CAPITAL GAINS IN ARIZONA AND THE EFFECT ON STATE GOVERNMENT GENERAL FUND REVENUES

A Report from the Office of the University Economist

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Dennis Hoffman, Ph.D.
Professor, Department of Economics; Director, L. William Seidman Research Institute;
and Director, Office of the University Economist

L. William Seidman Research Institute
W. P. Carey School of Business
Arizona State University
Box 874011
Tempe, Arizona 85287-4011

(480) 965-5362
FAX: (480) 965-5458
EMAIL: Dennis.Hoffman@asu.edu
wpcarey.asu.edu/research/competitiveness-prosperity-research
economist.asu.edu

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SUMMARY

Capital gains—the difference in the purchase price and selling price of an investment in a capital asset such as stocks, bonds, and real estate—are subject to the income tax. The Arizona state government's general fund received on average $300 million per year in revenue (in inflation-adjusted 2009 dollars) from capital gains between 1988 and 2009. However, capital gains are highly cyclical, contributing as much as $725 million in revenue in 2005 but barely more than $125 million in 2009 (the latest data).

While the revenue from capital gains accounted on average for only 5 percent of total ongoing general fund revenue between 1988 and 2009, the volatility of the revenue has proven to be problematic for budgeting purposes. In particular, during periods of high capital gains, the increase in general fund revenue has not been perceived to be transitory; instead, permanent tax reductions and spending increases have been made based on a temporary budget surplus caused in part by capital gains.

Capital gains became particularly important in the late 1990s as the rising stock market led to a surge in capital gains across the nation. With the collapse of equity prices in the early 2000s, capital gains fell sharply. The loss of tax receipts due to capital gains proved to be especially problematic in Arizona due to the state's structural deficit—to balance the budget, a high level of capital gains were necessary to offset tax cuts made throughout the decade. The capital gains cycle re-emerged in the mid-2000s, with sharply higher capital gains resulting from both equity price increases and a boom in real estate. The evaporation of most capital gains in 2008 and 2009 left an even bigger hole in the state's budget than it did in the early 2000s.

Another increase in capital gains is likely in the next two years. Stock prices already have climbed considerably. Since some investors may have an inordinate amount of capital losses to work through before they begin to report net capital gains, the effect on capital gains may be muted at first. However, the historical record suggests that significant increases in capital gains will once again occur.

If capital gains rise substantially, the challenge will be to convince Arizona policymakers that the increases will be temporary and therefore should not serve as the basis for making permanent decisions regarding revenues and expenditures. The analysis in this report clearly reveals that capital gains cannot be relied upon to provide a stable source of revenue for ongoing general fund spending over the long run. Demand for most general fund programs rises at a relatively steady pace while demand for health and welfare programs cycles *inversely* with capital gains.

Given the volatility of capital gains, an argument can be made to exclude from the state's general fund the revenue from capital gains that exceeds the amount expected during a cyclical downturn. The excess revenue would be transferred to the state's budget stabilization fund, which would help the state weather the next economic downturn.

INTRODUCTION TO CAPITAL GAINS

A capital gain or loss represents the difference in the purchase price and the selling price of an investment in a capital asset, such as stocks, bonds, and real estate. Since capital gains are subject to federal (and state) income taxes, data on the volume of net capital gains (capital gains less capital losses) are available by state from the Statistics of Income Division of the Internal Revenue Service (IRS). Data are available from 1997 through 2009 from the IRS website (http://www.irs.gov/taxstats/article/0,,id=171535,00.html). Data were collected for Arizona back to 1988 from historical data reported in the Arizona Joint Legislative Budget Committee's "Tax Handbook" and archived in the Seidman Research Institute's revenue forecasting model.

Capital gains as a percentage of the adjusted gross income of Arizona resident tax filers varied from 1988 through 2009 in Arizona from less than 3 percent (in 2009) to nearly 12 percent (in 2005), as seen in Chart 1. Capital gains follow a cycle that is positively correlated to the cyclicality of the entire economy.

Though the capital gains share of total income is small, the annual volatility of the share is high. The substantial cyclicality in capital gains has contributed significantly to the year-to-year changes in overall taxable income in Arizona. This volatility has proven to be vexing for policymakers since the individual income tax is responsible for about 35 percent of the state's general fund revenue—capital gains are responsible for a significant portion of the annual fluctuations in general fund revenue. (Revenues other than from capital gains also are cyclical, but not nearly to the extent of capital gains revenue.) Compared to this volatility in revenue, demand rises at a relatively steady rate for most general fund spending categories (particularly

