Finance and Economics Discussion Series
Divisions of Research & Statistics and Monetary Affairs
Federal Reserve Board, Washington, D.C.

Effective Tax Rates and Measures of Business Size

Kevin B. Moore

2012-58

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September 3, 2012

This paper uses data from the Survey of Consumer Finances (SCF) and the NBER TAXSIM model to estimate marginal and average tax rates for households that own businesses that are pass-thru entities. We examine how marginal and average tax rates vary by the size of business using four different measures of the size: net income, gross receipts, business value, and number of employees. The analysis also uses the long-time series of SCF cross-sections to examine how tax rates for business owners have evolved over the various changes in tax policy of the last two decades.

Keywords: businesses, tax rates, tax policy

JEL Codes: H22, H24, H25

Kevin B. Moore: Board of Governors of the Federal Reserve System, Washington, D.C. USA, (kevin.b.moore@frb.gov)

The analysis and conclusions set forth are those of the author and do not indicate concurrence by the other members of the research staff or the Board of Governors. The author thanks Arthur Kennickeill, John Sabelhaus, Jim Poterba, and the participants at the NTA Spring Symposium for comments and suggestions.

I. INTRODUCTION

In any discussion of changes in individual income tax policies, one group sure to be mentioned is business owners. Businesses are thought to be the engine of economic growth and any tax policy that hampers them could hurt the overall economy. In general, much of the discussion revolves around the effects of tax policies on small business owners, but the definition of a small business can greatly vary. The more relevant characteristic of the business from a tax policy perspective is whether it is taxed as a corporation or as a pass-thru entity on an individual's income tax return. Only pass-thru entities are directly affected by changes in individual income tax policy, although there may also be indirect effects on corporations.[1] How business owners respond to changes in tax policy is complicated by the fact that they have more flexibility in realizing income, which directly affects their effective tax rate. This paper uses data from the Survey of Consumer Finances (SCF) and the NBER TAXSIM model to estimate marginal and average tax rates for households that own businesses that are pass-thru entities. We then examine how marginal and average tax rates vary by the size of business using four different measures of size: net income, gross receipts, business value, and number of employees.

Although the SCF is a survey of households, the survey collects detailed information about the businesses owned by household. The business data allow us to examine how tax rates vary by measures of the size of the business other than net income, as these alternative measures may have a different relationship with tax rates. Unlike data from tax returns, the SCF also has information on all of the household's assets and liabilities, as well as a rich set of demographic data. We can also use the long time series of SCF cross-sections to examine how tax rates for business owners have evolved over the various changes in tax policy over the last two decades.

[1] See Petska (1998) for evidence that businesses change their legal form of organization in response to changes in individual and corporate tax rates.

To preview the results, we find that marginal and average tax rates increased from 1992 to 2010 for businesses in the top group of all of our measures, but the increases were smaller for the business value and number of employees measures of size. Over the more recent period from 2001 to 2010, all businesses, regardless of the size measure, experienced declines in marginal and average tax rates, but decreases were smaller for the largest businesses. Classifying businesses by multiple size measures reveals a substantial amount of heterogeneity in tax rate changes for the businesses in the top groups. We interpret this as evidence of the usefulness of the alternative measures of size. Given these results it is not surprising the share of total tax liability of all business owners accounted for by the businesses in the top size categories increased considerably from 1992 to 2010, but the share was smaller for the size measures other than net income. Our analysis also shows that allowing the 2001 and 2003 tax cuts to expire for high-income households would affect slightly more business-owning households than non-business owning households, but the effects are limited to a very small subset of business-owners.

II. DATA

The SCF is a survey of household balance sheets conducted by the Board of Governors of the Federal Reserve System in cooperation with the Statistics of Income (SOI) division of the Internal Revenue Service (IRS). Besides collecting information on assets and liabilities, the SCF collects information on household demographics, income, relationships with financial institutions, attitudes toward risk and credit, current and past employment, and pensions.[2]

The SCF uses a dual frame sample design to provide adequate representation of the financial behavior of all households in the United States. One part of the sample is a standard multi-stage national area probability sample (Tourangeau et al., 1993), while the list sample uses

[2] For more details on the SCF, see Bricker et al. (2012).

the SOI individual income tax data file to over-sample wealthy households (Kennickell, 2001). Wealth data from the SCF are widely regarded as the most comprehensive data available for the United States. Sample weights constructed for the SCF allow aggregation of estimates to the U.S. household population level in a given survey year (Kennickell and Woodburn, 1999; Kennickell, 1999).

To calculate federal and state tax rates and liabilities for each household in each year of the SCF, we use the NBER TAXSIM calculator.[3] Marginal tax rates are computed relative to taxpayer earnings and average tax rates are defined as the household federal tax liability divided by total household income.[4]

III. DEFINING BUSINESS OWNERS IN THE SCF

Any analysis of business owners, the self-employed or entrepreneurs must first decide how to define this heterogeneous group. Often the choice is driven by the information available in the data and the research question. Studies of tax rates often use IRS tax data and define a business as a return with income from Schedule C, E, or F.[5] However, determining what level of business income qualifies a filer as a business owner is often an issue and there is a lack of additional information about the business in most of the IRS public use datasets. Recently, Knittel et al. (2011) show significant progress in further refining the definition of a business

[3] For more information on TAXSIM, see Feenberg and Coutts (1993), or http://www.nber.org/~taxsim/taxsim-calc8/index.html. For program that put the SCF data in a form for Internet TAXSIM, see http://users.nber.org/~taxsim/to-taxsim/scf.

[4] Although we do not include state tax rates in the analysis, the household's state tax liability is included as part of itemized deductions when computing federal tax rates. Household income for the year prior to the survey include wages and salary, farm and sole proprietorship income, nontaxable interest, taxable interest, dividends, capital gains/losses, rent, royalty, and trust income, partnership, S-corp and other business income, unemployment or worker's compensation, child support and alimony, government transfers (TANF, SSI, food stamps), pension, Social Security and annuity income, withdrawals from IRAs or account-type pensions, and other miscellaneous income. . For a comparison of the income data in the SCF to IRS-SOI data, see Johnson and Moore (2008).

[5] Examples include Quantria Strategies (2009), Keightley (2012), Knittel et al. (2011), and Gale (2004).

