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EDUCATION AND INVESTMENT, NOT TABOR, FUELED COLORADO'S ECONOMIC GROWTH IN 1990S

By Karen Lyons and Nicholas Johnson

Proponents of Colorado's "Taxpayer Bill of Rights" (TABOR), the 1992 constitutional amendment that imposed the nation's strictest limit on taxes and public expenditures, have argued that TABOR is largely responsible for Colorado's strong economic performance during the 1990s. Few scholars of Colorado's economy, however, believe this causal relationship exists.

The skepticism about TABOR's role results in part from the recognition that Colorado had experienced several decades of strong economic growth even *before* TABOR was enacted. Moreover, research papers by Colorado's nonpartisan Legislative Council staff, by the Colorado Department of Local Affairs, by researchers at universities in Colorado and other states, and by the Federal Reserve Bank of Kansas City (whose district includes Colorado) suggest other reasons why Colorado prospered in the 1990s.

Colorado's prosperity, this research shows, has deep historical and regional roots. It was fueled by extensive public and private investment, high levels of educational attainment, and Colorado's Rocky Mountain location. Those factors — not TABOR — gave Colorado its strong economy in the 1990s.

- Colorado has been growing faster than most other states since World War II. In this regard the post-TABOR period has been little different from other decades. In the decades prior to TABOR, average annual job growth ran about 1.5 percentage points ahead of the rest of the country, while since TABOR it has run about 1 percentage point ahead of the rest of the country. Even in the 1980s when Colorado was experiencing a severe economic downturn, its economic growth surpassed that of the nation.
- This strong economic performance has its roots in massive public investments in Colorado by the U.S. military during World War II and into the Cold War era. An analysis by the Federal Reserve Bank of Kansas City found that these investments, such as Lowry Air Force Base, the North American Aerospace Defense Command (NORAD) located at Peterson Air Force Base, and the Air Force Academy in Colorado Springs left Colorado with a strong infrastructure of high-tech firms and researchers, a young, highly educated workforce, and public universities with well-respected science and technology programs. The

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TABOR Did Not Produce Colorado's Economic Growth, New Study Finds

A new study finds “little support” for the notion that TABOR sparked Colorado’s economic growth in the 1990s. The study was conducted by two prominent economists in the area of state and local public finance, Therese J. McGuire of Northwestern University’s Kellogg School of Management and Kim S. Rueben of the Urban Institute.

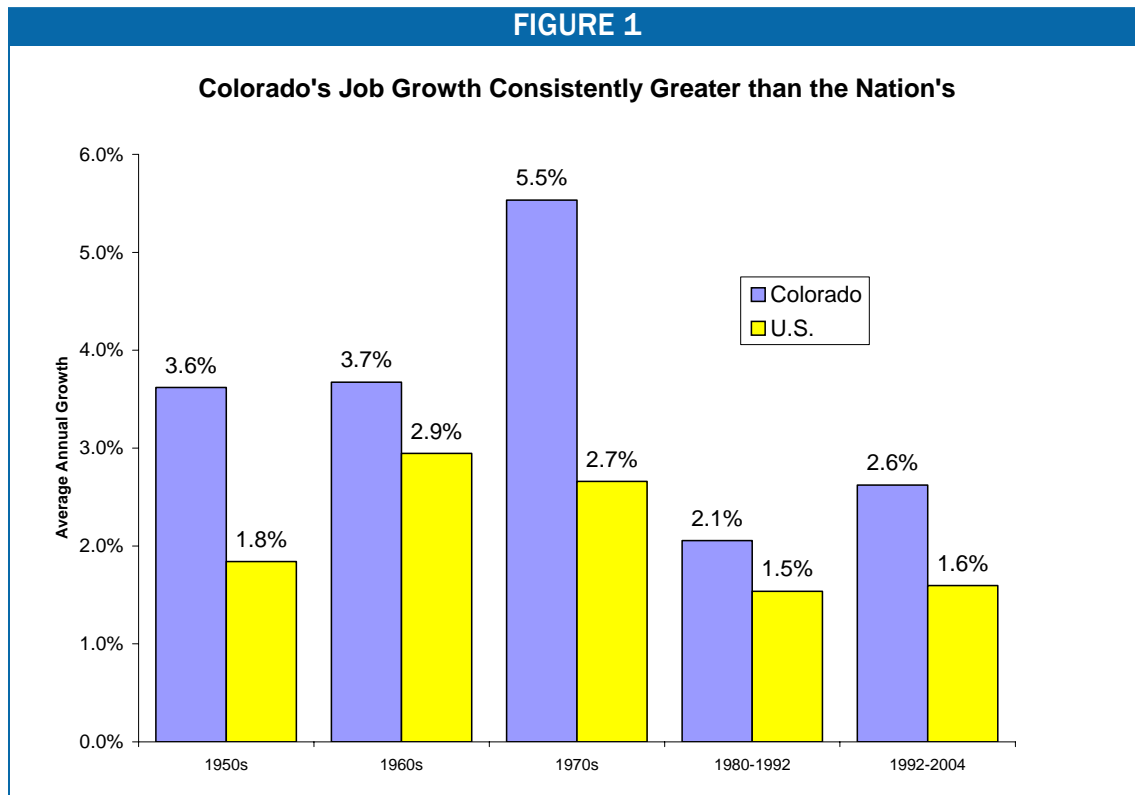
McGuire and Rueben used statistical analysis to separate TABOR from other factors that were present in Colorado both before and after TABOR's enactment, such as high levels of educational attainment and military spending that are documented in this paper. Their analysis finds that TABOR did little or nothing for Colorado’s economy. Indeed, controlling for those other factors, their analysis finds that Colorado had only slightly better growth than would have been expected in the first five years after TABOR, but weaker-than-expected growth in the following five years. For the entire 10-year period, McGuire and Rueben report that Colorado’s economic growth was about the same as what it would have been without TABOR.