CHART 1
CAPITAL GAINS IN ARIZONA AS A SHARE OF
THE ADJUSTED GROSS INCOME OF ARIZONA RESIDENTS
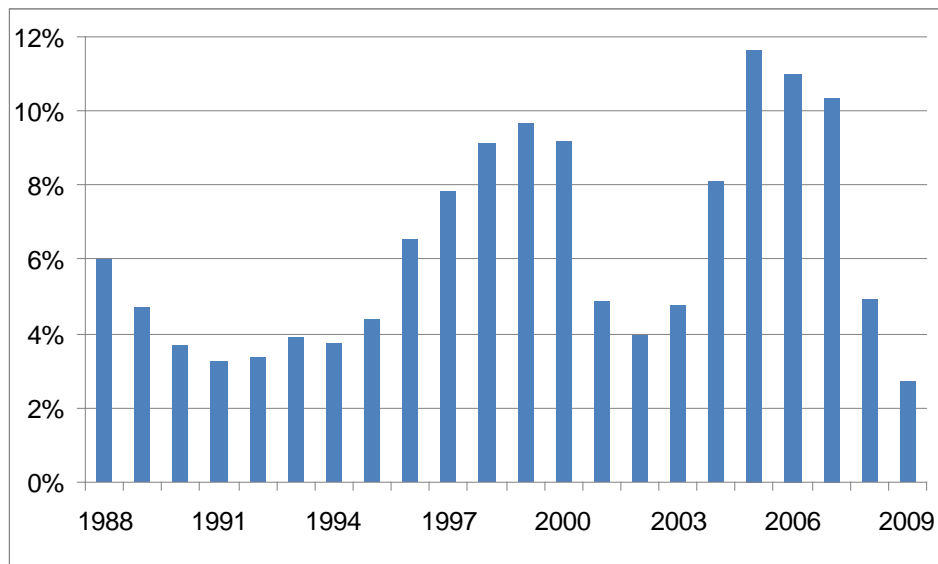
Source: Internal Revenue Service, Statistics of Income (capital gains) and Arizona Department of Revenue (unpublished data on adjusted gross income taken from annual abstracts of Arizona resident taxpayers).

education and the correctional system), and demand for health and welfare programs cycles *inversely* with the expansions and contractions in capital gains.

The large increase in the capital gains share in the late 1990s seen in Chart 1 largely resulted from significant increases in stock prices, particularly of Internet and related companies. This period is sometimes referred to as the "dot-com bubble." The surge in the mid-2000s was in part due to increases in stock prices, but was also greatly affected by a sharp increase in real estate values and sales activity in Arizona.

Capital gains in Arizona as a share of federal adjusted gross income as reported by the IRS are compared to the shares in two large nearby states and the United States in Chart 2. (The adjusted gross income for Arizona is different from that used in Chart 1, causing the shares to be slightly different in Chart 2.) Arizona's shares have closely matched the national average except during the real estate boom from 2004 through 2006. Since some parts of the country did not experience rapidly rising real estate values and large increases in the number of real estate transactions, capital gains nationally did not rise as much as in Arizona.

While the peak share nationally in the mid-2000s was about the same as in the prior cycle, Arizona's share was higher during the mid-2000s than in the prior cycle, providing an indication of the extent of the real estate boom in the state. In contrast, California experienced a much higher peak in the late 1990s than in the mid-2000s. Since Texas did not experience large increases in housing values during the mid-2000s, its peak was lower than that of the other comparison areas and its subsequent decline was not as large.

The annual dollar values of capital gains adjusted for inflation and population growth are shown in Chart 3. While the general pattern is similar to that of Chart 2, it can be seen that per capita capital gains in Arizona have been lower than those nationally except during 2005 and 2006. The values in Arizona and Texas were almost identical through 2003. Capital gains were higher in Arizona during the mid-2000s but dropped lower than those in Texas in 2008 and 2009.

In Chart 4, the annual inflation-adjusted percent change in the value of per capita capital gains is displayed, revealing the extreme volatility of capital gains. The percent change chart clearly shows the more rapid increases in capital gains in Arizona early in the mid-2000s real estate bubble and that the increases exceeded those in the comparison areas in both 2004 and 2005.

The general similarity across the comparison areas in the changes in capital gains largely results from the national markets for capital assets such as stocks and bonds. Common stock ownership has increased substantially in the past several decades across the country. Further, capital gains are influenced by both equity price movements and changes in capital gains tax rates. The mid-2000s increase in capital gains was influenced by the favorable federal tax rate reductions that occurred in the early 2000s.

