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A Study on the Reaction of Households' Entertainment Consumption Due to the Path Act

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Abstract

Contrary to traditional economic theory, studies have demonstrated how temporary increases in discretionary income can alter consumption habits of individuals. Furthermore, research has shown that spending on non-necessities, such as entertainment, can be influenced by increases in discretionary income as well as several other factors. This study attempts to analyze this relationship and whether a shift in the timing of tax refunds due to the PATH Act has changed entertainment spending in households. Using Consumer Expenditures Survey interview data, this paper will attempt to answer this question by focusing on households who obtained the EITC and ACTC. Although no statistically significant results were found in the main analysis, recurring patterns in the data challenged assumptions and expectations. Drops in entertainment spending across March 2015 and March 2016 despite an overall growth in entertainment expenditures, for example, demonstrates the need for further analysis.

A STUDY ON THE REACTION OF HOUSEHOLDS' ENTERTAINMENT CONSUMPTION

DUE TO THE PATH ACT

By

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JOSEPH WHARTON SCHOLARS

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ABSTRACT

Contrary to traditional economic theory, studies have demonstrated how temporary increases in discretionary income can alter consumption habits of individuals. Furthermore, research has shown that spending on non-necessities, such as entertainment, can be influenced by increases in discretionary income as well as several other factors. This study attempts to analyze this relationship and whether a shift in the timing of tax refunds due to the PATH Act has changed entertainment spending in households. Using Consumer Expenditures Survey interview data, this paper will attempt to answer this question by focusing on households who obtained the EITC and ACTC. Although no statistically significant results were found in the main analysis, recurring patterns in the data challenged assumptions and expectations. Drops in entertainment spending across March 2015 and March 2016 despite an overall growth in entertainment expenditures, for example, demonstrates the need for further analysis.

Keywords: Consumption, entertainment spending, PATH Act, tax refunds

Disciplines: Behavioral Economics | Public Policy

INTRODUCTION

In December of 2015, the Patriots Against Tax Hikes (PATH) Act was enacted. Most of the provisions in the PATH Act merely reestablished existing thresholds for households attempting to obtain the Earned Income Tax Credit (EITC) and the Additional Child Tax Credit (ACTC). One of the provisions, however, changed the timing of when many of these households would obtain their tax refunds (IRS, 2019). This singular provision allows for an analysis of whether shifts in tax refunds also shift spending.

More importantly, households receiving these tax refunds due to these tax credits tend to fall on the lower to moderate-income thresholds (IRS, 2019) . Studies of low-income households have demonstrated how 'cycles of scarcity' can cause them to behave suboptimally in terms of financial decisions (Feinberg, 2015). Research ultimately concluded that both a combination of limited mental bandwidth and worry of not having enough money can reduce cognitive capacity and lead to self-destructive habits (Mullainathan, 2013). Despite this research, few studies have focused on the behavioral consumption response among low-income households when anticipating a temporary income change. Even less research has been conducted on the direct relationship that tax refunds can have on entertainment spending. Across 2015 and 2016, there was a 3% total growth rate in average entertainment expenditures and from 2016 to 2017, there was a drastic 10% growth rate (Bureau of Labor Statistics, 2018). Given the industry trends and drastic increases in entertainment consumption throughout the past decade, this relationship would be an important one to study. Moreover, the intersection of the types of households

obtaining these refunds along with the ways in which entertainment spending diverges from traditional economic theory highlights the ways in which this research can be beneficial.

My research question will therefore focus on whether lower-income households use anticipated increases in discretionary income to increase spending on entertainment and whether the PATH Act influenced shifts in spending. This will also indirectly examine whether lower-income households properly smooth entertainment consumption leading up to the anticipated change. I hope to use tax refund income as a proxy for anticipated discretionary income changes by these households. The data used will come from the Consumer Expenditures Survey (CEX) as many papers in this field of study have used the interview data for similar analyses. This research will either confirm or contradict the notion found in other studies that low-income households smooth consumption suboptimally. The primary goal of this research is to better understand how anticipated changes in income, such as tax refunds, change consumption behaviors in entertainment among these households.

Borrowing and adjusting on some of the methodologies presented in similar papers, this research will use regression analysis to determine the effect that shifts in timing of refunds have on entertainment spending. Although none of the results were statistically significant in the original analysis, the patterns found in the data are promising and demonstrate the need for further research.

LITERATURE REVIEW

I.   Divergence from Traditional Economic Theory

Traditional economic theory asserts that consumption is not influenced by temporary increases or decreases in income, but this assumption is not always accurate. Established through the introduction of Milton Friedman's Permanent Income Hypothesis (1957), this assumption suggests that temporary increases in income will ultimately have negligible effects on overall consumption. Ideally, households will attempt to smooth consumption across all time periods in order to maximize utility. This means that households should be borrowing in their early years, paying off their debts and saving in the middle, and then using their savings to consume in their later years. Moreover, versions of the Relative Income Hypothesis suggest that consumption decisions of households are determined by previous consumption behaviors and that temporary decreases in income will not lead to an overall reduction in consumption (Duesenberry, 1949). Nevertheless, expected temporary changes in income have led to noticeable differences in consumption patterns of households (Shapiro and Slemrod, 1995). After the 2003 United States tax cut, for example, high-income households who had prior knowledge of the tax rebates they would be receiving were more likely to spend their additional income rather than save it (Coronado et al., 2005). Furthermore, some studies have demonstrated that households tend to adjust their consumption behaviors not when they learn of expected tax cuts, but rather, when they receive the payments (Wilcox, 1989). Using tax refunds as a proxy for increases in expected discretionary income, these findings differ from traditional economic models and demonstrate some of the many other factors that influence consumption decisions. The assumption that

consumers are rational and selfish, one of the foundations of traditional economic theories, is therefore challenged with many of these results.