“Using two different empirical approaches and examining two different measures of economic growth, we find that TABOR did not significantly boost Colorado’s economy,” the two economists report.

Source: Therese J. McGuire and Kim S. Rueben, *The Colorado Revenue Limits: The Economic Effects of TABOR*, Economic Policy Institute: 2006.

mountainous landscape and host of recreational opportunities in Colorado also made it an attractive place for workers and their families to move to. By 1989, advanced technology sectors were employing 102,000 workers, compared with 39,000 only a decade earlier; 40 out of every 1,000 Colorado workers were directly employed in high-tech industries. By 1991, more adults in Colorado had completed at least four years of college than in any other state in the nation.

- The one period of time in which Colorado’s economic growth cooled a bit — the 1980s — had the effect of helping to prime the state for the economic growth in the post-TABOR years. During the 1980s, a regional economic slowdown that resulted largely from a real estate bust and a huge drop in oil prices (Denver is the regional headquarters for the Rocky Mountain oil and mining industry) led to a surplus of office space, and reasonably low costs for housing, commercial, and industrial space. As Colorado’s well-regarded Legislative Council Staff has noted, these circumstances primed Colorado for a strong rebound in the 1990s.
- The tech-oriented nature of Colorado’s economy proved advantageous in the 1990s. The national boom in technology and telecom-related industries had a particularly powerful effect in Colorado, causing income and employment to rise rapidly. (Of course, this boom had a downside: a high level of exposure to the bursting of the tech bubble in the early 2000s.)
- The increasing percentage of American consumer dollars spent on recreation — particularly outdoor recreation like skiing — and on second-homes has also greatly benefited Colorado, with its mix of rugged landscapes and world-famous resorts like Aspen and Vail. Massive public investments in a new Denver airport and other projects also seem to have bolstered the economy.



- Colorado, of course, is not the only state to have done well since World War II and in the early 1990s. Other Rocky Mountain and southwestern states also have fared well, in part because of their economic and geographic similarities. Indeed, by comparison with its regional neighbors, Colorado's economic performance has been average.

These data suggest that TABOR had little, if anything, to do with the state's economic performance. Rather, Colorado's economic growth stemmed in large part from strong public investment in research, high-tech, education and infrastructure.

Colorado Was Outperforming the Country Long Before TABOR's Enactment

In the last 54 years, Colorado has consistently performed better than the nation on a number of key economic indicators — job growth, personal income growth and population growth.¹ (See Table 1.) On average, jobs grew 1.4 percent faster than the national average in Colorado during this time, personal income grew 0.9 percent faster and population grew 1.1 percent faster.

The extent to which Colorado's job growth outperformed the nation ranged from 0.6 percentage points during 1980-1992 to 2.8 percentage points during the 1970s. (See Figure 1.)

¹ The only exception was the 1985 to 1991 period, when Colorado was experiencing an economic downturn. See Colorado Legislative Council, *House Joint Resolution 03-1033 Study: TABOR, Amendment 23, the Gallagher Amendment, and Other Fiscal Issues*, September 2003, p. 31.

