

# Who Pays Taxes? A Dynamic Perspective

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**Abstract.** This paper examines the payment of income and payroll taxes from a longitudinal perspective. Several studies have used cross-sectional tax return data to estimate the fraction of families that on net pay into (or receive benefits from) the income and payroll tax systems in the United States at a point in time. In this paper, we utilize a panel of tax information at the individual level that spans the 2001-2011 to address the question of who pays taxes over longer time frames. We find that, in 2011, 46.7% of tax units paid no income tax, after increasing during the 2001-2003 and 2009-2011 periods, though the share of individuals that paid no income tax is lower at 38.2%. Including payroll taxes increases the share paying positive taxes, but does not alter the trend. Utilizing the panel nature of our data, we find that positive payment status is more persistent than non-payment or negative payment status. In addition, the fraction of individuals who over a five year window have negative tax liabilities is less than the fraction in any given year, while the fraction paying no taxes over a five year period is roughly half of the amount that pay no taxes in any given year.

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## 1. Introduction

The federal government in the United States relies on individual income and payroll<sup>1</sup> taxes for a large share of its revenue. In 2012, for example, \$1.1 trillion in individual income taxes and \$771 billion in payroll taxes were collected, out of a total of \$2.5 billion.<sup>2</sup> The shares of these taxes have remained relatively steady over the prior decade, with income taxes making up an average of 44% of federal receipts and payroll taxes making up an average of 35% of receipts. Because of these taxes' substantial role in funding the federal government, there is a great deal of interest in who pays (and who doesn't pay) these taxes. Tabulations by the Tax Policy Center have suggested that, in recent years, around 46.4% of tax units<sup>3</sup> pay no federal income taxes<sup>4</sup> (a fact that played a prominent role in the 2012 presidential campaign<sup>5</sup>), though the share drops to around 27.6% when payroll taxes are included.

However, these tabulations are based on cross-sectional data, and so only represent taxpaying behavior at a point in time. While informative, such tabulations suffer from a number of weaknesses. First, a taxpayer may be a net recipient in one year but a net payer the next (and vice versa), making it unclear whether such a division between payers and beneficiaries is similar over longer time frames. Second, using families as the unit of observation does not

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<sup>1</sup> In this paper, we use the term "payroll taxes" to refer to Federal Insurance Contributions Act (FICA) and Self Employed Contributions Act (SECA) taxes. These two taxes finance the Social Security and Medicare programs, and are levied on the wages of employees and the incomes of self-employed individuals, respectively.

<sup>2</sup> In 2011 and 2012 the tax rate for the employee share of the Social Security portion of the payroll tax was reduced from 6.2% to 4.2%.

<sup>3</sup> A tax unit consists of a primary filer, a secondary filer (if the taxpayer is married filing jointly), and dependents claimed on the tax form (if any). In the paper we use the term tax unit and families interchangeably.

<sup>4</sup> See, for example, Tax Policy Center, "Tax Units with Zero or Negative Tax Liability, Current Law, 2004-2011 (T11-0173," June 14, 2011, <http://www.taxpolicycenter.org/numbers/displayatab.cfm?DocID=3054>. Other similar tabulations are presented in Williams (2010), Toder and Johnson (2010), and Johnson et al. (2011).

<sup>5</sup> See, for example, Corn (2012) and Gale and Marron (2012).

account for the fact that payer or beneficiary status may be correlated with family size, and so the fraction of families in beneficiary or payer status may differ from the fraction of individuals.

In this paper, we construct a panel of tax information at the individual level by matching and merging a random sample of Internal Revenue Service (IRS) tax returns over the 2001-2011 period to a panel of information returns (including forms W-2, 1098, 1099, and others) that spans the same period. The resulting dataset allows us to address the question of who pays taxes over longer time frames.

In tabulating tax burdens, it is important to make a distinction between statutory tax paying (who legally has the obligation to pay the taxes) and tax incidence (on whom does the economic burden of the tax fall) since the two often differ. In this study, we are interested in the latter, since it measures the extent to which the welfare of individuals is ultimately impacted by a tax. However, only the statutory tax payment is observed in our data, and so we must make some assumptions that map these payments to the individual on whom the incidence falls. In this study, we follow the practice of the Treasury Department,<sup>6</sup> the Congressional Budget Office, and the Joint Committee on Taxation and assume that each individual bears the burden of the individual income taxes that they pay, and that each employee bears both the employee's and employer's share of the payroll tax.<sup>7</sup> As noted by Fullerton and Metcalf (2002), the latter assumption has been tested and confirmed in a number of studies.<sup>8</sup> However, evidence for the full incidence of income taxes falling on the individual who pays the tax is considerably weaker.<sup>9</sup>

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<sup>6</sup> See Cronin (1999).

<sup>7</sup> Note that we do not account for any benefits (including Social Security Benefits) that are associated with these tax payments.

<sup>8</sup> See Gruber (1997) for a survey of these studies, as well as an empirical test that finds that the incidence of the payroll tax in Chile falls fully on workers.

<sup>9</sup> Fullerton and Metcalf (2002) noted at the time of their survey that this assumption had never been tested. Since that time, Kubik (2004) found that pre-tax wages of workers declined when marginal tax rates decreased due to the Tax Reform Act of 1986, while Leigh (2010) found that pre-tax wages decreased when the generosity of the Earned

To verify consistency with currently available tabulations, we examine what fraction of families are net payers and beneficiaries on an annual basis using Current Population Survey information to account for the number of non-filer families. We find that, in 2011, 46.7% of tax units paid no income tax, after increasing during the 2001-2004 and 2008 periods after which it stayed elevated until 2011. The fraction with a negative income tax liability increased steadily between 2001 and 2007, before dramatically increasing in 2008. By 2011, the share declined to 20.7%.

Next, using our individual level data, we construct a measure of tax payment that does not require any imputation for non-filers. We find that the share of individuals with zero or negative income tax liability is lower than the share of tax units (38.2% in 2011), though trends over time are similar. Including income and payroll tax in the definition of tax liability reduces the share in a zero or negative tax position to 29.2% in 2011. The trend over time is similar to that of income tax liability. We also find that the shares individuals with zero or negative tax liabilities are higher for individuals aged 65 and older, and for younger individuals (particularly women).

Next, we utilize the panel structure of our data to examine dynamics of taxpaying over time. We find that positive tax payment status is more persistent than nonpayment or negative payment status, as around 90% of individuals who have positive total taxes also have positive taxes the next year, while around 75% of zero tax payers and 70% of negative tax payers stay in the same group in the next year. Across a five year window starting in 2007, 59.7% of taxpayers paid positive total taxes every year, while 13.2% paid positive taxes in no year, and 5.3% had negative total tax liabilities in all 5 years. Across the five year period beginning in 2001, these percentages were 67.7%, 10.8%, and 3.5%, respectively.

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Income Tax Credit increased. Bingley and Lanot (2002) report similar findings using Danish data. These results imply that at least some of the burden of the individual income tax is shifted onto employers.

Finally, we examine the net tax position of people over a longer period of time. We find that the fraction of individuals who over a five year window have negative tax liabilities is generally less than the fraction in any given year, while the fraction paying no taxes over a five year period is roughly half of the amount that pay no taxes in any given year. Across the years, approximately 95% of those who pay positive taxes in a given year will (on average) pay positive taxes in the next four years, while around 65% of those who pay no taxes in a given year will pay no taxes on average over the next four years, and about 70% of those who have a negative liability will have a negative liability on average over the next four years.

The paper proceeds as follows. Section 2 describes our data. Section 3 describes tax payments in a single year and Section 4 presents the dynamics of tax payments. Section 5 concludes.

## **2. Data**

We create a panel of individual tax data using the Internal Revenue Service's (IRS) Compliance Data Warehouse (CDW). The CDW is a repository for many of the various tax forms collected by the IRS, including Federal individual tax returns and the corresponding information returns. The CDW data is different in several ways from the more familiar Individual and Sole Proprietorship (INSOLE) data compiled by the IRS's Statistics of Income (SOI) division. First, the CDW is not cleaned in the way that the SOI cleans and processes the INSOLE data. This means that the CDW could have large outliers and may have inconsistent data due to either taxpayer errors or coding errors during transcription. Second, the INSOLE data is a point in time sample based upon a processing year while the CDW is a continuously updated sample that can

be organized in a number of different ways. We have chosen to construct our panel by tax year as opposed to processing year because we are interested in the share of people that pay tax for a given year regardless of when a tax return was filed. A related difference between the INSOLE and the CDW is that the CDW is continuously updated as new filings become available. Thus, information drawn from the CDW at one point in time may differ from data drawn at a later date due to late filers or amended returns. However, data more than a couple of years old should be relatively consistent over time because it is less likely to be updated.

We select a sample of individual information based upon ten different four-digit endings of a person's Social Security Number (SSN) or tax identification number (TIN), whichever applies. The four-digit endings of SSNs and TINs are assigned in order, effectively making them random from the sample perspective.<sup>10</sup> Sampling ten of these endings equates to a 1-in-1,000 sample of individuals, and so our individual weights are set to 1,000 for all observations. When we aggregate data to the return level, we need to adjust the weights for joint returns because the individuals on a joint return have approximately twice the probability of being in the sample compared to individuals on single returns. Thus, joint return weights are set to 500 for all primary or secondary filers.

Individuals are selected into our sample if they have one of the ten four-digit SSN/TIN endings<sup>11</sup> and either: (1) were the primary or secondary filer on a form 1040; (2) received a W-2 from an employer; (3) were claimed as a dependent on a form 1040; or (4) received one of the following information returns: 1098 (home mortgage interest paid), 1098-E (student loan interest paid), 1098-T (tuition statement), 1099-DIV (dividend income), 1099-G (certain government

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<sup>10</sup> However, one way this sample could be non-random is if people tended to illegally use certain SSN or TIN combinations over others.

<sup>11</sup> We drop individuals with an invalid SSN/TIN. We also drop individuals if they are reported as having died prior to the given tax year.

payments including unemployment compensation), 1099-INT (interest income), 1099-MISC (miscellaneous income), 1099-OID (original issue discount, which is a type of accrued interest), 1099-R (retirement distributions), 1099-SSA (Social Security income), W-2G (gambling winnings), or 5498 (IRA contributions).<sup>12</sup> We aggregated this data by individuals and made certain to drop duplicate form as well as aggregate wage amounts from W-2s for those with multiple jobs during a year.

Although the CDW contains tax information from 1996 through the latest processed information, we only use data from 2001 through 2011. Because the CDW data is not cleaned, certain information on the CDW is not available over the full time frame. For example, the data to link dependents to the tax return they show up on is not completely available from 1998 to 2000. The lack of dependent information in these years led us to start our panel in 2001.

Table 1 summarizes the counts of individuals from the tax data over time by the type of forms we observe them from. The table also compares the counts of individuals on the tax data with population counts from the U.S. Census. Individuals are assigned to be in one of six mutually exclusive groups: (i) non-dependent 1040 filers, which includes all primary and secondary filers on a form 1040 who cannot be claimed as a dependent on another person's return; (ii) non-dependent W-2 recipients with no 1040, which includes W-2 recipients that do not file a form 1040 and are not claimed as a dependent on another person's return; (iii) dependent 1040 filers, which includes individuals that file a form 1040 but are also claimed as a dependent on another person's return; (iv) dependent W-2 recipients with no 1040, which includes individuals that receive a W-2 and do not file a form 1040, but are claimed as a

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<sup>12</sup> A limitation of structuring the sample this way should be noted. To the extent that individuals reside in the U.S., but have no contact with the IRS, they will not be included in our sample. The upside of this is that if an individual earns money in informal employment that is not reported to the IRS, we do not wrongly impute to that individual payroll taxes that the IRS did not in fact receive. On the other hand, unless that individual had some other contact with the IRS, they would not be included in our population of individuals either.

dependent on another person's return; (v) dependents listed on a 1040, which includes children and other individuals listed as a dependent on another person's return, but do not receive a W-2 or file their own 1040; (vi) recipients of other information returns with no 1040, which includes individuals that are not in any of the above groups but appear in the tax system as a recipient of at least one of the other information returns discussed above.