CHART 2
**CAPITAL GAINS AS A SHARE OF ADJUSTED GROSS INCOME**
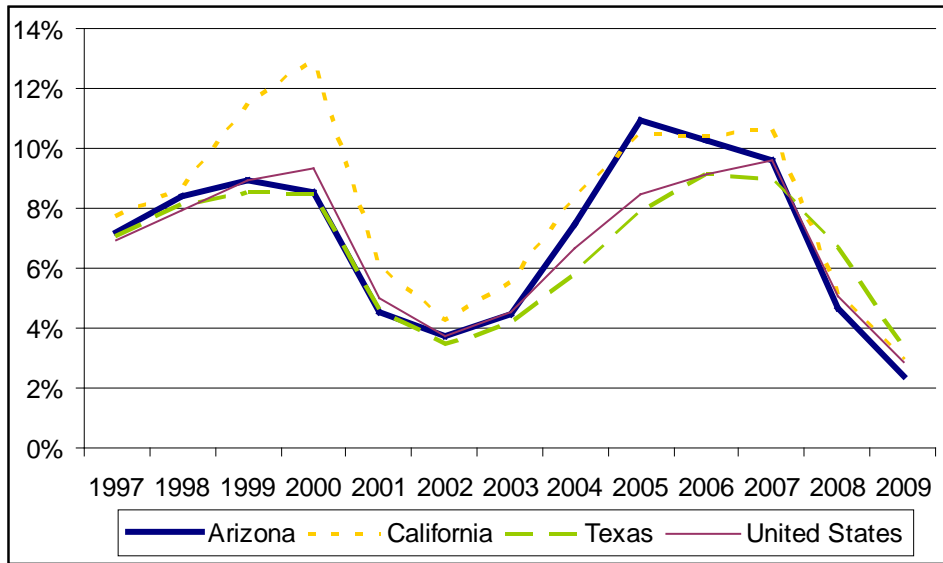
Source: Internal Revenue Service, Statistics of Income.

CHART 3
CAPITAL GAINS PER CAPITA IN 2009 DOLLARS
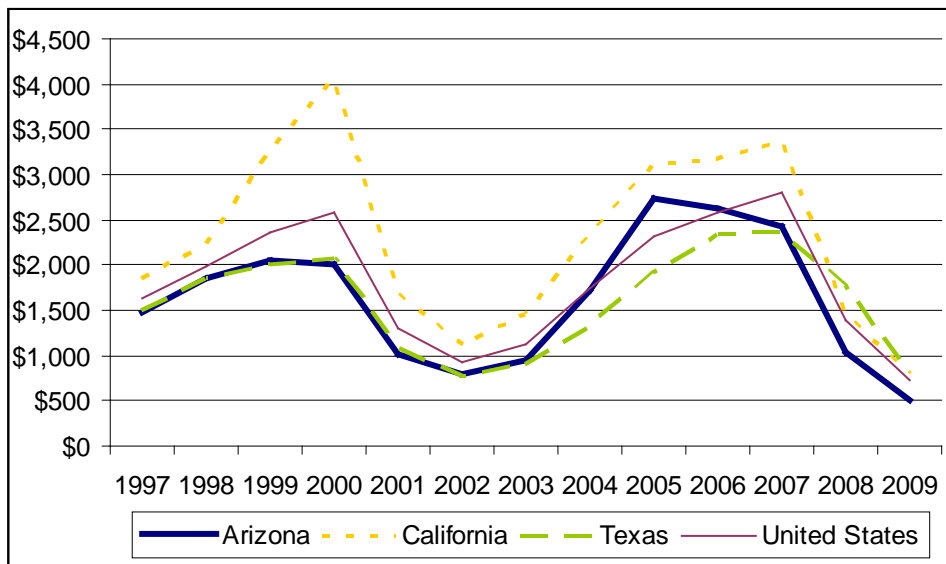
Sources: Internal Revenue Service, Statistics of Income (capital gains); U.S. Department of Commerce, Bureau of Economic Analysis (gross domestic product implicit price deflator); and U.S. Department of Commerce, Census Bureau (population). The Census Bureau's population estimates for Arizona for 2001 through 2009 were adjusted based on the 2010 census count.

