



MYTHS AND REALITIES SURROUNDING THE ESTATE TAX

Antony Davies, Ph.D.

&

Pavel Yakolev, Ph.D.

A Study by the American Family Business Foundation

Proponents of estate, inheritance, and gift (EIG) taxes admit that the taxes generate little revenue, but claim that the taxes provide a social benefit by preventing the accumulation of wealth in the hands of generational dynasties. Evidence presented here suggests that EIG taxes actually cost states more in lost revenue than they generate, that they negatively impact smaller firms disproportionately versus larger firms, and that they promote the concentration of wealth by preventing small businesses from being passed on to heirs.

Executive Summary

The purpose of this paper is to measure the effect of changes in state and federal estate, inheritance, and gift (EIG) taxes on the growth in the number of businesses, changes in the proportion of small to large businesses, and changes in tax revenue. As the federal EIG tax has remained relatively constant over time, we examine state and federal EIG taxes across states and over time to measure the effect of EIG tax changes. By adjusting for other state-specific factors that influence economic growth and business formation (such as non-EIG taxes, population growth, and economic policy), each state becomes an experiment that provides insight into the economic impact of changes in EIG taxes. Proponents of the EIG tax claim that the tax:

- Has little anti-entrepreneurial effect because the tax applies only to the very wealthy few;
- Is progressive and therefore is borne only by the wealthy;
- Does not introduce unintended consequences as the dead do not respond to incentives;
- Raises significant revenue that would be difficult to replace with other taxes.

Contrary to these claims, the results of our analysis indicate that:

- The EIG tax discourages entrepreneurship. Evidence suggests that abolishing the EIG tax would spur the creation of 100,000 businesses and 2 million jobs annually, and generate \$80 billion per year in additional labor income.
- The EIG tax results in the dissolution of small, privately-owned, firms in favor of large corporations. This suggests that the estate tax is more regressive than generally believed. Evidence suggests that every 4.5 percentage point increase in

the EIG tax per decedent (the average annual increase since 1993) results in an additional 6,000 small firms being eliminated or absorbed by large firms each year.

- Increases in the EIG tax are accompanied by larger reductions in non-EIG tax revenue. Evidence suggests that each additional dollar raised through increases in state EIG taxes results in three dollars lost in income, sales, and property taxes to the states due to the reduction in entrepreneurial activity.
- Under current law, the EIG tax exemption is scheduled to be increased annually for inflation. However, since 1983 median household wealth (among those 65 and older) has grown at almost twice the rate of inflation. Growing both household wealth and the EIG tax exemption at their historic rates, we project that the EIG tax will capture almost half of households within 50 years. This is about the same amount of time it took for the Alternative Minimum Tax to go from applying to less than 1% of taxpayers at its inception to applying to almost half of all taxpayers.

In short, our findings suggest that the EIG tax favors large businesses over small; decreases the overall number of businesses, and costs federal and state governments more in lost tax revenue than it generates. Our findings of the detrimental effect of the estate tax on entrepreneurship, tax revenues, and economic growth indicate a significant behavioral response to estate taxation by estate owners and their heirs. The presence of a significant behavioral response indicates that static scoring approaches to estimating estate tax revenues will consistently overstate the revenue generated and underestimate the economic cost. Dynamic scoring approaches should be employed when estimating EIG tax revenues.¹

¹ Dynamic and static scoring are two methods of estimating the revenue effects of tax changes. Both methods will be discussed later.

Measuring the Impact of Estate Taxes on Behavior

Studies of the behavioral effects of taxation typically focus on marginal tax rates rather than average tax rates because marginal rates reflect changes in tax burdens resulting from changes in behavior. In this study, however, we focus on the average EIG tax rate and, later, the average EIG tax burden per decedent. The marginal EIG tax rate is relevant to the person who bequests wealth because, to that person, the size of the bequest is not yet fixed. Each additional dollar the person bequests increases the heir's tax burden by the marginal tax rate. In this paper, we are concerned with the behavior of heirs who have received bequests. To the heir, the size of the bequest is fixed, therefore the marginal EIG tax rate is irrelevant. What matters to the heir is the total tax the heir must pay, and that is reflected in the (effective) average EIG tax rate. For example, consider two heirs, each of whom inherits a small business valued at \$1.5 million. Suppose that Heir A has an exemption of \$1 million and is taxed at a rate of 45% on the remaining \$500,000. Suppose that Heir B is taxed at a flat rate of 15% on the full \$1.5 million. Although the two heirs face different marginal tax rates (45% versus 15%), they both owe \$225,000 in taxes and therefore have the same incentive to liquidate the small business to raise money to pay the tax. What matters to the heir is the total tax bill, not the marginal tax rate.

Consider two ways to measure EIG taxes. The *effective EIG tax rate* is the total EIG tax revenue divided by the value of taxable assets. For example, if the state collects \$1 million EIG tax on estates and inheritances valued at \$10 million, then the effective EIG tax rate is 10%. While the effective EIG tax rate measures the average proportion of estates and inheritances the state confiscates, the *EIG tax per decedent* measures the average tax bill levied on heirs. For example, if the first \$1 million of a \$1.5 million estate

is exempt from estate taxes, and the remaining \$500,000 is taxed at 45%, then the effective EIG tax rate is 15% and the EIG tax per decedent is \$225,000.² The EIG tax per decedent is calculated as the total EIG tax revenue divided by the number of deaths. Because some decedents are not business owners, tax revenue per deceased business owner would be the ideal measure. Unfortunately, this data is not available. However, as long as changes in EIG taxes do not cause business owners to die at a different rate than that for non-business owners, it is reasonable to use the per-decedent measure as a proxy measure.

The Opportunity Cost of Estate Taxation

One of the arguments for the federal estate tax is that it is an important source of tax revenue for federal and state budgets. Considering that the estate tax has historically accounted for less than two percent of federal tax collections, it is hard to argue that such a small revenue amount cannot be raised through a different and more efficient (perhaps even more equitable) tax.³ Current economic research also suggests that the estate tax may actually result in negative net tax revenue due to its destructive effect on entrepreneurship and the corresponding reduction in income, property, and sales tax revenues. Estimates of compliance and administrative costs range from 7% of the revenue yield to approximately the full revenue yield.⁴

To analyze the consequences of EIG taxation for economic growth and tax revenues, we compare the growth rate in state tax revenue for 50 states from 1998 through 2006 to changes in those states' EIG tax rates and non-EIG tax rates after filtering

² $15\% = (\$500,000) (0.45) / \1.5 million ; $\$225,000 = (\$500,000) (0.45)$.

