and consumer choice task regardless of tax or nontax context. This is particularly important because our sample demographic (i.e. adults) differs from the prior marketing literature (i.e. college students).

Therefore our first hypothesis is:

H1: Demand for consumer goods will be higher when decision-makers are presented with a partitioned price than with an equivalent all-inclusive price.

**Nature of Partitioned Component**

A sales tax is not a tangible good, nor does it have an identifiable benefit to the decision-maker. Chakravarti et al. (2002) found that partitioned pricing makes the components more salient to decision-makers than all inclusive pricing. Furthermore, demand and customer evaluation increased when a refrigerator was bundled with a consumption-related accessory (ice
maker) rather than performance-related feature (warranty) suggesting that the nature of the surcharge affects decision-making. Similar findings were reported by Hamilton and Srivastava (2008) in that decision-makers were more sensitive to the price of the component that had low consumption benefits. In their study, the base was a refrigerator and the components were an ice maker (high benefit) or a sound-silencing system (low benefit). Bertini and Wathieu (2008) suggest that partitioned pricing structure affects the perception of the secondary (i.e. partitioned) element. Characteristics of the partitioned element, such as the perceived value, importance and evaluability (ease of evaluating), can determine if partitioning stimulates or hinders demand.

Sales tax charges provide the decision-maker with no immediate benefit. In addition, The Tax Foundation (2009a) reports that Americans generally have a negative opinion about taxes in the United States. If the surcharge makes the sales tax more salient and sales taxes are perceived as having low (or no) benefit, decision-makers may be more sensitive to a sales tax surcharge as compared to a non-tax surcharge. In such case, decision-makers may attend more to a sales tax surcharge than a non-tax surcharge. This prediction would mean that decision-makers are more likely to either do the actual mathematical calculation to evaluate the total cost of the purchase, consistent with classical economic theories, or they may anchor on the base item but adjust more accurately toward the total price. Total recalled prices at, or very near, the all-inclusive (correct) price is consistent with these approaches.

Much of the prior literature regarding partitioned pricing uses shipping and handling as the surcharge component of the pricing structure (Morwitz et al. 1998; Xia and Monroe 2004; Clark and Ward 2008). For instance, the partitioned items in Morwitz et al. (1998) were a telephone $69.95 base and shipping and handling $12.95 surcharge. When investigating price partitioning on the internet, Xia and Monroe (2004) included shipping and handling and sales tax
as a surcharge. Xia and Monroe (2004) found the shipping and handling surcharge affected purchase intentions more negatively than an equivalent sales tax. Although their study was more focused on the shipping and handling surcharge, their findings may imply that decision-makers use an ignoring strategy and actually under-value sales tax even more so than other types of surcharges. If decision-makers completely ignore the surcharge, the total recalled price would equal the base price when the surcharge is sales tax as compared to a non-tax surcharge. Alternatively, decision-makers may anchor on the base price, but adjust less for a sales tax surcharge compared to a non-tax surcharge.

Regarding their findings, Xia and Monroe (2004) suggest that decision-makers may be particularly sensitive to shipping and handling fees and somewhat impervious to sales tax. Decision-makers are aware that shipping and handling charges are controlled by the seller and, as such, represent a profit center for many businesses. In essence, decision-makers view shipping and handling fees as a “great rip off” (Neuborne 2001). Sales taxes, on the other hand, are simply more common and may be more acceptable because they are not actually imposed, or manipulated, by the seller.

Xia and Monroe (2004) is the only study to evaluate the effects of sales tax as a surcharge in a partitioned pricing structure. Due to the fact that the comparison non-tax surcharge (i.e. shipping and handling fees) may have confounding issues, the use of an alternative comparison surcharge will be investigated and the following hypotheses are proposed:

H1a: Demand for consumer goods will be higher when decision-makers are presented with a non-tax partitioned price than with an equivalent all-inclusive price.

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6 The surcharge in one other study, Burman and Biswas (2007) was described as applicable taxes and fees, but did not include analysis regarding the type of the surcharge (tax vs. non-tax).
H1b: Demand for consumer goods will be higher when decision-makers are presented with a tax partitioned price than with an equivalent all-inclusive price.

H2: Demand for consumer goods will be higher when decision-makers are presented with a partitioned price that includes an additional tax cost than with a partitioned price that includes an additional non-tax cost.