CHART 4
CAPITAL GAINS PER CAPITA,
INFLATION-ADJUSTED PERCENT CHANGE
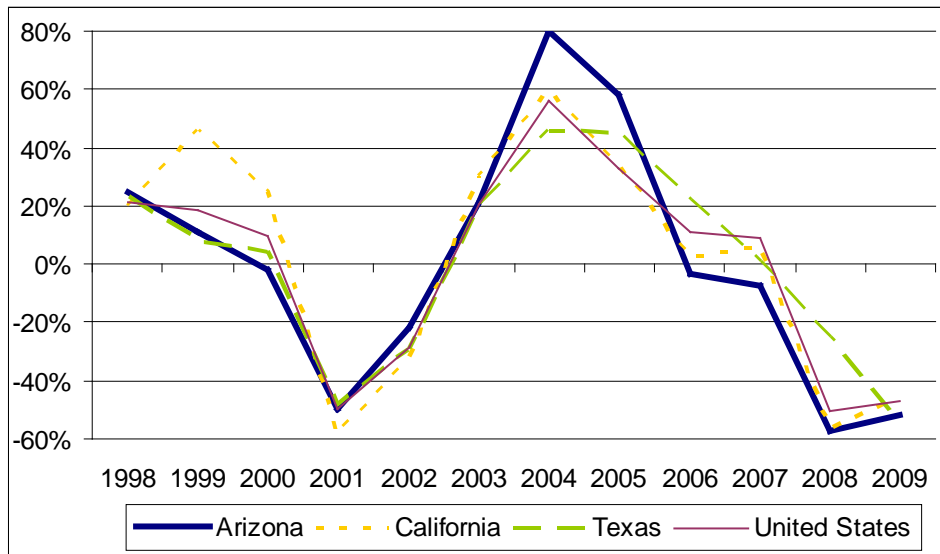
Sources: Internal Revenue Service, Statistics of Income (capital gains); U.S. Department of Commerce, Bureau of Economic Analysis (gross domestic product implicit price deflator); and U.S. Department of Commerce, Census Bureau (population). The Census Bureau's population estimates for Arizona for 2001 through 2009 were adjusted based on the 2010 census count.

THE EFFECT OF CAPITAL GAINS ON STATE GOVERNMENT REVENUES

The total tax liability of Arizona residents to the state's individual income tax is plotted in Chart 5. The values in Chart 5 are not adjusted for population growth. The portion of the total tax liability due to capital gains was estimated by applying the average marginal tax rate on capital gains for Arizona estimated by the TAXSIM model of the National Bureau for Economic Research (NBER). The model accounts for changes in the income distribution through time and for state tax law changes. On average, capital gains accounted for about $300 million in collections from 1988 through 2009 in 2009 dollars (the difference between the two lines in Chart 5). However, the annual revenues vary substantially. The tax liability due to capital gains rose in the late 1990s to more than $400 million, dropped to less than $200 million in 2002, surged in the mid-2000s to exceed $700 million in 2005, and then fell to about $130 million in 2009.

Given the volatility of capital gains, an argument for excluding them from the general fund tax base has merit. Capital gains are an inappropriate source of revenue to be used to finance ongoing predictable expenses and are particularly poorly suited for social programs financed by the general fund, since demand for these programs increases during economic downturns at the same time that capital gains are falling.

Arizona would have been wise to maintain a budget stabilization fund (BSF) balance at 15 percent of estimated budgets (the percentage used prior to 1995) and fund the BSF with transitory receipts from surging capital gains in the late 1990s. The state would not have had a

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CHART 5
TAX LIABILITY OF ARIZONA RESIDENTS TO ARIZONA INDIVIDUAL
INCOME TAX IN BILLIONS OF 2009 DOLLARS
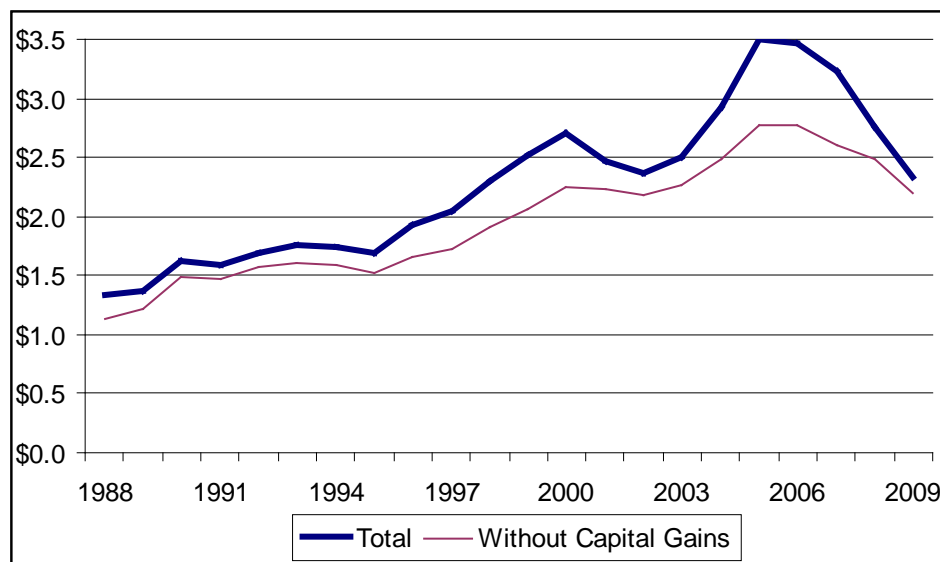
Sources: Arizona Department of Revenue (unpublished data on adjusted gross income), National Bureau for Economic Research (capital gains tax liability), and U.S. Department of Commerce, Bureau of Economic Analysis (gross domestic product implicit price deflator).

budget deficit during the 2001-02 downturn. Rebuilding the balance to 15 percent in the mid-2000s with temporary capital gains revenues would have better positioned the state to weather the 2008-09 economic recession and subsequent slow recovery.