³ See Chamberlain (2006) for a comprehensive review of economic arguments against the estate tax.

⁴ See Munnell (1988) and Davenport and Soled (1999).

out the effects of changes in incomes and changes in the previous year's state tax revenues.⁵

Our results suggest that increased growth in EIG tax revenues is associated with reduced growth in state and local non-EIG tax revenues. Specifically, a one percentage point increase in the growth of EIG tax revenues is associated with a 1/50th of one percentage point decline in the growth of non-EIG tax revenues. This appears to be an extremely small reduction in non-EIG taxes in exchange for the additional EIG tax until one considers the relative magnitudes of the numbers. In 2006, the average state took in \$100 million in EIG tax revenue, and \$14 billion in non-EIG tax revenue. A 1% increase in EIG tax revenues represents an additional \$1 million in tax revenues, but the corresponding 1/50th of one percent decline in non-EIG tax revenues represents a \$2.8 million loss. Thus, for every one dollar gained from an increase in EIG tax revenues, state and local governments lose almost three dollars in non-EIG taxes. Extending this analysis, we estimate that eliminating the EIG tax would increase state and local tax revenues by \$9.3 billion.⁶

Adding to the economic cost are the administrative and compliance costs of the estate tax. Researchers have argued that the cost of complying with estate taxes can be about one dollar for every dollar of revenue raised, making the estate tax about five times more costly than the notoriously complex federal income tax.⁷ The combination of these direct and indirect costs makes the estate tax a very inefficient revenue-generating tool and one for which superior alternatives are available at the state and federal levels.⁸

⁵ See Model 1 in the appendix for details.

⁶ Entin (2009) estimates that eliminating the estate tax will generate a net increase in Federal tax revenues of \$23.3 billion.

⁷ See Aaron and Munnell (1992) and Holtz-Eakin and Marples (2001).

⁸ See Chamberlain (2006) for a brief summary on the compliance and revenue costs of the estate tax.

Estate Taxation, Entrepreneurship, and the Liquidity Effect

There is anecdotal evidence that EIG taxes cause the dissolution of small firms as heirs are forced to liquidate the firms to raise money to pay the EIG tax (the “liquidity effect”). In 2005, the average household income for Americans who owned and managed a single small business was \$93,000 versus \$53,000 for the population as a whole.⁹ Adjusting for the average annual growth rate in wages, prior to the current recession, we could have expected household income for the average small business owner to rise to between \$125,000 and \$150,000 by 2011 when the current EIG tax cuts are set to expire. Suppose that the entirety of the \$150,000 represents a return on the small business’ net assets. A small business that earned, for example, a 10% return on net assets would have to have \$1.5 million in net assets to generate an annual pre-tax income of \$150,000 for the owners.

In 2011, the EIG exclusion is set to revert to \$1 million, so an heir who inherits this small business could end up owing more than \$200,000 in taxes.¹⁰ If the small business were less profitable such that the return on assets was 5% instead of 10%, the business would require \$3 million in net assets to generate the \$150,000 a year in income to the owner. An heir who inherits this small business will owe \$890,000 in EIG taxes – almost 6 times the annual income that the firm generates for the owner! This means that even a moderate income generated by an average small business likely requires enough net assets to trigger EIG taxes. At a 5% return on net assets, it is likely that the heir would be forced to dissolve the inherited business in order to pay the EIG tax. In contrast, when an heir inherits stock in a corporation and sells some of the stock to pay the EIG taxes, the

⁹ When one considers that the small business owner also incurs more financial risk than the non-business owner, the difference in incomes becomes less compelling. Cf., Haynes and Ou (2006).

¹⁰ The net estate (value of the estate less the exclusion) is \$500,000. The heir would owe an average of 42% on the \$500,000, or \$210,000. This assumes no special-case tax breaks such as minority discounts, spousal bequests, etc.

corporation is not disbanded. Hence, a reasonable hypothesis is that EIG taxes should have a disproportionately negative impact on the number of family owned versus publicly traded firms. Our evidence suggests that the EIG tax puts family owned businesses on a non-competitive footing compared to publicly traded corporations. As entrepreneurial activity mostly occurs at the small business level, the EIG tax discourages innovation.

We use the EIG taxes per decedent measure instead of the effective average estate tax rate because, where the liquidity effect of the EIG tax is concerned, the level of the estate tax burden is more important to the potential dissolution of firms than is the tax rate. While focusing on the effect of EIG taxes on the number of firms, we also control for the impact of state and local taxes per capita, size of state population, economic freedom, inflation, unemployment, and interest rates.

We build two models that compare the number of firms to the EIG tax. In the first model, we compare the total number of firms in each state to the EIG tax per decedent after controlling for state and local taxes, population size, economic policy (as reflected in the index of economic freedom), the interest rate, the unemployment rate, and inflation.¹¹ We find that a one percentage point increase in the growth in EIG taxes per decedent corresponds to a 1/50th of one percentage point decrease in the growth in the number of businesses. Over the span of our data set, the EIG tax per decedent grew at an average annual rate of 4.5% (from an average of \$5,800 in 1992 to \$10,500 in 2006) and the number of businesses grew at 1.1% annually. According to our model, eliminating the estate tax would increase the annual growth in the number of businesses by between 4.5% and 6.5%. At current numbers, this means approximately 100,000 additional firms

¹¹ See Model 2 in the appendix for details.

annually.¹² At an average of 20 workers and \$800,000 payroll per firm (as of 2006), those 100,000 additional businesses will create 2 million jobs, generate \$80 billion in labor income, and increase payroll tax revenues by more than \$20 billion annually.¹³