Table 1 shows that between 2001 and 2011, roughly 60% of individuals observable in the tax system are non-dependent 1040 filers. Tax year 2007 is the only outlier, when 64.2% of individuals were non-dependent 1040 filers. This was because the Economic Stimulus Act of 2008 required people to file a form 1040 for 2007 to receive their stimulus check from the Federal government. About 30% of the individuals we observe in the tax system are dependents listed on 1040s, the majority of which do not receive a W-2 or file their own return. The remaining 10% of individuals are not present on form 1040 returns but receive either a W-2 (roughly 30%) or one of the other information returns we looked for in the data (roughly 70%).

Table 1 also shows that we find roughly the same number of individuals in the tax system compared to estimates of the residential population by the U.S. Census. There are a number of potential reasons for differences between Census population counts and tax-based population counts. First, the tax system includes people living abroad who have tax liability in the U.S. Second, the number of undocumented immigrants included in the two data sources may be different. The tax system will include undocumented immigrants to the extent they use illegal SSNs or TINs (and exclude undocumented immigrants to the extent they are paid completely off-the-books), while the Census data will include estimates for the number of undocumented immigrants living in the U.S. Third, the Census population estimate is a point in time estimate, while the number of individuals in the tax system includes all individuals in the system at any



point during the calendar year. This includes individuals that died during the year and other people who did not reside in the U.S for the full year. We make no attempt to rid our sample of foreigners or undocumented immigrants because we are interested in the net individual tax position of all people that interact with the U.S. tax code. Additionally, there is no easy way to identify undocumented immigrants, foreigners, or other individuals who are only tangentially connected to the tax system in the sample. For example, although trying to use a person's address to figure out their status as a foreigner sounds appealing, it is possible such individuals own U.S. assets, such as houses, from which they could file their return.

Throughout the rest of this paper we focus upon three types of tax payments – (i) income tax payments; (ii) payroll tax payments; and (iii) total (income plus payroll) tax payments – and tabulate the share paying positive, negative, and zero taxes for two units of observation – tax units and individuals.

When tabulating shares for tax units, a difficulty arises in that it is not possible to group individuals who do not file tax returns into tax units, since information returns do not contain information on marital or dependency status, and do not link spouses and children. As a result, one must turn to an alternative source for a count of the total number of tax units. For this, we estimate the number of tax filing units for each year based upon the family structure reported in the Current Population Survey.<sup>13</sup>

An advantage of calculating shares for individuals is that an estimate of the number of tax units from an alternative sources is not needed. However, individual-level tabulations raise a different issue, in that some individuals have money withheld on their behalf, but then ultimately

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<sup>13</sup> CPS families can be disaggregated using the detailed family relationship codes. We use these codes to split families and related subfamilies into separate tax filing units. We also assign unrelated individuals to be their own tax filing units. Finally, we define related children over the age of 18 who are not students to be their own tax filing unit.

do not file a tax return. For example, an individual may work for wages, have income and payroll taxes withheld, and be issued a W-2 form, but then may not file a 1040 at the end of the year. Whether these payments should be included in tabulations of tax payment or net receipt is debatable. On the one hand, the government received the revenue from the individual, and so it is a positive tax payment. On the other hand, had the individual filed a return, they may have received all of their withholding back (making their tax zero), or may have had a negative tax liability. On net, we think that the former argument has more merit, and so in the tabulations that follow, we generally include individuals who have money withheld but do not file a tax return in the positive tax paying group. For comparison, however, in one table we present tabulations in which withholding from non-filers is excluded.<sup>14</sup>

When estimating the share of tax units that pay tax, we use tax filers to ascertain how many pay positive income tax, receive a negative income tax liability during the year due to refundable tax credits, or have zero liability. We assume that any difference between the CPS estimate of tax units and the number of filers from the tax data is due to individuals who pay zero income taxes. Hence, the fraction of units that pay positive taxes is the number of filing units with a positive tax liability from the tax data divided by our CPS estimate of tax units.

When estimating the share of individuals that pay tax, we define an individual as paying positive income taxes if they were a primary or secondary filer on a 1040 with a net positive tax liability during the year or were an individual who did not file a form 1040 but received a W-2 from which income taxes were withheld. We define an individual as having a negative income

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<sup>14</sup> One additional issue with individual level data is that some individuals appear in our sample in one year (for example due to filing a 1040), are absent from the sample for a number of subsequent years (because they did not file and did not receive any information returns), then reappear in a later year. In Table 3 and subsequent tables, we exclude such individuals in the years in which they are absent from the sample. To examine whether these individuals' exclusion alters the main findings in any way, in Appendix Table 3A we fill in missing years as zero tax payments if we observe the individual in at least one year before and at least one year after the missing year. Since it is not possible to use such information to fill in observations in the first and last years of the sample, we omit 2001 and 2011 from this table. Overall, the results are very similar to the tabulations presented in Table 3.

tax if they were a primary or secondary filer on a 1040 with a net negative tax liability during the year due to refundable tax credits.<sup>15</sup> Any remaining individuals are classified as having zero income tax liability for a year.

Our definition of payroll taxes includes the employee and employer shares of the payroll tax (both Social Security taxes (OASDI) and Medicare taxes). We use the withheld amounts from W-2s for the employee portion of the payroll tax and calculate the employer share using the statutory payroll tax rates (6.2% for Social Security (up to the taxable maximum) and 1.45% for Medicare). We also include payroll tax payments by the self-employed as filed on schedule SE of the form 1040.<sup>16</sup>

In our analysis that focuses on individuals, we aggregate tax (both income and payroll) to the tax unit level for joint filers and assume that both the primary and secondary filers are responsible for this aggregate amount. For example, we consider a stay-at-home secondary filer to be responsible for the same level of tax payments as the primary filer. Alternatively, we could

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<sup>15</sup> Our income tax definition starts with tax before credits (including alternative minimum tax) less non-refundable credits, earned income tax credit (EITC), and the additional child tax credit, which correspond to 2010 form 1040 lines 46, 54, 64a, and 65 respectively. Depending upon the year, we subtract additional refundable credits, including Making Work Pay (2009 and 2010), the American Opportunity Tax Credit (AOTC) (2009, 2010, 2011), credit for prior year AMT (2008 and beyond), adoption credit (2010 and 2011), the health care tax credit (2002 and beyond), first-time homebuyer credit (2009 and 2010), the recovery rebate for 2008, and the credit for federal tax on fuels (all years). We also include the additional tax on IRAs, other qualified retirement plans, etc. (2010 form 1040 line 58). We do not include the 2008 version of the first-time homebuyer credit in our definition of tax because it was only a loan that has to be paid back over a 15 year period. We had to impute the value of the 2008 recovery rebate because it is not present in the data. We estimated the value for taxpayers with Social Security numbers using both 2007 and 2008 tax data and took the larger of the two estimates. We assigned the rebate to 2008 liability. We also had to impute the refundable portion of the AOTC because in our data we only observe the total AOTC (refundable plus non-refundable portions) but the non-refundable portion is included in the total non-refundable credits on 2010 form 1040 line 54. We estimated the refundable portion using part III of form 8863. For individuals who do not file a form 1040, we define income tax to be the sum of income taxes withheld on information returns, such as W-2s, 1099-Rs, etc.

<sup>16</sup> We also include in our payroll tax any unreported Social Security and Medicare taxes paid on the form 1040 via the forms 4137 and 8919 (2010 form 1040 line 57).

have assumed that each filer was responsible for a portion the tax payments of tax unit, but this raises questions about how to allocate the various income sources across the family unit.<sup>17</sup>

### **3. Tax Paying in a Given Year**

We begin by tabulating the share of tax units that have a positive, zero, or negative income tax liability (see Table 2). In 2011, the last year of our sample, 53% of tax units paid positive income tax, while 47% either paid no income tax or had a negative tax liability (that is, their income tax bill was negative, as refundable credits exceeded taxes owed, and so they received the difference from the income tax system). These results are consistent with prior tabulations done by the Tax Policy Center. Of the 47%, that did not pay positive income tax, 26% paid no income tax, while 21% had a negative income tax liability.

Looking across all of the years of our sample, we find that the fraction of tax units paying positive income taxes decreased from 62% in 2001 to 49% in 2009, before rebounding to 53% in 2011, which is a nine percentage point decrease relative to the share in 2001. This decreasing trend was most predominant during the 2001-2004 and 2007-2009 periods. A significant portion of this decline is likely due to legislative changes due to the 2001 and 2003 tax cuts, the 2008 stimulus bill, and the 2009 American Recovery and Reinvestment Act (ARRA).<sup>18</sup> As noted above, using tax units as the level of observation can yield different results than if one uses the

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<sup>17</sup> Since we do not observe marital status for individuals who do not file a 1040 but for whom we observe an information return, we are not able to determine whether there exists a spouse from which we should attribute responsibility for tax payments. This may affect the some of the tabulations below, but the impact is likely to be small given the size of this group relative to the taxpaying population as a whole.

<sup>18</sup> Johnson, et. al (2011) show that roughly half of returns that don't pay income taxes do so because of the standard deduction and personal exemptions. The other half are non-taxable because of tax expenditures, some of which became more generous by these tax cuts.

individual as the level of observation if tax payment status is correlated with family structure. In the tabulations that follow we treat individuals as the unit of observations, and tabulate the share of non-dependent individuals in each of the statuses.

Table 3 presents the income tax tabulations as in Table 2 and additional tabulations for payroll tax and income plus payroll tax, but with the unit of observation being an individual taxpayer. In this table, the share of individuals paying zero or negative income taxes is consistently lower (and the share paying positive income taxes is consistently higher) than the share of tax units. In 2011, 38% of individuals paid zero or negative income taxes if withholding by non-filers is included (this share increases to 42% if withholding by non-filers is excluded). These differences reflect the fact that single and head of household tax units (which contain one non-dependent individual) are less likely to pay positive tax and more likely to have a zero or negative tax liability than married filing jointly tax units (which contain two non-dependent individuals). The trend over time for individuals is similar to the trends for tax units, though the decline is slightly less steep, with the share with positive income tax decreasing from 69% to 62%.

Turning to payroll and total taxes, in 2011, 75% paid positive payroll tax and 71% paid positive total tax. The share with positive payroll tax declined from 79% in 2001 to 75% in 2011, and the share with positive total tax decreased from 79% to 71%. Over the same period, the share of individuals with negative total tax liability increased from 8.4% to 14.9%.

We next examine the extent to which these tabulations differ by age and gender. Table 4 presents the share of individuals, by age and gender, who pay positive total taxes, while Table 5 presents the tabulations of individuals who have negative liabilities. Separate tabulations for income and payroll taxes are presented in Appendix Tables 4A-B and 5A-B.

In the top panel of Table 4, individuals are divided into five age groups: 25-34, 35-44, 45-54, 55-64, and 65 and older. The bottom row presents the share of positive taxpayers among individuals 25 and older.<sup>19</sup> Looking across age groups, those age 65 and older are much less likely to pay positive total tax than other age groups. This is not particularly surprising, since a number of these individuals are likely to be retired and receiving either small amounts of retirement income or tax-preferred forms of retirement income. Among those under 65, the fraction paying positive total tax appears to increase with age, hitting a plateau after the age of 45. Across all age groups, the fraction paying positive total taxes declined over the 2001-2011 period, though the 4.4 percentage point decline among those age 55-64 was much less steep than the declines among younger age cohorts (13.3 percentage points among 25-34 year olds, 10.9 percentage points among 35-44 year olds, and 8.8 percentage points among 45-54 year olds).