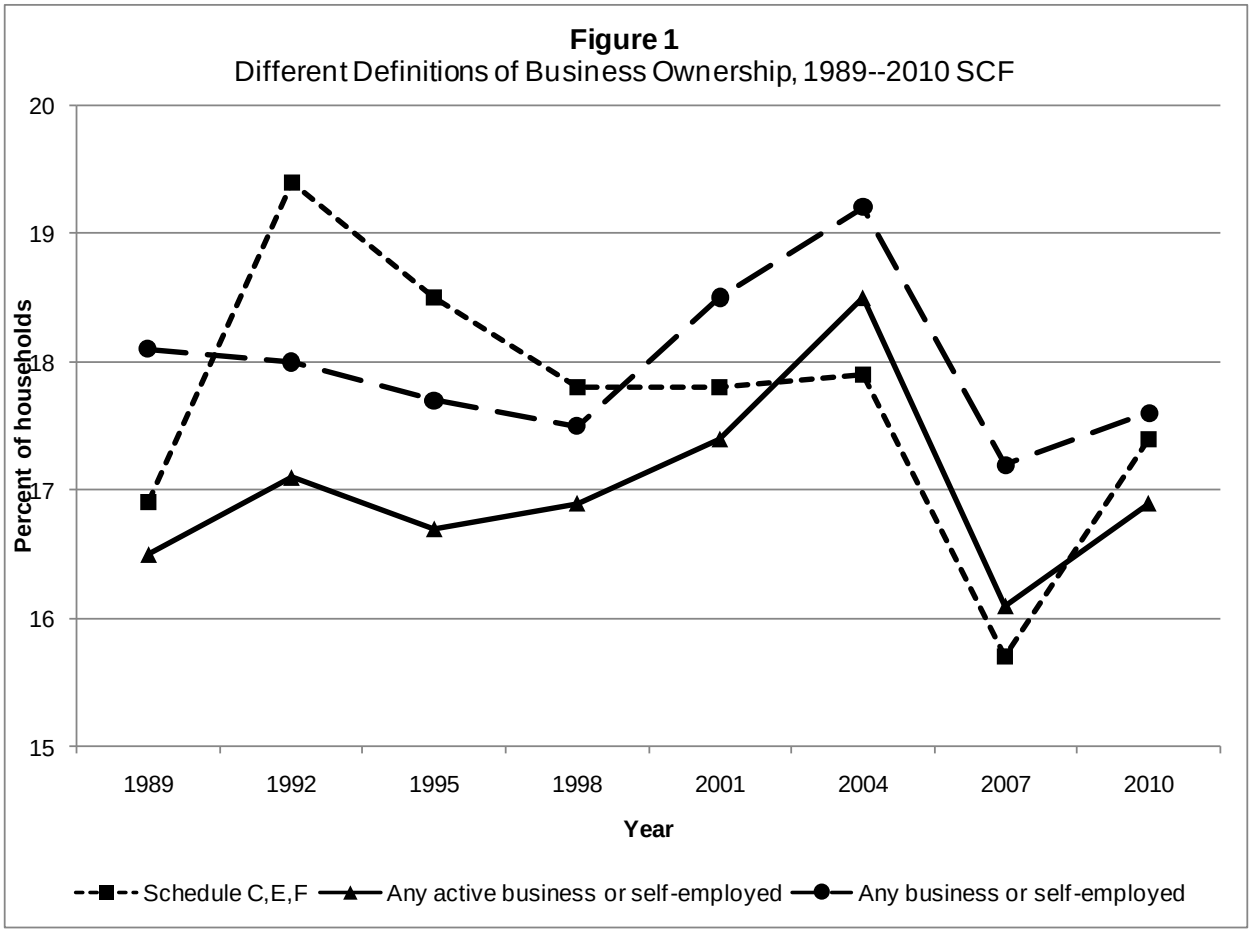
owner by using information on Schedule C, E, and F, and Forms 1065, 1120, and 1120S in conjunction with Form 1040.

Surveys provide another source of data for studies of business owners, but defining the business owner is no less problematic. In the SCF, there are numerous ways to define a business owner. The SCF has specific questions about actively-managed and non-actively managed businesses in the asset section of the questionnaire, but also asks about self-employment status in the questions about the respondent and spouse/partner's current employment. There are also questions on business income in the income section of the SCF (which refer to line numbers on IRS Form 1040) and questions about whether the respondent or spouse/partner filed a Schedule C, E, and F.

Figure 1 shows three possible definitions of business owner from the SCF over the 1989 to 2010 period. Each of the measures has its advantages and disadvantages, but all three move in a fairly tight range of about 16 to 19 percent of households over the period. Our preferred definition of business ownership, any active business or self-employed, allows us to leverage the detail on active businesses available in the SCF. Specifically, a household is considered a business owner if the household owns an actively-managed business that is not a C corporation or the respondent or spouse/partner reports being self-employed on their current main job. A household may own more than one actively-managed business or many own a combination of actively-managed and non-actively managed businesses under our preferred definition.[6] As shown in Figure 1, the fraction of households classified as business owners by our definition (the