Structure of the Surcharge

Regarding the structure of the surcharge, Morwitz, et al., (1998) found that decision-makers were particularly likely to use a heuristic or ignoring strategy when the surcharge was presented as a percentage of the base as compared to the dollar value equivalent. That is, the results—increased demand and lower recalled price—were more prominent when the surcharge was presented as a percentage of the base item. Xia and Monroe (2004) found that the increase in the demand related to the presentation of the partitioned element in percentage format versus an equivalent dollar format when the surcharge is low. Unfortunately, these are the only two papers in the prior marketing literature that question the difference that formatting might have on consumer demand and only Morwitz, et al. (1998) assessed the effects on recalled price. We examine whether these prior findings extend to a tax and non-tax surcharge, i.e., we examine whether consumer demand is affected by presentation of the partitioned tax as well as nontax surcharge in a percentage versus equivalent dollar format:

H3a: Demand for consumer goods will be higher when decision-makers are presented with a non-tax partitioned price as a percentage of the base price than with a non-tax partitioned price as an add-on dollar amount to the base price.

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7 The magnitude of the surcharge was manipulated at 6% and 12% as low and high, respectively. Xia and Monroe (2004) did not capture recalled price.
H3b: Demand for consumer goods will be higher when decision-makers are presented
with a tax partitioned price as a *percentage* of the base price than with a tax
partitioned price as an add-on *dollar* amount to the base price.

**Partitioned Pricing Processing Strategies**

Three strategies to process partitioned pricing structure are presented in order of the
cognitive effort (high to low) required by each strategy. First, according to classical economic
theories that presume descriptive invariance (Tversky, Sattath and Slovic 1998), decision-makers
may process the partitioned surcharge accurately as a sum of the base plus surcharge. In this
case, the partitioned pricing structure (versus all-inclusive) should not affect the total recalled
price or decision-maker demand. Second, decision-makers may use an anchor and adjustment
process whereby they would anchor sequentially (Hogarth and Einhorn 1992; Tversky and
Kahneman 1974) or by perceived importance of the two pricing components (Yadav 1994). As
applied to partitioned pricing, decision-makers utilizing an anchor and adjustment strategy are
likely to attend to the base price and insufficiently adjust the total price for the surcharge.
Finally, decision-makers may completely ignore the sales tax surcharge and simply state the base
price as the total cost of the item. The result of either the anchor and adjust strategy or ignoring
is increased demand and/or lower recalled price, with a more pronounced effect if the surcharge
is completely ignored.

Assuming the demand effects hold, we turn our attention to the underlying mental
accounting that Morwitz, et al. (1998) suggested explains differences in demand between
partitioned and all-inclusive price structure. The first dependent variable we examine for mental
accounting is the recalled price. Recalled price has received limited attention in the prior
literature, yet it provides much insight about the variations in demand. Therefore, the following hypotheses are proposed:

**H4a:** Recalled price for consumer goods will be lower when decision-makers are presented with a *non-tax* partitioned price than with an equivalent all-inclusive price.

**H4b:** Recalled price for consumer goods will be lower when decision-makers are presented with a *tax* partitioned price than with an equivalent all-inclusive price.

**H5a:** Recalled price for consumer goods will be lower when decision-makers are presented with a *non-tax* partitioned price as a *percentage* of the base price than with a non-tax partitioned price as an add-on *dollar* amount to the base price.

**H5b:** Recalled price for consumer goods will be lower when decision-makers are presented with a *tax* partitioned price as a *percentage* of the base price than with a tax partitioned price as an add-on *dollar* amount to the base price.

To delve even further into the differences in demand and recalled price, we examine the extent to which consumers engage in math processing or heuristic processing when dealing with the partitioned price. Based on prior marketing research, we expect a higher incidence of math processing when the partitioned element is in dollars and a higher incidence of heuristic processing when the partitioned element is presented as a percentage of the base price.

**H6a:** Math processing will be higher when decision-makers are presented with a *non-tax* partitioned price as an add-on *dollar* amount to the base price than with a non-tax partitioned price as a *percentage* of the base price.
H6b: Math processing will be higher when decision-makers are presented with a tax partitioned price as an add-on dollar amount to the base price than with a tax partitioned price as a percentage of the base price.

H7a: Heuristic processing will be higher when decision-makers are presented with a non-tax partitioned price as a percentage of the base price than with a non-tax partitioned price as an add-on dollar amount to the base price.