In the second model, we use the data on firms and their sizes provided by the U.S. Small Business Administration (SBA), which conducts an annual census in which it counts firms and categorizes firms according to number of employees. Because firms must accurately account for the number of their employees in order to pay payroll taxes, this measure tends to be more reliable across firm sizes than, for example, reported assets. We compare the ratio of small firms (0-19 employees) to large firms (20-500+ employees) in each state to the EIG tax per decedent after controlling for state and local taxes, population size, economic policy (as reflected in the index of economic freedom), the interest rate, the unemployment rate, and inflation.¹⁴ In 2006, there were approximately 5.4 million small firms and 640,000 large firms in the United States, for a ratio of more than 8 to 1. From 1993 to 2006, the EIG tax per decedent has grown by 4.5% annually. According to our model, every 4.5 percentage point increase in the EIG tax per decedent is associated with the elimination of almost 6,000 small firms per year.¹⁵ For example, since 1993, the number of firms with 100 or more employees has grown 26% while the number of firms with fewer than 20 employees has grown only 15%. In causing heirs to liquidate inherited businesses, the EIG tax takes vital capital away from small businesses

¹² As of 2006, there were more than 6 million firms in the United States.

¹³ Figures for 2006 come from the Small Business Administration. The payroll tax estimate assumes an average 30% tax rate for Federal, state, and local payroll taxes combined. Using a different data set and a different analytic model, Entin (2009) also estimates that elimination of the EIG tax would generate almost \$80 billion in labor income.

¹⁴ See Model 3 in the appendix for details.

¹⁵ The EIG tax per decedent has grown at an average annual rate of 4.5% over the period 1993 through 2006. Large firms employ, on average, thirty-eight times the number of workers as do small firms. These figures assume that the dissolution of thirty-eight small firms corresponds to the creation of one large firm, on average.

leaving their market shares to be absorbed by large corporations that are unaffected by the EIG tax. These results suggest that the estate tax, in fact, achieves the opposite of its intended purpose. Rather than preventing the formation of dynasties, the data suggest that the estate tax promotes the concentration of economic power in the hands of large corporations by inhibiting the growth of small businesses – the very entities that, historically, have been the engines of wealth creation and dissemination.

Implications for Dynamic versus Static Scoring

One of the highly contested topics in economics is whether dynamic scoring (dynamic analysis) rather than static scoring should be the dominant forecasting standard by which all tax reforms should be evaluated. Dynamic scoring refers to a thorough accounting of all primary and secondary (or behavioral) effects of proposed policy changes on tax revenue. In contrast, static scoring is more straightforward and mechanical in its analysis because it considers only the direct effects of policy changes on tax revenue. That is, static scoring assumes that people will not alter their behaviors in response to a change in tax policy. For example, static scoring of an increase in marginal income tax rates would assume that no one would withdraw from the labor force in response to higher tax rates and so would overestimate tax revenues. The fact that people do alter their behavior in response to changes in tax policy causes static scoring to consistently overestimate tax revenues versus dynamic scoring.

For example, in 2006, the average state took in around \$100 million in EIG tax revenue. Static scoring would predict that a one percentage point increase in the EIG tax rate would result in additional tax revenues of \$1 million. As suggested by our previous results, one could expect a dynamic model – which accounts for the dissolution of firms,

the slowing of entrepreneurial activity, and the resulting reduction in non-EIG tax revenues – to predict that total tax revenues would fall by \$2 million in response to the increase in the EIG tax rate.

Fairness and the Economic Burden of the Estate Tax

Perhaps the most appealing argument to proponents in favor of the estate tax rests on the premise that EIG taxation is a highly progressive and effective method of taxing or redistributing wealth. Upon a closer examination, the EIG tax appears to be ineffective in preventing wealth concentration because it may not be as progressive as commonly assumed and because the economic burden of the estate tax is likely to be spread across many members of society.¹⁶ The Urban-Brookings Tax Policy Center estimates that 305,000 estate tax returns will have been filed between 2007 and 2012, and of these, 130,000 will have been taxed.

When it comes to preventing the concentration of wealth, researchers have estimated that estate heirs are, on average, only half as wealthy as those from whom they inherited.¹⁷ Because the progressivity of the tax is measured based on the generation who earns the wealth, not the generation who inherits the wealth, these numbers suggest that the estate tax is much less progressive than it is often claimed to be. The less the pre-inheritance wealth of the inheriting generation, the less progressive is the estate tax. Research also suggests that, among people subject to the tax, wealthier individuals are more likely to create foundations to shelter their estates than are less wealthy individuals

¹⁶ In recent decades, the estate tax has been affecting between 1 and 2 percent of estates, according to Chamberlain (2006).

¹⁷ See Mankiw (2003).

thereby removing the wealth forever from the tax base.¹⁸ Our finding that a higher EIG tax is associated with a reduced growth in the ratio of smaller to larger businesses suggests that the EIG tax might actually be regressive within the population that pays this tax. Further, the already progressive U.S. tax system becomes even more progressive once the distribution of government spending is taken into account, as households in the lowest income quintile received roughly \$8.21 of government spending for every dollar of taxes paid in 2004, while households in the middle income quintile received \$1.30, and households in the top income quintile received \$0.41.¹⁹ Hence, it becomes difficult to argue that the progressive nature of the U.S. tax system and government spending needs to be made even more progressive with the help of the questionably progressive EIG tax.