The challenge to implementing a policy of transferring capital gains revenue to the BSF is that the magnitude of capital gains is not revealed in a timely fashion. The estimates of capital gains for tax year 2009 were not published until mid-June 2011 by the IRS. Thus, developing a means of estimating the magnitude of capital gains on a timely basis could be a valuable tool for Arizona policymakers.

MODELING CAPITAL GAINS IN ARIZONA

In order to estimate the value of capital gains, data on equity price appreciation and real estate price appreciation must be collected as well as data on the number of transactions in the equity and real estate markets. For the real estate portion, the number of transactions and the median price of residential real estate in the Phoenix metropolitan area are used as a proxy for total activity in Arizona. These data have been reported by the W. P. Carey School of Business at Arizona State University since the 1980s.

Equity appreciation is proxied by two time series. One is the S&P 500 index, which measures activity in the stock market. The three-year price change, based on the annual average of the index for each year, is weighted by the volume of transactions in the ending year. It is assumed that on average a three-year holding period for equities reasonably represents the pattern of capital gains in Arizona.

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The second series for equities is specific to capital gains from taxable mutual funds. It uses the national figure reported in the annual fact book of the Investment Company Institute (ICI). The ICI's estimated taxable gains are available about three months following the end of each year, about 15 months ahead of the IRS release of capital gains.

A summary of the multiple regression model based on these three independent variables over the 1988-to-2009 period is shown in Table 1. The three variables in the model are each individually statistically significant and positive, suggesting that increases in any of the variables is associated with increases in capital gains. The model explains more than 98 percent of the variability in the annual time series of capital gains. Chart 6 reveals that the model fits very well with the actual capital gains data in Arizona over the 1988-to-2009 period.

The timely availability of each of the three data series used in the regression model allows an estimate of capital gains for a calendar year to be produced early in the following calendar year—long before the actual data are released by the IRS. For example, in early 2011 an estimate could be made of the value of capital gains in 2010, even though the actual figure will not be available until June 2012. Based on the model, the value of capital gains in Arizona in 2010 was around $3.7 billion—up from the 2009 low of $3.2 billion, but still very low from a historical perspective.

Forecasts

In order to use the model to forecast capital gains in the year(s) ahead, projections must be made of each of the three independent variables. It is reasonable to attempt such a forecast for the next year or two, but capital gains are not easily predicted on a medium-to-long-term (3-to-5 year) planning horizon.

The projections of the S&P 500 and real estate activity were made directly by the author. To maintain consistency within each of the conditional scenarios, a simple linear regression of mutual fund capital gains on a three-year change in the S&P 500 was fitted and this simple regression was used to formulate forecasts for the mutual fund capital gain series for 2011 and 2012. For each of the three variables, forecasts were made under each of three sets of assumptions, representing middle (baseline), pessimistic, and optimistic scenarios.

TABLE 1
CAPITAL GAINS REGRESSION MODEL

	Coefficient	Standard Error	t-Statistic
Constant	-96,194	201,087	-0.48
Stock Market Gain	0.001892	0.000314	6.02
Value of Real Estate Transactions	0.000295	0.00000127	23.27
Estimated Mutual Fund Gain	12.46	1.68	7.43

Sources: Computed from Standard & Poor's Financial Services (stock market), Investment Company Institute (mutual fund), and Arizona State University, W. P. Carey School of Business (real estate).