II. Changes in Consumption Due to Tax Refunds

Research relating to changes in consumption that are directly tied to tax refunds demonstrate how differently households consume compared to what would be economically rational. Several studies have found that tax refunds stimulate a myriad of different behaviors, from savings to paying down debt to increasing overall consumption (Coronado et al., 2003; Stephens, 2008; and Zhang, 2017). A similar paper, which focused on responses related to changes in social security taxes across distinct periods, found that these increases in consumption are in part due to a 20% increase in non-durable consumption (Parker, 1999). A comparable study based in Italy, on the other hand, found that expected tax rebates caused increases in food and durable consumption (Neri et al., 2015). Furthermore, another study concluded that households spent a majority of anticipated tax refunds on durable goods (Souleles, 1999). Although the amount of consumption that increases due to durable as opposed to non-durable good expenditures differ among different studies, they are both correlated with income-levels given that low-income households tend to have greater expenditure responses (Johnson et al., 2006). Correspondingly, lower income households have been found to change their consumption by a much greater scale as a result of tax refunds. These findings highlight the differences among distinct income levels that get lost when aggregating overall changes in consumption, which is commonly done in most studies in this field. It also highlights low-income households' liquidity constraints, whereas not having enough economic resources makes it difficult for them to defer

consumption and save money or pay off debt (Beverly, 1997). Due to many of these constraints, temporary increases in discretionary income as a result of tax refunds would allow for these households to fill in gaps in consumption that they may have otherwise not been able to afford or been allowed to borrow to fill. Additionally, increased consumption reactions to expected increases of discretionary income in a study focused on the repayment of a car loans further demonstrated that low-income households have borrowing constraints which limit their consumption patterns in these situations (Stephens, 2008). Nonetheless, in understanding the consumption patterns of low-income households, perceptions of overall changes in wealth may matter more than actual changes in absolute wealth (Epley et al., 2006). As long as households believe that this change in taxes will change overall wealth rather than income, they will most likely spend more even if this is not the realistic case. Although due to lack of information or households misunderstanding the impact these changes will have on overall wealth, this skewed perception and the actions that result are at odds with the Permanent Income Hypothesis. Moreover, framing a tax refund as either a "bonus" or a "rebate" led to drastic changes in how individuals would theoretically save or consume; those primed with a bonus were more likely to spend the money whereas those primed with a rebate were most likely to save the additional income (Epley et al., 2006). Additionally, merely increases in pay frequencies as opposed to changes in overall income have also been shown to increase consumption in households (Zhang, 2017). These findings add a behavioral component to traditional economic theory and, with liquidity and borrowing constraints, can help address issues relating to how low-income households spend additional discretionary income.

Separately, studies have demonstrated that low-income households are likely to use tax refunds to pay debt. Mendenhall et al. (2012) used a survey to gauge the intended places where these low-income households would spend their refunds. 72 percent of families that were surveyed planned to use their refunds to pay down debt and their bills while 84 percent ended up actually following through (Mendenhall et al., 2012). While the data is self-reported, regional, and aggregated at times, it demonstrates a willingness by households to use these refunds to pay off debt. Similarly, the Earned Income Tax Credit (EITC) has been shown to have several positive effects on households, such as boosting employment of single mothers, but it has also shown to affect debt repayment (Marr et al., 2015). Schaefer et al. (2013) found in their study that EITC expansions in 1990 led to more unsecured debt repayments by households of single mothers. Therefore, changes in tax credit policies have shifted the ways in which households spend their refunds or whether they use them to save or pay down debts. These findings are important in understanding the tradeoff households face when deciding between entertainment spending and other forms of consumption, or paying down debt and saving.

On a much more granular level, however, temporary changes in discretionary income have been linked to increases in entertainment spending (Stephens, 2008). Consumption of entertainment by households differ due to much of these expenditures being experience-based and driven by unique individual preferences. Consequently, understanding how consumption of entertainment differs from other types of spending, across time periods, and between different types of households, will better frame the analysis put forth in this study.

III. Consumption of Entertainment by Households

Studies have shown that increasing amounts of time available for leisure across past decades have equated to more discretionary income spent on entertainment spending (Schwenk, 1992). Entertainment, however, has had a complex relationship with discretionary spending. Historical research, for example, established the idea that the emergence of cinematic entertainment and many other forms of innovative new forms of consuming entertainment were demand-driven (Bakker, 2007). Therefore, breakthroughs in the consumption of entertainment were created to address the need for these households to spend more of their leisure time on experiential activities. Interestingly, as Bakker (2007) found, through the emergence of these entertainment technologies, households began allocating more of their spending towards these segments at the expense of other entertainment platforms. These results were similar to Hong's study (2004), which found that cross-price elasticities demonstrated that changes in prices of other entertainment goods affected the price of music recordings. Consequently, these findings imply a deep relationship among different types of entertainment whereas prices of unrelated industries can affect the amount of consumption allocated to them by households.

Much more generally, however, past research has highlighted several trends within entertainment spending. Those aged between 35-54, for example, spend more on entertainment on average than do those over 54 years old or under 35 (Tseng, 2003). This, however, may be connected due to increases in income and leisure time during this period of time in individuals' lives. Nonetheless, the amount spent on entertainment of those over 54, when a majority for this segment are in retirement and have much more leisure time than any other group, is not as high

as middle adulthood. Due to retirement income constraints, this may also imply that discretionary income is therefore much more important in determining entertainment spending than available leisure time. Tseng's research (2003) also quantitatively solidified and supported the idea that those with higher overall incomes have higher discretionary incomes and therefore spend much more on entertainment on average. In terms of the Permanent Income Hypothesis, these findings are important due to highlighting the ways in which households may not smooth entertainment consumption across time periods. However, this phenomenon may not be equatable to traditional economic theories due to discretionary spending not being a concept that was specifically mentioned in these theories (Crouch et al., 2007). Spending differences within this spending category can therefore be explained by much more preferential reasons. For example, spending on necessities may maximize utility at a greater rate than entertainment spending across different periods, which may help to explain why this entertainment spending fluctuates. Other explanations for this phenomenon might be due to credit constraints, whereas studies have shown that households that are credit constrained or unable to borrow money are less likely to spend on entertainment than on necessities (Cole et al., 2008). Other constraint factors, such as time and sociodemographic characteristics, have also been associated with similar entertainment spending categories, such as leisure travel (Hong, 2005).

