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Capital Gains Tax and its Effect on Investment

Andy Long

Recently, there has been controversy surrounding the capital gains tax. During his state of the union address, President Obama mentioned the case of Debbie Bosanek as a clear indication that the tax is unfair. Debbie is the secretary of Warren Buffet, and happens to pay fewer taxes than her boss. The primary reason for this is through capital gains. The tax rate on long-term capital gains (assets that have been held for over a year), is less than the tax on regular income, with most people paying about 15% on gains (the highest earners now pay 20%).

Legislation on and rationale for the tax rate is one that tends to be a hot political topic. On one side, the belief is that the tax disproportionately favors the rich. In 2010, the top 20% realized more than 90% of all capital gains. The 0.1% (richest) made about 47% of the capital gains realizations (5). On the other hand, there are fears that higher taxes may have negative economic consequences. This could include a decrease in investment, as well as the incentive to hold onto low-performing assets. The claim that tax rate has an effect on investment is one that must be tested to objectively address the issue. Therefore, I will attempt to answer if the tax on long-term capital gains affects investment behaviors in an economy. If such a relationship exists, it could be useful for future tax legislation.

Currently, research has shown that economic growth is not entirely reactive to the taxes on capital gains alone. According to George Plesko there are many ways, aside from taxes, which indirectly affect the realization of gains. To prove this, he noted the high correlation ($r = .91$) between corporate and individual gains over time. This is important, in that the tax laws on individuals and corporations change at different times (Burman 8). This would suggest that tax has little to do with overall investment behavior. Given that strong relationship, I was able to assume that aggregate investment could be appropriately used in my analysis. No additional adjustment would be necessary to account for public vs. private investment.

Another point of research involves the effect that high tax rates have on the decision to sell an investment or not. As the tax rate gets higher, an investor has an incentive to hold onto the asset, even if it is economically inefficient to do so. This is known as the "lock-in" effect. It is due to this behavior that increased taxes may not even bring about increased tax revenues, due to a refusal to sell an asset and realize the gain at a higher cost. According to both the Joint Committee on Taxation and the Treasury's Office of Tax analysis, "raising rates above 28 percent or so would likely not be scored as increasing capital gains revenue" (Burman 8). Of course, as we will see later, investors often know of the impending tax, and will sell investments in the year prior to when the tax goes into effect.

Perhaps the most important part of Burman's research was in regards to the capital gains tax rate and economic growth. He concluded that there was "no obvious relationship between tax rates on capital gains and economic growth" (12). To determine this, the percentage change in real GDP was compared to the capital gains tax rate. As seen in the attached figure, there appears to be no relationship, with a correlation of 0.12. This means, of course, that the tax on capital gains has little effect on economic growth. This research does not address the question, however. My main concern is if

the tax has an effect on *investment* itself. Therefore, the use of GDP growth is inappropriate for my research.

To begin, I examined historical data to determine if there was any visible change in investment behavior as a result of tax changes. Perhaps the largest change was the Tax Reform Act of 1986, which increased the highest tax on capital gains to 28%. That means that those who were in the top income bracket would effectively pay 28% of long-term capital gains to the government. In 1986, the amount of realized capital gains was \$318,944,000,000, which was a 91.72% increase from the previous year. In 1987, the amount of realized capital gains was \$140,386,000,000, or a 55.98% decrease. More recently, the capital gains realized in 2012 grew by 60.4%, as a reaction to the increase of the tax to 23.8% effective 2013. The reason for this volatility was due to the incentive to sell investments before the change went into place. If a gain was realized in 1986, it would be taxed at 20%. If it was realized in 1987, the tax would be 28%. Thus, as a reaction to the higher tax on gains, investors chose to sell their investments and realize the gains when it would be cheaper to do so.

The next two reforms to the capital gains tax resulted in lower rates. In 1998, the tax was reduced from 29.19% to 21.19%, which occurred as a result of the Taxpayer Relief Act of 1997. In 2004, the tax was reduced further to 16.05%. If behavior acted similarly to a tax *increase*, then a tax decrease would result in higher realizations of gains. This, however, tends not to be the case. In 1998, realizations grew 28.58%, amidst prior growth rates of 41.26 and 47.13%. There were higher realizations, but they were not as high as they had been. Therefore, it seems that a market is not as reactive to a tax decrease as it is to a tax increase. A possible reason is that investors will not sell an investment just because of the lower tax rate on its gain. If they seem strong, one will obviously hold onto them to enjoy more gains, and still will be able to fall back on the lower tax rate.

Although this does show that investors may have a short-term reaction to tax changes, it doesn't give enough information on investment in the long run. In addition, the realized gains do not suggest any change in the amount of aggregate investment itself, but merely reflects when an investment is sold for a gain. Therefore, my research naturally took a turn towards investigating the amount of investment spending each year. To start, I obtained information regarding annual GDP from the Bureau of Economic Analysis. This provided a listing of GDP dating back to 1929. In addition, the amounts were also listed in terms of 2009 valued dollars.