H7b: Heuristic processing will be higher when decision-makers are presented with a tax partitioned price as a percentage of the base price than with a tax partitioned price as an add-on dollar amount to the base price.

RESEARCH METHODOLOGY

Participants

Participants were potential jury members at a state courthouse in the New England area. Data was gathered on three separate occasions. In all cases, data was gathered before any potential jurors were called for jury duty. All potential jury members, 223 people, were asked to complete a survey that included a hypothetical consumer purchasing decision. Of the 223 requests, nine people declined, three returned blank surveys and three surveys were dropped from the analysis due to nonsensical or inadequate responses. For instance, one person wrote that he only buys used (i.e. not new) appliances and did not answer the questions pertaining to demand or recalled price (i.e. the dependent variables). Thus, the sample consisted of 208

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8 There was one survey in which a gentleman did not complete the demographic questions at the end of the survey because he was called for jury duty. In addition, there was one day when the researcher(s) went to the courthouse and jury selection had already commenced. No data was gathered that day.
responses which is a 93% response rate. Participant demographics are shown in Table 1. We are unable to compare our sample to that used in prior marketing literature because marketing samples have been drawn exclusively from college populations. By utilizing potential jury members, our sample was effectively drawn from a diverse population of adults as is corroborated by the demographic results.

[Insert Table 1]

Experimental Task

Participants were randomly assigned to one of five treatment conditions. Participants responded to a hypothetical consumer purchasing decision task. The consumer product, a refrigerator, and a forced choice design was adapted from seminal research by Morwitz, et al. (1998) and Chakravarti, et al. (2002) and more recently Hamilton and Srivastava (2008). Participants were asked to assume that they had accepted a new job that provided an increased salary and benefits. With the increased salary, the participant could afford to replace his/her refrigerator that was not working well (e.g. temperature control does not work, etc.). Further, participants were told that they had completed research and narrowed the choice down to two models—refrigerator A (target) and refrigerator B (control). In all conditions, the price of refrigerator B (control) was presented as an all inclusive price of $740. There were two slight differences between refrigerator A (target) and refrigerator B (control). Refrigerator A had 16.6 cubic feet capacity and a one-year manufacturer warranty. Refrigerator B had 15.7 cubic feet capacity.

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9 The high response rate may be due to the fact that the jury room coordinator announced the survey and encouraged participation. Also, at least one researcher was present and directly handed a survey (and informed consent document) to each person with a clipboard and a pen. Subjects who did not want to participate were asked to indicate to researcher as surveys were being distributed.
capacity and a two year manufacturer warranty. Thus, the target was slightly larger, but had lesser warranty.\textsuperscript{10}

**Dependent Variables**

*Demand.* Participants were asked to rate their demand for the refrigerator on an 11 point Likert-type scale. The specific question was: “Of the two models, which refrigerator are you more likely to purchase?” The scale ranged from -5 “Definitely purchase Refrigerator A” to +5 “Definitely purchase Refrigerator B” with zero labeled as neutral.

*Recalled Total Price.* The total price of both refrigerator models across all manipulated conditions is $740.\textsuperscript{11} After a distracter task, participants were asked to report the total recalled price of refrigerator A (target) *without looking back at the information provided.*

**Independent Variables**

*Experimental design.* The experimental design includes three manipulations: (1) two levels of price structure (all-inclusive vs. partitioned-price) and, within the partitioned-price treatment, a 2 x 2 manipulation of (2) surcharge type (tax vs. non-tax), and (3) partitioned-price format (dollar amount vs. percentage of base price). See Table 2.

[Insert Table 2]

*Price Structure.* Price structure is a between-subject variable manipulated at two levels: all inclusive or partitioned. The price of refrigerator B (control) was consistently shown at $740. In the all-inclusive condition, the price of refrigerator A (target) was shown at $740. In the

\textsuperscript{10} From a research design standpoint, the goal was to make the differences inconsequential to the purchase decision. The differences are based on prior literature and substantial pre-testing where subjects were asked to elaborate on how/why they made their selection.

\textsuperscript{11} The all-inclusive condition and refrigerator B (control) were always shown as $740. The manipulated conditions discussed next – i.e. refrigerator A (target) – are mathematically equal to $741. The fact that price of the control equals the total price of the target strengthens any recalled price differences found. Pre-test subjects thought the price was reasonable.
partitioned price structure condition, the price was shown at $699 plus a mandatory partitioned surcharge that added together equals $741.