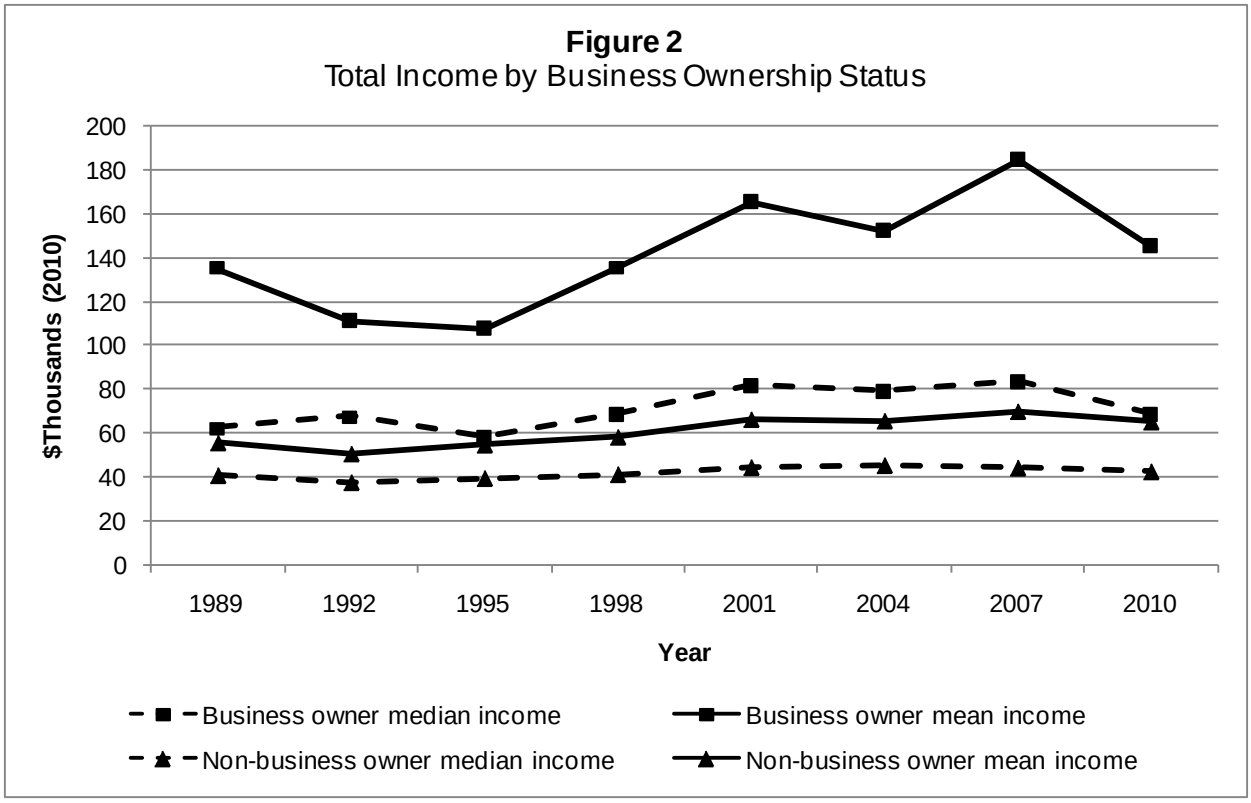
[6] The fraction of households that only own a C-corporation is less than one-half of 1 percent in a given survey year. The fraction of households that only own a non-actively managed business is about one percent in a given survey year. About 70 percent of business owners report filing a Schedule C, E, or F in a given survey year. About 20 to 30 percent of business owners report being self-employed with no business assets in a given survey year.

solid line) was between 16 to 17 percent from 1989 to 1998; the fraction increased to a peak of just over 18 percent by 2004 before falling back to between 16 to 17 percent in 2007 and 2010.

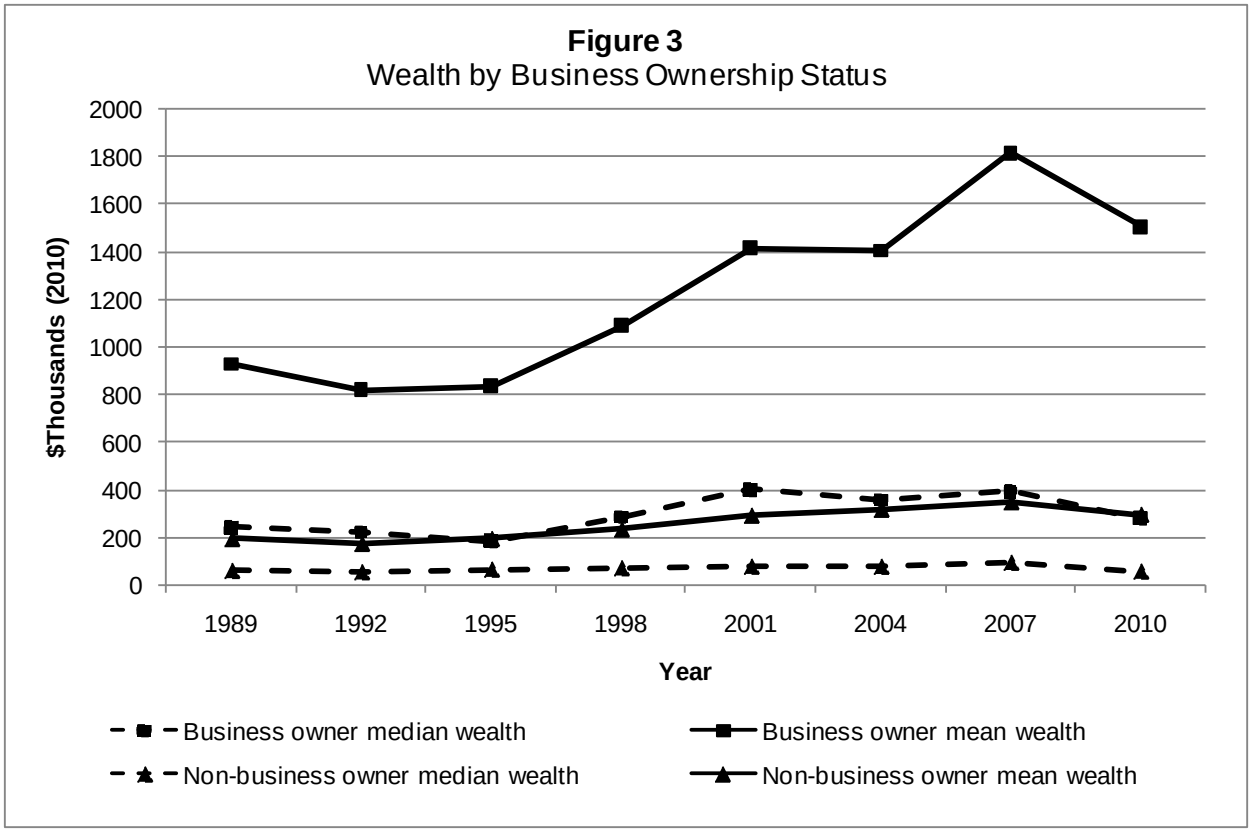


Figures 2 and 3 reveal how business owners differ from non-business owning households along the dimensions of income and wealth.[7] Not surprisingly, business owners have higher levels of real median and mean income and wealth over the 1989 to 2010 period. Median income for business owners is about 1.5 times non-business owning household median income, and the mean is over two times as large (Figure 2). In fact, median income for business owners is higher than mean income for non-business owners in all years.