Comparing males to females by age cohort, the shares of men paying positive tax generally exceed the shares of women paying positive tax, though the difference is particularly large among the youngest and the oldest age cohorts. Among the youngest cohort, the share of women paying positive total tax is generally 7-8 percentage points lower (likely driven by women in this cohort being more likely to claim child-related tax benefits on their tax returns), while among the oldest cohort, the gender difference hovers between 10 and 12 percentage points. One reason for this might be that women tend to live longer than men on average and thus may be more likely to live alone with lower income. Among people later in their working careers (those age 45-64), however, the fractions of men and women paying positive total tax are very similar.

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<sup>19</sup> Note that the bottom row is different from the tabulations in Table 3 for two reasons. First, Table 3 includes non-dependent filers under age 25, while Table 4 excludes those individuals. Second, there are some individuals for whom age is missing who are included in Table 3 but excluded from Tables 4 and 5.

Table 5 presents tabulations of the fraction of individuals with negative tax liabilities when income and payroll taxes are taken into account. The results for the younger cohorts mirror those in the positive tax tabulations, in that younger individuals are more likely to have negative tax liabilities, and women in these age cohorts are more likely to have negative liabilities than men. This is not the case among individuals age 65 and older, likely due to the fact that the two major tax provisions that would cause an individual to have a negative tax liability (the Earned Income Tax Credit and the Child Tax Credit) would not apply to many of the individuals in this cohort, since their children are more likely to be adults<sup>20</sup>.

#### **4. Dynamics of Tax Paying**

Although the tabulations and trends in the preceding section are informative, they are all point in time estimates of taxpaying behavior, and so may paint a misleading picture of who pays positive taxes on net. For example, suppose that there are two taxpayers, and that in year 1, the first taxpayer pays \$1,000 in taxes while the second has a negative liability of \$500. In year 2, suppose that the positions of the two taxpayers reverse, so that the first taxpayer has a negative liability of \$500 while the second taxpayer pays \$1,000. In this situation, the point in time tabulations from the previous sections would suggest that half of the individuals are taxpayers each year, while half have negative liabilities. However, if a longer two year window were examined, 100% of the individuals would be taxpayers and nobody would be a net recipient. We next utilize the panel structure of our data to examine whether the picture of who is paying taxes changes when longer time periods are examined.

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<sup>20</sup> The large increase in the share of 65 and older in 2008 that have negative taxes is mostly due to the 2008 stimulus.

In Table 6, we examine the extent to which individuals transition from one taxpaying state (paying positive tax, paying zero tax, or having a negative liability) in one year to another state in the next year. In this table, we again include both income and payroll taxes; separate tabulations for income tax and payroll tax paying are presented in Appendix Tables 6A and 6B.

The top panel examines, for each year of our sample, individuals who are positive tax payers in a given year, and tabulates the share of these taxpayers who pay positive, zero, or negative tax in the next year, or who are missing or are claimed as a dependent. From this panel, it appears that tax payment status is highly persistent as around 90% of individuals who have positive total taxes also have positive taxes the next year, a fraction that has remained relatively constant across the sample period. About three or four percent of these taxpayers switch to paying no tax in the next year, and an additional three or four percent switch to having a negative liability. The exception to aforementioned consistency over the period is the 2007/2008 and 2008/2009 transitions, where individuals with positive tax liability were more likely to switch to zero or negative liability than in the other years.

In the middle panel, which examines taxpayers who paid no tax in the initial year, it is clear that paying no taxes is still persistent, but less so than positive taxpaying, with around 74% of zero tax payers staying in the same group in the next year. However, an additional 10% of these taxpayers are missing from the sample in the subsequent year, meaning they did not have any contact with the tax system in the next year, and so did not pay tax. Between eight and thirteen percent of this group switch to paying positive tax in the next year. Before the 2007-08 year pair, between two and three percent switched to having a negative liability in the next year. This group spiked in the 2007-08 pair at 6.1 percent, however, and has remained elevated at between 3 and 4 percent since.



The bottom panel looks at those who have negative tax liabilities in the initial year. This group appears to exhibit the largest amount of switching between statuses across years.

Although around 68% of this group still has a negative tax liability in the following year, around 23% of these individuals pay positive taxes in the subsequent year.

To examine what such yearly transitions rates imply for taxpaying status over a longer time period, we next divide up the sample into a series of rolling five-year windows (2001-2005, 2002-2006, etc).<sup>21</sup> We then count up the number of years in which each individual pays positive taxes in that five-year window, and the number of years in which each individual has a negative tax liability. Figure 1 presents these tabulations for income plus payroll taxes, while separate tabulations for income and payroll taxes are presented in Appendix Figures 1A and 1B.

The top panel presents the frequencies of paying positive income plus payroll taxes in each five year window. Across the five year windows, an average of 63.8% of taxpayers paid positive total taxes every year, though this fraction gradually declined from 68% in the 2001-2005 window to 60% in the 2007-2011 window. Across the windows, an average of 11.8% of individuals did not pay positive taxes in any year, and this fraction edged up slightly during the sample from 10.8% in the 2001-2005 window to 13.2% in the 2007-2011 window. Finally, across five year windows, between 21% and 27% pay positive taxes between 1 and 4 years of the five year window.

The bottom panel presents frequencies of having a negative liability in each five year window. Here, only around 4 percent of taxpayers had negative liabilities in all five years, though that fraction has steadily increased from 3.5% to 5.3%. In excess of 70 percent of

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<sup>21</sup> To be included, an individual must be present in the sample in all five years of the window. As a result, we are using balanced panels. Appendix Table 1A compares the sample sizes from these five year windows to the sample sizes from the yearly cross-sections, and shows that the yearly cross-sections are approximately 11% larger than the balanced panels that being in the same year.

individuals had negative liabilities in none of the years, though this fraction trended down from 83.1% to 72.7%. Between 13% and 22% have negative liabilities in between one and four years of the five year windows.

Clearly, individuals who pay positive taxes every year of a five year window are positive taxpayers in total over that period, while individuals who have negative liabilities in every year have a negative tax liability in sum over the entire window. It is ambiguous, however, whether those who pay positive taxes an intermediate number of years, or who have negative tax liabilities an intermediate number of years, are taxpayers or have negative liabilities on net over a longer timeframe. In Figure 2, then, we additionally account for the amounts of positive tax paid, or net benefits received, in each year of the five year window. We convert all nominal amounts to real 2011 dollars, and then calculate the average amount of taxes paid across each five year window.<sup>22</sup> We then tabulate the fraction of the individuals in each window that (on average) had a negative tax liability, paid zero taxes, paid positive taxes under \$1,000, paid positive taxes between \$1,000 and \$10,000, paid positive taxes between \$10,000 and \$25,000, or paid taxes in excess of \$25,000. Figure 2 presents these tabulations for total income plus payroll taxes. Separate tabulations for income taxes and payroll taxes are presented in Appendix Figures 2A and 2B.

For comparison, Panel A presents tabulations of the distribution of tax payment or net receipt amounts in each yearly cross-section. The fraction of individuals with negative tax liability increases from 8.4% to 14.9% between 2001 and 2011, while the share of individuals paying no tax increased from 12.7% to 14.3% (although not smoothly). Among those paying

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<sup>22</sup> Note that these tabulations do not account for the time value of money, which would imply that tax payments earlier in each window are more valuable in present value than tax payments later in the window.

positive taxes, the share paying under \$1,000 increased, while the shares paying larger amounts of tax decreased.

Panel B presents the distribution of average annual tax payments in each five year window using our balanced panel. Comparing this panel to panel A, the fraction of individuals who have a negative liability on net over 5 years is generally less than the fraction in a given year, though it did increase during the sample from 8.7% to 13.5%. The fraction paying no taxes over a five year period is roughly half of the amount that pay no taxes in any given year. A significant portion of this difference is due to the sample differences; individuals with zero tax are more likely to be missing in the following year compared to individuals with positive or negative taxes.<sup>23</sup> Among positive tax payers, the size of the group paying less than \$1,000 is about the same in the five year period as it is in the cross-sections, while the fractions paying larger amounts are greater in the five year windows than in the yearly tabulations.

Finally, because most of the publicly available tax data consists of annual cross-sections, it is interesting to examine how representative a cross-section is of subsequent taxpaying behavior over a longer period. In Table 7, using our 5 year balanced panels, we compare tax paying or negative tax liability status in one year to the average amount of tax payments in the subsequent four years. In this table, we present tabulations of total income plus payroll taxes, while separate tabulations for income taxes and payroll taxes are presented in Appendix Tables 7A and 7B.

Across the years, approximately 94% of those who pay positive taxes in a given year will (on average) pay positive taxes in the next four years, while about 66% of those who pay no taxes in a given year will pay no taxes on average over the next four years, and about 70% of

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<sup>23</sup> For example, the balanced sample shows 9.5% of individuals in 2001 had zero tax liability compared with 12.7% in the full cross-section for 2001.

those who have a negative tax liability will have a negative tax liability on average over the next four years. In the early years of our sample, only about 5% of those who paid positive taxes in a given year will switch to paying no taxes or having a negative liability on average over the next four years, though this increased to 6.8% and 8.9% for the five year windows beginning in 2006 and 2007. However, between 20-30% of those who pay no taxes or who have a negative liability in a given year switch to paying positive tax on average over the next four years. Thus, the fact that an individual pays positive tax in a particular year is a strong indicator that they will on average pay positive taxes over the subsequent four years, but being a zero or negative tax liability individual in a particular year is less of an indicator for remaining in those statuses.

## **5. Conclusion**

In this paper, we use a panel of tax and information returns that spans 2001-2011 period to examine who pays taxes, who does not, and who has negative tax liabilities, both on an annual basis and over a longer time frame. These data allow us to look at taxpaying behavior at the individual level without relying on imputations for non-filers. Further, the results provide a more complete picture of taxpaying behavior than can be gleaned from yearly snapshots.

We find that the fraction of both tax units and individuals that paid no income tax or have negative tax liabilities over these years increased steadily. We also find that the shares of individuals with non-positive total taxes are higher for individuals aged 65 and older, and for younger individuals (particularly women).

Utilizing the panel structure of our data to examine dynamics of taxpaying over time, we find that tax payment and nonpayment status is relatively persistent, as around 90% of individuals who have positive total taxes also have positive taxes the next year, while around 74% of zero tax payers and 68% of individuals with negative liabilities stay in the same group in the next year. Across a five year window, an average of 64% of taxpayers paid positive total taxes every year, while 12% paid positive taxes in no year, and an average of 4% percent paid negative total taxes all 5 years. We also find that the fraction of individuals who have a negative liability on net over 5 year windows is generally less than the fraction in any given year, though it did increase during the sample from 8.7% to 13.5%, while the fraction paying no taxes over a five year period is roughly half of the amount that pay no taxes in any given year. Finally, an individual paying positive tax in a particular year is a strong indicator that they will on average pay positive taxes over the subsequent four years, but being a zero or negative tax liability individual in a particular year is less of an indicator for remaining in those statuses.

Taken together, these results suggest that the fraction of Americans paying positive taxes has decline substantially over the last decade, whether measured in tax units or individuals, and whether payroll taxes are or are not added to income taxes. There are numerous reasons for this decline, including legislative changes that reduced tax rates and increased refundable credits, and the Great Recession. However, although positive taxpaying behavior is quite persistent, paying no taxes or negative taxes is much less so, suggesting that a taxpayer who is paying no or negative taxes (on net) is reasonably likely to become a positive taxpayer in a subsequent year. Finally, tabulations of taxpaying using cross-sectional may yield misleading pictures of taxpaying behavior along some dimensions, as the fractions paying zero or negative taxes tends

to be higher in a given year than over a longer time period, and the fraction paying positive taxes tends to be lower.