CHART 6
**CAPITAL GAINS IN ARIZONA IN BILLIONS OF CURRENT DOLLARS,
ACTUAL AND PREDICTED VALUES**
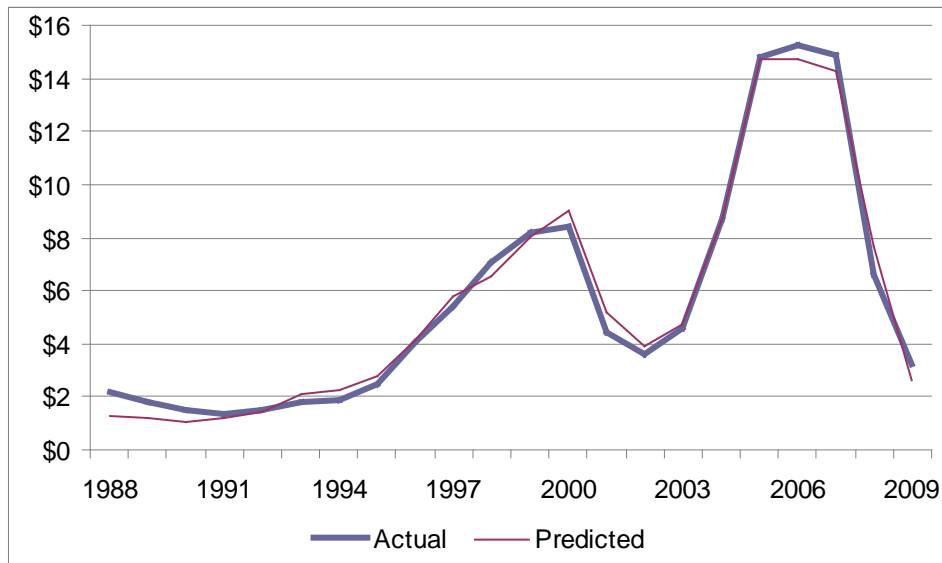
Sources: Internal Revenue Service, Statistics of Income (actual) and author (predicted).

Actual values of the S&P 500 are shown in Chart 7 from 1988 through 2010. The 2011 and 2012 values are projections made for each of the scenarios. The expectation is that the annual average of stock prices in 2011 will be higher than the 2010 annual average in each scenario. Stock prices continue to rise in 2012 in the middle and optimistic scenarios.

In addition to the actual and projected values, the modeled historical values of the taxable mutual fund changes are displayed in Chart 8. The modeled values are quite close to the actual figures into the mid-1990s, but significant variations are seen after that. In each of the three scenarios, the projected values are expected to rise in both 2011 and 2012.

The huge increase in the value of real estate transactions (a function of both housing prices and the number of houses sold) in the mid-2000s is seen in Chart 9. A very substantial decline from the 2005 peak continued through 2010. A modest recovery is expected in 2011 in the middle and optimistic scenarios, but the value does not bottom out until 2011 in the pessimistic scenario. The value picks up in 2012 in each scenario, but the magnitude of the recovery is small compared to that experienced by the S&P 500 and mutual funds measures.

Based on these projections of the three independent variables, the resulting prediction of capital gains by scenario is displayed in Chart 10. In each scenario, capital gains are expected to increase substantially in 2011 and 2012. As in any forecast, risks are present. The model may not adequately reflect the large capital losses that some investors experienced in recent years and that must be offset before net taxable capital gains materialize for these investors. Moreover, even the pessimistic scenario does not reflect the possibility of a significant downturn in equity prices.

CHART 7
S&P 500 STOCK PRICE INDEX, ACTUAL VALUES
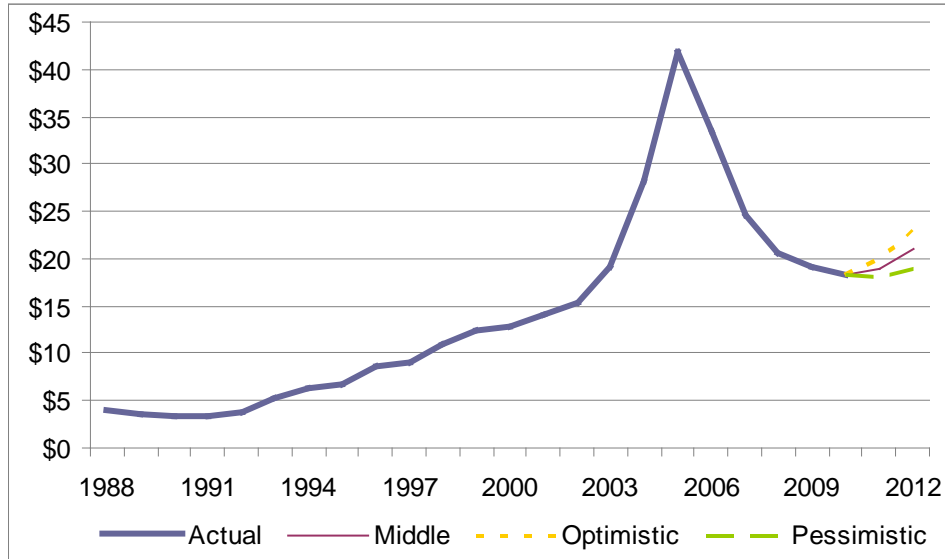## AND PREDICTED VALUES BY SCENARIO
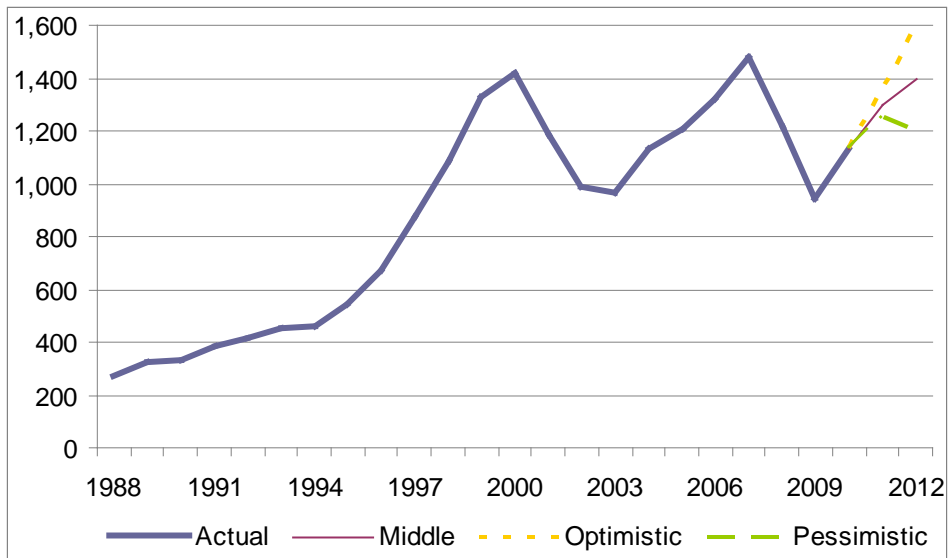
Sources: Standard & Poor's Financial Services (actual) and author (predicted).

