

2012

Taxation with Representation Ain't So Hot Either: An Empirical Analysis of Taxpayer Satisfaction

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Recommended Citation

Kawano, Rei, "Taxation with Representation Ain't So Hot Either: An Empirical Analysis of Taxpayer Satisfaction" (2012). *CMC Senior Theses*. Paper 370.

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CLAREMONT McKENNA COLLEGE

**TAXATION WITH REPRESENTATION AIN'T SO HOT EITHER: AN
EMPIRICAL ANALYSIS OF TAXPAYER SATISFACTION**

SUBMITTED TO
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AND
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FOR
SENIOR THESIS
SPRING 2012
APRIL 23, 2012

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Abstract

This paper analyzes whether the decreasing progressivity of the US Federal Tax system appear to affect taxpayer satisfaction. I use data from the publicly available General Social Survey and combine them with average tax rates from Piketty and Saez (2007). In this study, two distinct questions are addressed: (1) Is a taxpayer's belief that his or her own federal income tax is too high affected by their actual average tax rates? (2) Is a taxpayer's belief that his or her own federal income tax is too high affected by the progressivity of the federal income tax?

The results show that taxpayer dissatisfaction is consistently positively correlated to average taxes and progressivity. Upon dividing up our respondents to income quintiles, my results reveal two interesting findings: (1) the magnitude of dissatisfaction for a given increase in average taxes follows a U shaped pattern across the income quintiles, where taxpayers in the third quintile were most responsive to fluctuations in tax rates, (2) the magnitude and strength of the correlation between the various progressivity variables and taxpayer dissatisfaction was consistent for all income quintiles, implying that taxpayers are not recognizing changes in progressivity. These findings disclaim the homo economicus assumption. Further, after dividing our respondents based on their educational attainment, I find that taxpayers with higher levels of education are more responsive to changes in tax rates.

“In this world nothing can be said to be certain, except death and taxes. ”

Benjamin Franklin writing to Jean Baptiste Le Roy, November 13 1789

Introduction

On September 19, 2011 President Barrack Obama proposed what he called the “Buffet Rule”, a guiding principle that the very wealthy should not pay a lower rate of federal tax than the middle class. Warren Buffet had long been an advocate for the reform of the US Federal Tax system which he believed favored the ultra wealthy, enabling individuals like himself to pay an effective tax rate of 17.4 percent, lower than the 30 percent rate paid by his secretary (Buffett, 2011). Since the explosion of the Occupy Wall street movement, the issue of increasing income inequality, and the growing perception that the federal government is unfair, especially with regards to their treatment of taxes for the very wealthy, has hit the spotlight. As it should. There exists no other legislation whose affects are as widespread and significant as those of taxation.

A solid tax system is imperative to the success of every government. Its roles range from the distribution of public goods to the redistribution of wealth. Residents pay taxes in exchange for various goods and services from the government. Thus in this context, taxpayers can be viewed as investors and taxes their investment in the government. Understanding investor satisfaction is important to maintain the success of investments.

Public perception of and satisfaction in the federal tax system, has long been acknowledged as essential to the success of the government. Not only is tax perception important because it is correlated to tax compliance, but studies have shown there exists a

break down in trust for the government if taxpayers believe the system is unfair (Rawlings, 2003).

For the last 40 years the US Federal Tax System has undergone dramatic changes. In this paper I analyze whether these changes appeared to affect taxpayer satisfaction. Using data from the publicly available General Social Survey and tax rates from Piketty and Saez (2007), I show that taxpayer dissatisfaction is consistently positively correlated to average taxes and progressivity. Upon dividing up our respondents to income quintiles, my results reveal two interesting findings: (1) the magnitude of dissatisfaction for a given increase in average taxes follows a U shaped pattern across the income quintiles, with taxpayers in the third quintile being most responsive to fluctuations in tax rates, (2) the magnitude and strength of the correlation between the various progressivity variables and taxpayer dissatisfaction was consistent for all income quintiles, implying that taxpayers are not recognizing changes in progressivity. These findings reveal that the homo economicus assumption, often used by public policy researchers, is inappropriate with regards to tax policy. Further, after dividing our respondents based on their educational attainment, I find that taxpayers with higher levels of education are more responsive to changes in tax rates.

The remainder of the paper will be organized as follows. In the next section, I will briefly present the theories of justice, fairness and taxpayer preferences. Next, I will summarize the changes in income inequality and progressivity since the 1960's. Then I will describe the data, procedure and results to my empirical study. In the final section I will summarize the findings and offer some conclusions.