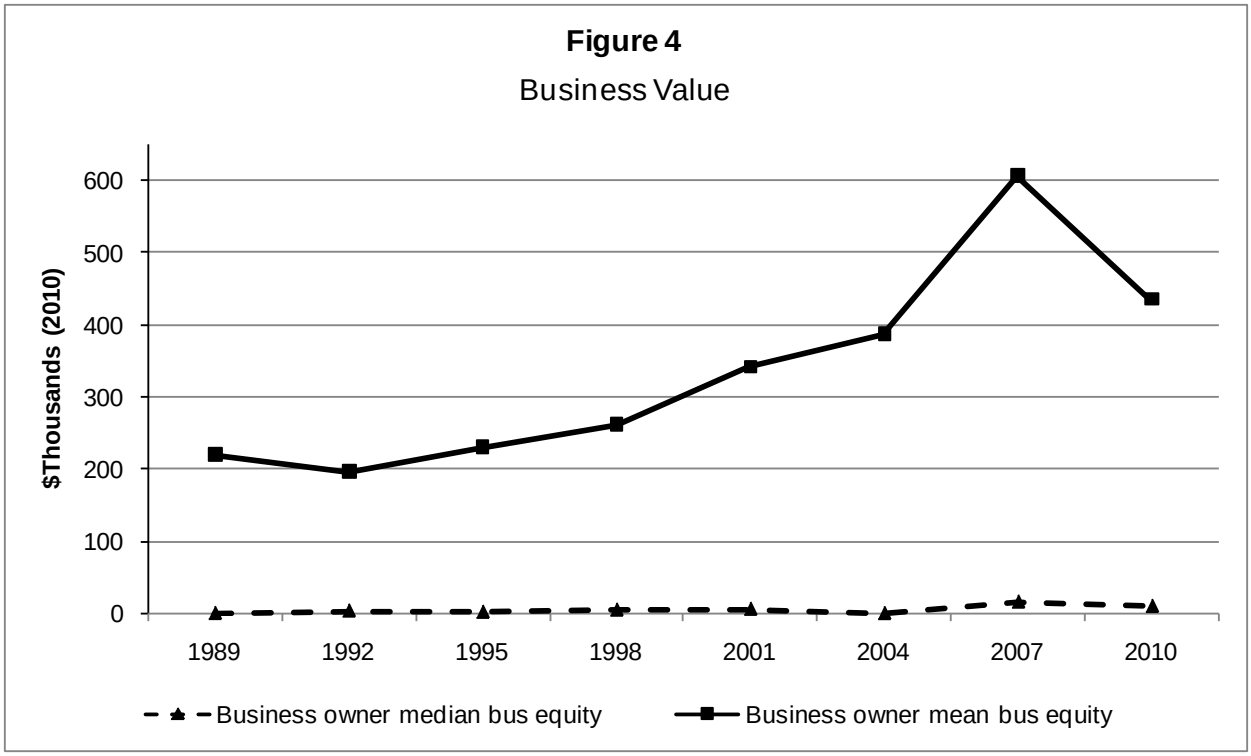
[7] All dollar values are in 2010 dollars unless otherwise noted.



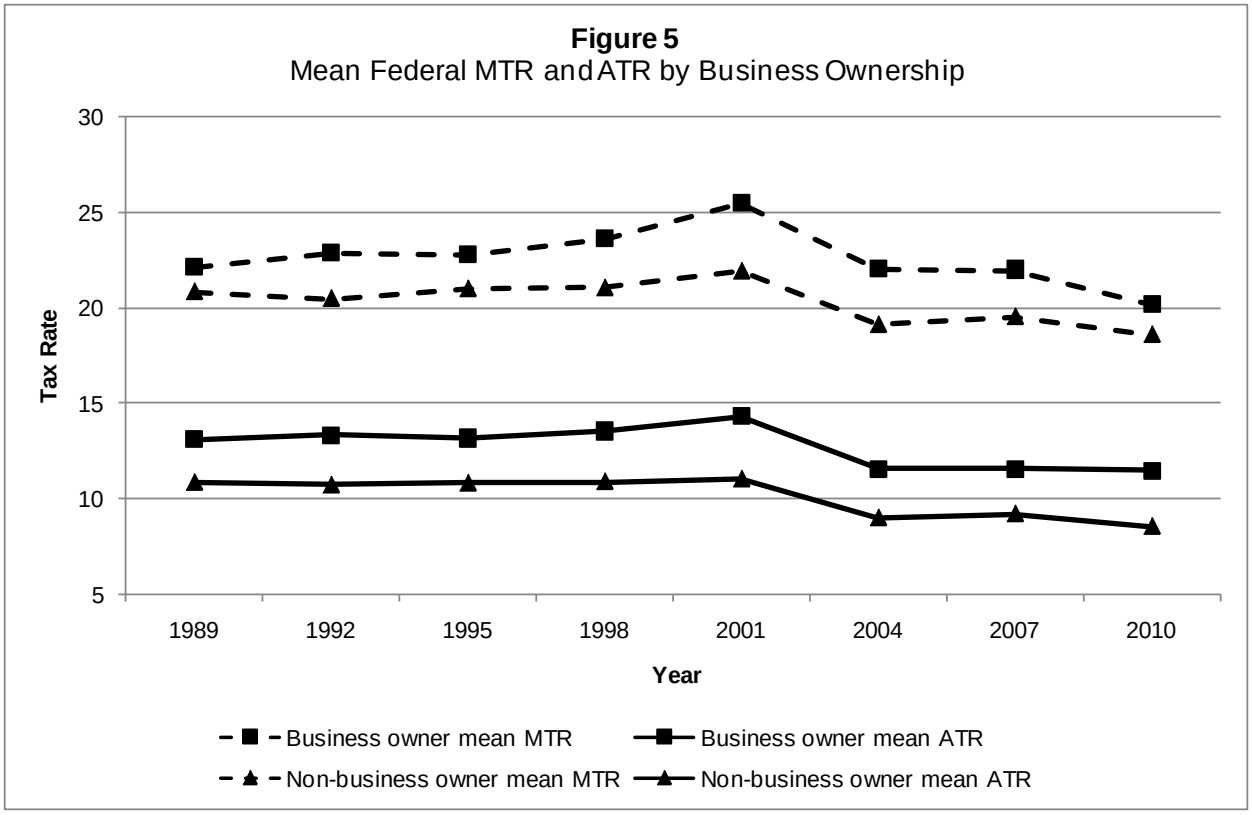
For wealth, Figure 3 shows the differences in the mean and median are even larger, with median wealth for business owners about four times as large, and mean wealth nearly five times are large. In fact, median wealth for business owners is larger than mean wealth for non-business owners in all years but 1995 and 2010. Across all years of the survey, business owners are also more likely to be married, have a college degree, and not be a racial minority.