For the purposes of this study, it is critical to also understand specific quantifiable entertainment consumption behaviors that results from increases in discretionary income. Research has previously attempted to quantify the amount of entertainment spending in relation to other categories. Households, for example, have been found to aim for 9% of their discretionary income to go to categories such as home entertainment and leisure activities

(Crouch et al., 2007). Moreover, when this discretionary income goes down as a whole and budget-cutting occurs, households are much more likely to lower entertainment spending for services that require transportation (Pyo et al., 1991). On the other hand, effects on entertainment spending due to temporary increases in discretionary income with events such as tax refunds have not been studied much. Nonetheless, one study found that those who received the Earned Income Tax Credit were just as likely to spend on entertainment as households with similar characteristics who did not receive this credit (Goodman-Bacon and McGranahan, 2008). This same study conducted by Goodman-Bacon and McGranahan (2008) also found that there was an 86% probability of the respondents who received the EITC to ultimately use part of their tax refunds for entertainment spending. The Additional Child Tax Credit (ACTC), however, differs from the EITC due to not being limited to those with lower income levels (Hungerford and Thiess, 2013). As the *Methodology* will further explain, this differentiation will not matter given that those receiving tax refunds in the dataset are mostly lower-income. In summary, though, these findings are the most aligned with the purposes of this study and the research questions it aims to answer.

IV. Summary

All in all, the present literature in this field is able to highlight several key points. First, increases in consumption due to temporary and expected increases in income are common despite the Permanent Income Hypothesis being at odds with these findings. Second, differences in consumption patterns, including entertainment spending, can sometimes be explained by income levels. Some examples are the liquidity and borrowing constraints low-income

households face. Third, the framing of these expected temporary increases in income can lead to differences in the way households respond and are key to understanding expected consumption responses. Fourth, research has shown that increases in discretionary income lead to more spending on entertainment and budget-cutting can affect some types of entertainment spending. More importantly, however, households that received refunds and obtained the EITC had a high probability of spending part of their tax refunds on entertainment. Lastly, while some of the research is done using experiments, much is based off survey response data, such as the Michigan Surveys of Consumers (MSC) and the Consumer Expenditures Survey (CEX).

As such, current literature seems to point to there being an increase in consumption across lower and middle-income households when expecting temporary increases to their income. In addition, liquidity and borrowing constraints, as well as uncertainty of unemployment, may also help to explain how these households make decisions in consuming these rebates and tax refunds. Furthermore, gaps in research paved the way for the analysis conducted in this study. Research focused on the effects that occurred due to the Patriots Against Tax Hikes (PATH) Act is almost nonexistent and mostly comes from economic think tanks in the form of broad legal reviews. Understanding the interactions between timing of refunds of those who qualify for the EITC and ACTC and entertainment spending can be helpful in adding to current literature aimed at exploring this relationship. Still, the lack of studies directly tying entertainment spending and refund amounts demonstrated a research opportunity. Through my research, I hope to explore the latter and expand on already published papers to answer whether households affected by the PATH Act changed their entertainment spending as a result of deferment of tax refunds.

MOTIVATION FOR RESEARCH

I.   Effect of Discretionary Income on Entertainment Spending

Due to entertainment spending being considered a non-necessity, households use their discretionary income in order to consume entertainment products ranging from video games to entertainment equipment to admissions to theme parks. Consequently, fluctuations in discretionary income are directly correlated with entertainment spending (Tseng, 2003). During recessions and economic downturns, discretionary income decreases for many households due to pay cuts and unemployment. As a result, companies aiming to provide entertainment services to households are sometimes hit the hardest by these downturns (Boorstin, 2008). For example, during the 2008 recession, Walt Disney Company shares slid in price when they reported a sharp decline in hotel bookings and advertising revenue (Keating, 2008). As a result, many of these entertainment companies have begun both diversifying their portfolio of intellectual property and have expanded their offerings in order to capture a greater share of discretionary income and mitigate against these potential economic downturns. Moreover, due to the digitalization of entertainment viewing, advertising revenues have declined for the industry as a whole. A study conducted by PwC demonstrated that this has further shifted revenue streams of these entertainment companies to being more reliant on expenditures that come directly from consumers (Vollmer, 2018). Therefore, a focus on capturing market share of discretionary income from lower and middle-class households has allowed many entertainment conglomerates to keep their competitive advantage.

Tax refunds have been generally viewed as a form of discretionary income that stimulates consumption, although data results regarding how tax refunds are used by households is mixed (Edwards, 2016). Therefore, analyzing the relationship between this form of discretionary income and entertainment can have widespread implications for the entertainment industry. Understanding whether tax refunds are used heavily towards entertainment purchases would allow companies to begin to take advantage of this trend in order to capture greater market share during the tax season. Moreover, as previously stated, households that obtain refunds as a result of the Additional Child Tax Credit (ACTC) and Earned Income Tax Credit (EITC) are generally on the lower end of the income scale (IRS, 2019). Understanding much more clearly how lower-middle class and low-income households change their entertainment spending behaviors may also allow entertainment companies to better cater to these markets.