Background

JUSTICE, FAIRNESS AND TAXPAYER PREFERENCES

Although past research has mainly concentrated on the economic factors of tax compliance, a growing number of researchers have begun to look at ‘non-economic’ factors to taxpayer’s evaluation on the tax system.

When forming opinions on the tax system, taxpayers consider three things: equity, simplicity and self-interest (Milliron, Watkins, & Karlinsky, 1987). Equity as the ultimate goal of a good tax system had existed since Adam Smith in his canons of taxation in 1796 and widely accepted by the public. Taxpayer morale is largely dependent on their belief that taxes are fair, and maintaining such moral is critical for tax systems such as the US, which is largely based on self-reporting and voluntary compliance (United States Dept. of the Treasury: Office of the Secretary, 1984). The Tax Reform Act of 1986 was in part proposed in order to change the growing perception that the tax system was unfair (United States Dept. of the Treasury: Office of the Secretary, 1984). Having said this, defining a ‘fair’ tax system, which can be applied to various groups across time, is difficult.

Within public finance, there are two commonly used approaches to this question: the benefit principle and the ability to pay principle. The benefit principle states that taxpayers should pay according to the benefits received from the government. The exchange is considered equitable if taxpayers believe that the benefits they receive from the government is proportional to the amount of taxes they pay. However, fairness as a terms of exchange with the government has become less relevant as government expenditures have shifted from expenditures that might benefit everyone in the

community, such as bridges and public buildings, to expenditures on special programs which target a specific group, such as the Earned Income Tax Credit which provides financial assistance only for eligible low-income households (Bradley, 1984). The ability to pay is based on the principle that each individual should contribute to the government in accordance with how much they are able to pay. This approach is tied to the theory of Horizontal Equity, individuals with the same income pay the same amount, and Vertical Equity, individuals who are wealthier pay more (Gerbing, 1988).

Researchers have also identified three elements to justice in taxation: procedural justice, retributive justice and distributive justice (Wenzel, 2003). Procedural justice deals with the fairness of the process of resource allocation. Retributive justice refers to fairness in the consequences and treatment of those who break the established rules. Distributive justice refers to the fairness in the outcome of resource allocation or distribution. The issues considered in distributive justice are tax burdens, tax based benefits and avoidance/evasion opportunities (Wenzel, 2003). This last point is particularly important as the current tax system's allows for various exemptions that are applicable to only the very wealthy, enabling them to have an effective tax rate that is lower than the general public.

To further understand our analysis, it is important to note that individuals will more often evaluate the desirability of their current position not in absolute terms, but in relative terms to other point in times as well as other people. Psychological research has found that individuals often identify themselves as part of different groups, based on the perceived "sharedness and consensus on distinctive group interest" (Wenzel, 2003). This creates a distinct attitude of in-group and out-group, where individuals might feel a

competitiveness or hostility towards those in the out-group. The growing income inequalities since the 1980's has resulted in individuals distancing themselves from their identity as Americans and rather identify themselves as members of different income groups. There exists particular hostility towards the top 1% who has captured more than half of the US economic growth since the 1980's and more recently, have captured 93% of the income gains in 2010, and the bottom 20% who pay a small portion of the overall tax rates but still receive a notable portion of government benefits (Saez, 2012).

Individuals and groups may judge the equity of their tax burden based on the above three points. They may compare themselves to others who they believe are in the same income group, in the case of horizontal equity, or, in the case of vertical equity, they may compare themselves to others who they believe are in other income groups. Individuals may also make judgments of their current tax level on their past tax burden. Wartick (1994) found that taxpayers perceived changes in the tax law to be unfair if it made them worse off. Taxpayers also lose trust in the tax system if they believe that others aren't paying their share, particularly with regards to the wealthy. Gerbing (1988) found that taxation towards the rich was a major factor in determining fairness in taxation. Research by Spicer and Lundstedt (1976) found that among respondents who stated their tax burden was too high, 75% of them attributed their dissatisfaction towards the significant tax avoidance by wealthy taxpayers. Their opinions however appear to be grounded on lack or misinformation, and their perceptions overestimate the level in which wealthy individuals take advantage of loopholes and avoid taxes. A study by McKee and Gerbing (1989) of two large cities found that residents believed that

45% of millionaires pay no income taxes, however, actual data from the IRS indicate that fewer than 2% of millionaires pay no taxes in any given year.