The disparity in median and mean wealth for business owners is driven by the large differences in median and mean business values among business owners. Figure 4 shows the median and mean business value (net equity) across survey years. Over the period, median business value was between $500 and $15,000, while the mean ranged from $200,000 to $600,000. Businesses are an important component of total wealth for business owners and their importance has grown over time. The share of business owners for which businesses account for at least half of total wealth increased from about 5 percent in 1989 to over 17 percent in 2010. This fraction increases dramatically with the size of business, accounting for one-half of wealth for 40 to 60 percent of business owners with businesses worth at least $1 million.



Given the differences in income and wealth between business owners and other households, it is not surprising to observe differences in marginal and average tax rates. Figure 5 shows the mean federal marginal and average tax rates for households with positive federal tax liability in each group. All the tax rate measures follow a similar pattern over the time period, with rates rising slightly after the 1993 Omnibus Budget Reconciliation Act (OBRA) and falling more noticeably after the 2001 Economic Growth and Tax Relief Reconciliation Act (EGTRRA) and the 2003 Jobs and Growth and Tax Relief Reconciliation Act (JGTRRA). Mean marginal and average tax rates for business owners are higher than for non-business owners across all years. However, mean marginal tax rates are only about 5 to 15 percent higher, while mean average tax rates are 20 to 30 percent higher. Both groups experienced sizeable drops in mean tax rates between 2001 and 2010 of 15 to 20 percent. These differences in tax rates across the two groups are less pronounced than the differences in mean and median income.



IV. MEASURES USED TO CLASSIFY BUSINESS OWNERS

Shifting the focus to just business owners, the next step is to examine how marginal and average tax rates vary when we classify business owners by different measures of the size of the business. The first measure, net income, is typically used in studies based on tax data, as it is readily available on tax forms. Using the SCF data allows us to add three other measures of business size: gross receipts, business value, and the number of employees. These three alternative measures will provide additional insight into the characteristics of businesses that face high marginal or average tax rates.

Table 1 presents the four business size measures, the distribution of business owners across each measure, and the share of the total measure accounted for by each category within the group for selected survey years. For net income, about 30–40 percent of businesses have zero or negative net income in a given year and another roughly 40 percent have net income greater

than zero but less than $25,000.[8] The share of business owners in the highest net income class, $100,000 or more, varies from 5 to 8 percent across survey years, but this small group accounts for about 95 percent of total net income. A similar pattern exists for gross receipts, which is not surprising given the relationship between gross receipts and net income. Grouping business owners by the value of the business reveals that over 40 percent of businesses have no value, another 40 percent have a value greater than zero and less than $250,000, and 5 to 10 percent have a value of $1 million or more. The business owners in the highest value class account for at least two-thirds of the total value of all businesses, and their share was growing through 2010.[9] The last measure of business size, number of employees, reveals that over 95 percent of businesses have less than 25 employees, and that about 60 percent of businesses have zero employees (this does not include the owner). The businesses with 25 or more employees account for approximately 90 percent of all employees working for these businesses.

[8] All dollar values are in 2010 dollars.
[9] Gross receipts and business value are set to zero for the 20 to 30 percent of business owners who reported being self-employed with no business assets in a given survey year.

Table 1
Distribution of Business Owners by Measures of Business Size, 1992–2010 SCF

	Year							
	1992		1995		2001		2010	
Business Characteristic	Percentage of Owners	Percentage of Total	Percentage of Owners	Percentage of Total	Percentage of Owners	Percentage of Total	Percentage of Owners	Percentage of Total
Net income ($)								
≤ 0	42	–1	43	0	44	0	36	–1
> 0 to < 25k	44	3	44	2	36	1	45	1
25k to < 100k	9	4	9	3	14	3	17	2
≥ 100k	5	94	4	96	7	96	8	98
Gross receipts ($)								
≤ 0	39	0	44	0	42	0	34	0
> 0 to < 50k	42	1	41	0.3	36	1	41	0.2
50k to < 500k	15	2	11	1	17	3	18	1
≥ 500k	4	97	4	99	5	96	6	99
Business value ($)								
≤ 0	47	0	47	0	46	0	38	0
> 0 to < 250k	41	15	44	10	39	8	41	5
250k to < 1 mil	8	20	6	14	10	14	13	12
≥ 1 mil	3	65	4	76	5	77	9	82
Number of employees								
0	60	0	62	0	61	0	57	0
1 to 4	29	3	26	4	26	2	26	4
5 to 24	8	5	9	7	9	4	12	6
≥ 25	3	91	3	89	4	94	5	91

Note: All dollar values are in 2010 dollars.

V. MARGINAL AND AVERAGE TAX RATES BY SIZE MEASURE

Table 2 presents results for mean marginal and average tax rates by net income. The tables for each of the four business size measures are structured to show tax rates for selected SCF years. Panel A of the table shows the results for the mean marginal tax rate, and panel B contains the results for the mean average tax rate. The years chosen span the changes in tax rates due to 1993 OBRA and the 2001 EGTRRA (and 2003 JGTRRA). For both marginal and average tax rates, the top net income group faced the highest rates over the period, and is the only group that did not see a decline in tax rates between 1992 and 2010. However, marginal and average tax rates did decline for the top net income group over the 2001 to 2010 period, but by notably less than for the other groups. The lowest two net income groups had similar mean marginal and average tax rates across most years, but the group with net income greater than zero and less than

$25,000 experienced the largest percentage decline in both tax rates over the periods 1992 to 2010 and 2001 to 2010. Not surprisingly, there is a close correspondence between higher levels of net income and higher marginal and average tax rates.