II.   Lack of Previous Academic Research

Discretionary income is one of the single most important factors relating to entertainment spending for the industry. Although several studies have examined these two variables, research attempting to understand the relationships between tax refunds and entertainment spending is limited. Most studies conducted in the field are focused on aggregate, numerical changes in households' Marginal Propensity to Consume (MPC) and durable vs. non-durable good spending. Consequently, these aggregate analyses often do not make distinctions between socioeconomic levels or the effect that timing of tax refunds have on entertainment spending by households. Nonetheless, scholars within the field of behavioral economics have extensively

studied many other ways in which low-income individual consumption habits differ from traditional economic theories (Beverly, 1997; Epley et al., 2006).

Therefore, this study aims to add to a growing list of literature that examines the effects tax refunds have on spending and the implications these actions have on traditional economic models. Using tax refunds as a proxy for expected temporary increases in discretionary income further allows for this study to be viewed through several different lenses. Policymakers and the IRS can benefit from this research in order to better comprehend how tax credits can affect spending. Directly tying this research to the PATH Act can also begin to shed light on ways in which small provisions within the piece of legislation affected consumption patterns. Moreover, from a behavioral economics standpoint, understanding whether these households smooth entertainment consumption due to expected changes in timing of these refunds can further demonstrate differences between traditional economic models and reality. Lastly, as stated previously, the private sector can also benefit substantially from this research. For example, entertainment companies will be able to predict spending amounts of those who qualify for these refunds much more clearly. Through all these lenses, it is therefore increasingly clear how important this type of research can be both within the entertainment industry and in the broader scheme of legislation affecting timing of tax refunds.

METHODOLOGY

I.   Research Questions & Hypotheses

This study will quantitatively determine whether households who obtain the Earned

Income Tax Credit (EITC) and Additional Child Tax Credit (ACTC) changed their entertainment

consumption behaviors as a result of deferment of when tax refunds are received due to the

Patriots Against Tax Hikes (PATH) Act. If a relationship is found, further analysis will be

conducted in order to better understand the quantifiable amount that this deferment in tax refunds

had as a percentage of after-tax income.

Research Questions:

1) Did households who qualified for the EITC and ACTC and received tax refunds change
   their entertainment spending due to changes in timing of the refunds as a result of the
   PATH Act?

2) If there are changes, how much of these changes are directly explained by tax refunds?

Hypotheses:

1) Hypothesis 1: There is a change in entertainment spending across the control group
   (2015; Pre-PATH Act) and the experimental group (2016; Post-PATH Act)

2) Hypothesis 2: The change in entertainment spending can be explained by the shift in
   timing of when these households received their refunds due to the PATH Act

3) Hypothesis 3: Households defer part of their entertainment spending until they receive their tax refunds

II. Data Overview

The data for this study will come from one primary source: The Consumer Expenditures Survey (CEX). Many similar studies have used the CEX in order to measure changes in consumption among households (Stephens, 2008; Parker, 1999; Zhang, 2017), which is why the dataset was chosen to attempt to answer this question. Although thorough, the data used in the interview dataset pose some problems that have the ability to alter interpretations of the analysis that will be conducted. These problems are discussed below and the implications they have on the results are further examined in the *Discussion* section of this paper.

Tax refunds are at the center of this study, therefore the way CEX calculates how taxes are paid set the time frame for this analysis. Prior to 2013, tax information in CEX was self-reported which led to some flaws in the data due to households underestimating the amount of taxes they paid (Geoffrey, 2015). Consequently, the Bureau of Labor Statistics used TAXSIM as an output based on other self-reported inputs in the survey to obtain a more accurate representation of the amount of taxes paid by these households. TAXSIM is a model created by the National Bureau of Economic Research and refers to a collection of local and federal datasets that implements a microsimulation of U.S. federal and state taxes. The simplified tax calculator formula for the model is:

Total Taxes Paid = Total Taxes - EITC - ACTC

Therefore, households with 'negative' amounts of taxes paid obtain refunds due to the sum of EITC and ACTC being greater than taxes owed. In December of 2015, the PATH Act was enacted which did not include any major tax provisions other than renewing existing thresholds for the EITC and ACTC. However, the PATH Act included a provision that required the IRS to hold income tax refunds for recipients of the EITC and ACTC until February 15th (Margot, 2018). Therefore, in order to understand the effect that this change in tax refund timing had, only households that qualified for the EITC and ACTC should be included in the data set. Given the formula within the TAXSIM model in the CEX, this means any household with negative taxes would qualify for these tax credits and subsequently should be included in the analysis. Additionally, the CEX changed the way they classified and calculated entertainment spending on their reporting in 2017. Therefore, this study was constrained to the data available post-2013, when the way taxes were calculated on the CEX changed, and pre-2017, when the way in which entertainment spending was calculated changed. Consequently, the control group used in this analysis is 2015, Pre-PATH Act, and the experimental group is 2016, Post-PATH Act.

Moreover, the CEX interviews the same Consumer Units (CUs) every quarter for one year. The CUs are spaced out so that every month in the calendar year is covered, but the same CUs are only interviewed once every three months. Two of these interview periods had to then be chosen to indicate a quarter when a CU would have obtained their refund Pre-PATH Act and Post-PATH act. Those interviewed in March, based on standards set by the CEX, report spending for the past three months. This means that they would be reporting spending for December of the prior calendar year, January, and February. Those in the Pre-PATH Act period

would most likely obtain their tax refunds during this quarter given that households could begin

filing their taxes as early as January 15th in 2015. Additionally, households that expect to receive

refunds are most likely to file first (Kopczuk and Pop-Eleches, 2007). Those in the Post-PATH

Act period, however, would not obtain their taxes in this March quarter. Given that the PATH

Act prevented households who obtained the EITC and ACTC from filing taxes before February

15th, they would not obtain their tax refunds before the end of the reported quarter. This is due to

the time in between households filing their taxes and receiving their refund being around three

weeks (Internal Revenue Service, 2019). As a result, in 2016 after the PATH Act was enacted,

these households should be expecting to receive their refunds in March. Those interviewed in

June of 2016, however, are expected to have obtained their tax refunds by the time they reported

their spending on the CEX. This is due to them reporting spending for March, April, and May in

this interview period. Additionally, due to the way in which interviews of CUs are conducted, the

CUs interviewed in March and in June come from the same population sample. For example,

those in March of 2015 and June of 2015 come from the same sample of interview respondents,

but those in the following year come from a different sample of households.