Studies of public preference for tax systems by Gerbing (1988), Seidl and Traub (2001), Edlund (2003) all concluded the general public preferred a progressive tax system. Roberts and Hite (1994) conducted a study of 600 US taxpayers shortly after the 1986 Tax Reform Act. The study revealed that most respondents preferred a progressive tax system, however amongst this group, there existed three distinct groups which varied in the level of progressiveness: Steep Progressives, Mild Progressives and Flatraters. The percentages dissatisfied by the fairness of the current system were 70%, 59% and 78% respectively. Interestingly, they find that actual effective tax rates at that time were lower than public preferences even amongst those who state that their current tax level is too high. Inconsistencies in answers depending on if they were presented in real or abstract terms has raised questions on the reliability of the results and rather indicate a general lack of information or understanding of progressivity and the tax system.

PROGRESSIVITY AND INCOME INEQUALITY

Since the 1960's the US federal tax system has undergone significant changes which have shifted the system in the direction of less progressivity. Changes in the tax code as well as the changes in the pattern of the sources and size of income, especially for the very wealthy, has resulted in unprecedented levels of income inequality.

Kuznet (1955) hypothesized that income inequality should follow an inverse U-shape; increasing with industrialization and then falling as the larger public are able to

reap the benefits and move into high productive sectors of the economy. However, the current state of the US income distribution evidently contradicts this hypothesis.

Piketty and Saez (2003) found that top shares in the US followed a U-shape since the 1900, falling during WWI and the Great Depreciation and rapidly increasing since 1960's. The share of after-tax income accruing to the top 1%, at 17.1%, reached its highest level since 1979 in 2007 while, during this same period, the share going to the middle one-fifth population reached its lowest level of 14.1 % (Sherman & Stone, 2010). Throughout the years, the US economy has undergone significant economic growth, however, evidence shows that the majority of the growth was captured by only the top 1%. From 1993 to 2010 the average real income per family increased by 13.8%, however, if one excludes the top 1%, real income for the 99% only grew by 6.4% Comparatively, the incomes of the top 1% grew by 58% during this 17 year period (Saez, 2012).

They also found that the income composition for the top bracket has changed significantly from 1929 to 1998, with percentage of capital income for the 90-95% bracket falling from 20% to 5%, and wage income increasing from 60% to 90%. Dividing the top income bracket further, however, also illustrates differences in the income composition within each subdivision, whereby the top .01% hold more in capital and entrepreneurial income compared to those in the top 10% bracket, all though less than 1929 levels. The increase in the wage component of income was also accompanied by an increase in the average salaries of CEO's in the top one percent since the 1970's while the bottom 99% experienced dismal growth. This point was further reiterated in Saez (2004).

A study by Piketty and Saez (2007) calculated the average effective federal tax rate paid by every income bracket. Adopting the income groups in Piketty and Saez (2003) and using publicly available individual tax returns, Piketty and Saez were able to estimate the effective federal tax which include the individual income tax, corporate income tax, estate (and gift) tax and the payroll tax. Table 1, replicated from Piketty and Saez (2007), presents the pattern of the average federal tax for different income groups from the 1960's to 2004.

In the 1960's the top marginal rate for the highest income was 91 percent, resulting in an effective average tax rate of up to 71.4 percent for the top .01 percent compared to the average tax rate of 13.9 percent for the bottom twenty percent. Tax evasion was prominent; in 1981 the IRS estimated uncollected taxes on legal income of about \$81.5 billion (United States Dept. of the Treasury: Office of the Secretary, 1984). Growing concern that the past tax structure was unfair, overly complex and inefficient prompted the Tax Reform Act of 1986. Some of the most important changes include (United States Dept. of the Treasury: Office of the Secretary, 1984):

1. Reduction in tax brackets from over a dozen to approximately four.
2. Establishment of limits on the passive losses that can be declared.
3. Reduction in the top marginal rate from 50% to 28%.
4. Reduction in corporate and capital gains tax.
5. Widening of the tax base and increasing exemptions and standard deductions.

These changes sought to reduce the loopholes utilized by the wealthy and increase compliance. However, despite the original intentions of TRA 86 to make the tax system

more equitable, the general public did not appear to perceive the decrease in progressivity to be fairer (Gerbing, 1988).

Progressivity in the top income group decreased significantly, while the average federal tax on the middle-income group remained relatively unchanged. The decreasing progressivity can be mostly attributed to the reduction on capital income taxation and estate taxation, which exclusively benefit wealthy households (Piketty and Saez, 2007). The higher the income bracket the higher the percentage of income earned through investment capital. Over time, the tax system had grown to work in favor of those already in the top income bracket. This point was further discussed by Fleischer (2007), who argued that the ability for fund managers to tax their profit- capital interest- at the long-term capital gains rate, is at conflict with a progressive income system. Further, tax deductions for charitable giving and Foreign Tax Credit allow the wealthiest individuals to pay an effective tax rate below their 35% top marginal rate. By 1990 the average tax rate for the top .01% had reduced to 35.4% while the average tax rate for the bottom 20% increased, although minimally, to about 16.2 % (Piketty and Saez, 2007). It is crucial to note that that much of the decrease in progressivity was due to mainly to the drastic decrease in the average tax rate of the top .01%.