Table 2
Federal Marginal and Average Tax Rates by Net Income

A. Mean MTR (%)					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
SCF Year					
1992	23	22	25	28	23
1995	21	21	29	36	23
2001	25	23	29	35	26
2010	20	17	22	30	20
Percentage change 1992–2010	–11	–21	–11	9	–11
Percentage change 2001–2010	–17	–25	–22	–14	–20
B. Mean ATR (%)					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
SCF Year					
1992	13	12	16	20	13
1995	12	12	18	26	13
2001	13	12	17	24	14
2010	11	9	13	22	12
Percentage change 1992–2010	–13	–30	–17	17	–13
Percentage change 2001–2010	–15	–30	–20	–5	–20

Table 3 shows the results for gross receipts. The patterns are similar to net income, which is expected, but there are some differences. As with net income, the top gross receipts group was the only group to experience an increase in both tax rates over the 1992 to 2010 period, but the increases were smaller than for top net income group. Over the 2001 to 2010 period, all gross receipts groups saw a decline in mean marginal and average tax rates, with the largest decreases in both tax rates for business owners with gross receipts greater than zero and less than $50,000.

Table 3
Federal Marginal and Average Tax Rates by Gross Receipts

A. Mean MTR (%)					
	Gross Receipts (2010$)				
	≤ 0	> 0 to < 50k	50k to < 500k	≥ 500k	All
SCF Year					
1992	23	22	23	29	23
1995	21	21	27	34	23
2001	25	23	29	34	26
2010	19	18	23	30	20
Percent change 1992–2010	–16	–19	0	2	–11
Percent change 2001–2010	–23	–22	–19	–13	–20
B. Mean ATR (%)					
	Gross Receipts (2010$)				
	≤ 0	> 0 to < 50k	50k to < 500k	≥ 500k	All
SCF Year					
1992	13	12	14	20	13
1995	12	12	17	24	13
2001	13	12	18	24	14
2010	11	9	13	23	12
Percent change 1992–2010	–16	–28	–9	13	–13
Percent change 2001–2010	–20	–25	–25	–5	–20

Table 4 presents the results when the measure of size is the value of the business. As with the first two measures, only the top business value group saw an increase in mean marginal and average tax rates over 1992 to 2010. All business value groups experienced a decline in both tax rates over the 2001 to 2010 period, and the percent changes were more similar across groups than for the net income or gross receipts groups. There is also less variability in tax rates among the top two business value groups than for the top two groups for the previous measures of size, indicating the weaker link between business value and tax rates.

Table 4
Federal Marginal and Average Tax Rates by Business Values

A. Mean MTR (%)					
	Business Value (2010$)				
	≤ 0	> 0 to < 250k	250k to < 1 mil	≥ 1 mil	All
SCF Year					
1992	23	22	26	27	23
1995	22	22	29	33	23
2001	25	23	29	35	26
2010	19	19	24	28	20
Percent change 1992–2010	–16	–15	–9	6	–11
Percent change 2001–2010	–25	–20	–19	–19	–20
B. Mean ATR (%)					
	Business Value (2010$)				
	≤ 0	> 0 to < 250k	250k to < 1 mil	≥ 1 mil	All
SCF Year					
1992	13	13	16	18	13
1995	12	12	19	23	13
2001	14	13	17	25	14
2010	11	10	14	21	12
Percent change 1992–2010	–17	–23	–16	13	–13
Percent change 2001–2010	–22	–23	–20	–16	–20

Table 5 shows results when the measure of size is the number of employees. As with the other size measures, the largest employers saw increases in marginal and average tax rates over the period, but the increases were more similar to those experienced by the top business value group. Tax rates are considerably higher across all years for the top group compared to the other three groups, whereas for the other size measures the differences in tax rates was apparent for the top two groups. It is interesting to see such a break in the level of tax rates at just 25 employees, given that "small" businesses are often defined as less than 500 employees.[10] Over the 2001 to 2010 period, all groups saw a decrease in mean marginal and average tax rates, but the decline was considerably smaller for the largest employers.

[10] Only about one-half of 1 percent of business owners in any survey year had more than 500 employees.

Table 5
Federal Marginal and Average Tax Rates by Number of Employees

A. Mean MTR (%)					
	Number of Employees				
	0	1 to 4	5 to 24	≥ 25	All
SCF Year					
1992	22	23	24	29	23
1995	22	23	25	34	23
2001	24	25	29	35	26
2010	19	19	24	30	20
Percent change 1992–2010	–15	–14	–4	5	–11
Percent change 2001–2010	–21	–23	–20	–13	–20
B. Mean ATR (%)					
	Number of Employees				
	0	1 to 4	5 to 24	≥ 25	All
SCF Year					
1992	13	13	15	19	13
1995	12	13	16	25	13
2001	13	14	19	24	14
2010	11	10	13	23	12
Percent change 1992–2010	–16	–21	–13	19	–13
Percent change 2001–2010	–18	–26	–30	–3	–20

Overall, marginal and average tax rates increase with an increase in any of the measures of size. Tables 2–5 show that regardless of the size measure, businesses in the top group of a size measure saw an increase in tax rates over the 1992 to 2010 period. The increase was somewhat smaller when using a measure other than net income or gross receipts, which reveals the weaker relationship between business value, number of employees, and tax rates. The previous tables examine each size measure in isolation, but the next two tables examine how the relationship between net income, business value, and number of employees has changed over time.

Table 6 shows the distribution of net income by business value over 1992 to 2010. In 1992, 38 percent of business owners in the top business value group were in the top net income group. This figure increased to 59 percent by 2001, but then fell back to 41 percent in 2010. Thus, it seems the relationship between business value and net income became stronger during a period when the top marginal tax rates were also increasing. Of course, 1992-2001 was a period of strong economic growth, which may have lead to increases in net income that outpaced the

growth in the value of the business. The effect of the Great Recession is reflected in the fact that by 2010, 33 percent of business owners in the top business value group had net income of less than $25,000, compared to only 18 percent in 2001. For business owners with a business value of zero, the fraction with zero or negative net income increased to over 70 percent between 1992 and 2001, but then declined to 56 percent by 2010.