In summary, the control group is therefore the data of those households interviewed

March and June of 2015, Pre-PATH Act, and the experimental group is the data of those

households interviewed in March and June of 2016, Post-PATH Act. Moreover, only CUs with

'negative' taxes paid according to the TAXSIM output in the CEX data were included. This

would mean that they were expected to obtain refunds as a result of their EITC and ACTC

exceeding the amount of taxes owed. It would also imply that these CUs were impacted by the

PATH Act since they would be qualifying for these tax credits. Finally, CUs were excluded if the

total sum of their self-reported entertainment spending in the CEX was zero. In order to obtain a better picture of behaviors of households who did spend on entertainment, these CUs had to have been excluded. This exclusion, however, presented some problems in interpreting the results that are explained later in the *Discussion* section.

III.   Regression Model Framework

The statistical methodology that will be used in order to test whether changes in timing of tax refunds affect entertainment spending will follow that introduced by Parker (1999). Several of the variables were taken directly from the regression framework proposed in the Parker study (1999). The time period dummy variables, size of family, and income components were all similar to the model introduced in this paper. Nonetheless, the main difference lies within Parker's (1999) paper focusing on percentage changes across spending of the same households. Due to the data constraints and changes in which households spend on entertainment across quarters, this same analysis was not possible. Therefore, this methodology will be altered to reflect changes among different sample populations rather than the same one and will assess entertainment spending changes rather than overall spending changes. Correspondingly, parts of this methodology have been taken from other studies that have attempted establish relationships between increases in temporary discretionary income and spending (Stephens, 2008; Zhang, 2017).

Moreover, the regressions for this study are split up into 'First Stage' and 'Second Stage' regressions in order to differentiate the hypotheses they are attempting to address. The First

Stage Regression Model attempts to answer the first hypothesis, while the Second Stage

Regression Model attempts to answer the second and third hypothesis.

First Stage Regression Model[1]:

$$C_{e,t} = \alpha_1 I_t + \alpha_2 S_t + \alpha_3 R_t + \alpha_4 D_{t=1,2,3,4}$$

<u>Dependent Variable</u>: $C_{e,t}$, *Total Adjusted Entertainment Spending as Reported by the CEX*

      Entertainment spending is calculated in the CEX by summing the amount of outlays

reported by households for sound systems, sports equipment, toys, cameras, and down payments

on boats and campers. For the purposes of this study, adjusted entertainment spending included

those outlays and added the amount of fees and admissions paid for entertainment services . It

also included the "Other Entertainment" category of this survey which is comprised of

subscriptions, memberships, books, and other related entertainment expenses. This adjusted

entertainment value therefore reflects the sum of all categories that the Consumer Expenditures

Survey classifies as entertainment spending.

<u>Independent Variables:</u>

1) $\alpha_1 I_t$, *After-Tax Income of Households as Reported by CEX*

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[1] Throughout the First Stage and Second Stage Regression Model, α refers the the regression coefficients of each independent variable, including dummy and interaction variables. For $\alpha 4$ and $\alpha 5$, these include four distinct coefficients for each representing the respective time periods that these dummy variables are reflecting. Additionally, t represents the time component, whereas the Dependent Variable C(e,t) refers to entertainment spending of that particular time period. This is differentiated due to the possibility of the same CUs appearing multiple times in the data due to the way the CEX interviews are conducted. Therefore, only the time component, rather than specific CUs, matters.

After-tax income is directly correlated with the amount of other discretionary income

households have in order to spend on entertainment, which is why this variable was added. This

after-tax income is also calculated using the TAXSIM data by subtracting taxes paid or adding

tax refunds received to the household's reported total before-tax income.

2) $\alpha_2 S_t$, *Size of Household as Reported by CEX*

The size of the household includes all those living within the consumer unit (CU) and

both affects the amount of household income and size of the tax refund due to the Additional

Child Tax Credit. Additionally, larger households would presumably spend more on

entertainment.

3) $\alpha_3 R_t$, *Calculated Tax Refund According to TAXSIM Output in CEX*

Tax refund amounts as calculated by CEX are merely estimates of the amount of tax

refunds these households expect to receive, however they are a crucial independent variable for

testing the hypotheses.

4) $\alpha_4 D_{t=1,2,3,4}$, *Dummy variables reflecting the four interview periods*

These dummy variables refer to March 2015 and 2016 as well as June 2015 and 2016,

whereas the interview for March reflects spending for the past quarter (December, January,

February) and June reflects spending for March, April and May.

This stage of the model attempts to measure sensitivity of entertainment spending to changes in timing across the time periods. Therefore, understanding whether there was an overall change in entertainment spending across these time periods will allow us to cement whether or not there was a pattern of change during the same time period as when the PATH Act was enacted. Any statistically significant changes in the coefficients of the dummy variables (α_4) would support the first hypothesis.