**Surcharge Type.** The surcharge type is manipulated between partitioned price structure (only) subjects. That is, the surcharge is not applicable in the all-inclusive condition. The surcharge format is manipulated at two levels in that the surcharge portion of the partitioned pricing structure was described as a tax (i.e. sales tax) or mandatory non-tax charge. Based on pre-testing, the non-tax charge is described as a choice of exterior color options of white or stainless steel. In the all-inclusive condition, as well as the description of refrigerator B (control), the sales tax and choice of exterior color option are included in the $740 price.

**Partitioned Price Format.** The partitioned element is a mandatory additional (to the base price) charge. Like the surcharge type, the format of the partitioned element was manipulated between partitioned price structure (only) subjects. The format of the partitioned element was presented as either a dollar amount ($42) or as a percentage of the base price (6%) that is shown in addition the base price of $699.

**Processing Strategy.** Processing strategy is only applicable to subjects in the partitioned price condition. That is, the all inclusive price condition does not require processing. Processing strategy was determined in accordance with prior literature (Morwitz et al. (1998). Subjects were classified as using a mathematical strategy if they reported a single figure within .5% of the actual total price or if they reported the calculation and solved it (e.g. 699+42=741). Thus, a recalled price of $737 to $745 was coded as mathematical processing. Subjects were classified as using a heuristic if they reported the base price (i.e. $699) or an amount within .5% of the base
price (i.e. ignored the partitioned price element). Thus, a recalled price of $695 to $703 was coded as ignoring/heuristic.\textsuperscript{12}

*Control Variables.* The usual demographic variables—age, gender, level of education, income—were evaluated to ensure equivalence across the five participant groups. Demographic variables were measured categorically with five categories represented (See Table 1). In addition, employment status was measured in an attempt to control for the possibility that the fictitious story of affordable refrigerator is overridden by employment status/hardship.

ANOVAs for each demographic category indicated no significant differences across the five participant groups (p > .05). A plurality of participants are in the 41-65 age group, $50,001 to $100,000 income group, employed full-time, and have achieved an educational status of “some college.” Forty-eight (48) percent of participants are male, and the mean years of employment for those currently employed is 9.4 years. The subject pool appears to be a good representation of the adult population in the United States.

**RESULTS**

**Effects of Partitioned-Pricing, Surcharge Type, and Price Format on Consumer Demand**

ANOVA results for H1 are shown in Table 3, and between-group means are shown in Table 4. The ANOVA for Pricing Structure is highly significant (f = 9.9; p < 0.001). The All Inclusive pricing group mean likelihood of purchasing the target refrigerator is 1.3 (3.9 s.d.) on the -5 (definitely purchase target refrigerator) to +5 (definitely purchase control refrigerator) response scale, and the Partitioned Pricing group mean is -0.8 (3.8 s.d.). The difference in means is also highly significant (t = 3.1; p < 0.001). Therefore, we conclude H1 is supported. In this

\textsuperscript{12}We operationalize heuristic use as ignoring as a strong test of heuristic strategy. People who ignore the cost of the partitioned surcharge are displaying the use of heuristic strategy to the extreme.
between-subject test of all inclusive versus partitioned pricing, consumer demand is higher in
texture to partitioned pricing as compared to all inclusive pricing.

[Insert Table 3]

[Insert Table 4]

Results for H1a and H1b, also reported in Tables 3 and 4, likewise indicate consumer
demand is higher when pricing is partitioned than all inclusive when (1) the partitioned element
(Surcharge Type) is a non-tax add-on item (stainless steel exterior versus basic white enamel) (f, 4.4; p < 0.02) as well as (2) when the partitioned element consists of an add-on sales tax (f, 13.4; p < 0.0002). Means for the non-tax partitioned versus all inclusive conditions are -0.2 (3.7 s.d.) vs. 1.3 (3.9 s.d.) (t, 2.1; p < 0.02). Means for the tax partitioned versus all inclusive conditions are -1.4 (3.9 s.d.) vs. 1.3 (3.9 s.d.) (t, 3.7; p < 0.0002).

H2 tests for differences in consumer demand based on Surcharge Type. As shown in
Table 3, the difference is significant (f = 4.3; p < 0.02). Consumer demand is significantly
greater when the partitioned price element is an add-on sales tax than the non-tax color option
(Table 4). Means are -1.4 (3.9 s.d.) for the sales tax condition and -0.2 (3.7 s.d.) for the non-tax
add-on (t = 2.1; p < 0.02). Therefore, we conclude participants are more likely to purchase the
target consumer good when the partitioned price surcharge consists of sales taxes as compared to
an additional product choice.