TABLE 1. ECONOMIC INDICATORS: AVERAGE ANNUAL CHANGE (%)					
	1950s	1960s	1970s	1980-1992	1992-2004
Jobs					
Colorado	3.6	3.7	5.5	2.1	2.6
U.S.	1.8	2.9	2.7	1.5	1.6
Difference	1.8	0.8	2.8	0.6	1.0
Personal Income (\$2004)					
Colorado	5.3	5.0	5.4	2.8	4.4
U.S.	4.0	4.8	3.1	2.6	2.5
Difference	1.3	0.2	2.3	0.2	1.9
Population					
Colorado	2.9	2.3	2.9	1.6	2.3
U.S.	1.7	1.3	1.1	1.0	1.1
Difference	1.2	1.0	1.8	0.6	1.2

Source: CBPP analysis of data from Bureau of Labor Statistics, Bureau of Economic Analysis, and Census Bureau.

The data in Table 1 also show that Colorado’s economic growth in 1992-2004 – the years since TABOR’s enactment – has not been markedly different from its growth in previous decades. In fact, job growth and personal income growth were greater in the pre-TABOR years (1950-1992), while population growth was the same. (See Figure 2)

Reviewing these figures in 1999, Tom Dunn, then Chief Economist of Colorado’s Legislative Council, noted that the state’s overall growth rate in the 1990s was not that different from what it has been over the last 50 years.²

The Roots of Colorado’s Strength, 1940-81: Military Investment and Strong Universities Led to a High-tech Private Sector and the Nation’s Best-Educated Workforce

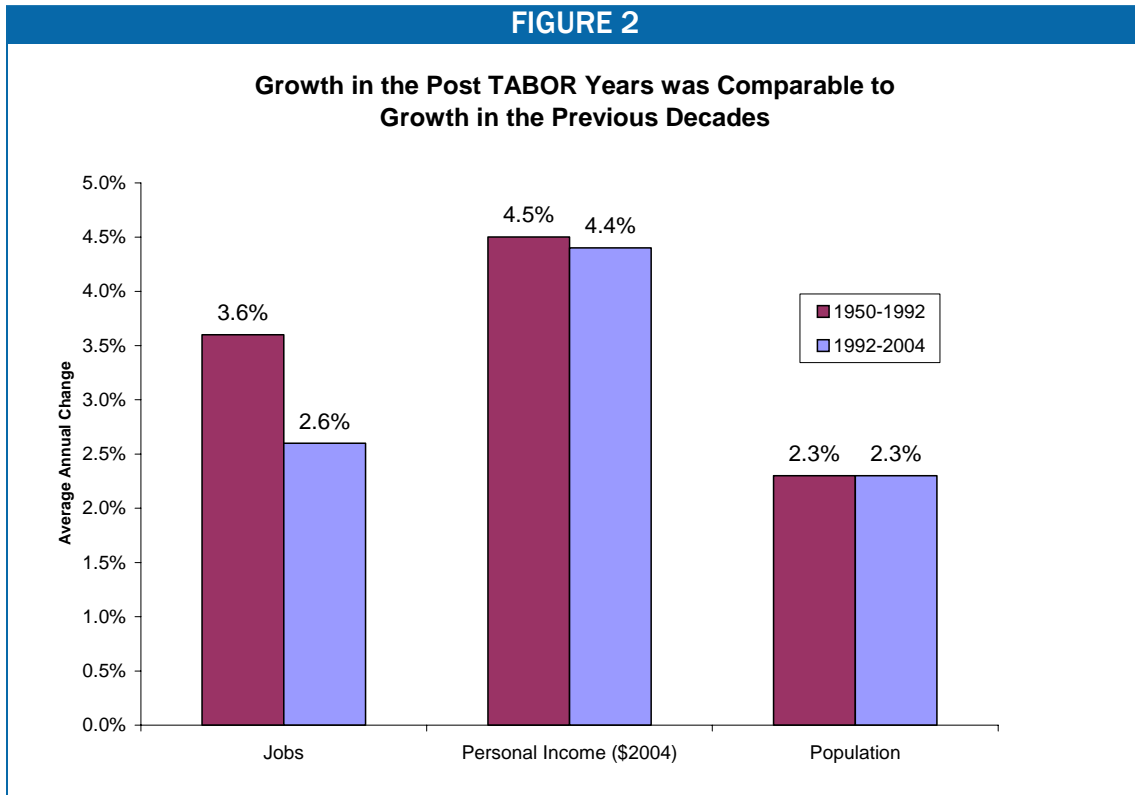
Studies of Colorado’s unusually strong economy, before and after TABOR, cite the state’s booming high technology sector and a highly educated workforce as key determinants of prosperity.³ Those attributes did not develop overnight, nor did they occur randomly. Instead they result from a series of investments dating back to the 1940s, beginning with a sharp increase in the form of defense spending by the federal government and continuing with strong private and public investments in research and development.