An empirical study by Gerbing (1988) analyzed whether taxpayers believed that the implementation of TRA 1986 resulted in a fairer tax regime. Various questions were developed to measure the respondent's attitudes and beliefs about the fairness of tax laws, particularly with regards to wealthy taxpayers and their ability to utilize special provisions, which enable them to pay less than their fair share. Gerbing found that in the

summer of 1987, after the implementation of TRA 86, the general public perceived the federal tax system as less fair.

Empirical Examination

Having explored the history of the US federal tax system and taxpayer attitudes towards taxation, I will now examine the implications of the changing structure of the federal tax system on taxpayer satisfaction. My study is broken down to answer two distinct questions.

1. Is a taxpayer's belief that his or her own federal income tax is too high affected by their actual average tax rates?
2. Is a taxpayer's belief that his or her own federal income tax is too high affected by the progressivity of the federal income tax?

Prior research on tax perception within the realms of public policy assumes that households are *homo economicus*; the assumption that humans are rational and self interested and hence are able to perceive tax burdens, both their own and others, correctly (Blaufus, Bob, Hundsdoerfer, Kiesewetter, & Weimann, 2010). Taxpayers are assumed to have perfect knowledge and understanding, therefore, all opinions regarding the tax system are based upon the correct evaluation of the overall tax structure.

It is intuitive to think that the actual average taxes paid by taxpayers will affect their satisfaction with the federal income tax. The lower their tax burden, the more satisfied they would be with the income tax system. Likewise, if taxpayer satisfaction is heavily determined on their perception of fairness and it is generally accepted that a progressive tax system is fair, then it seems logical to believe that the level of

progressivity should have an affect on taxpayer satisfaction. More specifically, higher degrees of progressivity would result in increased satisfaction with the tax system for households in the lower income bracket, and decreased satisfaction for households in the higher income bracket.

Combing the general demographic data and taxpayer satisfaction measures from the General Social Survey (GSS) with the average tax rates calculated by Piketty and Saez (2003), I will attempt to determine whether this above relationship exists. Evidence to the contrary would suggest that either individuals are unable to calculate or are unaware of the taxes paid by others, or that individuals do not truly understand the meaning of progressivity, disclaiming the *homo economicus* assumption frequently used for tax policy. This will raise various public policy implications and may shed light to how governments might proceed to improve taxpayer satisfaction.

THE DATA

For this analysis, I will use data from the General Social Survey (GSS). The GSS is an annual survey administered from 1972 that serves to collect data on demographic characteristics and attitudes of the public.¹ The questions range from opinions about government spending to the existence and nature of God. From this survey I extracted the questions concerning their attitudes towards federal income tax, as well as other questions regarding their demographics that I used to control for heterogeneity. Descriptions of the variables examined are presented in Table 2.

¹ Survey was administered every year from 1972 to 1994 (except for the years 1979, 1981 and 1992) and every other year since 1994

Ideally I would like to have the response to a question regarding taxpayer's attitudes towards the overall tax system. Questions regarding each respondent's attitude towards the overall current tax structure did exist in the survey but was only administered in selected years.² Due to the constraints in available data, the question I used regarding attitudes towards their current tax rate asked in the questionnaire is the following: *Do you consider the amount of federal income tax which you have to pay as too high, about right, or too low?*

I acknowledge that some respondents may interpret this question differently; Hess and Orphanides (1996) interpreted this question to measure respondents overall tax preference. For the purpose of this paper I will assume that at least some of the respondents interpreted the question correctly.

Very few respondents stated that their taxes were "too low", thus I combined respondents stating that they were "too low" with those stating they were "about right" to create the binary variable TAX. This variable will equal 1 if respondents felt their federal taxes were "too high" and 0 otherwise.

The explanatory variable I consider to reflect the respondents effective federal tax rate is their estimated average tax rate, AVGTAX. The GSS did not have data regarding the respondents effective tax rate, however, it did include data regarding the respondents

² Questions on progressivity included in the GSS were the following: (1) how much income tax should the rich pay? Questions were included in 1985 and 1990 only. (2) Should the rich pay bigger share of taxes? Question was included in 1987 and 2000 (3) Taxes on high-income people too high? (4) Taxes on middle-income people too high? (5) Taxes on low-income people too high? Questions 3,4 and 5 were administered in 1987, 1998 and 2006.

income. The question provided income brackets that respondents fell into.³ Using the midpoint, I made a rough estimate of the respondent's income then generated a new variable QUINTILE, which further divided the respondents into 20 percent income brackets.