Because surcharge type is significant, we analyze the effects of partitioned price format
in terms of an add-on expressed in dollars versus a percentage of the base price separately for
non-tax and tax surcharges. H3a predicts Partitioned Price Format will significantly affect
demand in the non-tax surcharge condition. However, as shown in Tables 3 and 4, this
hypothesis is not supported (Table 3: f = 0.5; p > 0.20).
In contrast, partitioned price format does significantly affect demand when the Surcharge Type is an add-on sales tax (H3b). As shown in Table 3, the ANOVA for H3b is significant ($f = 4.4; p < 0.02$). Mean demand when the partitioned element is a percentage of the base price is -2.3 (3.5 s.d.) and -0.5 (4.1 s.d.) when the partitioned element is expressed in dollars ($t = 2.1; p < 0.02$). These results indicate a partitioned price in percentages, as compared to dollars, produces increased demand in the sales tax condition but not in the non-tax condition.

Effects of Partitioned-Pricing, Surcharge Type, and Price Format on Consumer Price

Recall

H4a and H4b predict recalled price will be lower for partitioned-priced goods than all-inclusive priced goods in non-tax and tax conditions, respectively. As shown in Table 5, analysis of variance results are significant for both hypotheses. Pricing Structure is significant for the Non-Tax Surcharge ($f = 36.2; p < 0.0001$) as well as for the Tax Surcharge ($f = 10.3; p < 0.001$). Table 6 shows the mean recalled price for the partitioned-pricing participants is significantly lower than for the all-inclusive pricing participants for both the Non-Tax Surcharge condition (716.6 vs. 741.3; $t = 7.9; p < 0.0001$) and for the Tax Surcharge condition (717.8 vs. 741.3; $t = 4.2; p < 0.0001$). Therefore both H4a and H4b are supported, and we conclude the previously reported increase in consumer demand attributable to partitioned versus all-inclusive pricing (H1, H1a, H1b) is attributable to the fact that consumers focus their attention on the base price of the partitioned price.

[Insert Table 5]

[Insert Table 6]
H5a and H5b predict that participants’ recall of price will be lower when the format of the partitioned element is a percentage of the base price as compared to an add-on amount expressed in dollars. ANOVAs for H5a and H5b are both significant (p < 0.05) (see Table 5). Recalled price for the percentage condition was significantly lower for both the Non-Tax Surcharge Type (711.4 vs. 721.3; t = 1.7; p = 0.05) as well as for the Tax Surcharge Type (703.9 vs. 731.3; t = 2.6; p < 0.007). Therefore both H5a and H5b are supported, and we conclude the previously reported findings that consumer demand is higher for partitioned pricing in percentage than dollar format (H3a, H3b) is explained by consumers’ increased likelihood of focusing only on the base price when the surcharge format is expressed as a percentage of a base price.

Effects of Surcharge Type and Price Format on Consumer Information Processing

Hypotheses six and seven predict participants will use math processing (H6a and H6b) and heuristic processing – in the form of ignoring – (H7a and H7b) to a greater extent when the partitioned-price format is presented in dollars and as a percentage, respectively. Analysis of variance results are shown in Table 7, and group means for each experimental condition are shown in Table 8. The predicted effect for math processing in the non-tax surcharge condition (H6a) is not supported (f = 1.0; p = 0.16). The predicted effect for heuristic processing (H7a, ignoring the percentage partitioned-price add-on) is only weakly supported (f = 2.3; p = 0.07). As shown in Table 8, the percentage of participants who used a math processing strategy in the dollars format was 37.2% compared to 26.8% for math processing in the percentage format. However, these means are not significantly different (t = 1.0; p = 0.16). The percentage of participants who used heuristic processing in the percentage format, non-tax surcharge condition was 53.7% compared to only 37.2% in the dollars format.
In the tax surcharge condition, however, there is strong support for math processing when the sales tax is presented in dollars (H6b) \( (f = 12.0; p < 0.0004) \). As predicted, 61.0% of participants used math processing in the tax surcharge condition, compared to 25.6% in the percentage surcharge condition \( (f = 3.5; p < 0.0004) \). Therefore, H6b is supported, and we conclude consumers are more likely to use math processing when sales taxes are expressed in dollars of tax as compared to a percentage add-on to the base price. The results also indicate support for H7B: participants used heuristic processing to a greater extent, 32.6% vs. 17.1%, when the sales tax add-on was expressed in percentage terms rather than additional dollars of tax \( (t = 1.7; p = 0.05) \).

**CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH**

We tested a prediction implied in the consumer behavior literature: partitioned-pricing causes increased consumer demand as compared to all-inclusive pricing. We tested this prediction (H1) in a between-subjects design, with a diverse adult sample, which has not previously been tested in the marketing literature. We found further support for H1, when the partitioned price surcharge was designated as a typical consumer add-on\(^{13}\) (H1a). We extended the marketing context to a partitioned-price versus all-inclusive consumer tax context by presenting a subset of participants with a partitioned-price tax add-on and found that partitioning the tax (e.g. sales tax) instead of including the tax (e.g. excise tax) also increased consumer demand (H1b). Although H1 was supported in both the non-tax as well as the tax contexts, in a direct test we found consumer demand was significantly higher in the tax context than in the nontax context (H2). We also found demand was higher when the tax partitioned-price was

\(^{13}\) a charge for choice of refrigerator exterior – stainless steel or white.
presented as a percentage add-on instead of a dollar amount add-on (H3b), though this difference was not significant in the non-tax context (H3a). Overall, these findings suggest that people attend less to sales tax than to the non-tax consumer surcharge.

We predicted and explained the significant results for consumer demand by examining participant’s price recall and their use of math and heuristic information processing strategies. We found the recalled prices were significantly lower in both the partitioned-price non-tax and tax conditions (H4a and H4b) and were also lower when the partitioned-prices were expressed as a percentage add-on to the base price than when the add-on was stated in dollars (H5a and H5b). We found significant evidence participants used math processing for sales taxes in dollars (H6b) and ignored sales taxes expressed as a percentage (H7b), however the prediction of increased math processing for the dollars partitioned price was not supported in the non-tax condition (H6a) and evidence for heuristic processing of a percentage format was only weakly significant in the non-tax context (H7a).

The results strongly support the prediction that partitioned-pricing leads to higher consumer demand (and lower recalled price) both overall and separately for non-tax and tax contexts. In terms of the effects of sales taxes versus excise taxes on consumer spending, the national economy, and state and local tax revenues, the use of (1) partitioned-pricing—sales taxes instead of excise taxes—and (2) the presentation of sales taxes as a percentage of the base price rather than as an additional dollar amount prior to purchase should stimulate consumer demand and produce increased state and local consumption revenues. We further note our results indicated the stimulating effects of partitioned-pricing and percentage format on consumer demand are even more significant in the tax context than in the non-tax consumer context.
We chose to employ a similar decision context to that used in prior marketing experiments in order to make our extensions into the effects of partitioned-pricing on consumer demand and tax revenues as seamless as possible. However, the results are necessarily dependent on the generalizability of the specifics of the experimental task—the use of a single consumer spending decision context (replacing a refrigerator), the dollar and percentage amounts employed in the case—to other consumer spending decisions.

What might we discover if we compare a sales tax surcharge to various types of consumer spending decisions? The research of Hamilton and Srivastava (2008) imply that the utility of the underlying consumer good may affect the processing of the surcharge. Would people process sales tax differently if the underlying consumer good is something that is held in high (or low) regard? We found that adults were more likely to ignore sales tax on the purchase of a refrigerator, we did not ask our subjects to rate the importance (e.g. pleasure to be derived, satisfaction, etc.) of the purchase. It might be interesting to investigate whether attention (to tax) is related to people’s utility of the underlying consumer good or service.

Xia and Monroe (2004) report a potential boundary condition of partitioned pricing. They found that when the relative magnitude of the surcharge is large (i.e. 12%)\(^{14}\), a percentage presentation will not enhance consumer purchase decisions. On the other hand, the seminal research by Morwitz, et al. (1998) operationalized the surcharge as 18.5%. The point is that even if people are more likely to ignore a tax surcharge, is there some point at which they begin to attend?