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## Tables

Table 1. Counts of Individuals by Tax Filing Status (in Thousands)

Tax Filing Status	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Non-Dependent 1040 Filer	171,870	172,599	173,461	175,306	178,040	182,502	197,107	187,076	185,764	187,210	186,435
Non-Dependent W-2 Recipient with no 1040	8,739	8,748	8,723	9,188	9,180	8,906	7,066	8,468	8,122	8,463	9,787
Dependent 1040 Filer	11,375	10,696	10,279	10,101	10,198	10,407	11,420	9,830	8,206	8,053	8,749
Dependent W-2 Recipient with no 1040	4,203	4,420	4,554	4,628	4,891	5,075	4,778	4,568	5,029	5,012	4,245
Dependent Listed on 1040	68,615	70,949	72,567	73,882	74,790	75,998	77,645	80,066	82,359	82,548	81,597
Recipient of Other Information Return with no 1040	18,976	19,469	19,934	19,976	19,938	18,593	8,797	19,057	21,190	21,507	22,421
<b>Total</b>	<b>283,778</b>	<b>286,881</b>	<b>289,518</b>	<b>293,081</b>	<b>297,037</b>	<b>301,481</b>	<b>306,813</b>	<b>309,065</b>	<b>310,670</b>	<b>312,793</b>	<b>313,234</b>
Census Count of Individuals	284,915	287,501	289,986	292,806	295,583	298,442	301,280	304,228	307,212	310,233	313,232
Difference	-1,137	-620	-468	275	1,454	3,039	5,533	4,837	3,458	2,560	2

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.



Table 2. Share of Tax Units with Positive and Negative Income Tax

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Tax Units from Current Population Survey	143,447	145,725	147,077	149,682	151,837	153,249	155,362	156,895	159,117	160,606	162,707
Share of Tax Units with:											
Positive Income Tax	62.4%	59.3%	57.8%	56.6%	57.0%	57.7%	58.3%	48.7%	49.1%	50.4%	53.3%
Zero or Negative Income Tax	37.6%	40.7%	42.2%	43.4%	43.0%	42.3%	41.7%	51.3%	50.9%	49.6%	46.7%
Negative Income Tax	13.9%	15.4%	16.2%	17.2%	17.3%	17.5%	18.1%	31.0%	28.7%	28.0%	20.7%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 3. Share of Individuals with Positive and Negative Tax by Type of Tax

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Individuals in Tax Units (Excluding Dependents)	199,585	200,816	202,118	204,470	207,158	210,001	212,970	214,601	215,076	217,180	218,643
Share of Individuals with:											
Positive Income Tax (including withholding from nonfilers)	69.3%	66.8%	65.1%	64.2%	64.5%	64.8%	64.7%	54.9%	56.3%	57.6%	61.8%
Zero or Negative Income Tax (including withholding from nonfilers)	30.7%	33.2%	34.9%	35.8%	35.5%	35.2%	35.3%	45.1%	43.7%	42.4%	38.2%
Negative Income Tax (including withholding from nonfilers)	12.8%	14.5%	15.5%	16.6%	16.7%	16.8%	17.2%	30.9%	27.9%	26.9%	19.8%
Positive Income Tax (excluding withholding from nonfilers)	66.1%	63.5%	61.8%	60.8%	61.2%	61.4%	61.8%	51.9%	53.1%	54.3%	57.6%
Zero or Negative Income Tax (excluding withholding from nonfilers)	33.9%	36.5%	38.2%	39.2%	38.8%	38.6%	38.2%	48.1%	46.9%	45.7%	42.4%
Positive Payroll Tax	78.5%	78.2%	78.1%	78.2%	78.3%	78.3%	78.2%	77.8%	76.5%	75.6%	75.4%
Positive Income + Payroll Tax	78.9%	77.3%	76.3%	76.0%	76.2%	76.6%	76.2%	69.5%	69.5%	69.9%	70.8%
Negative Income + Payroll Tax	8.4%	9.5%	10.1%	10.6%	10.7%	10.7%	11.0%	18.6%	16.5%	16.2%	14.9%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 4. Share of Individuals with Positive Income + Payrol Taxes by Age and Gender

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>All Individuals Age:</b>											
25-34	81.4%	79.0%	77.3%	76.3%	76.0%	76.0%	74.9%	69.1%	66.3%	66.5%	68.1%
35-44	83.6%	81.7%	80.5%	79.6%	79.7%	79.7%	79.0%	73.7%	72.1%	72.7%	72.6%
45-54	87.6%	86.4%	85.7%	85.0%	84.9%	84.9%	84.2%	79.4%	78.4%	78.4%	78.8%
55-64	85.0%	84.4%	84.4%	84.1%	84.3%	84.4%	83.8%	78.2%	79.7%	79.8%	80.6%
65 and over	57.1%	55.2%	53.9%	54.9%	56.4%	58.2%	59.1%	47.5%	53.8%	55.4%	56.9%
Total	79.1%	77.4%	76.4%	76.1%	76.4%	76.8%	76.3%	69.6%	70.0%	70.5%	71.3%
<b>Males Age:</b>											
25-34	85.3%	83.0%	81.1%	80.3%	80.3%	80.1%	78.8%	72.7%	69.8%	70.2%	72.2%
35-44	86.1%	84.1%	83.2%	82.3%	82.1%	82.4%	81.7%	76.2%	74.8%	75.2%	75.8%
45-54	87.8%	86.5%	85.9%	85.3%	85.4%	85.6%	84.8%	79.9%	79.0%	79.2%	79.4%
55-64	85.9%	85.0%	85.0%	84.6%	84.6%	84.8%	84.4%	79.0%	80.0%	79.9%	80.6%
65 and over	63.8%	62.1%	60.7%	61.3%	62.6%	63.8%	64.6%	53.3%	59.6%	60.9%	62.1%
Total	82.5%	80.8%	79.8%	79.3%	79.5%	79.8%	79.2%	72.7%	72.8%	73.2%	74.1%
<b>Females Age:</b>											
25-34	77.4%	75.0%	73.4%	72.2%	71.6%	71.7%	71.0%	65.4%	62.8%	62.8%	64.1%
35-44	81.0%	79.3%	77.8%	76.9%	77.4%	77.0%	76.4%	71.1%	69.5%	70.2%	69.5%
45-54	87.4%	86.3%	85.4%	84.6%	84.4%	84.3%	83.7%	78.9%	77.8%	77.7%	78.2%
55-64	84.1%	83.8%	83.7%	83.6%	84.0%	84.1%	83.2%	77.5%	79.3%	79.7%	80.6%
65 and over	52.1%	50.0%	48.7%	50.1%	51.5%	53.7%	54.7%	42.8%	48.9%	50.9%	52.7%
Total	75.9%	74.3%	73.3%	73.0%	73.4%	73.9%	73.5%	66.8%	67.3%	68.0%	68.6%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 5. Share of Individuals with Negative Income + Payroll Taxes by Age and Gender

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>All Individuals Age:</b>											
25-34	15.1%	17.1%	18.4%	19.6%	19.9%	19.9%	20.9%	27.2%	29.1%	29.0%	27.2%
35-44	11.9%	13.4%	14.3%	15.4%	15.4%	15.4%	15.8%	22.1%	22.5%	21.9%	21.8%
45-54	6.2%	7.1%	7.6%	8.3%	8.5%	8.5%	8.8%	14.6%	14.2%	14.0%	13.3%
55-64	3.2%	3.7%	3.8%	3.9%	3.9%	3.9%	4.2%	11.3%	8.1%	7.9%	6.5%
65 and over	0.7%	0.7%	0.7%	0.8%	0.8%	0.8%	0.9%	14.2%	2.7%	2.7%	1.5%
<b>Total</b>	<b>8.0%</b>	<b>8.9%</b>	<b>9.5%</b>	<b>10.1%</b>	<b>10.1%</b>	<b>10.1%</b>	<b>10.4%</b>	<b>18.1%</b>	<b>15.5%</b>	<b>15.2%</b>	<b>14.0%</b>
<b>Males Age:</b>											
25-34	10.5%	12.3%	13.8%	14.8%	14.9%	14.9%	16.3%	22.7%	24.6%	24.5%	22.2%
35-44	8.5%	9.9%	10.7%	11.8%	12.0%	11.7%	12.3%	18.6%	18.5%	18.3%	17.6%
45-54	4.9%	5.7%	6.1%	6.8%	7.0%	6.9%	7.3%	12.9%	12.5%	12.1%	11.4%
55-64	2.8%	3.6%	3.4%	3.6%	3.6%	3.6%	3.7%	10.4%	7.8%	7.8%	6.4%
65 and over	0.9%	1.0%	1.0%	1.1%	1.1%	1.1%	1.2%	14.3%	3.4%	3.4%	1.9%
<b>Total</b>	<b>6.0%</b>	<b>7.0%</b>	<b>7.5%</b>	<b>8.2%</b>	<b>8.2%</b>	<b>8.1%</b>	<b>8.6%</b>	<b>16.0%</b>	<b>13.8%</b>	<b>13.5%</b>	<b>12.1%</b>
<b>Females Age:</b>											
25-34	19.8%	22.1%	23.1%	24.4%	25.1%	24.9%	25.6%	31.7%	33.7%	33.6%	32.2%
35-44	15.4%	17.0%	18.0%	19.0%	18.7%	19.0%	19.4%	25.6%	26.3%	25.5%	25.9%
45-54	7.5%	8.4%	9.2%	9.8%	9.9%	10.2%	10.3%	16.2%	15.8%	15.9%	15.1%
55-64	3.5%	3.8%	4.1%	4.2%	4.3%	4.2%	4.6%	12.1%	8.5%	8.1%	6.6%
65 and over	0.5%	0.5%	0.5%	0.5%	0.6%	0.6%	0.7%	14.1%	2.2%	2.1%	1.2%
<b>Total</b>	<b>9.8%</b>	<b>10.8%</b>	<b>11.3%</b>	<b>11.9%</b>	<b>11.9%</b>	<b>12.0%</b>	<b>12.2%</b>	<b>20.0%</b>	<b>17.2%</b>	<b>16.8%</b>	<b>15.9%</b>

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 6. Annual Income + Payroll Tax Transition Rates

Transition	From: To:	2001 2002	2002 2003	2003 2004	2004 2005	2005 2006	2006 2007	2007 2008	2008 2009	2009 2010	2010 2011
From positive tax...											
	to positive tax	91.0%	91.2%	91.5%	91.9%	91.9%	91.7%	84.9%	89.1%	90.2%	90.5%
	to zero tax	3.2%	3.3%	2.8%	2.7%	2.7%	2.7%	2.1%	2.6%	3.0%	3.3%
	to negative tax	3.5%	3.3%	3.5%	3.2%	3.2%	3.4%	10.9%	6.1%	4.8%	4.1%
	to missing	1.7%	1.7%	1.6%	1.6%	1.7%	1.7%	1.6%	1.5%	1.5%	1.7%
	to dependent	0.6%	0.5%	0.5%	0.6%	0.6%	0.6%	0.6%	0.6%	0.5%	0.5%
From zero tax...											
	to positive tax	10.1%	10.3%	11.9%	12.6%	13.4%	12.4%	8.1%	8.9%	11.9%	11.5%
	to zero tax	75.3%	75.0%	74.1%	73.7%	72.6%	72.7%	72.0%	74.9%	72.7%	73.3%
	to negative tax	2.2%	2.3%	2.5%	2.4%	2.4%	2.6%	6.1%	3.8%	4.0%	3.2%
	to missing	10.2%	10.4%	9.7%	9.4%	9.5%	9.5%	11.9%	10.3%	9.3%	9.9%
	to dependent	2.2%	2.1%	1.9%	1.9%	2.1%	2.8%	1.9%	2.1%	2.2%	2.1%
From negative tax...											
	to positive tax	22.4%	22.3%	23.1%	24.8%	25.3%	23.4%	14.9%	24.7%	23.6%	24.0%
	to zero tax	4.5%	4.3%	3.9%	3.6%	3.6%	3.7%	3.2%	13.0%	4.9%	6.1%
	to negative tax	69.9%	69.7%	69.8%	68.5%	68.0%	69.9%	78.2%	57.2%	67.7%	65.2%
	to missing	2.3%	2.4%	2.1%	2.1%	2.0%	1.9%	2.4%	3.8%	2.6%	3.4%
	to dependent	1.0%	1.2%	1.0%	1.0%	1.0%	1.1%	1.2%	1.3%	1.2%	1.4%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 7. Annual Versus Longer-Term Income + Payroll Taxpaying