Piketty and Saez's (2007) paper estimated the average tax for income quintiles every year from 1960 to 2004. Using data from the public micro-file tax return data, they broke down the data into different income groups ranging from the second quintile (20-40 percentile) to the top 0.01 percent (99.9-100 percentile). They defined income as all sources of market income, which not only include wages and salaries, but also includes bonuses and exercised stock options, self-employment income; dividends, interest, and rents, as well as realized capital gains. They then proceeded to calculate the average tax by considering four federal taxes: the individual income tax; corporate income tax; estate (and gift) tax; and the payroll tax. The average tax was calculated using TAXSIM, after making several assumptions on tax incidence.⁴

I combined the two data sets by assigning the average tax calculated by Piketty and Saez to respondents based on their income quintile. The quintiles were calculated based on the income of the respondents of the survey. As the GSS is a nationally representative survey, I believe my estimated quintiles closely match actual quintiles for each year.

³ Over time, due to inflation, NORC has added brackets in which respondents can place their current income

⁴ TAXSIM is a program developed by the National Bureau of Economic Research which allows one to calculate federal and state income tax liabilities.

I also generated four additional variables to measure progressivity: WTOP, the average tax rate of the top .01%; AVGDIFF, the average difference in the tax rates from moving up a quintile; TBOT, the difference in the average tax rates of the top .01% and the bottom 20%; and TMID the difference in the average tax rates of the top .01% and the middle 40-60%.

Piketty and Saez (2007) found that the decrease in progressivity of the US federal tax system was heavily due to the significant drop in the average tax rate for the top .01%, while the change in the average tax rate for the rest of the population was, comparatively speaking, very limited. Looking back to Table 1, we see that from 1960-2004 the average tax rate for the 20-40th percentile income group up to the 99-99.5 percentile income group changed by less than 6% whereas the average tax rate for the 99.99-100 percentile income group dropped by 36.7%, from 71.4% to 34.7%. Although the data most likely did not include respondents in the top .01% group, I believe that it was most appropriate in illustrating progressivity because the change was concentrated at this level.

Additional explanatory variables that I used to control for observable factors that may affect the respondents perception on TAX are the respondents household population, HOMPOP, the respondents income adjusted for inflation, ADJ_INCMID, the age of respondents, AGE, and the number of years they have been in school, EDUC.⁵ Additionally MALE, WHITE, BLACK, EMPL and MARRIED are dummy variables for

⁵ The GSS provided several income ranges respondents could place themselves in. We took the midpoint of these income brackets, and then adjusted it for inflation to generate the variable ADJ_INCMID.

whether the respondent is male, white, black, currently employed, and currently married, respectively.

ESTIMATION RESULTS

Modeling the relationship between the response to the tax question and average tax as a binary probabilistic choice problem, the probability that the i th respondent states that his/her taxes are “too high” is

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{AVGTAX}_i+\delta\cdot Z_i) \quad (1)$$

where AVGTAX is the i th respondent’s estimated average tax rate.

The probability that the i th respondents states that his/her taxes are “too high” in response to the tax question and progressivity as a binary probability choice problem are

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{WTOP}_i+\delta\cdot Z_i) \quad (2)$$

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{AVGDIFF}_i+\delta\cdot Z_i) \quad (3)$$

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{TBOT}_i+\delta\cdot Z_i) \quad (4)$$

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{TMID}_i+\delta\cdot Z_i) \quad (5)$$

In all the above equations Z_i is a vector of the additional observable characters I wish to control for. ϕ is the cumulative distribution function of a standard normal distribution.

The estimation results for equation (1) are reported in Table 3. The first column presents my estimates based on the entire set of respondents, controlling for all of the variables. Results indicate that, even after controlling for income, as the average tax rate

increases, the probability that respondents would be dissatisfied with their own taxes increases as well. This illustrates that there is more than an income effect taking place.

To allow for variations in the relationship across different income groups, I ran separate regressions for each income quintile. My results indicate that the relationship between the average tax rate and satisfaction with their own tax is U-Shaped, that is, the relationship between AVGTAX and TAX increases as you move up the income quintile reaching a peak at the third quintile, then falls for higher income quintiles. In the second column we see that for the first quintile, a 1% point increase in AVGTAX increases the likelihood that the respondent is dissatisfied with their current tax by 1.2 percentage points or 3.1%.⁶ Moving up to the third quintile, a 1 percentage point increase in AVGTAX increases the likelihood that the respondent is dissatisfied with their taxes by 7.7 percentage points or 15.1%, but as you move up to the fifth quintile the likelihood falls to about 2.3 percentage points or 4.4%.⁷ The middle class' satisfaction with their own taxes is significantly affected by variations in their own tax rate, while the bottom and top quintiles are much less affected.