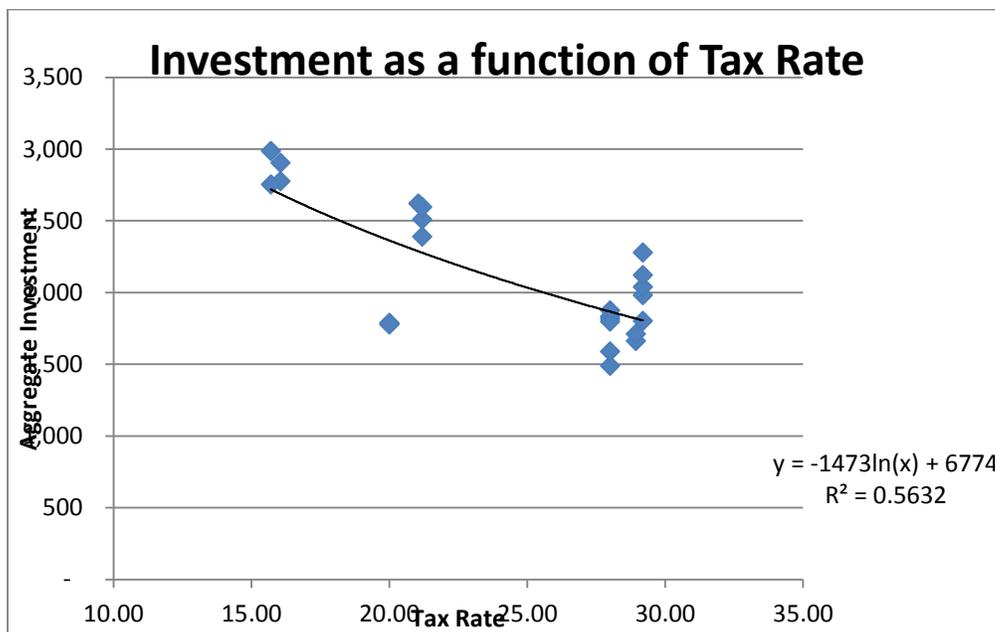
In order to reach annual investment, I consulted data provided by the WorldBank. This listed the percentage of GDP that was in Gross Capital Formation from 1980 to 2013. Gross capital formation includes expenditures on inventories, PP&E, and construction of assets. This capital formation would usually come from sale of stock to investors in order to raise funds to purchase such additions. Capital assets are also those which have the capital gains tax applied. To determine aggregate investment by year, I simply took the percentage and multiplied it by the GDP in 2009 values. The reason for this is to account for inflation to make the historical data more comparable.

In addition to adjusting for inflation, one would have to also consider stock market growth over time. To make things more comparable, the growth of a stock from 1980 until 2009 would have to be

considered. For this adjustment, I decided to use the Compound Annual Growth Rate (CAGR), which provides the growth of a stock over a period of years. For instance, purchasing an investment in 2000 and selling it in 2009 would end up with a 0.99% reduction in value. This method was meant to further reduce the effects of natural growth which would cause older data to be consistently lower, in addition to smoothing out the volatility of the market.

Finally, other market factors were considered as part of the calculations, in order to eliminate data that may be an outlier due to many other lurking variables. It is in times of economic decline that investment will be most affected. Therefore, it is during the major recessions that investment will be significantly decreased, and will not be a factor of the tax rate. It is for this reason that the major recessions of the last three decades have been illustrated. I decided to use a lag-period of one year, since investment may not have been affected in the year of, depending on when it first began. Additionally, recovery from a recession may take time, so the year after it ended would also have had lower investment. The first began in July of 1981 and terminated in November of 1982. Therefore, the data for 1982 and 1983 was eliminated. A short recession began and ended in 2001, and so that and 2002's data was eliminated. Further, the Great Recession began late 2007 and subsided in mid-2009. Both 2008 and 2009 data was cast out of the analysis.

At this point, I felt that data had been properly adjusted to be comparable, as well as to eliminate lurking variables such as inflation, stock market growth, and market conditions. I plotted the aggregate investment as a function of the tax rate, and came up with the following relationship:



The relationship represents a logarithmic function. This makes sense due to the shape of this equation, as the tax rate approaches 0, aggregate investment increases at an exponential rate. This would be reflective of behavior; one would want to put as much into capital assets if there would be no

tax on it. As the tax approaches 100%, aggregate investment goes down to nothing; no one would invest if all gains went to the government.

The value, R^2 , represents the correlation of the trendline to the relationship between investment and the capital gains tax. Essentially, this means that 56.32% of the data is accurately represented by the logarithmic function. The acceptableness of this correlation is entirely subjective, so there are two paths which may be taken. First, I may reject this function, and assume that there is no strong relationship between investment and the capital gains tax rate. However, I may also accept that there are lurking variables that I was unable to identify, and that the function is sufficient enough to be representative.

Imagine that this model is rejected. The conclusion would therefore be that there is no apparent relationship between investment and the tax rate on capital gains. If this were the case, then we could argue that increasing the capital gains tax would not have adverse side effects, aside from the short term reactions as we have seen. On the other hand, the model could be accepted as an appropriate fit for the data. This would support the claim that higher tax rates lead to lower investment, which may have harmful consequences on the economy as a whole.

At this point, I have decided that my model must be rejected. First off, there is not enough data to form a comprehensive picture. Secondly there are many lurking variables. Non-economic incentives such as the popularity of investment could be a factor. There is the use of technology to advertise entrepreneurship and to obtain venture capital. Additionally, there is an obvious alternative explanation for the relationship I have found. Historically, the capital gains tax has been decreasing. For 27 years, from 1986 to 2013, the capital gains tax has been falling. During that time, investment has always been growing. This is due to the natural growth of the economy over the past 3 decades. GDP and, subsequently, investment show a general upward trend of growth.

It is for this reason that the next step in research is to continue pushing forward. I could certainly highlight some other variables that may be affecting the data. Additionally, there may be other factors which must be considered. Finally, there seems to be an insufficient amount of data to use. It may be good to see how things are 10, 20, or even 30 years from now. As legislature continues to change, as well as investment, one may have a better understanding of this relationship.