Table 6
Distribution of Net Income by Business Value

A. 1992					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Business value ($)					
≤ 0	63	30	5	2	100
> 0 to < 250k	27	63	8	1	100
250k to < 1 mil	15	39	28	18	100
≥ 1 mil	8	29	25	38	100
B. 2001					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Business value ($)					
≤ 0	74	17	8	2	100
> 0 to < 250k	20	65	13	2	100
250k to < 1 mil	13	29	40	17	100
≥ 1 mil	9	9	23	59	100
C. 2010					
	Net Income ($)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Business value ($)					
≤ 0	56	27	14	3	100
> 0 to < 250k	26	64	7	2	100
250k to < 1 mil	18	39	26	16	100
≥ 1 mil	16	17	26	41	100

Table 7 presents the distribution of net income by the number of employees. For businesses with zero employees (other than the owner), about 90 percent have net income of less than $25,000 in each survey year. About three-fourths of businesses with 1 to 4 employees also have less than $25,000 in net income in a given year. Once a business has 5 or more employees,

the business is much more likely have net income above of at least $25,000, and for businesses with 25 or more employees, over one-half have net income of at least $100,000. For the largest employers, the fraction in the top net income group has increased considerably over the period, from 56 percent in 1992 to 72 percent in 2010. This is in contrast to the top business value group, which saw a decrease in the fraction in the top net income group after 2001. This difference is due to the imperfect overlap between the top business value group and top employees group. Only about one-half of businesses in the top employees group are also in the top business value group.

Table 7
Distribution of Net Income by Number of Employees

A. 1992					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Number of employees					
0	54	41	4	2	100
1 to 4	27	57	13	2	100
5 to 24	21	38	26	15	100
≥ 25	13	17	14	56	100
B. 2001					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Number of employees					
0	61	30	7	1	100
1 to 4	18	55	22	5	100
5 to 24	14	31	30	25	100
≥ 25	9	3	23	66	100
C. 2010					
	Net Income ($)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Number of employees					
0	42	45	11	2	100
1 to 4	31	53	12	5	100
5 to 24	19	36	27	17	100
≥ 25	12	3	12	72	100

The previous two tables reveal how the distribution of business owners by multiple size measures has changed over time. Tables 8 and 9 focus on the changes in mean marginal tax rates observed when business owners are groups by multiple size measures. Both tables have the same structure; the cell entries are the percentage change in the mean marginal tax rate for businesses with those characteristics between either 1992 to 2010 or 2001 to 2010.

Table 8 present results when businesses are classified by business value and net income. Over the 1992 to 2010 period, almost all businesses with less than $100,000 in net income experienced a decline in mean marginal tax rates. For businesses in the top net income group, most of the increases were quite small, except for businesses with a value of $250,000 to less than $1 million. Over the 2001 to 2010 period, all groups saw a decline in mean marginal tax rates, with businesses with zero value and net income greater than zero and less than $100,000 experiencing the largest declines. Businesses in the top two value groups and lowest two net income groups also saw a substantial decrease in marginal tax rates over the period.

Table 9 presents the results by net income and number of employees. Over the 1992 to 2010 period, all businesses but those in the top net income group experienced no change or a decline in marginal tax rates. Businesses with zero employees and net income of at least $100,000 saw one of the largest increases in tax rates, along with businesses in the top net income group with 5 to 24 employees. The increase in marginal tax rates for the high net income, zero employee business may be due to the lack of expenses from employee wages for those businesses. Similar to the results by business value and net income, businesses in the next to the highest net income group were less likely to see declines in marginal tax rates over the period, unless they had zero employees. Over the 2001 to 2010 period, all groups saw a decline in mean marginal tax rates, with some of the largest declines for businesses with net income greater than

zero and less than $25,000, regardless of the number of employees. Businesses with 1 to 4 employees at all net income levels also experienced sizeable decreases in marginal tax rates over the period.

Table 8
Percentage Change in Mean MTR by Net Income and Business Value

A. Percentage change 1992–2010					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Business value ($)					
≤ 0	–11	–28	–29	3	–16
> 0 to < 250k	–9	–21	1	0	–15
250k to < 1 mil	–16	–22	–3	18	–9
≥ 1 mil	–11	13	–1	5	6
All	–11	–21	–11	9	–11
B. Percentage change 2001–2010					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Business value ($)					
≤ 0	–18	–37	–37	–15	–25
> 0 to < 250k	–15	–21	–15	–15	–20
250k to < 1 mil	–28	–27	–8	–11	–19
≥ 1 mil	–25	–26	–17	–14	–19
All	–17	–25	–22	–14	–20

Table 9
Percentage Change in Mean MTR by Net Income and Number of Employees

A. Percent change 1992–2010					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥ 100k	All
Number of employees					
0	–9	–20	–23	13	–15
1 to 4	–13	–22	0	0	–14
5 to 24	–10	–18	0	16	–4
≥ 25	–24	9	–5	6	5
All	–11	–21	–11	9	–11
B. Percent change 2001–2010					
	Net Income (2010 $)				
	≤ 0	> 0 to < 25k	25k to < 100k	≥100k	All
Number of employees					
0	–15	–26	–27	–6	–21
1 to 4	–26	–20	–21	–23	–23
5 to 24	–18	–33	–4	12	–20
≥ 25	–21	–27	–13	–13	–13
All	–17	–25	–22	–14	-20

The results in Tables 8 and 9 show that while mean marginal tax rates did increase for businesses in the top net income group over 1992 to 2010, the size of the increase varies by business value and by the number of employees. Businesses in the top net income group and in the next to the largest business value group or with 5 to 24 employees saw the largest increases. The results by multiple measures provide evidence of the usefulness of size measures other than net income, as they reveal the heterogeneity of the businesses.

VI. TAX LIABILITY

Given the changes in tax rates previously discussed, it seems natural to examine how federal tax liability for business owners varies across the different size measures. [11] Table 10 shows the share of businesses owners and share of federal tax liability for each group in the

[11] Federal tax liability is calculated for total household income.

various size measures during the period 1992 to 2010.[12] For the net income measure, businesses in the top group saw their share of the total tax liability more than double over 1992 to 2010, which outpaced the increase in the share of businesses in the top net income group. By 2010, 7 percent of businesses were in the top group, but they accounted for 44 percent of the total tax liability. About one-half of the increase in the share of tax liability for the top net income group occurred over 2001 to 2010, as tax rates fell less during that period for the top group versus other businesses owners. The next to highest net income group experienced a sizeable increase in the share of businesses in the group, but the share of tax liability for that group was little changed from 1992 to 2010. Businesses in the bottom two groups saw a considerable decline in their share of the total tax liability over the period in line with the decrease in their marginal tax rates from 1992 to 2010. The results by the gross receipts measure are similar to those for net income and are omitted for brevity.