The estimation results for equations (2) to (5) are presented in Table 4.1 to 4.4. In contrast to my hypothesis, there is a positive relationship between all of the progressivity variables and TAX, a binary variable equal to 1 if respondents state their taxes are too high and 0 otherwise. This correlation is consistent even after breaking them down into income quintiles. Across the quintiles, respondent's dissatisfaction with their own tax

⁶ A 2.5% point increase is a 6.4% increase from the base rate of 39.3%. Base rates were calculated by taking the means of respondents answer to TAX for every income quintile.

⁷ Base rates for the third and fifth quintile are 51% and 52.7%, respectively.

rates increases as progressivity increases. The strength of the relationship between TAX and progressivity variables were consistent throughout.⁸ A percentage point increase in WTOP, the average rate of taxes paid by the top .01%, AVGDIFF, the average difference in average taxes paid by each income quintile, TBOT, the difference in average taxes paid by the top .01% and bottom 20%, and TMID, the difference in the average taxes paid by the top .01% and middle 40-60%, increased the likelihood for dissatisfaction by approximately 1.95%, 9.19%, 1.87% and 1.78% respectively, across each quintile.⁹

To analyze this point further, I ran similar probit regressions after controlling for AVGTAX. The probability that the i th respondents states that his/her taxes are “too high” in response to the tax question and progressivity as a binary probability choice problem, after controlling for AVGTAX is

$$\Pr(\text{TAX}_i=1)=\phi(\beta\cdot\text{PROG}_i+\text{AVGTAX}+\delta\cdot Z_i) \quad (6)$$

where PROG_i is any one of the progressivity variable WTOP, AVGDIFF, TBOT or TMID.

Here, I hoped to illuminate how a respondent would react to changes in progressivity after controlling for changes in their own tax rate. In doing so, I was able to isolate the dissatisfaction that arise from absolute changes in ones own taxes from the dissatisfaction which arise from relative changes in taxes. Table 5.2 presents the results from regressing TAX on AVGDIFF after controlling for the previous explanatory

⁸ This finding is interesting in contrast to the U-Shaped relationship between AVGTAX and TAX previously presented in Table 3

⁹ Values presented on the tables are percentage points. To calculate the percentage change, we divide the percentage point by the base rate. Actual average percentage changes across the different quintiles for WTOP, AVGDIFF, TBOT and TMID are 5.3%, 24.6%, 4.9% and 4.7%, respectively.

variables and AVGTAX.¹⁰ Similar to our previous findings, results show a positive correlation between TAX and AVGDIF, indicating that when progressivity increases, respondents are more likely to be dissatisfied with their own tax burden even if there are no changes to their own rate. The direction and strength of the correlation were similar across each quintile.¹¹ The similar regression results would indicate that respondents evaluate their own taxes in relative terms. That is, a taxpayer that paid a tax rate of 15% in year one and 15% in year two will feel their burden has increased, if in year two everyone else's taxes fell to 10%. However, this would presume that taxpayers are aware of what others are paying. This is particularly interesting, as the positive nature of the correlation between TAX and all of our progressivity variables across every quintile would suggest the opposite.

An increase in progressivity would significantly benefit respondents in the lower quintile and at the same time hurt respondents in the upper quintile, yet in the above cases there exist no variations in the relationship across all the quintiles in both magnitude and direction. If the assumptions of homo economicus were true, and individuals are in fact able to calculate and perceive their individual and others tax rates correctly, respondents in the lower quintile should be able to recognize the benefits of higher progressivity and be more satisfied as progressivity increases. The correlation between the progressivity variables and TAX should thus be negative. Likewise, respondents in the upper quintile should recognize the damage from an increase in progressivity. The correlation between

¹⁰ Regression results for WTOP, TBOT and TMID are presented in table 5.1, 5.3 and 5.4, respectively.

¹¹ A 1% point increase in AVGDIF would increase the probability that a respondent would be dissatisfied with their own tax rate 9.92%, 8.44%, 7.65%, 9.49% and 5.88% for quintiles 1 through 5, respectively.

the progressivity variables and TAX should be positive and stronger for respondents in these quintiles. The absence of such variation suggests that the poor are not recognizing the benefits from an increase in progressivity, and the rich do not seem to be bothered by the harm from an increase in progressivity.