CHART 8
MUTUAL FUND TAXABLE GAIN IN BILLIONS OF CURRENT DOLLARS
BASED ON THE S&P 500 STOCK PRICE INDEX, ACTUAL VALUES AND
## PREDICTED VALUES NATIONALLY BY SCENARIO
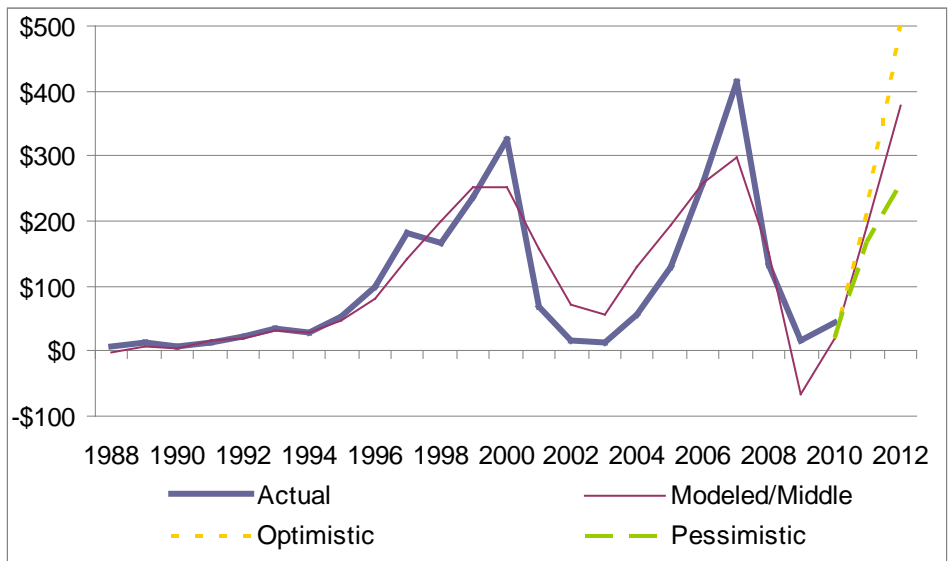
Sources: Investment Company Institute (actual) and author (predicted).

CHART 9
VALUE OF RESIDENTIAL REAL ESTATE TRANSACTIONS IN METROPOLITAN PHOENIX IN BILLIONS OF CURRENT DOLLARS, ACTUAL VALUES AND PREDICTED VALUES BY SCENARIO

Sources: Arizona State University, W. P. Carey School of Business (real estate) and author (predicted).