Second Stage Regression Model:

$$C_{e,t} = \alpha_1 I_t + \alpha_2 S_t + \alpha_3 R_t + \alpha_4 D_{t=1,2,3,4} + \alpha_5 R * D_{t=1,2,3,4}$$

The Second Stage regression includes the same variables as the First Stage, but also includes four other added independent variables:

5) $\alpha_5 R * D_{t=1,2,3,4}$ *, Interaction Terms between refunds and the dummy variables reflecting the four interview periods*

This stage of the model attempts to measure the changes in entertainment spending as a result of changes in refund timing. Therefore, in order for the second hypothesis to be supported by the data, there should be changes in the coefficients of the four interaction terms (α_5) that align with the PATH Act's postponement of refunds. Any changes in these coefficients that are statistically significant would provide basis for supporting the second hypothesis of this study.

In order for the data to support the third hypothesis, there needs to be a deferment in entertainment spending that is a result of the refund amounts. Therefore, the timing changes of the refunds should be reflected by the spending patterns. For example, March 2015 should then have a larger interaction coefficient than March 2016. This is due to 2015 being Pre-PATH Act, which would indicate that these households should have received their refunds in March of that year and spent part of them on entertainment. In March 2016, however, post-PATH Act, this refund would have been received in the June interview period. Therefore, we should see a larger coefficient in March 2015, indicating a greater effect of refund amounts during this period on entertainment spending as a whole. Conversely, then, we should expect June 2016 interaction coefficients to be larger than June 2015.

Summary statistics and analysis of different factors within the regressions will both provide sanity checks and also better holistically explain the picture. Understanding the differences between the averages of entertainment spending across the different periods and seeing if there is a statistically significant difference could provide support for the first hypothesis. Correspondingly, a statistically significant decrease between average entertainment spending in March 2015 and March 2016 and a statistically significant increase between June 2015 and June 2016 could provide support for the second and third hypotheses. However, the regression is the main focus of this study given that the analysis is much more robust.

RESULTS

I. Summary Statistics

Table A: Entertainment Spending and Tax Refund Summary Statistics

(in $USD)	N	Min.	1st Quartile	Median	3rd Quartile	Max	Mean	SD
All Periods (March, June of 2015 & 2016)								
Entertainment Spending	1105	2	105	189	302.5	4640	266.33	342.44
Tax Refund Amount	1105	1	581	2822	5050	9257.69	3128.63	2545.16
March, 2015								
Entertainment Spending	290	3	120	200	340.75	4640	306.96	438.06
Tax Refund Amount	290	1	510	2818	5386	9038	3149.57	2645.35
March, 2016								
Entertainment Spending	258	5	99.25	169	270	4511	255.29	385.74
Tax Refund Amount	258	7.65	496	2694.99	4306.5	9075.5	2974.34	2445.41
June, 2015								
Entertainment Spending	274	2	118	193	310.75	2169.33	250.9	256.31
Tax Refund Amount	274	1.81	640.16	2957.47	5460	8928.82	3217.52	2586.17
June, 2016								
Entertainment Spending	283	6	96	186	300	1873	249.7	246.76
Tax Refund Amount	283	4.48	740.54	2959.65	4900.61	9257.59	3150.78	2499.36

Table A provides the summary statistics for the different entertainment spending and tax refund amounts across all four periods. Notably, the tax refund amounts throughout all four periods do not differ much. It is also important to note that the differences between the averages of entertainment spending in March 2015 and March 2016 and the differences between the averages of June 2015 and June 2016 are not statistically significant as shown by Table B below. Nonetheless, there is a much greater change and drop in entertainment spending between March 2015 and March 2016, whereas June 2015 and June 2016 seems to have almost no change in this spending.

Table B: Differences in Entertainment Spending						
	N	2015 Mean	2016 Mean	2015 SD	2016 SD	Difference in Mean
Entertainment Spending						
March	548	306.96	255.29	438.06	385.74	(51.67)
June	557	250.9	249.7	256.31	246.76	(1.20)

Moreover, Table C below demonstrates the comparison of differences between March 2015 and June 2015 and then March 2016 and June 2016. Those in the same year come from the same sample, however, the same CUs might not be represented due to changes in their own self reporting that could have affected their refund amounts or whether or not they spent on entertainment for that quarter. Notably, the differences between March 2015 and June 2015 are not statistically significant although they are large in comparison to the small difference in between March 2016 and June 2016.

Table C: Differences in Entertainment Spending (Same Year)

	N	Mean	SD	Difference
2015				
March	290	306.96	438.06	
June	274	250.9	256.31	(56.06)
2016				
March	258	255.29	385.74	
June	283	249.7	246.76	(5.59)

II.   Regression Results

As discussed earlier, in order to test the first hypothesis, the differences between the control groups (i.e. 2015) and experimental group (i.e. 2016), must be statistically significant. The first stage regression is similar to the one conducted in Parker's study (1999), although altered to better test the hypotheses.

Table D: First Stage Regression[2]

	Coefficient	Std. Error
Income	0.0021**	0.0005
Size of Household	-3.3352	8.1564
Tax Refund Amount	0.0068	0.0048
Mar-15	224.2121**	28.8552
Mar-16	166.4086**	29.0089
Jun-15	161.231**	29.6759
Jun-16	158.1724**	29.0924

The first primary result of the regression is that entertainment spending varies significantly due to the total after-tax income of households as well as the period in which the

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[2] *P-Value <0.05 and **P-Value<0.01

spending occurs. Notably, although there is a decline of $57.80 between the coefficient of March 2015 and March 2016, this decline is not quite statistically significant. Similar to the pattern in the summary statistics, the differences between June 2015 and June 2016 are almost nonexistent, with a decrease of $3.06. Moreover, the difference between coefficients of March 2015 and June 2015 ($62.98) are not quite statistically significant either, although the difference in March 2016 and June 2016 are a lot smaller in comparison ($8.24).