Past studies regarding tax perception have found that an individual's educational attainment is the most important variable in determining a respondent's ability to correctly perceive their tax burden. König et al. (1995) found that school education was the main determinant of taxpayer misperception on individual marginal tax rates. Further, Hundsdorfer and Sichertmann (2007) reveal that even physicians have difficulties in correctly estimating tax rates. This implies that what is important is not only the level of education, but the type of knowledge the respondent has; more specifically, economic knowledge (Blaufus, K., Bob, J., Hundsdorfer, J., Kiesewetter, D., & Weimann, J., 2010).

My results show that education is consistently negatively correlated to TAX. This suggests that the more education the respondent attains, the more satisfied they will be with their own tax rate. This result was consistent in all of the regressions for all quintiles except for the first, 0-20th percentile. This finding was similar to results from an empirical study by Niemirowski *et al* (2002) who found that poor knowledge on the tax system increased taxpayers' distrust for the government (Hofmann, Hoelzl, & Kirchler, 2008).

I further analyzed this by allowing variations in the correlation between TAX to AVGTAX and the other progressivity variables, by performing the same regressions after dividing respondents based on their educational attainment. Respondents were broken

down into 4 distinct groups; less than high school, high school, College/some College and advanced degree.¹²

Table 6 presents a summary of our results. We see that the strength of the correlation between TAX and AVGTAX, and TAX and the various progressivity variables, increases the higher the education attained by the respondent. Individuals with higher education are more responsive to changes in the tax rate. Respondents with a higher education are more likely able to understand the tax system and keep up with news, thus are able to form their opinions based on actual tax rates rather than, lets say, opinions of their peers. Therefore, it seems intuitive that opinions of those with higher education are more closely linked to variations in their actual average tax rate.

Conclusion

This paper has discussed the falling progressivity in the US federal tax system and increasing income inequality since the 1960'S, and its implications on taxpayer satisfaction. Several important findings emerge.

First, the effect of taxpayers real average tax rate on their satisfaction with the tax system follows a U-shaped pattern. Middle-income taxpayers views on their tax system are significantly affected by changes in their actual tax rates, while taxpayers in the low and high income brackets are less affected. The reasoning

¹² Based on the variable EDUC, we divided up respondents into 4 distinct groups. Individuals earning less than 12 years of schooling, less than high school ; individuals with exactly 12 years of schooling, high school; individuals with between 13-16 years of schooling, college/ some college; and individuals earning more than 16 degrees of schooling, advanced degree.

behind this finding is still unknown and is an area that can be explored deeper in future studies.

Second, contrary to our hypothesis, taxpayers dissatisfaction and progressivity have a positive correlation across all income groups. That is, an increase in progressivity increases the likelihood that a taxpayer will be dissatisfied with their taxes regardless of whether the change is beneficial or detrimental to the taxpayer. An increase in progressivity would benefit taxpayers in the lower income bracket, and hurt taxpayers in the upper income bracket, but our findings show that the correlation between our progressivity variables and TAX were positive and of equal magnitude across all quintiles. This finding was consistent even after controlling for changes in the respondent's own tax rates. These results suggest that the homo economicus assumption may be inappropriate in the context of taxation. Similar to findings from previous research, my findings suggest that taxpayers in fact do not fully understand the current federal tax system and are unaware of the actual level of progressivity. Despite preferences for a more progressive tax system, taxpayers fail to recognize changes to progressivity.

Thirdly, the actual level of the respondents average tax and progressivity affect the taxpayers satisfaction with the income tax system more for respondents with higher education. The higher the level of education attained, the less are their opinions grounded on their preconceived demographic variables and more by the current level of taxation.

Given these findings, it seems that simply adopting the "Buffet Rule" is not sufficient in increasing taxpayer satisfaction. Tax administrators should rather

consider ways to better inform and educate the public to better understand the US federal tax system. The current US Tax Code has over 67,000 pages and includes high levels of abstraction and numerous technical terms. The commissioner of the Internal Revenue Service, Douglas Shulman, publicly admitted that he used a tax preparer to do his federal income tax return because he found the US tax code too complex (Ballasy, 2010). If the commissioner finds difficulty in understanding the US Tax Code, it is unsurprising that the majority of the public does as well.

Information regarding the effective average tax rate for the various income groups is already easily accessible; therefore efforts should be targeted so that taxpayers are able to actually understand the meaning of progressivity both in abstract and real terms. The availability of resources and programs to increase taxpayer understanding for all income levels, would allow taxpayers to gauge changes in the tax system themselves. Better understanding would increase taxpayer's trust in the government and, perhaps more importantly, taxpayer's opinions on the level of taxation can be grounded on variables that the government can observe and amend. Although emphasis is currently put on increasing the progressivity of the US tax system, my findings suggest that addressing concerns regarding the overall complexity of the US tax law should be the long-term priority for Congress.