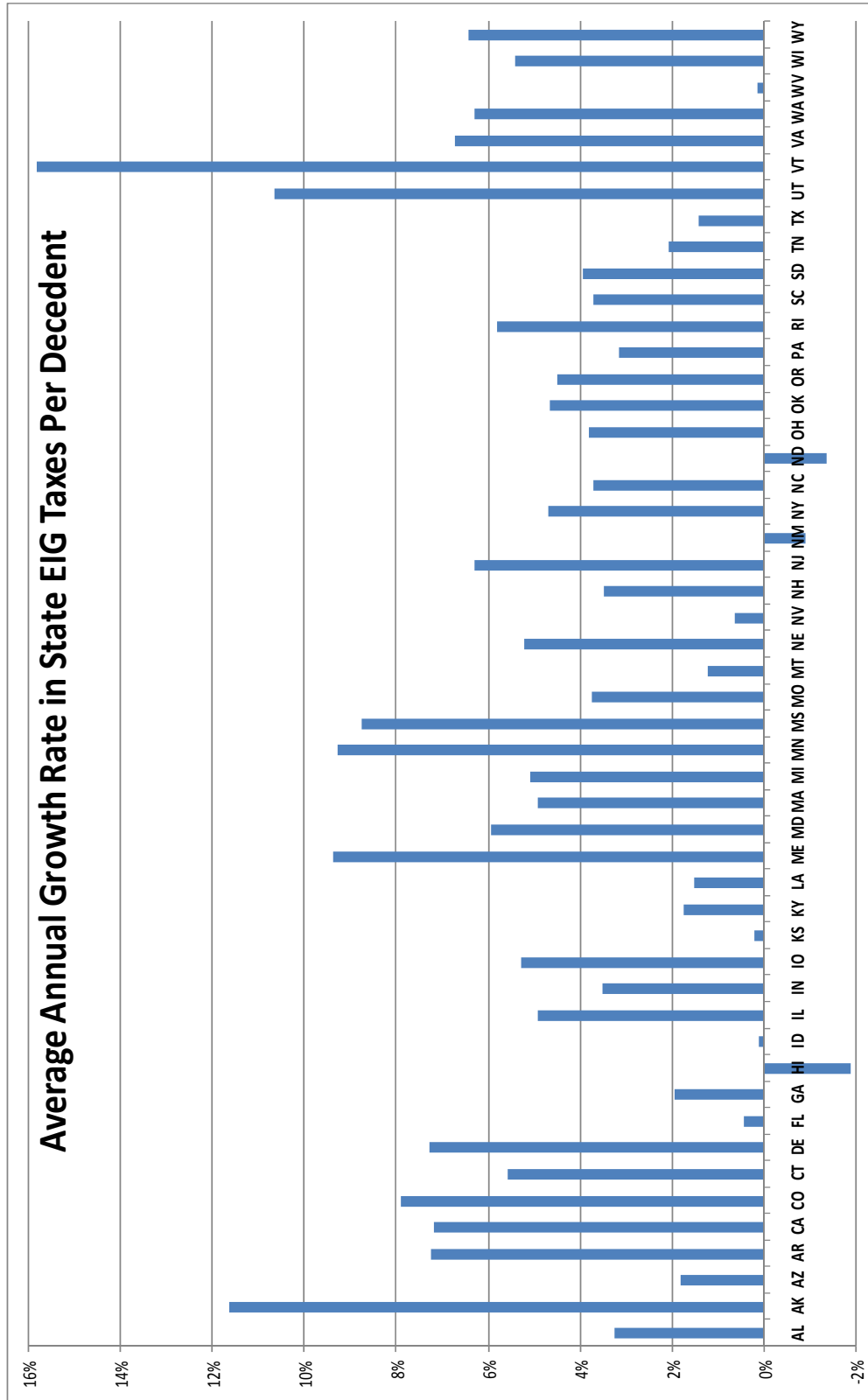
Proponents argue that evidence of the progressivity is the fact that very few households are subject to the EIG tax. In an attempt to avoid a repeat of the Alternative Minimum Tax in which a tax intended for a small group of high income taxpayers eventually grew to encompass middle-class taxpayers, Congress indexed the EIG tax exemption for inflation. However, since 1983, household wealth among those 65 and older has been growing three percentage points faster than inflation. The median net worth of 65+ aged householders was approximately \$175,000 in 2004 (the last date for which data is available). Assuming an annual inflation rate of 3.5% and an inflation-adjusted exemption of \$1 million starting in 2011, we can expect the median household wealth for those 65 and older to reach the EIG exemption by 2065.

¹⁸ See Nutter (2007).

¹⁹ See Chamberlain and Prante (2007).

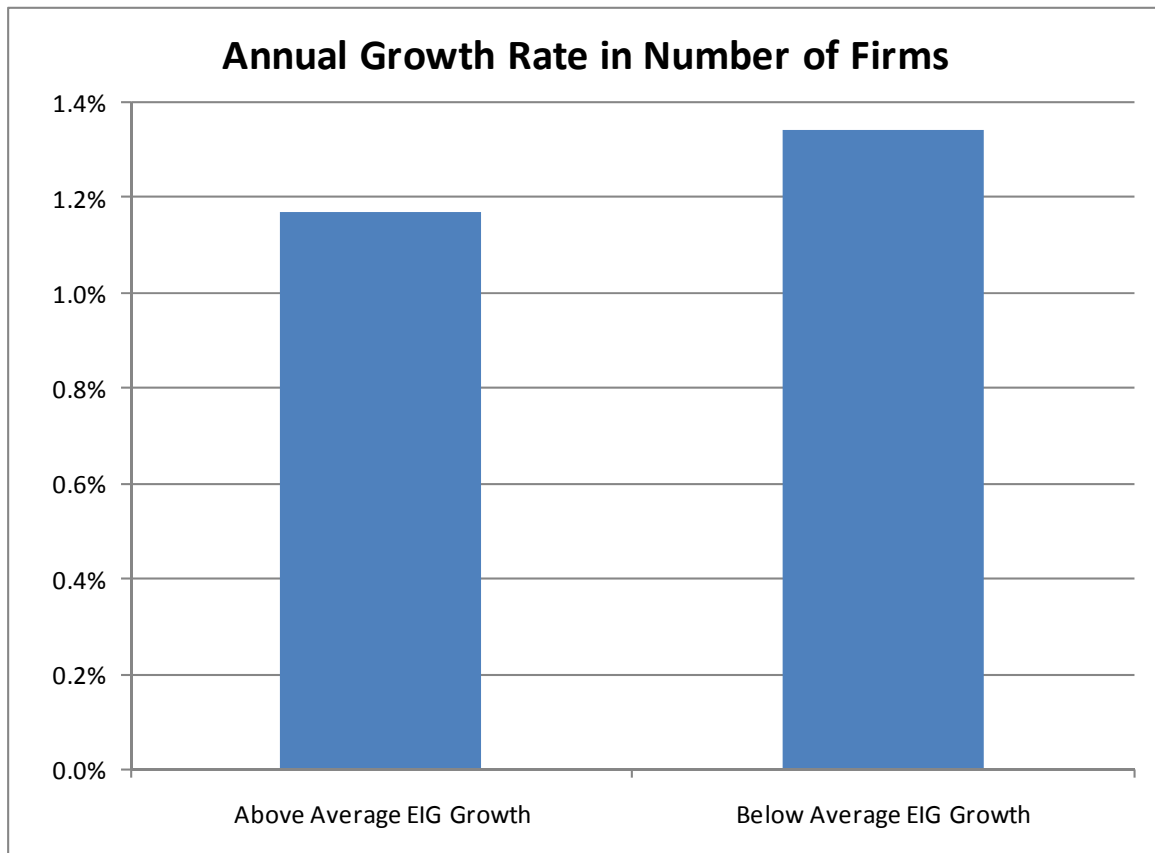
Case Studies: Comparison of High EIG Tax States to Low EIG Tax States