The second stage regression is an extension of the first stage regression in order to be able to test the second and third hypotheses. Here, the focus of the regression are the interaction terms of tax refund amounts and the period dummy variables. The interaction term of tax refund amount and June 2016 is the default baseline coefficient, meaning that it is zeroed out. Table E below shows the results:

Table E: Second Stage Regression

	Coefficient	Std. Error
Income	0.0021**	0.0005
Size of Household	-3.034	8.1622
Tax Refund Amount	0.0071	0.0048
Mar-15	222.57034**	28.8919
Mar-16	166.0967**	29.0619
Jun-15	159.92024**	29.7285
Jun-16	156.34013**	29.1412
Refund*March15	-0.0118	0.011
Refund*March16	0.0042	0.0118
Refund*June15	-0.0094	0.0113
Refund*June16	-	-

The first primary result comes from viewing the interaction term between refund amount and the dummy variable of the June 2016 period. Consequently, there seems to be an increase in 2016 interaction variables overall in comparison. Unfortunately, none of the changes between the interaction terms are statistically significant. Moreover, it seems as if the interaction terms themselves are not statistically significant.

III. Additional Analyses

Table F: Differences in Entertainment Spending w/ All CUs

	N	2015 Mean	2016 Mean	2015 SD	2016 SD	Change (2016-2015)
Entertainment Spending						
March	723	241.64	185.58	407.8	348.56	(56.06)*
June	692	204.61	197.93	251.07	241.88	(6.68)

Table F above includes an analysis of differences in means for all CUs. This adds back the CUs that were excluded for not reporting entertainment expenditures for the quarter.[3] The difference between the average entertainment expenditures for March 2015 and March 2016 saw a decrease that was statistically significant when including CUs that had been removed due to not reporting entertainment spending. Similarly, Table G below is an analysis of the results of the First Stage Regression including all CUs. The change in coefficients between March 2015 and March 2016, however, is not statistically significant.

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[3] As discussed in the Methodology section, the original analysis removed CUs that did not report spending on entertainment for the quarter. This was due to focusing mainly on the patterns created by those who had spent on entertainment.

Table G: First Stage Regression w/ All CUs

N = 1416	Coefficient	Std. Error
Income	0.0026**	0.0004
Size of Household	-5.7119	6.9189
Tax Refund Amount	0.0020	0.0039
Mar-15	168.4667**	23.6258
Mar-16	107.3864**	23.3710
Jun-15	124.0932**	24.6038
Jun-16	117.7672**	23.4728

Ultimately, the only statistically significant difference comes as a result of re-introducing the CUs that were taken out as from the original analysis. As the Discussion below will demonstrate, adding back households who had not reported spending on entertainment for the quarter may be useful for this analysis.

DISCUSSION

In terms of the tests conducted, the data does not support the hypotheses for this analysis, although there are some patterns that keep appearing throughout the data. Through the summary statistics, however, there were important characteristics of the data that provided sanity checks. For example, in Table A, we see that across the four periods, the amount of tax refunds did not change significantly. Therefore, any foreseeable changes in entertainment spending that could be a result of these tax refunds would not be due to drastic increases or decreases in the estimated TAXSIM refund amounts across these periods.

The first hypothesis hinged on the possibility of there being a statistically significant change in entertainment spending across the control and experimental groups. According to the summary data, however, this was not the case. Moreover, the changes of the time period coefficients of the Stage One Regression Model were not enough to be considered statistically significant. Nonetheless, as seen in Table B and in looking at the time period coefficients of Table D, there is a sharp decline in spending of entertainment within March 2015 and March 2016. Interestingly, however, there seemed to be little to no change across the June 2015 and June 2016 period. Although this decline in entertainment spending between March 2015 and March 2016 was not statistically significant, the small changes across June would imply that there should have been an overall decrease in entertainment spending across 2015 and 2016 if the remaining quarters were to stay around the same amounts. Nevertheless, entertainment spending as a whole increased by almost 3% in 2016 (Bureau of Labor Statistics, 2018). Therefore, either this growth was driven by households who did not receive the ACTC or the EITC, or the growth was made up by greater increases in spending across the final two quarters.

In terms of the focus of this study, if this sharp decline across March 2015 and March 2016 had been statistically significant and if the change across June 2015 and June 2016 had been nonexistent, it may have implied that households used their tax refunds to purchase other items. Moreover, the data in Table B demonstrated that there was a sharp decline in entertainment spending across March 2015 and June 2015. This would make sense, given that the March interview period includes entertainment spending for the month of December, when many holidays occur. However, changes in entertainment spending across March 2016 and June 2016 is almost minimal in comparison to that of 2015. This is further supported by the same effect being demonstrated in the coefficients of both regressions. In summary, then, the trend that appears across all the data is a much smaller change in entertainment spending between March 2015 and 2016 versus June 2015 and 2016 and then a similar, much smaller change in entertainment spending between March and June 2015 versus March and June of 2016. These two patterns would then imply that these types of households spent less on entertainment during these two periods as a whole in 2016. However, given that these declines were not statistically significant, these results are not definitive and failed to support the first hypothesis.

Although these patterns stood out, they would not imply that the change in timing of the refunds due to the PATH Act was the reason for these changes in entertainment spending. In order to come to this conclusion and potentially support the second hypothesis, the interaction terms for the Second Stage regression shown in Table E should have changed by a statistically significant amount. Using the June 2016 and Refund amount interaction term as the baseline, this was not the case as none of the changes across the coefficients of these interaction terms were statistically significant. Nonetheless, there was a small pattern in regards to the interaction terms

for March and June of 2016. Both of these interaction terms were greater than the interaction terms of March and June of 2015. Given the small difference, however, this may have merely been coincidental and is hard to interpret. Due to this lack of change across these interaction terms, the data then failed to support both the second and third hypotheses.