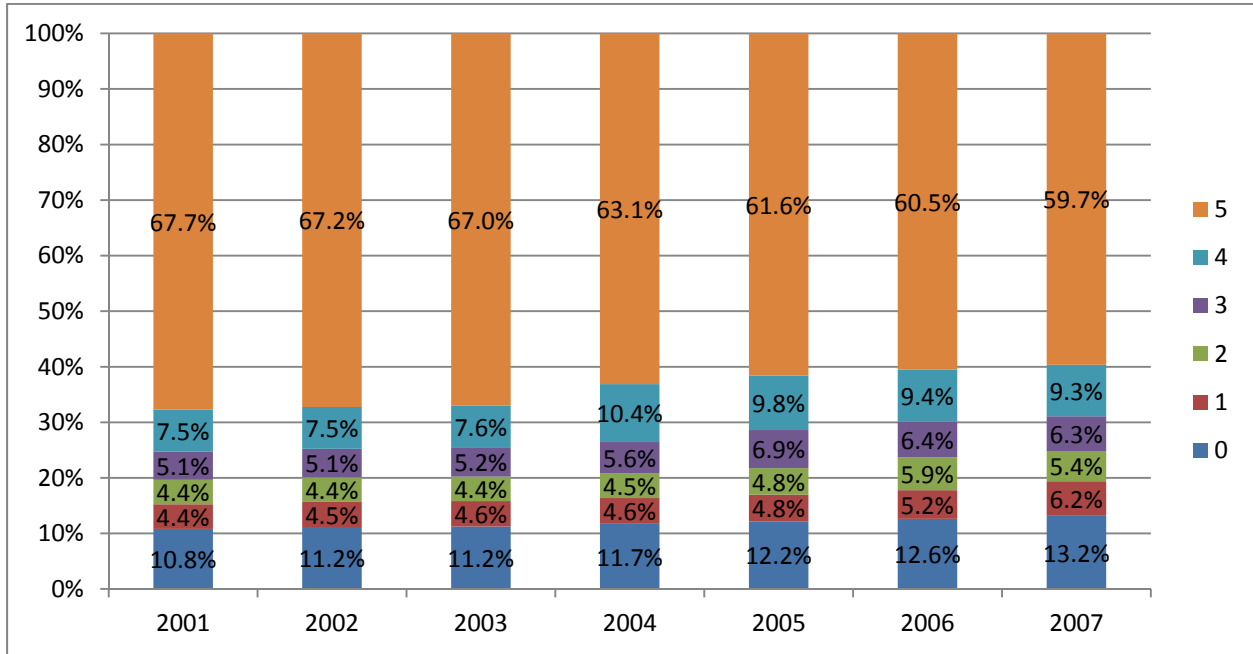
Transition	From: To:	2001 2002-2005	2002 2003-2006	2003 2004-2007	2004 2005-2008	2005 2006-2009	2006 2007-2010	2007 2008-2011
From positive tax...								
	to positive average tax	95.1%	95.6%	95.8%	95.4%	94.5%	93.2%	91.1%
From zero tax...								
	to zero average tax	70.1%	67.1%	63.3%	62.9%	64.3%	65.6%	66.8%
From negative tax...								
	to negative average tax	69.4%	67.0%	64.8%	66.4%	70.4%	74.8%	77.9%
From positive tax...								
	to negative or zero average tax	4.9%	4.4%	4.2%	4.6%	5.5%	6.8%	8.9%
From negative or zero tax...								
	to positive average tax	27.7%	30.5%	33.4%	31.6%	28.4%	24.9%	22.4%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

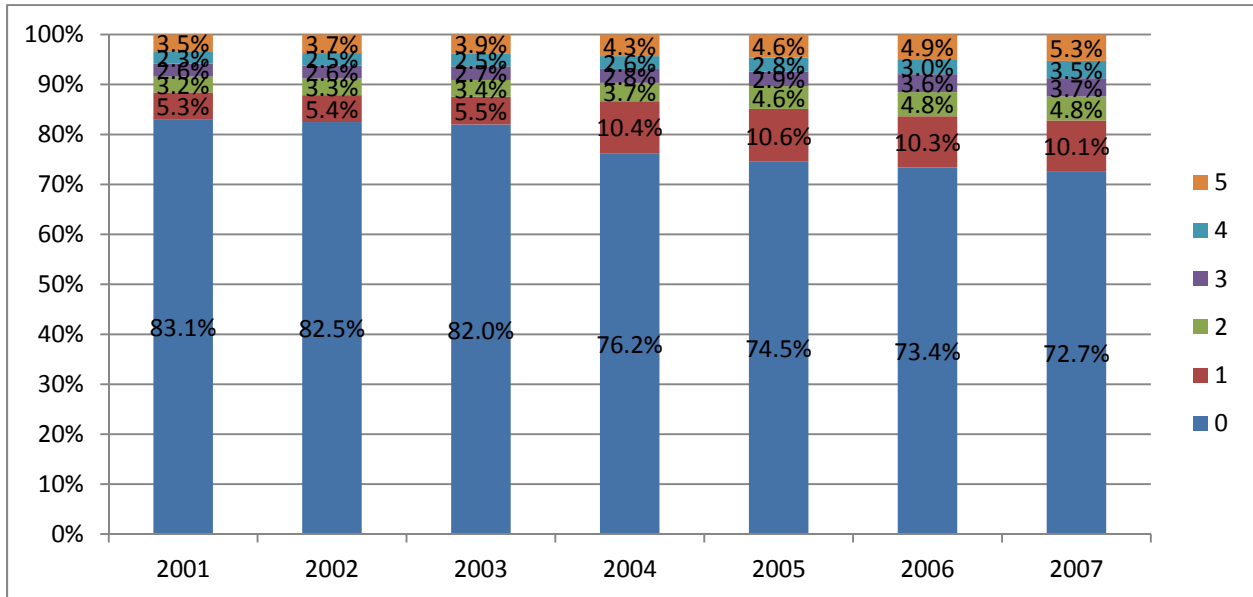
## Figures

Figure 1. Share of Individuals Paying Tax by Number of Years in 5-Year Panels

### A. Positive Income + Payroll Tax



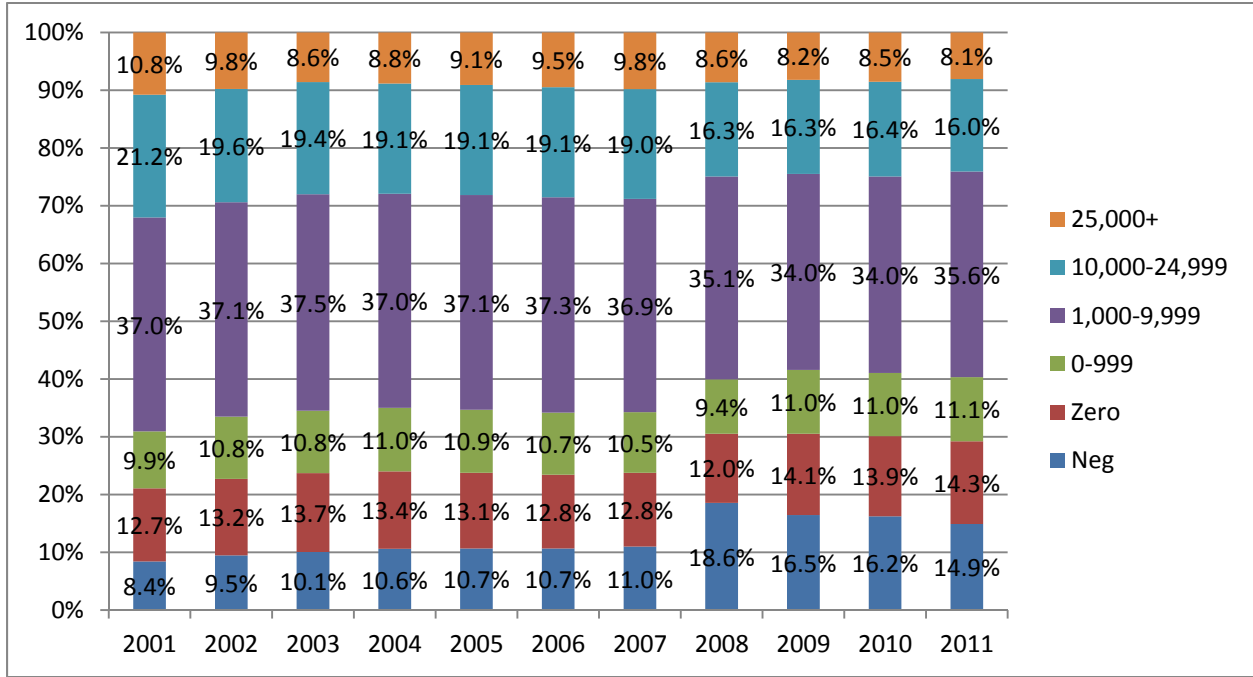
### B. Negative Income + Payroll Tax



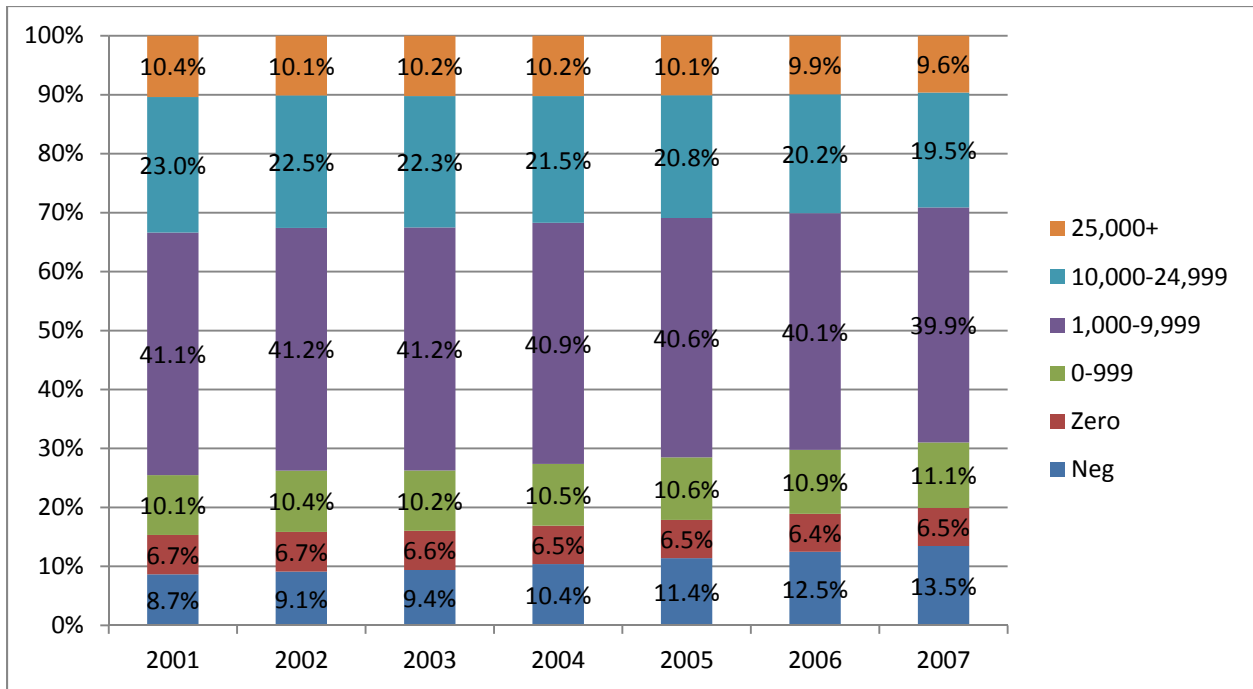
Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Figure 2. Distribution of Income + Payroll Tax Payments

A. Annual Payment in Cross Section



B. Average Annual Payment in 5 Year Panel



Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.