References

- Ballasy, N. (2010, January 12). IRS Commissioner: 'I Find the Tax Code Complex, So I Use a Preparer'. *CNSnews.com* .
- Blaufus, K., Bob, J., Hundsdoerfer, J., Kiesewetter, D., & Weimann, J. (2010). *It's All About Tax Rates- An Empirical Study of Tax Perception*.
- Bradley, B. (1984). *The Fair Tax* . New York : Pocket Books .
- Buffett, W. E. (2011, August 14). Stop Coddling the Super-Rich. *The New York Times* .
- Edlund, J. (2003). Attitudes Towards Taxation: Ignorant and Incoherent? . *Scandinavian Political Studies* , 26 (2), 145-167.
- Fleischer, V. (2007, September 13). Taxing Blackstone. *U Illinois Law & Economics Research Paper No. 07-036* .
- Gerbing, M. D. (1988). *An Empirical Study of Taxpayer Perceptions of Fairness*. Orlando.
- Hess, G. D., & Orphanides, A. (1996). Taxation and Intergenerational Transfers with Family-Size Heterogeneity: Do Parents with More Children Prefer Higher Taxes? *Journal of Money, Credit, and Banking* , 28 (2).
- Hofmann, E., Hoelzl, E., & Kirchler, E. (2008). Preconditions of Voluntary Tax Compliance: Knowledge and Evaluation of Taxation, Norms, Fairness, and Motivation to Cooperate. *Journal of Psychology* , 216 (4), 209-217.
- Konig, H., Laisney, F., Lechner, M., & Pohlmeier, W. (1995). Tax Illusion and Labor Supply of Married Women. Evidence of German Data. 347-368.
- Kuznet, S. (1955). Economic Growth and Economic Inequality . *American Economic Review* .
- McKee, T., & Gerbing, M. (1989). Taxpayer Perceptions of Fairness: The TRA of 1986. *Internal Revenue Service Research Conference* . Washington D.C.
- Milliron, V., Watkins, P., & Karlinsky, S. (1987). Taxpayers' Criteria in Making Tax Policy Judgements. Pennsylvania State University .
- Piketty, T., & Saez, E. (2007). How Progressive is the U.S. Federal Tax System? A Historical and International Perspective . *Journal of Economic Perspectives* , 21 (1), 3-24 .

- Piketty, T., & Saez, E. (2003). Income Inequality in the United States 1913-1998. *The Quarterly Journal of Economics* , CXVIII (1).
- Rawlings, G. (2003). Cultural Narratives of Taxation and Citizenship: Fairness, Groups and Globalisation. *Australian Journal of Social Issues* , 38 (3), 269-305.
- Roberts, M. L., & Hite, P. A. (1994). Progressive Taxation, Fairness, and Compliance. *Law & Policy* , 16 (1).
- Saez, E. (2004). Reported Incomes and Marginal Tax Rates, 1960-2000: Evidence and Policy Implications. (J. Poterba, Ed.) *Tax Policy and the Economy* , 18, 117-173.
- Saez, E. (2012, March 2). Striking It Richer: The Evolution of Top Incomes in the United States (Updated with 2009 and 2010 Estimates). *Pathways Magazine* .
- Seidl, C., & Traub, S. (2001). Taxpayers' Attitudes, Behavior, and Perception of Fairness . *Pacific Economic Review* , 6 (2), 255-267.
- Sherman, A., & Stone, C. (2010). *Income Gaps Between Very Rich and Everyone Else More Than Tripled in Last Three Decades, New Data Show*. Center on Budget and Policy Priorities . Washington: Government Printing Press.
- Spicer, M., & Lundstedt, S. (1976). Understanding Tax Evasion . *Public Finance* , 31 (2), 295-305.
- United States Dept. of the Treasury: Office of the Secretary. (1984). *Tax Reform for Fairness, Simplicity, and Economic Growth*. Washington D.C: Washington D.C: Office of the Secretary, Dept. of the Treasury.
- Wartick, M. (1994). Legislative Justification and the Perceived Fairness of Tax Law Changes: A Reference Cognitions Theory Approach. *The Journal of the American Tax Association* , 16, 106-123.
- Wenzel, M. (2003). Tax Compliance and the Psychology of Justice: Mapping the Field . In V. Braithwaite, *Taxing Democracy* (pp. 41-69). Aldershot, UK: Ashgate.