Other questions regarding our processing findings provide additional avenues of future research. What motivates heuristic use in non-tax versus tax contexts? Only 37.2% of participants exhibited math processing in the non-tax, dollar format condition compared to

\(^{14}\) The small surcharge was 6% which is one reason that we use 6% in the current study.
61.0% who used math processing in the tax, dollar format condition. Is math processing used more for sales taxes because sales taxes are more familiar? Is math processing not used in the non-tax context because participants valued the choice of exterior color option and were, thus, less motivated to add the surcharge to the base price? Similarly, were participants more likely to ignore the percentage add-on (53.7%) in the non-tax, percentage condition than in the tax, percentage condition (32.6%) because they thought they were getting something tangible for the additional fee?

As fears grow that the U.S. economy is heading into a double-dip recession, federal, state, and local governments continue to struggle with decreased tax revenues from decreased consumer spending. The results of this study suggest legislatures should avoid increasing excise taxes and should consider instead lowering excise taxes and replacing them with partitioned-pricing for consumption taxes.
REFERENCES


Table 1: Participant Demographics

<table>
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<th>Demographic category</th>
<th>Percentage</th>
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<td>Gender - % Male (n=205)</td>
<td>48</td>
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Age (n=204):
- Under 18: none
- 18 to 25: 13
- 26 to 40: 21
- 41 to 65: 55
- Over 65: 11

Household Income (n=201):
- $< 10,000: 3
- $10,000 to 25,000: 11
- $25,001 to 50,000: 23
- $50,001 to 100,000: 35
- $> 100,000: 28

Education Level Completed (n=202):
- High School: 5
- High School Graduate: 18
- Some College: 31
- Bachelor Degree: 25
- Graduate Degree: 21

Employment Status (n=203):
- Full-time: 60
- Part-time: 18
- Unemployed: 8
- Retired: 11
- Student: 3

If employed average time: 9.4 years
Table 2: Dependent and Independent Variables

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<tr>
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<tr>
<td>Manipulation</td>
</tr>
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<td>Pricing Structure</td>
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<tr>
<td>Partitioned-Price vs. Equivalent All-Inclusive Price</td>
</tr>
<tr>
<td>Surcharge Type</td>
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<td>Non-Tax vs. Tax Surcharge</td>
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<tr>
<td>Partitioned Price Format</td>
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<td>Dollars vs. Percentage of Base Price</td>
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<td>Description</td>
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<td>Processing Strategy Utilized</td>
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<td>Mathematical vs. Heuristic (i.e. Ignore)</td>
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Table 3: ANOVAs for Effects of Pricing Structure, Surcharge Type, and Partitioned Pricing Format on Demand

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<td>61.7</td>
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<td>4.4</td>
<td>0.02</td>
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<td>H1b</td>
<td>Pricing Structure with Tax Surcharge</td>
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<td>201.9</td>
<td>1833.5</td>
<td>13.4</td>
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<td>H2</td>
<td>Surcharge Type with Partitioned Pricing</td>
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<td>61.9</td>
<td>2375.1</td>
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</tr>
<tr>
<td>H3a</td>
<td>Partitioned Price Format with Non-Tax Surcharge</td>
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<td>1119.2</td>
<td>0.5</td>
<td>0.24</td>
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<td>4.4</td>
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Table 4: Means for Effects of Pricing Structure, Surcharge Type, and Partitioned Pricing Format on Consumer Demand

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<th>Pr &gt; t</th>
<th>Finding/Interpretation</th>
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<td>1.3</td>
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<td>0.001</td>
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<td>40/3.9</td>
<td>167/3.8</td>
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<td>H1a</td>
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<td>1.3</td>
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<td>Non-tax surcharge partitioned-pricing participants significantly more likely to purchase target item</td>
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<td>40/3.9</td>
<td>83/3.7</td>
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<tr>
<td>H1b</td>
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<td></td>
</tr>
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<td></td>
<td>1.3</td>
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<td>Tax surcharge partitioned-pricing participants significantly more likely to purchase target item</td>
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<td>40/3.9</td>
<td>84/3.9</td>
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<td>H2</td>
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<td></td>
<td>83/3.7</td>
<td>84/3.9</td>
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<tr>
<td>H3a</td>
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<td>$ format</td>
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<td>Non-tax partitioned-pricing percentage format participants not significantly more likely to purchase target item than dollars format participants</td>
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<tr>
<td></td>
<td>42/3.8</td>
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<td>H3b</td>
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<td>-0.5</td>
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<td></td>
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Table 5: ANOVAs for Effects of Pricing Structure, Surcharge Type, and Partitioned Pricing Format on Consumer Price Recall