## Appendix Tables

Table 1A. Counts of Individuals in Yearly Cross Sections and Balanced Panels (in Thousands)

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Yearly Cross Section	199,585	200,816	202,118	204,470	207,158	210,001	212,970	214,601	215,076	217,180	218,643
5-Year Balanced Panel Beginning in Year	177,202	178,664	180,409	182,628	184,563	186,779	188,192				

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse. Counts exclude dependent filers.

Table 3A. Share of Individuals with Positive and Negative Tax by Type of Tax - Missing Years Filled in if Taxpayer Present in Surrounding Years

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Individuals in Tax Units (Excluding Dependents)	203,083	205,681	208,550	211,523	214,184	216,683	218,345	218,629	219,482
Share of Individuals with:									
Positive Income Tax (including withholding from nonfilers)	66.0%	63.9%	63.0%	63.2%	63.5%	63.6%	53.9%	55.4%	57.0%
Zero or Negative Income Tax (including withholding from nonfilers)	34.0%	36.1%	37.0%	36.8%	36.5%	36.4%	46.1%	44.6%	43.0%
Negative Income Tax (including withholding from nonfilers)	14.4%	15.2%	16.3%	16.4%	16.5%	16.9%	30.4%	27.5%	26.6%
Positive Income Tax (excluding withholding from nonfilers)	62.8%	60.8%	59.6%	59.9%	60.2%	60.7%	51.0%	52.2%	53.7%
Zero or Negative Income Tax (excluding withholding from nonfilers)	37.2%	39.2%	40.4%	40.1%	39.8%	39.3%	49.0%	47.8%	46.3%
Positive Payroll Tax	77.3%	76.7%	76.7%	76.7%	76.8%	76.8%	76.5%	75.2%	74.8%
Positive Income + Payroll Tax	76.4%	75.0%	74.5%	74.7%	75.1%	74.9%	68.3%	68.3%	69.2%
Negative Income + Payroll Tax	8.4%	9.4%	9.9%	10.4%	10.5%	10.5%	10.8%	18.3%	16.2%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 4A. Share of Individuals with Positive Income Taxes by Age and Gender

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>All Individuals Age:</b>											
25-34	69.8%	66.3%	63.6%	61.3%	61.0%	60.8%	60.6%	51.5%	51.4%	52.5%	58.0%
35-44	73.2%	70.2%	68.4%	66.4%	66.4%	66.4%	65.9%	57.2%	58.4%	59.7%	63.5%
45-54	80.0%	77.8%	76.2%	75.1%	74.9%	74.6%	74.1%	66.0%	66.5%	67.2%	70.7%
55-64	78.1%	76.7%	76.2%	76.0%	76.3%	76.3%	76.0%	67.4%	69.6%	70.5%	73.5%
65 and over	51.9%	49.5%	47.7%	48.6%	50.5%	52.3%	53.1%	41.0%	45.9%	48.3%	51.3%
<b>Total</b>	<b>70.5%</b>	<b>68.0%</b>	<b>66.3%</b>	<b>65.3%</b>	<b>65.7%</b>	<b>66.0%</b>	<b>65.9%</b>	<b>56.5%</b>	<b>58.2%</b>	<b>59.6%</b>	<b>63.3%</b>
<b>Males Age:</b>											
25-34	73.9%	70.4%	67.4%	65.3%	65.0%	65.1%	64.7%	55.0%	54.5%	55.7%	62.0%
35-44	75.7%	72.9%	71.2%	69.3%	69.1%	69.2%	68.4%	60.0%	61.2%	62.5%	66.8%
45-54	80.2%	77.9%	76.4%	75.4%	75.2%	75.2%	74.6%	66.4%	67.0%	67.9%	71.5%
55-64	79.1%	77.4%	76.9%	76.5%	76.9%	76.8%	76.9%	68.2%	70.3%	70.3%	73.5%
65 and over	57.6%	55.4%	53.2%	53.8%	55.7%	56.8%	57.7%	45.6%	50.7%	52.9%	55.7%
<b>Total</b>	<b>73.7%</b>	<b>71.2%</b>	<b>69.4%</b>	<b>68.3%</b>	<b>68.5%</b>	<b>68.8%</b>	<b>68.6%</b>	<b>59.2%</b>	<b>60.8%</b>	<b>61.9%</b>	<b>65.9%</b>
<b>Females Age:</b>											
25-34	65.5%	62.2%	59.8%	57.2%	56.9%	56.4%	56.5%	47.9%	48.2%	49.3%	54.0%
35-44	70.6%	67.5%	65.5%	63.5%	63.8%	63.6%	63.3%	54.4%	55.7%	57.0%	60.3%
45-54	79.9%	77.6%	75.9%	74.9%	74.5%	74.0%	73.7%	65.6%	65.9%	66.6%	70.0%
55-64	77.3%	76.0%	75.5%	75.5%	75.7%	75.8%	75.2%	66.7%	69.0%	70.6%	73.6%
65 and over	47.6%	45.1%	43.5%	44.7%	46.4%	48.7%	49.5%	37.2%	42.0%	44.6%	47.6%
<b>Total</b>	<b>67.5%</b>	<b>65.0%</b>	<b>63.4%</b>	<b>62.6%</b>	<b>63.0%</b>	<b>63.4%</b>	<b>63.3%</b>	<b>54.1%</b>	<b>55.9%</b>	<b>57.4%</b>	<b>60.8%</b>

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 4B. Share of Individuals with Positive Payroll Taxes by Age and Gender

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>All Individuals Age:</b>											
25-34	94.2%	93.7%	93.0%	92.9%	92.7%	92.6%	92.1%	91.6%	90.4%	89.7%	90.1%
35-44	93.7%	93.2%	92.9%	93.0%	93.0%	92.9%	92.6%	92.4%	91.0%	90.2%	90.2%
45-54	91.0%	90.7%	90.7%	90.5%	90.7%	90.8%	90.4%	90.3%	89.2%	88.1%	88.1%
55-64	78.1%	78.5%	78.6%	78.8%	79.0%	79.1%	79.0%	79.3%	78.6%	77.9%	77.5%
65 and over	23.7%	24.0%	24.7%	25.8%	26.4%	27.1%	28.1%	28.5%	28.2%	28.0%	28.4%
<b>Total</b>	<b>77.5%</b>	<b>77.3%</b>	<b>77.1%</b>	<b>77.3%</b>	<b>77.4%</b>	<b>77.5%</b>	<b>77.2%</b>	<b>77.0%</b>	<b>75.7%</b>	<b>74.9%</b>	<b>74.6%</b>
<b>Males Age:</b>											
25-34	93.4%	92.7%	91.7%	91.7%	91.5%	91.2%	90.7%	90.1%	88.5%	87.9%	88.5%
35-44	92.6%	91.9%	91.7%	91.9%	91.8%	91.6%	91.3%	91.1%	89.2%	88.5%	88.7%
45-54	90.1%	89.6%	89.5%	89.4%	89.7%	89.8%	89.4%	89.3%	88.0%	86.6%	86.6%
55-64	80.1%	79.8%	79.7%	79.5%	79.4%	79.9%	79.7%	79.9%	79.0%	78.5%	78.1%
65 and over	30.5%	30.6%	31.4%	32.2%	32.9%	33.8%	34.6%	35.1%	34.5%	34.0%	34.2%
<b>Total</b>	<b>79.9%</b>	<b>79.3%</b>	<b>79.1%</b>	<b>79.1%</b>	<b>79.1%</b>	<b>79.1%</b>	<b>78.8%</b>	<b>78.4%</b>	<b>76.9%</b>	<b>76.0%</b>	<b>75.7%</b>
<b>Females Age:</b>											
25-34	95.1%	94.9%	94.4%	94.2%	94.0%	94.0%	93.6%	93.2%	92.2%	91.5%	91.8%
35-44	94.7%	94.5%	94.0%	94.2%	94.3%	94.2%	93.9%	93.7%	92.8%	92.0%	91.7%
45-54	91.9%	91.7%	91.9%	91.5%	91.7%	91.8%	91.4%	91.4%	90.4%	89.6%	89.6%
55-64	76.2%	77.2%	77.5%	78.1%	78.7%	78.3%	78.4%	78.9%	78.3%	77.3%	77.0%
65 and over	18.5%	19.0%	19.7%	20.8%	21.4%	21.7%	23.0%	23.3%	23.0%	23.1%	23.7%
<b>Total</b>	<b>75.3%</b>	<b>75.4%</b>	<b>75.4%</b>	<b>75.6%</b>	<b>75.9%</b>	<b>75.9%</b>	<b>75.8%</b>	<b>75.6%</b>	<b>74.7%</b>	<b>73.9%</b>	<b>73.6%</b>

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 5A. Share of Individuals with Negative Income Taxes by Age and Gender

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
All Individuals Age:											
25-34	22.8%	25.8%	27.8%	30.3%	30.5%	30.7%	31.6%	42.5%	42.5%	41.5%	34.9%
35-44	18.9%	21.8%	23.1%	25.3%	25.5%	25.6%	26.3%	37.3%	34.8%	33.4%	28.9%
45-54	9.9%	11.7%	12.9%	14.1%	14.5%	14.8%	15.2%	26.5%	24.6%	23.8%	18.8%
55-64	5.4%	6.5%	6.8%	7.0%	7.1%	7.2%	7.6%	20.6%	16.8%	15.9%	10.0%
65 and over	0.9%	1.0%	1.1%	1.2%	1.3%	1.2%	1.3%	18.9%	8.7%	8.0%	1.9%
Total	12.4%	14.2%	15.1%	16.4%	16.5%	16.5%	16.9%	29.5%	25.7%	24.6%	18.9%
Males Age:											
25-34	17.6%	20.3%	22.7%	25.2%	25.2%	25.3%	26.4%	37.7%	38.0%	37.1%	29.8%
35-44	15.0%	17.7%	19.1%	21.3%	21.7%	21.7%	22.4%	33.3%	30.6%	29.4%	24.4%
45-54	8.5%	10.2%	11.3%	12.8%	13.0%	13.1%	13.7%	24.8%	22.8%	21.7%	16.6%
55-64	5.0%	6.3%	6.5%	6.8%	6.7%	6.7%	7.0%	19.9%	16.1%	15.8%	9.9%
65 and over	1.3%	1.5%	1.6%	1.8%	2.0%	1.8%	1.9%	20.0%	10.2%	9.4%	2.6%
Total	10.4%	12.1%	13.2%	14.6%	14.6%	14.6%	15.1%	27.6%	24.1%	23.1%	17.0%
Females Age:											
25-34	28.1%	31.3%	33.0%	35.4%	35.9%	36.2%	36.9%	47.5%	46.9%	45.8%	40.1%
35-44	22.9%	25.9%	27.2%	29.3%	29.3%	29.5%	30.2%	41.3%	39.0%	37.4%	33.4%
45-54	11.4%	13.2%	14.4%	15.5%	15.9%	16.4%	16.6%	28.2%	26.4%	25.8%	20.9%
55-64	5.8%	6.7%	7.1%	7.2%	7.6%	7.6%	8.2%	21.4%	17.5%	15.9%	10.0%
65 and over	0.6%	0.6%	0.7%	0.7%	0.7%	0.8%	0.8%	18.0%	7.4%	6.8%	1.4%
Total	14.3%	16.1%	17.0%	18.1%	18.2%	18.3%	18.7%	31.3%	27.3%	26.1%	20.7%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 6A. Annual Income Tax Transition Rates