The figure below shows the average annual growth in EIG taxes for each state over the period 1993 through 2006.



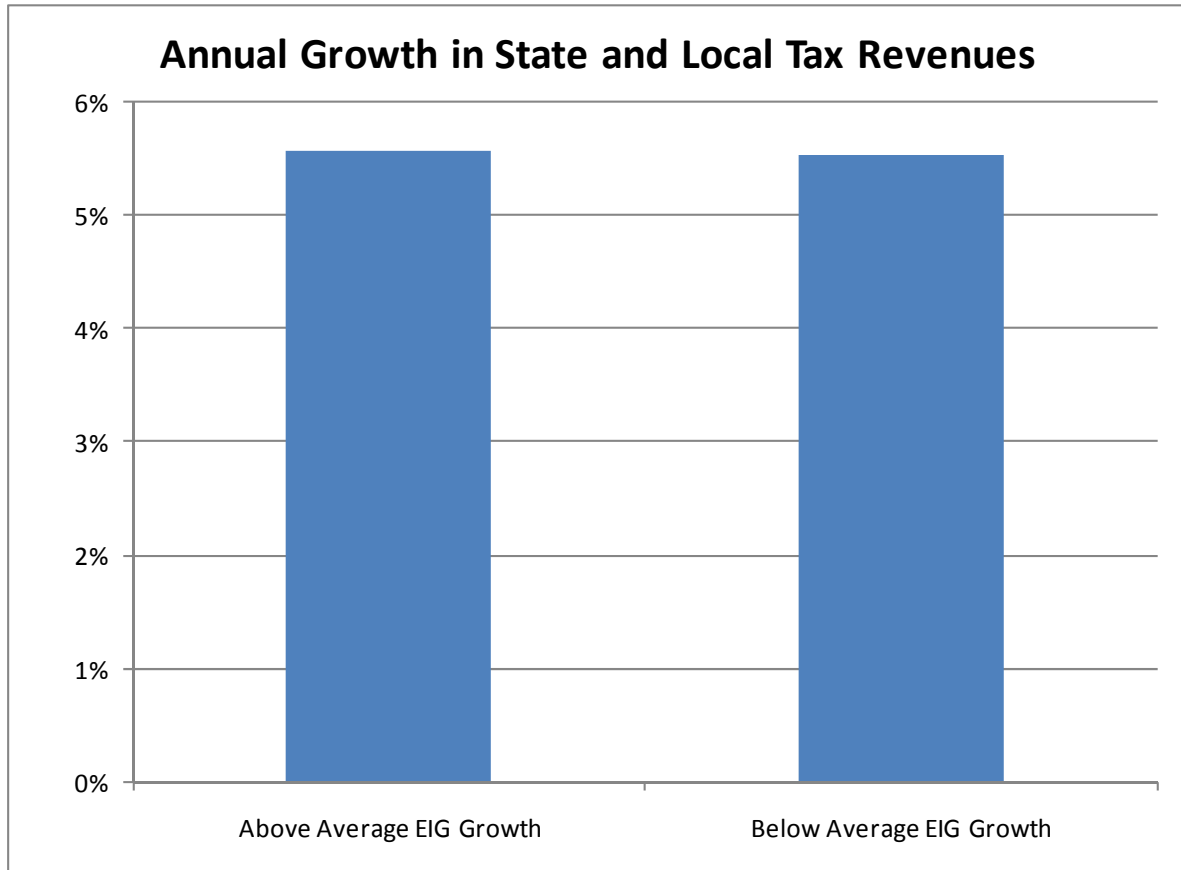
The average annual growth in EIG taxes per decedent across states for the period was 4.5%. States that showed the lowest annual growths are Hawaii (-1.9%), North Dakota (-1.3%), New Mexico (-0.9%), and Idaho (0.1%). States that show the highest annual growths are Vermont (15.8%), Alaska (11.6%), Utah (10.7%), and Maine (9.4%).

Dividing the states into two groups, those with above average EIG tax rates and those with below average EIG tax rates, makes apparent the significant difference in the annual growth rates in the number of firms.²⁰ States with below average EIG tax rates have experienced 14% greater annual growth (on average) in the number of firms within those states.



²⁰ The average annual growth in EIG taxes for the “high growth” states is 7.1%. The average growth for the “low growth” states is 1.8%.

Conversely, the graph below shows almost no difference in the average annual growth in state and local tax revenues for high EIG growth states versus low EIG growth states.



Connecticut provides a good case study in the dangers of EIG tax growth. Connecticut effectively increased its EIG tax per decedent by almost 19% in 2003 and another 11% in 2005. In 2006, Connecticut lost a net of 889 firms (a 1.1% decline). While the state did gain 217 large firms, the gain was overshadowed by a loss of 1,106 small firms. That same year, the average U.S. state gained 772 firms and saw its payroll rise 1.6 times faster than Connecticut's.²¹

²¹ Nationwide, payrolls rose 2.9% from 2005 to 2006 versus 1.8% in Connecticut.