CHART 10
CAPITAL GAINS IN ARIZONA IN BILLIONS OF CURRENT DOLLARS, ACTUAL VALUES AND PREDICTED VALUES BY SCENARIO
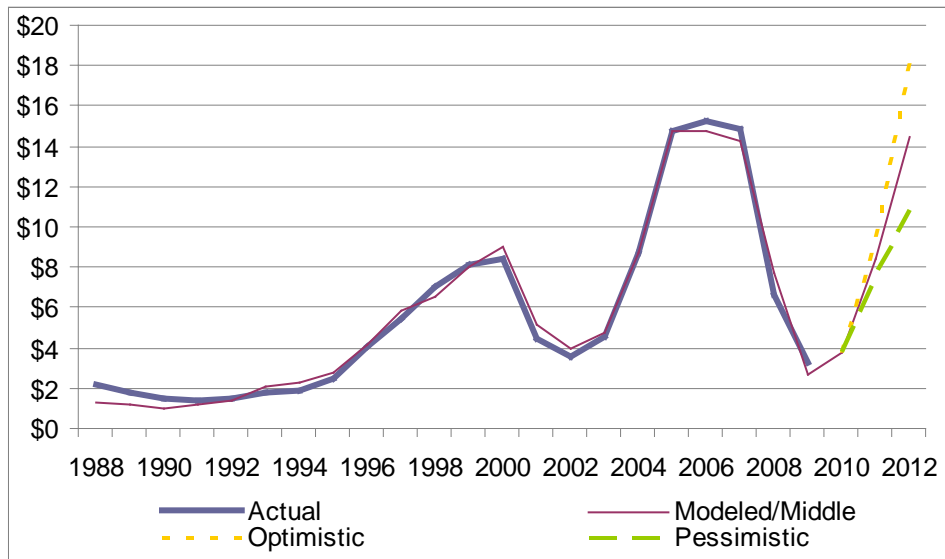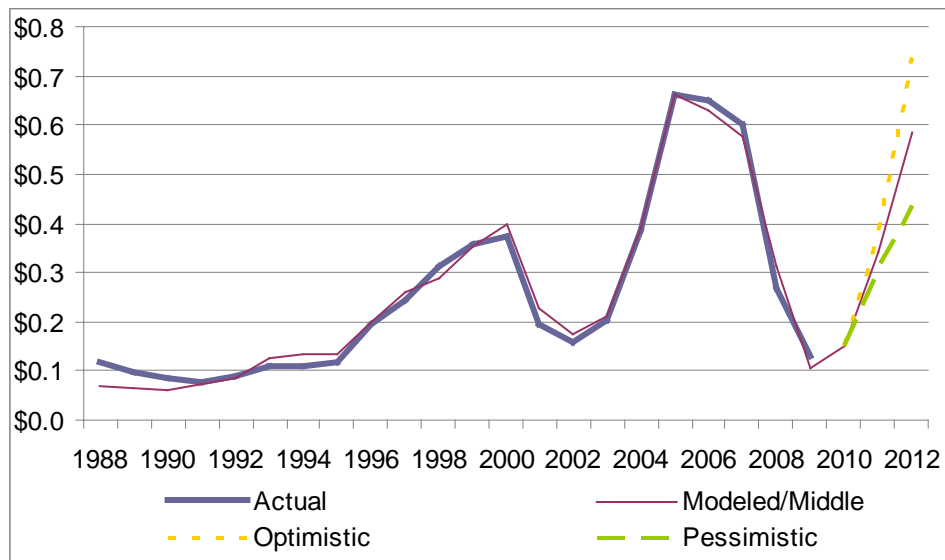

Sources: Internal Revenue Service, Statistics of Income (actual) and author (predicted).

The individual income tax liability that can be traced to capital gains is shown in Chart 11. The modeled figures are very close to the actual figures from 1988 through 2009. In each scenario, the predicted value rises substantially in 2011 and 2012 from the actual figure in 2009 and the modeled estimate in 2010.

In inflation-adjusted dollars, the 2009 actual figure was less than half the long-term average and the estimated 2010 figure was half the average. The projected figures for 2011 range from equal to the average in the pessimistic scenario to somewhat above average in the optimistic scenario. In 2012, the projections go above average even in the pessimistic scenario, with the figure in the optimistic scenario approaching the 2005 record. Importantly, tax collections from capital gains of these magnitudes do not require much in the way of appreciation of the S&P 500 index from this point forward nor do they require a significant resurgence in real estate activity. However, the growth in capital gains income that are projected in 2011 and 2012 will not be repeated in the years immediately following unless the stock market continues to appreciate or the Arizona residential real estate market undergoes a significant improvement. Capital gains could begin to drop after 2012.

While the likely strong recovery in general fund revenue due to capital gains is welcome news to policymakers who have had to deal with a dearth of general fund revenue for several years, the coming surge in revenue creates the potential for policymakers to mistake it for permanent revenue. If spending is increased or taxes reduced on the basis of this temporary revenue, the structural deficit will be increased. If such action is taken and if capital gains begin to drop at the same time that the temporary sales tax ends in May 2013, the state could quickly return to an unbalanced budget even in the midst of an economic expansion.

CHART 11
CAPITAL GAINS TAXES OWED IN ARIZONA IN BILLIONS OF CURRENT DOLLARS, ACTUAL VALUES AND PREDICTED VALUES BY SCENARIO

Sources: Internal Revenue Service, Statistics of Income (actual) and author (predicted).