Transition	From: To:	2001 2002	2002 2003	2003 2004	2004 2005	2005 2006	2006 2007	2007 2008	2008 2009	2009 2010	2010 2011
From positive tax...											
	to positive tax	88.2%	88.0%	88.5%	89.2%	89.2%	88.9%	78.5%	86.8%	88.1%	90.2%
	to zero tax	5.4%	5.5%	4.8%	4.7%	4.7%	4.8%	2.6%	2.8%	3.1%	4.2%
	to negative tax	4.7%	4.7%	5.0%	4.4%	4.4%	4.5%	17.2%	8.7%	7.3%	3.9%
	to missing	1.3%	1.3%	1.3%	1.3%	1.4%	1.4%	1.4%	1.3%	1.3%	1.4%
	to dependent	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.4%	0.3%	0.2%	0.2%
From zero tax...											
	to positive tax	13.0%	13.8%	15.2%	16.2%	16.6%	17.0%	9.1%	10.2%	10.0%	10.6%
	to zero tax	69.3%	69.4%	68.3%	67.8%	67.2%	65.8%	58.0%	67.8%	71.3%	72.4%
	to negative tax	6.0%	5.4%	5.8%	5.5%	5.6%	6.2%	20.8%	9.6%	6.8%	4.6%
	to missing	9.2%	9.1%	8.5%	8.3%	8.3%	8.2%	9.9%	10.0%	9.6%	10.1%
	to dependent	2.4%	2.3%	2.1%	2.2%	2.3%	2.8%	2.3%	2.4%	2.3%	2.2%
From negative tax...											
	to positive tax	15.8%	16.7%	16.3%	18.7%	18.7%	17.9%	9.1%	20.6%	20.7%	26.3%
	to zero tax	6.9%	7.0%	6.7%	6.1%	6.4%	5.9%	3.7%	11.3%	5.6%	11.8%
	to negative tax	74.4%	73.2%	74.3%	72.6%	72.4%	73.6%	84.1%	64.0%	70.5%	58.1%
	to missing	2.0%	2.1%	1.8%	1.8%	1.7%	1.7%	2.1%	2.8%	2.0%	2.5%
	to dependent	0.9%	1.0%	0.9%	0.9%	0.8%	0.9%	1.0%	1.3%	1.2%	1.3%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 6B. Annual Payroll Tax Transition Rates

Transition	From:	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
	To:	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
From positive tax...											
	to positive tax	93.9%	93.9%	94.2%	94.2%	94.3%	94.4%	93.7%	92.7%	92.9%	93.0%
	to zero tax	3.9%	3.9%	3.7%	3.6%	3.6%	3.6%	4.1%	4.9%	5.1%	5.0%
	to missing	1.5%	1.5%	1.5%	1.5%	1.4%	1.4%	1.4%	1.6%	1.3%	1.4%
	to dependent	0.7%	0.7%	0.6%	0.7%	0.7%	0.7%	0.7%	0.8%	0.6%	0.6%
From zero tax...											
	to positive tax	8.7%	8.9%	9.5%	9.4%	9.7%	9.1%	8.5%	7.9%	9.2%	10.3%
	to zero tax	82.5%	82.0%	81.8%	82.1%	81.6%	81.7%	81.5%	82.9%	81.8%	80.0%
	to missing	7.4%	7.7%	7.4%	7.3%	7.4%	7.4%	8.7%	7.9%	7.5%	8.2%
	to dependent	1.4%	1.3%	1.3%	1.2%	1.4%	1.8%	1.3%	1.4%	1.5%	1.5%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Table 7A. Annual Versus Longer-Term Income Taxpaying

Transition	From: To:	2001 2002-2005	2002 2003-2006	2003 2004-2007	2004 2005-2008	2005 2006-2009	2006 2007-2010	2007 2008-2011
From positive tax...								
	to positive average tax	92.2%	92.8%	93.4%	92.6%	91.0%	89.0%	87.1%
From zero tax...								
	to zero average tax	57.7%	55.5%	51.2%	47.8%	47.8%	47.7%	48.6%
From negative tax...								
	to negative average tax	78.2%	75.8%	74.0%	75.3%	78.4%	81.7%	82.0%
From positive tax...								
	to negative or zero average tax	7.8%	7.2%	6.6%	7.4%	9.0%	11.0%	12.9%
From negative or zero tax...								
	to positive average tax	25.4%	28.1%	31.1%	28.9%	25.4%	22.1%	21.0%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.



Table 7B. Annual Versus Longer-Term Payroll Taxpaying

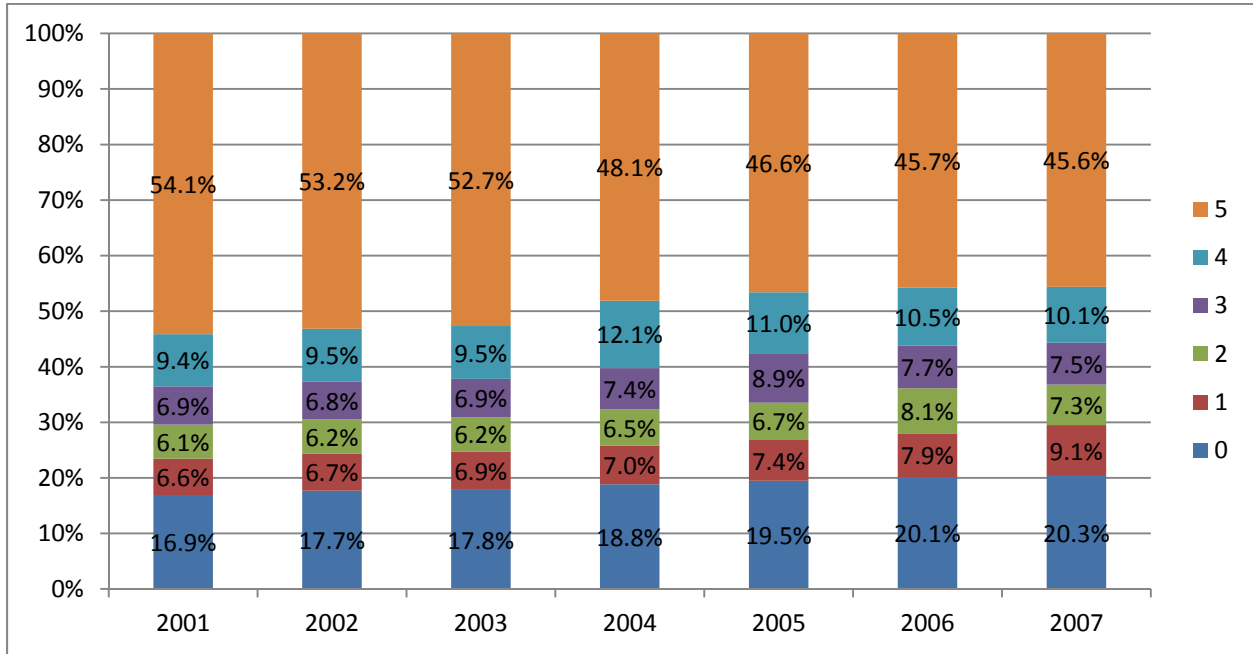
Transition	From:	2001	2002	2003	2004	2005	2006	2007
	To:	2002-2005	2003-2006	2004-2007	2005-2008	2006-2009	2007-2010	2008-2011
From positive tax...								
	to positive average tax	98.5%	98.5%	98.5%	98.5%	98.4%	98.4%	98.1%
From zero tax...								
	to zero average tax	80.4%	79.4%	78.2%	78.4%	79.3%	80.6%	81.6%
From positive tax...								
	to zero average tax	1.5%	1.5%	1.5%	1.5%	1.6%	1.6%	1.9%
From zero tax...								
	to positive average tax	19.6%	20.6%	21.8%	21.6%	20.7%	19.4%	18.4%

Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

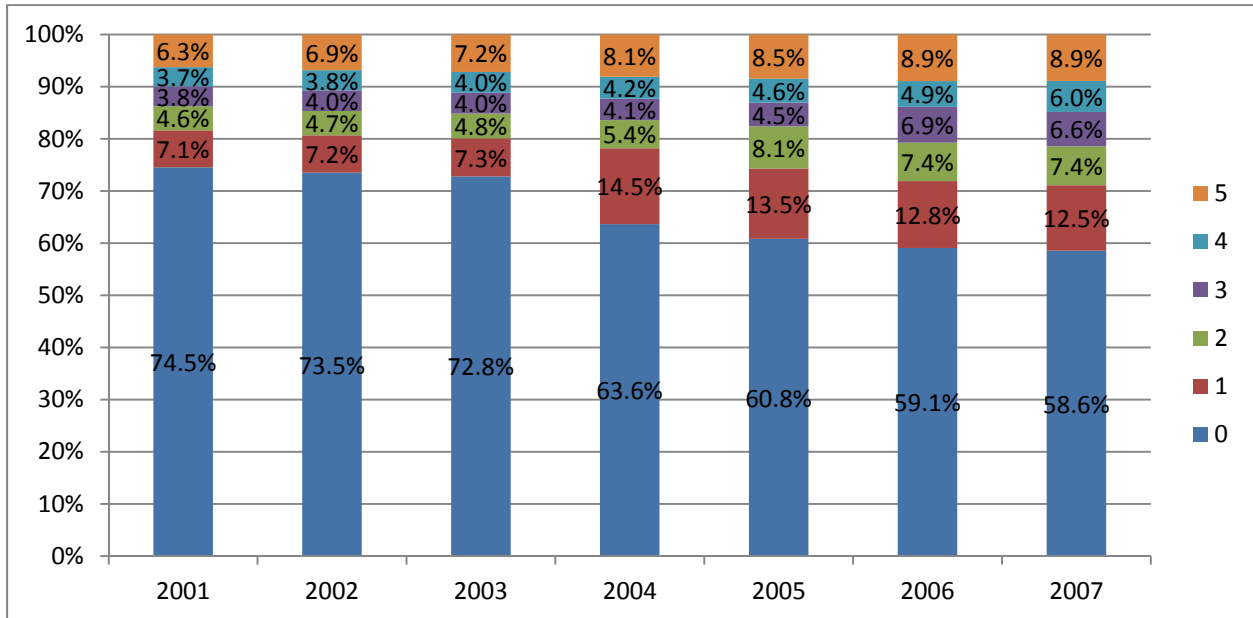
## Appendix Figures

Figure 1A. Share of Individuals Paying Tax by Number of Years in 5-Year Panels

### A. Positive Income Tax



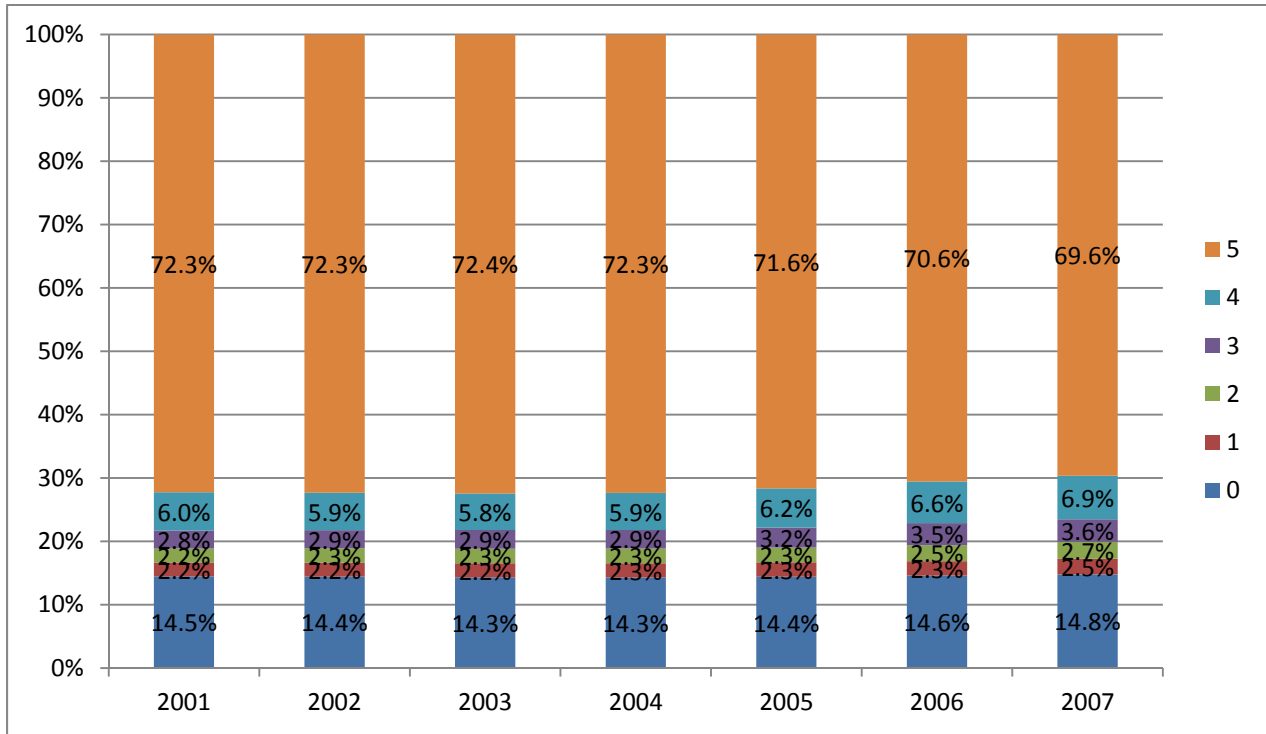
### B. Negative Income Tax



Notes: Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Figure 1B. Share of Individuals Paying Tax by Number of Years in 5-Year Panels

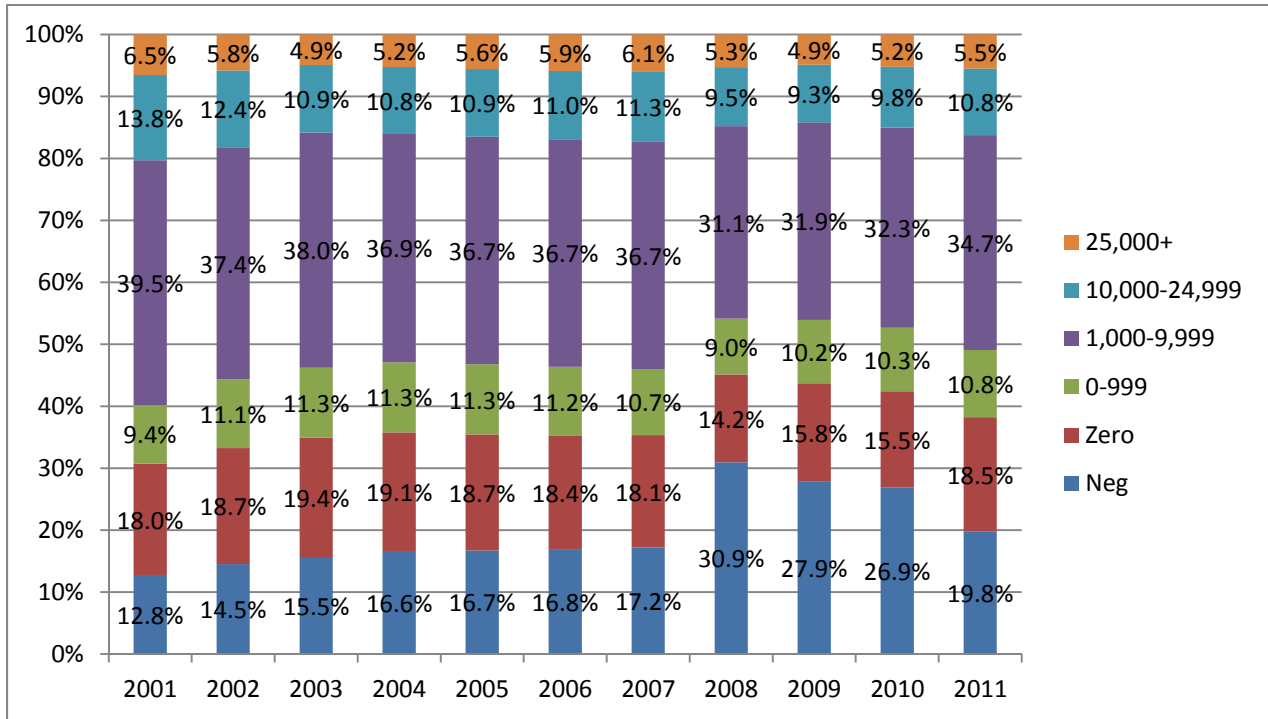
A. Positive Payroll Tax



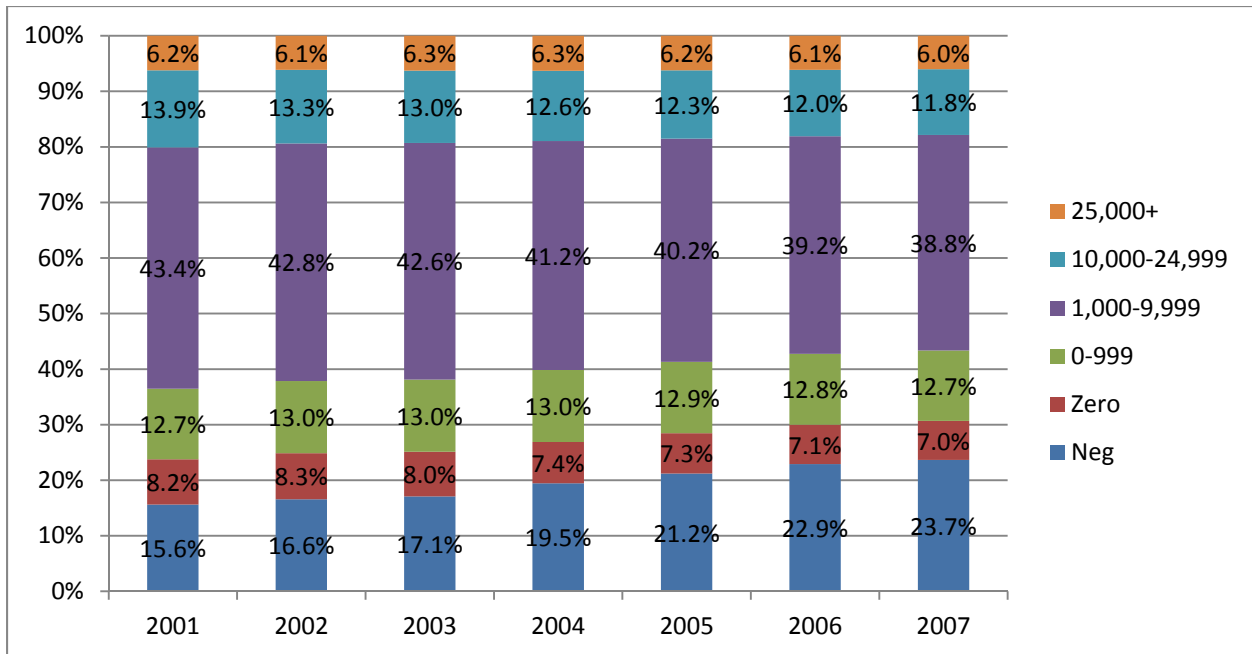
Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Figure 2A. Distribution of Income Tax Payments

A. Annual Payment in Cross Section



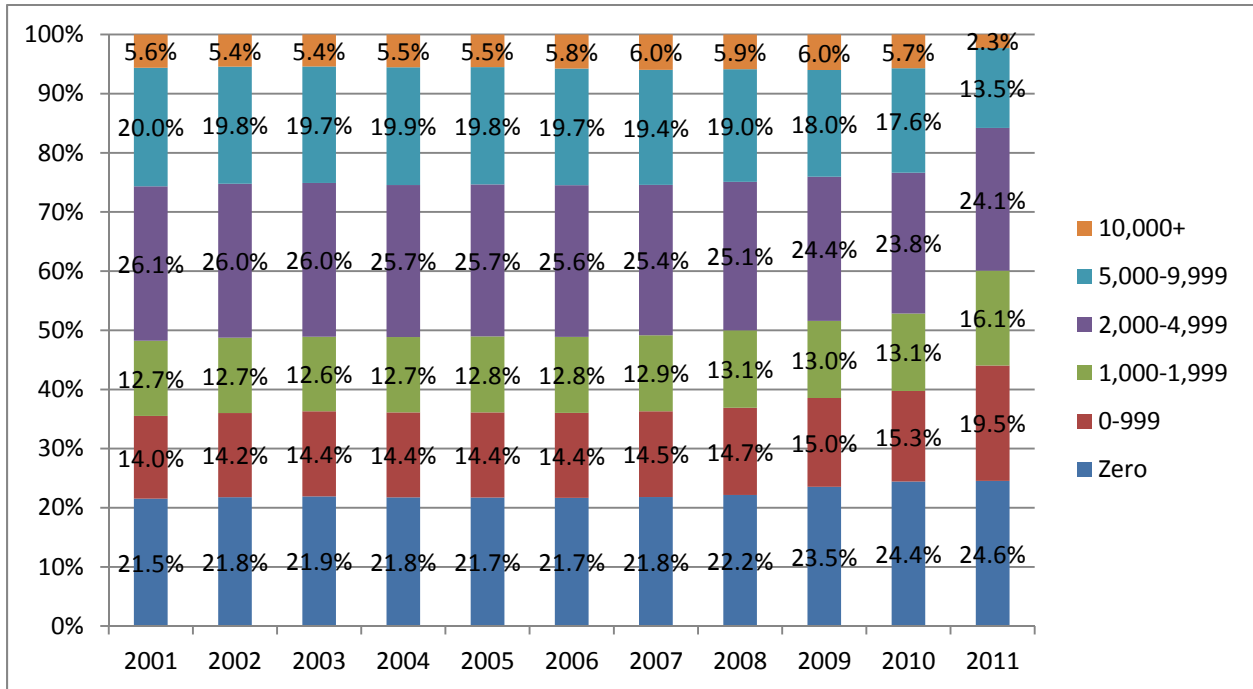
B. Average Annual Payment in 5 Year Panel



Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.

Figure 2B. Distribution of Payroll Tax Payments

A. Annual Payment in Cross Section



B. Average Annual Payment in 5 Year Panel



Notes: Data from 2001-2011 panel of individual tax returns created using the IRS Compliance Data Warehouse.