Conclusion

Our analysis calls into question several arguments in favor of the estate tax. We find that the estate tax fails to accomplish those very things for which proponents value the tax. Namely, the estate tax reduces the ratio of smaller to larger businesses, discourages business owners and farmers from passing their estates on to next generation, reduces entrepreneurship and economic growth, and costs more in lost revenue than it collects. We show that the estate tax, created to prevent the concentration of wealth in the hands of the few, has been more successful at preventing the transfer of wealth from small estate and business owners to their heirs. Thus, the estate tax appears to be neither a fair nor an efficient method of wealth redistribution. If the fairness of a society is to be judged by the distribution of wealth, the distribution should not be measured at a single point in time but rather across generations. Our findings concur with Foster's commentary that "the U.S. economy has solved the concentration-of-wealth problem far better than the estate tax ever could."²²

²² Foster. J. D. 1999. "Is the Estate Tax a (Revenue) Loser?" Tax Foundation commentary.

Appendix

Variable Definitions

\dot{N}_{it}	Growth rate in the number of firms in state i from year $t-1$ to year t
ΔR_{it}	Change in the ratio of small firms to large firms in state i from year $t-1$ to year t
\dot{V}_{it}	Growth rate in state and local tax revenues excluding EIG tax revenues in state i from year t to year $t-1$
\dot{E}_{it}	Growth rate in the real per-decedent estate, inheritance, and gift tax revenue (state and federal combined) in state i from year $t-1$ to year t
\dot{T}_{it}^C	Growth rate in the real per-capita corporate income tax revenue in state i from year $t-1$ to year t
\dot{T}_{it}^I	Growth rate in the real per-capita personal income tax revenue in state i from year $t-1$ to year t
\dot{T}_{it}^L	Growth rate in the real per-capita licensing tax revenue in state i from year $t-1$ to year t
\dot{T}_{it}^S	Growth rate in the real per-capita sales tax revenue in state i from year $t-1$ to year t
\dot{T}_{it}^P	Growth rate in the real per-capita property tax revenue in state i from year $t-1$ to year t
\dot{P}_{it}	Growth rate in the population in state i from year $t-1$ to year t
\dot{G}_{it}	Growth rate in the real gross state product in state i from year $t-1$ to year t
ΔI_t	Change in consumer inflation from year $t-1$ to year t
$\Delta \dot{W}_{it}$	Change in the growth rate of real wages in state i from year $t-1$ to year t
ΔU_{it}	Change in the unemployment rate in state i from year $t-1$ to year t
$\Delta r_{i,t-1}$	Change in the nominal interest rate in state i from year $t-1$ to year t

Data sources:

Bureau of Economic Analysis (BEA); Tax Foundation; Internal Revenue Service, Statistics of Income (SOI); U.S. Census Bureau; Bureau of Labor Statistics; U.S. Small Business Administration (SBA); Federal Reserve of Saint Louis.

Model 1. *The effect of changes in EIG taxes on changes in state and local non-EIG tax revenues*

$$\dot{V}_{it} = \alpha_i + \sum_{j=0}^5 \beta_j \dot{E}_{i,t-j} + \sum_{m=\{C,I,L,S,P\}} \sum_{j=0}^5 \gamma_j^m \dot{T}_{i,t-j}^m + \delta_1 \dot{P}_{it} + \delta_2 \dot{G}_{it} + \delta_3 \Delta I_t + \delta_4 \Delta \dot{W}_{it} + \delta_5 \Delta U_{it} + u_{it}$$

Regressor	Estimates (standard errors)					
	<i>t</i>	<i>t</i> - 1	<i>t</i> - 2	<i>t</i> - 3	<i>t</i> - 4	<i>t</i> - 5
EIG Tax Revenue Per-Decedent Growth Rates						
\dot{E}_{it}	-0.001 (0.002)	-0.004 * (0.003)	-0.005 ** (0.003)	-0.005 * (0.003)	-0.004 (0.003)	-0.005 ** (0.002)
Non-EIG Tax Revenue Per-Capita Growth Rates						
\dot{T}_{it}^C	0.049 *** (0.003)	0.002 (0.004)	0.002 (0.004)	0.005 (0.005)	-0.005 (0.005)	0.013 *** (0.005)
\dot{T}_{it}^I	0.341 *** (0.012)	0.002 (0.013)	0.023 * (0.013)	0.026 ** (0.013)	0.026 * (0.014)	-0.019 ** (0.007)
\dot{T}_{it}^L	0.058 *** (0.008)	-0.003 (0.008)	0.017 ** (0.007)	0.004 (0.008)	0.001 (0.007)	-0.001 (0.003)
\dot{T}_{it}^S	0.632 *** (0.015)	0.013 (0.017)	0.013 (0.018)	-0.001 (0.017)	-0.007 (0.016)	-0.012 (0.008)
\dot{T}_{it}^P	0.016 *** (0.002)	0.001 (0.002)	-0.001 (0.002)	-0.001 (0.002)	-0.004 * (0.002)	-0.001 (0.001)
Macroeconomic Measures						
\dot{P}_{it}	0.840 *** (0.087)					
\dot{G}_{it}	0.029 (0.036)					
ΔI_{it}	0.063 (0.103)					
$\Delta \dot{W}_{it}$	0.028 (0.053)					
ΔU_{it}	-0.092 (0.140)					

Feasible GLS with cross-section fixed effects, 426 observations (50 states, annual 1998-2006). $R^2 = 0.919$, DW = 2.09.

* Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

Model 2. *The effect of changes in EIG taxes on the growth in the number of firms*

$$\dot{N}_{it} = \alpha_i + \sum_{j=0}^5 \beta_j \dot{E}_{i,t-j} + \sum_{m=\{C,I,L,S,P\}} \sum_{j=0}^5 \gamma_j^m \dot{T}_{i,t-j}^m + \delta_1 \dot{P}_{it} + \delta_2 \dot{G}_{it} + \delta_3 \Delta I_t + \delta_4 \Delta \dot{W}_{it} + \delta_5 \Delta U_{it} + \delta_6 \Delta r_{i,t-1} + u_{it},$$

$$u_{it} = \rho u_{i,t-1} + \varepsilon_{it}$$

Regressor	Estimates (standard errors)					
	<i>t</i>	<i>t - 1</i>	<i>t - 2</i>	<i>t - 3</i>	<i>t - 4</i>	<i>t - 5</i>
EIG Tax Revenue Per-Decedent Growth Rates						
\dot{E}_{it}	-0.002 ** (0.001)	-0.003 * (0.001)	-0.005 *** (0.001)	-0.004 *** (0.001)	-0.003 *** (0.001)	-0.002 ** (0.001)
Non-EIG Tax Revenue Per-Capita Growth Rates						
\dot{T}_{it}^C	-0.002 (0.001)	-0.006 *** (0.002)	-0.010 *** (0.002)	-0.014 *** (0.002)	-0.010 *** (0.002)	-0.004 ** (0.002)
\dot{T}_{it}^I	0.003 (0.004)	-0.005 (0.004)	-0.017 *** (0.004)	-0.017 *** (0.005)	-0.011 ** (0.005)	-0.001 (0.005)
\dot{T}_{it}^L	0.002 (0.002)	0.002 (0.004)	-0.006 * (0.004)	-0.000 (0.004)	-0.005 (0.003)	0.001 (0.002)
\dot{T}_{it}^S	0.015 ** (0.007)	0.011 (0.007)	0.001 (0.008)	0.003 (0.008)	0.004 (0.008)	0.005 (0.006)
\dot{T}_{it}^P	0.000 (0.001)	0.000 (0.001)	-0.001 (0.001)	-0.000 (0.001)	-0.000 (0.001)	0.000 (0.001)
Macroeconomic Measures						
\dot{P}_{it}	0.153 *** (0.034)					
\dot{G}_{it}	0.051 *** (0.017)					
ΔI_{it}	-0.081 * (0.043)					
$\Delta \dot{W}_{it}$	0.016 (0.018)					
ΔU_{it}	-0.207 *** (0.063)					
$\Delta r_{i,t-1}$		-0.185 *** (0.028)				
Autocorrelation Coefficient						
ρ	0.336 *** (0.058)					

Feasible GLS with cross-section fixed effects, 376 observations (50 states, annual 1999-2006). $R^2 = 0.879$, DW = 2.03.

- Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

Model 3. *The effect of changes in EIG taxes on the change in the ratio of small to large firms*

$$\Delta R_{it} = \alpha_i + \sum_{j=0}^5 \beta_j \dot{E}_{i,t-j} + \sum_{j=\{C,I,L,S,P\}} \gamma_j \dot{T}_{it}^j + \delta_1 \dot{P}_{it} + \delta_2 \dot{G}_{it} + \delta_3 \Delta I_t + \delta_4 \Delta \dot{W}_{it} + \delta_5 \Delta U_{it} + u_{it}, u_{it} = \rho u_{i,t-1} + \varepsilon_{it}$$

Regressor	Estimates (standard errors)					
	<i>t</i>	<i>t - 1</i>	<i>t - 2</i>	<i>t - 3</i>	<i>t - 4</i>	<i>t - 5</i>
EIG Tax Revenue Per-Decedent Growth Rates						
\dot{E}_{it}	-0.052 ** (0.015)	-0.042 *** (0.016)	-0.059 *** (0.017)	-0.034 ** (0.016)	-0.052 *** (0.016)	-0.009 (0.017)
Non-EIG Tax Revenue Per-Capita Growth Rates						
\dot{T}_{it}^C	0.034 (0.023)	-0.012 (0.025)	-0.025 (0.029)	-0.041 (0.030)	0.047 (0.034)	-0.041 (0.037)
\dot{T}_{it}^I	-0.167 * (0.087)	0.025 (0.078)	-0.116 (0.079)	-0.191 ** (0.079)	0.267 *** (0.088)	0.003 (0.094)
\dot{T}_{it}^L	0.138 *** (0.046)	0.158 *** (0.050)	-0.008 (0.052)	0.039 (0.055)	-0.049 (0.054)	0.047 (0.036)
\dot{T}_{it}^S	0.003 (0.106)	-0.133 (0.107)	0.055 (0.105)	-0.086 (0.104)	-0.095 (0.107)	-0.145 (0.090)
\dot{T}_{it}^P	0.007 (0.010)	0.015 (0.009)	-0.005 (0.009)	-0.000 (0.010)	0.014 (0.010)	0.019 * (0.011)
Macroeconomic Measures						
\dot{P}_{it}	-1.817 *** (0.650)					
\dot{G}_{it}	-0.294 (0.272)					
ΔI_{it}	0.941 (1.005)					
$\Delta \dot{W}_{it}$	-0.009 (0.393)					
ΔU_{it}	3.220 *** (1.221)					
$\Delta r_{i,t-1}$		-1.948 *** (0.548)				
Autocorrelation Coefficient						
ρ	-0.361 *** (0.065)					

Feasible GLS with cross-section fixed effects, 376 observations (50 states, annual 1999-2006). $R^2 = 0.495$, DW = 2.24.

* Significant at the 10% level. ** Significant at the 5% level. *** Significant at the 1% level.

References

- Aaron, H.J. and A.H. Munnell, 1992. Reassessing the role for wealth transfer taxes. *National Tax Journal*. 45(2): 119-143.
- Arellano, M., and O. Bover, 1995. Another look at the instrumental variable estimation of error component models. *Journal of Econometrics* 68: 29-52.
- Auerbach, A.J., 1999. On the performance and use of government revenue forecasts. *National Tax Journal*. 52(4): 765-782.
- Bakija, J. and J.B. Slemrod, 2004. Do the rich flee from high state taxes? Evidence from federal estate tax returns. NBER Working Paper No. W10645.
- Bernheim, D.B., 1981. A note on dynamic tax incidence. *Quarterly Journal of Economics*. 96(4): 705-723.
- Blundell, R. and S. Bond, 1998. Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics* 87: 115-143.
- Chamberlain, A., G. Prante, and P. Fleenor. 2006. Death and taxes: the economics of the federal estate tax. Tax Foundation Special Report No. 142.
- Chamberlain, A. and G. Prante, 2007. Who pays taxes and who receives government spending? An analysis of federal, state and local tax and spending distributions, 1991-2004. Tax Foundation Working Paper No. 1.
- Davenport, C. and J.A. Soled., 1999. Enlivening the death-tax death-talk. *Tax Notes*, July 26 84(4), 591-630.
- Davies, A. and K. Lahiri, 1995. A new framework for testing rationality and measuring aggregate shocks using panel data. *Journal of Econometrics*, 68(1): 205-227.
- , 1999. Re-examining the rational expectations hypothesis using panel data on multi-period forecasts. In *Analysis of Panels and Limited Dependent Variable Models*, eds. C. Hsiao, K. Lahiri, L. Lee, and M.H. Pesaran, 226-254. Cambridge: Cambridge University Press.
- Dye, R.F., 2004. State revenue cyclicity. *National Tax Journal*, 57(1): 133-145.
- Entin, S.J., 2009. Economic impact of the estate tax: effects of various possible reform options. American Family Business Foundation Study, June.
- Felix, A., 2008. The growth and volatility of state tax revenue sources in the tenth district. *Economic Review*, Q III: 63-88.
- Flannery, M.J. and A.A. Protopapadakis, 2002. Macroeconomic factors do influence aggregate stock returns. *Review of Financial Studies*, 15(3): 751-782.