Tax liability is slightly less concentrated when businesses are classified by business value, and the group accounting for the largest share of taxes has shifted over time. The share of businesses in the top group increased from 3 percent in 1992 to 7 percent in 2010, while their share of the tax liability jumped from 15 percent to 40 percent. Prior to 2004, the lowest business value group had accounted for the largest share of the total tax liability. As with the net income measure, the increase is the share of tax liability is driven by increase in marginal tax rates for the top business value group and the decline in tax rates for all other value groups.

Unlike net income and business values measures, for the number of employees measure, the group with the largest share of businesses also accounted for the largest share of the total tax liability. However, businesses with 25 or more employees have increased their share of total tax

[12] In Table 10, only business-owning households are included in the measure of federal tax liability. The share of federal tax liability of all households accounted for by business owners is about 45 percent in any given year of the SCF.

liability from 14 percent in 1992 to 33 percent in 2010, with most of the increase taking place from 2001 to 2010. In contrast, the share of business in the top number of employees group only increased from 3 percent to 4 percent over 1992 to 2010. As with the other two business size measures, businesses with 25 or more employees saw an increase in marginal rates over 1992 to 2010, while all other groups saw declines in their marginal rates and share of total tax liability.

Table 10
Share of Federal Tax Liability by Measures of Business Size, 1992–2010 SCF

	Year							
	1992		1995		2001		2010	
Business characteristic	Percentage of owners	Percentage of tax	Percentage of owners	Percentage of tax	Percentage of owners	Percentage of tax	Percentage of owners	Percent of tax
Net income ($)								
≤ 0	42	37	43	24	44	37	36	25
> 0 to < 25k	44	28	44	27	36	18	45	17
25k to < 100k	9	14	9	18	14	15	13	15
≥ 100k	5	21	4	31	7	30	7	44
Business value ($)								
≤ 0	47	40	47	32	46	42	36	22
> 0 to < 250k	41	30	44	22	39	18	46	21
250k to < 1 mil	8	15	6	18	10	12	11	16
≥1 mil	3	15	4	28	5	28	7	40
Number of employees								
0	60	46	62	43	61	45	58	34
1 to 4	29	25	26	20	26	18	30	20
5 to 24	8	15	9	17	9	19	9	13
≥ 25	3	14	3	20	4	17	4	33

Note: All dollar values are in 2010 dollars.

Although the analysis has focused on classifying businesses by the size measures, for the purposes of the tax policy it is also useful to group business owners by their total household income. Table 11 examines two of the more often discussed options for partially extending the 2001 EGTRRA (and 2003 JGTRRA) tax rate cuts; not extending tax rate cuts for incomes greater than $250,000 or $1 million.

Table 11
Share of Business Size Measures and Tax Liability
by Household Income, 2007—2010 SCF

		Business Size Measure				
		Percentage of				
	Percentage of owners	Net Income	Gross Receipts	Business Value	Number of Employees	Percentage of tax
Income > $250k						
2007	13.7	65.8	94.0	89.1	88.4	77.5
2010	11.4	63.1	96.6	95.0	82.7	75.1
Income > $1 mil						
2007	2.4	37.6	39.6	46.5	33.0	43.5
2010	1.6	33.6	51.0	77.0	49.3	35.6

Among business-owning households, Table 11 shows that the fraction with household income greater than $250,000 was 13.7 percent in 2007 and 11.4 percent in 2010. Not surprisingly, these high-income business owners account for the majority of each of the business size measures, with the lowest share about two-thirds of net income. For the three alternative business size measures, the high-income business owners account for at least 80 percent of each measure, showing the stronger relationship between household income and the alternative size measures. The last column of Table 11 reveals that high-income business owners also account for about three-fourths of the federal tax liability paid by business-owning households in 2007 and 2010.

Changing the household income threshold to greater than $1 million greatly reduces the fraction of business-owning households that would be affected by the 2001 and 2003 tax cuts expiring. These very high-income business owners account for a smaller share of each of the business size measures, but still account for at least one-third of each measure in 2007 and 2010. Some measures show a higher degree of concentration, such as business value. In 2010, the very high-income business owners account for 77 percent of total business value, up from about 46

percent in 2007. The very high-income business owners also have a smaller, but still substantial, share of federal tax liability, accounting for 43.5 percent in 2007 and 35.6 percent in 2010.

Overall, a higher fraction of business-owning households fall into the high income groups than non-business owning households, but because their share of all households is small, business-owning households are only slightly more likely to be affected by the tax rate changes,[13] Although less than 15 percent of business owners would be affected by the tax rate changes, these business owners account for a significant share of businesses as measured by the business size measures.

VII. CONCLUSION

This study uses data from the SCF and the NBER TAXSIM model to estimate marginal and average tax rates for households that own businesses that are pass-thru entities. We then examine how marginal and average tax rates vary by the size of business using four different measures of the size: net income, gross receipts, business value, and number of employees.

Our results show that marginal and average tax rates increased from 1992 to 2010 for businesses in the top category of all size measures and declined or remained unchanged for other groups. However, the increases were smaller for the some measures of business size, such as business value and number of employees. Over the more recent period of 2001 to 2010, when tax law changes reduced marginal rates, all businesses experienced declines in marginal and average tax rates, but decreases were smaller for businesses in the top category of a size measure. Classifying businesses by multiple size measures reveals a substantial amount of heterogeneity in tax rate changes for the businesses in the top groups. For example, business in the top net income group who were also in the next to the largest business value group or had 5 to 24

[13] The fraction of non-business owning households with income greater than $250,000 was 2.2 percent in 2007 and 2010. The fraction of non-business owning households with income greater than $1 million was 0.3 percent in 2007 and 2010.

employees saw the largest increases in tax rates. Businesses in the top net income group who were also in the top business value group or had 25 or more employees saw small changes in their tax rates. We interpret this as evidence of the usefulness of the alternative measures of size. Given these results it is not surprising the share of total tax liability accounted for by the businesses in the top size categories increased considerably from 1992 to 2010, but the share was smaller for the measures other than net income. Our analysis also shows that allowing the 2001 and 2003 tax cuts to expire for high-income households would likely affect more business-owning households than non-business owning households, but the effects are limited to a very small subset of business-owners.

Although this study is mainly descriptive, we feel it highlights the usefulness of using multiple measures of business size to analyze changes in tax rates for business owners and clearly shows that net income is not always directly correlated with business value or number of employees. We plan to extend the analysis to include other characteristics of business, such as legal organization, industry, and age of the business in future work.

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