In summary, however, the data might have failed to support the hypotheses set in this study for several reasons. First of all, some of these households may have access to credit which would allow them to smooth any sort of consumption when they know they will be obtaining a tax refund. If this were the case, there would be no change in consumption behaviors of entertainment spending. Unfortunately, due to lack of available and useable credit card data in the CEX, the levels of credit card debt could not be studied across these periods to see if this relationship existed. Second, these households may be using their refunds for other types of spending and would therefore not impact the amount of entertainment spending as a whole. Some studies have shown increase in durable good spending or using their tax refunds to pay down credit card debt (Medenhall et al., 2012; Souleles, 1999). These types of spending habits, however, were beyond the scope of this study and require a much detailed analysis of the different spending segments that refunds may be influencing.

Third, this analysis excluded those that reported no entertainment spending for that quarter due to fears of bias that might result from this self-reported total. Considerable amounts of households across the data, however, reported zero expenditures for entertainment across the quarter time periods. They were excluded in order to better focus on patterns of households that spent money on entertainment in these quarters. Nonetheless, excluding them may have affected the results given that some CUs in the same sample year reported spending on entertainment in

one quarter and not the other. As Table G shows, however, there seems to be a statistically significant decrease in average entertainment spending across March 2015 and March 2016 when these CUs are reintroduced into the data. Reevaluating this relationship using the first stage regression, however, this pattern becomes lost in the coefficients. The difference in coefficients of March 2015 and March 2016 is not quite statistically significant, although it has a P-Value < 0.1. Nonetheless, this statistically significant decline in entertainment spending across March 2015 and March 2016 is promising. Still, this data is not enough to support any of the hypotheses in this study.

Lastly, another problem within this analysis could be that the timing and amount of refunds obtained by households may be different from what had been postulated in the formation of these hypotheses. The amount obtained by households depended on the TAXSIM data, which was calculated using the interview data that was self-reported by CUs. If some households did not report the same amounts of income or other certain tax credits, for example, they may have not obtained the amounts that were expected based on TAXSIM data. Consequently, there was no way of knowing whether these households ultimately filed their taxes early in 2015. Those with little to no tax refund according to TAXSIM data (under $100, for example), may not have cared as much in obtaining their tax refunds as quickly as those with larger amounts. If this were the case, then the time periods chosen in this study would not be applicable to these households and their entertainment spending would have nothing to do with refunds during the March 2015 period. This also demonstrates how assumptions on timing of when households would file taxes and ultimately receive their tax refunds were the foundation for this research. If it were the case that households received refunds in the same quarter despite the PATH Act, then this may

explain a lack of results. Moreover, if it were the case that those that qualified for the EITC and ACTC did not, as a majority, file taxes prior to February 15 before the PATH Act, this may also explain a lack of results. The latter, however, seems unlikely given the past research showing how individuals with tax refunds are most likely to file earlier (Rubin, 2017).

Out of the analysis conducted, these were far from the expected results. One of the greatest limitations of this study were the data constraints. Out of thousands of CUs interviewed for each period, only a handful fit the criteria of being interviewed in the respective month, spending on entertainment for that quarter, and receiving tax refunds. Additionally, given the changes in how entertainment spending is reported in 2017, further data was not available to determine whether changes that occurred between 2015 and 2016 also occurred across 2016 and 2017. Conducting further research that may consolidate the two or looking at 2018 data, when it becomes available, and comparing it to 2017 data may prove to be useful. Furthermore, patterns found within the data left for the potential to analyze other aspects relating to the subject. For example, given the sharp decline in entertainment spending for the quarter of March 2015 and March 2016, it may be useful to look across all groups and see if this is a trend that specifically affects those receiving these tax credits. Moreover, analyzing the potential effects that the PATH Act had on other forms of non-necessity spending might better explain the lack of definitive results from this study.

CONCLUSION

The aim of this paper was to examine whether shifts in entertainment spending would occur as a result of shifts in the timing of tax refunds due to the PATH Act. More broadly, however, part of the goal was to examine whether entertainment spending was not properly smoothed by households who obtained the EITC and ACTC. This would imply a divergence from traditional economic theories, such as the Permanent Income Hypothesis, and would have added to a growing list of literature that has demonstrated how individual actions differ from many of the assumptions in these theories. Another objective of this research aimed at better understanding the relationship between entertainment spending by households and tax refunds. Intuitively, and based on past research conducted on tax recipients who qualified for the EITC, tax refunds should be positively correlated with entertainment spending. Therefore, it would have been expected that this shift in timing of refunds would have shifted the timing of entertainment expenditures.

Unfortunately, there was a lack of concrete statistically significant results that supported my hypotheses aiming to test these theories. Although this was not the case, drastic drops in entertainment spending across March 2015 and March 2016 and then similar spending on entertainment during the June 2015 and June 2016 quarters may imply that this spending went elsewhere. As previously explained, this pattern was not statistically significant and may have been explained by flawed assumptions as well as data constraints. Nonetheless, this pattern may be useful to study. Understanding why these households potentially shifted spending across categories could benefit the entertainment industry in better understanding how these

lower-income households trade off their discretionary income. More broadly, however, understanding where this spending went or whether it was saved or used to pay down debt can allow for insight into what tradeoffs were made. If the timing of the PATH Act was also found to coincide with this shift, these insights could better help the IRS and policymakers understand how the particular provision of the PATH Act altered consumption. Therefore, although it was outside of the scope of this specific research question, further research should be conducted to see whether a relationship between tax refunds and another spending category is present using the theoretical framework proposed in this research. Additionally, more research focused on the relationship between entertainment spending and tax refunds should be conducted using the following years of CEX data released.

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