- Gurley-Calvez, T. and D. Bruce, 2008. Do tax cuts promote entrepreneurial longevity? *National Tax Journal*, 61(2): 225-250.
- Holtz-Eakin, D. and D. Marples, 2001. Estate taxes, labor supply, and economic efficiency. American Council for Capital Formation. Special Report.
- Horioka, C.Y., 2009. Do bequests increase or decrease wealth inequalities? NBER Working Paper 14639.
- Johnson, B.W., 1998. Updating techniques for estimating wealth from federal estate tax returns. American Statistical Association, Proceedings of the Business and Economics Statistics Section. 143-147.
- Kopczuk, W. and J. Slemrod, 2001. The impact of the estate tax on the wealth accumulation and avoidance behavior of donors. in Gale, W., J.R. Hines Jr., and J. Slemrod, eds., *Rethinking Estate and Gift Taxation*. Brookings Institution Press, Washington, D.C. forthcoming.
- Mankiw, N.G., 2003. Remarks by Dr. N. Gregory Mankiw Chairman Council of Economic Advisers at the National Bureau of Economic Research Tax Policy and the Economy Meeting. President's Council of Economic Advisors.
- Munnell, A.H., 1988. Wealth transfer taxation: the relative role for estate and income taxes. *New England Economic Review*. Nov/Dec: 3-28.
- Nutter, S.E., 2007. State estate, inheritance, and gift taxes: uncertainty at the federal level passes down to the states. *State Tax Notes*. 46(7).
- Reed, R.W., 2008. The determinants of U.S. state economic growth: a less extreme bounds analysis. *Economic Inquiry*, forthcoming.
- Roodman, D., 2006. How to do xtabond2: an introduction to difference and system GMM in stata. Center for Global Development Working Paper No. 103.
- Rosen, H.S., 2005. *Public Finance*, 7th Edition. Chapter 17. New York: McGraw-Hill.
- Sobel, R.S. and R.G. Holcombe, 1996. Measuring the growth and variability of tax bases over the business cycle. *National Tax Journal*. 49(4): 535-552.
- Somers, H.M., 1958. Estate taxes and business mergers: the effects of estate taxes on business structure and practices in the United States. *Journal of Finance*. 13(2): 201-210.
- Wooldridge, J.M., 2002. *Econometric Analysis of Cross Section and Panel Data*. MIT Press, Cambridge, Massachusetts.
- Yakovlev, P. and A. Davies, 2008. The effect of estate, inheritance, and gift taxes on the number of firms: a panel data analysis. Working paper, under review.

[About the Authors](#)

Dr. Davies is associate professor of economics at Duquesne University and Research Fellow at the Mercatus Center at George Mason University. His areas of research include econometrics, consumer behavior, international economics, and mathematical economics.

Dr. Davies has lectured at numerous venues including the Econometric Society, the American Economic Association, the American Psychological Association, the International Conference on Panel Data, the International Forecasting Symposium, the Department of the Treasury, the House of Representatives, and many state capitals. In addition to teaching at the undergraduate, masters, and Ph.D. levels, Dr. Davies was an equities analyst for The Burney Company (Falls Church, VA), Chief Analytics Officer and acting Chief Financial Officer for Paragon Computation (Fairfax, VA), President and co-founder of Paragon Software (now Take-Two Interactive), and co-founder of Replika (now Zoo Entertainment).

His research has appeared in the Journal of Econometrics, the Journal of Consumer Psychology, the Journal of Economic Psychology, the International Journal of Forecasting, Clinical Cancer Research, Applied Economics, and the Journal of Socioeconomics. His popular press writings have appeared in BizEd, World & I, Religion and Liberty, and the International Journal on World Peace. Most recently, Dr. Davies presented a lecture on the future of Social Security for the Mercatus Center's Congressional Chiefs of Staff Retreat.

Dr. Davies earned his B.S. in Economics from Saint Vincent College, and Ph.D. in Economics from the State University of New York at Albany.

Pavel A. Yakovlev is Assistant Professor of Economics at Duquesne University. He earned his doctorate degree from West Virginia University, where he spent an additional year conducting post-doctoral research on taxation for the Bureau of Business and Economic Research (BBER). Dr. Yakovlev's fields of specialization are public and international economics, but he writes articles on a wide variety of topics ranging from state and local taxation to economic growth.

[About the American Family Business Foundation](#)

The American Family Business Foundation (AFBF) is the research and education voice of America's family business owners and farmers. Established in 2008, the Foundation publishes reports that examine critical policy questions about the impact the estate tax has on capital accumulation, family businesses, employment, income mobility and wealth disparity, federal revenues and the general economy. In addition to academic research, the Foundation hosts educational events designed to drive the public debate about the estate tax. Finally, the Foundation's principals are policy experts that are frequently called upon to provide insight on estate tax issues.

AMERICAN FAMILY BUSINESS FOUNDATION

722 12TH STREET NW, 4TH FLOOR • WASHINGTON, DC 20005 • PHONE: 202-969-2444 • FAX: 202-969-2445
WWW.NODEATHTAX.ORG