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<th>SSE</th>
<th>F</th>
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<td>H4a</td>
<td>Pricing Structure with Non-Tax Surcharge</td>
<td>1/111</td>
<td>15645.7</td>
<td>47485.0</td>
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<td>Pricing Structure with Tax Surcharge</td>
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<td>13915.0</td>
<td>144430.9</td>
<td>10.3</td>
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<td>Partitioned Price Format with Non-Tax Surcharge</td>
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<td>H5b</td>
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<td>1/68</td>
<td>12957.8</td>
<td>130436.6</td>
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Table 6: Means for Effects of Pricing Structure, Surcharge Type, and Partitioned Pricing Format on Consumer Price Recall

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<td></td>
<td>741.3</td>
<td>716.6</td>
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<td>0.0001</td>
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<td>40/5.2</td>
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<td>Non-tax surcharge partitioned-pricing participants recall significantly lower price for target item</td>
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<td>717.8</td>
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<td>40/5.2</td>
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<td></td>
<td>721.3</td>
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<td>H5b</td>
<td>731.3</td>
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<td>Tax surcharge partitioned-pricing percentage format participants recall significantly lower price for target item than dollars format participants</td>
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Table 7: ANOVAs for Effects of Surcharge Type and Partitioned Pricing Format on Consumer Information Processing

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<td>H6a Math processing</td>
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<td>0.2</td>
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<td>1.0</td>
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<td>H6b Math processing</td>
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<td>0.07</td>
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<td>0.5</td>
<td>15.2</td>
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Table 8: Means for Effects of Surcharge Type and Partitioned Pricing Format on Consumer Information Processing

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</table>
Figure 1: Days Spent Laboring to Pay Taxes by Type of Tax

Days Spend Laboring to Pay Taxes in 2011

102 Days

- Individual Income Taxes: 36 Days
- Social Insurance Taxes: 22 Days
- Sales & Excise Taxes: 15 Days
- Property Taxes: 12 Days
- Corporate Income Taxes: 12 Days
- Other Taxes: 4 Days
- Estate & Gift Taxes: 18 Hrs

Federal
- Federal Income Taxes: 27 Days
- Federal Sales & Excise Taxes: 3 Days
- Federal Property Taxes: 0 Days
- Federal Corporate Income Taxes: 10 Days
- Federal Other Taxes: 3 Days
- Federal Estate & Gift Taxes: 15 Hrs

State & Local
- State & Local Income Taxes: 9 Days
- State & Local Sales & Excise Taxes: 17 Hrs
- State & Local Property Taxes: 12 Days
- State & Local Corporate Income Taxes: 12 Days
- State & Local Other Taxes: 2 Days
- State & Local Estate & Gift Taxes: 3 Hrs
Founded in 1892, the University of Rhode Island is one of eight land, urban, and sea grant universities in the United States. The 1,200-acre rural campus is less than ten miles from Narragansett Bay and highlights its traditions of natural resource, marine and urban related research. There are over 14,000 undergraduate and graduate students enrolled in seven degree-granting colleges representing 48 states and the District of Columbia. More than 500 international students represent 59 different countries. Eighteen percent of the freshman class graduated in the top ten percent of their high school classes. The teaching and research faculty numbers over 600 and the University offers 101 undergraduate programs and 86 advanced degree programs. URI students have received Rhodes, Fulbright, Truman, Goldwater, and Udall scholarships. There are over 80,000 active alumnae.

The University of Rhode Island started to offer undergraduate business administration courses in 1923. In 1962, the MBA program was introduced and the PhD program began in the mid 1980s. The College of Business Administration is accredited by The AACSB International - The Association to Advance Collegiate Schools of Business in 1969. The College of Business enrolls over 1400 undergraduate students and more than 300 graduate students.

Mission

Our responsibility is to provide strong academic programs that instill excellence, confidence and strong leadership skills in our graduates. Our aim is to (1) promote critical and independent thinking, (2) foster personal responsibility and (3) develop students whose performance and commitment mark them as leaders contributing to the business community and society. The College will serve as a center for business scholarship, creative research and outreach activities to the citizens and institutions of the State of Rhode Island as well as the regional, national and international communities.

The creation of this working paper series has been funded by an endowment established by William A. Orme, URI College of Business Administration, Class of 1949 and former head of the General Electric Foundation. This working paper series is intended to permit faculty members to obtain feedback on research activities before the research is submitted to academic and professional journals and professional associations for presentations.

An award is presented annually for the most outstanding paper submitted.