1940s and 1950s: The Growth of the Defense Sector Brings Money, Jobs and Highly Skilled Individuals to the State

Defense spending began to play a significant role in Colorado’s economy in the pre-World World II days. As the nation began to mobilize, the US military created and expanded a number of bases located in Colorado, such as Lowry Air Force Base and Buckley Field. Wilson D. Kendall, author of a 2002 paper on Colorado’s recent economic history, reports that the result was a huge increase in Colorado military earnings from \$1.7 million in 1937 to \$152 million by 1945 or from four-tenths of

² Tom Dunn, testimony for Interim Study on Development and Growth, October 4, 1999, http://www.state.co.us/gov_dir/leg_dir/lcsstaff/1999/comsched/99DevGrow1004sum.htm.

³ High technology encompasses large computer hardware, software, telecommunications, and aerospace sectors.



a percent of total earnings to over 13 percent.⁴ The U.S. military also opened large research centers in Colorado in the 1940s and 1950s, including the North American Aerospace Defense Command (NORAD) and the United States Air Force Academy.

As the federal defense sector grew so did the private defense sector. The Martin Company (now Lockheed-Martin) built a major defense plant near Littleton, CO; Sundstrand (now Hamilton Sundstrand) built its first plant outside of its Illinois headquarters in Denver; Dow Chemical Company took over administration of the Rocky Flats Plant from the Atomic Energy Commission and greatly expanded its facilities and employment; and Ball Aerospace entered the aerospace industry in 1956 when it acquired Control Cells, Inc., a small research and development operation in Boulder.

1960s and 1970s: High-Tech Firms Emerge

The Federal Reserve Bank of Kansas City points out in a recent paper that Colorado’s military presence led directly to the state’s private-sector high-tech industry. The Federal Reserve paper finds that these military institutions “attracted and produced scores of scientists, engineers, and computer specialists over the years, many of whom, in time, have started high-tech business of

⁴ Wilson D. Kendall, “A Brief Economic History of Colorado,” Sept. 14, 2002, <http://dola.colorado.gov/demog/Economy/Forecasts/EconomicHistoryCBEF2002.pdf>.

their own.”⁵ Due largely to this early military research influence, Colorado Springs now has the highest concentration of high-tech workers of any medium sized metropolitan area in the country.

The military presence was augmented by the development of strong research programs at Colorado’s institutions of higher education — Colorado State University and the University of Colorado, the bank’s study found.

Among the high-tech firms that grew in Colorado in the 1960s and 1970s were Hewlett-Packard, which built its first non-California manufacturing plant in Loveland, Colorado in 1962 and then quickly built another plant in Colorado Springs in 1962; Storage Technology (now known as StorageTek, a unit of Sun Microsystems); and Texas Instruments. Later, Hewlett-Packard’s first desktop computers were built in Colorado.

The public-sector investments that have benefited the state in the past are threatened by TABOR’s artificial formula for determining state spending levels.

1970s and 1980s: Colorado’s Research and Technology Sector Continues to Expand

The late 1970s and 1980s saw the establishment of government space installations, the emergence of new research facilities, and the expansion of the state’s research universities, all of which fortified the growing technology sector. In 1979, the Space Defense Operations Center was created (it later supported the first flight of the space shuttle) and in 1982, the Air Force Space Command (AFSPC) was founded at Petersons Air Force Base. During this same time, the lab for the National Oceanic and Atmospheric Administration (run by the US Department of Commerce) was established, as was the Solar Energy Research Institute (Department of Energy) and the National Center for Atmospheric Research.

This buildup of federal research and defense installations, combined with a strong research sector in the 1970s and 1980s began to have a major impact on Colorado’s economy. Between 1979 and 1989, the high tech share of all nonfarm private establishments increased by 38 percent in Colorado (even as the comparable figure for the rest of the country was declining). Also in these ten years, the state’s employment in high tech industries rose from slightly less than 30 jobs per 1000 residents to over 40 jobs per 1000 residents.⁶

By 1991, 32.2 percent of Colorado residents ages 25 and over had completed at least four years of college, the highest rate among the 50 states. (The national average was 21

⁵ Chad Wilkerson, “How High Tech Is the Tenth District?” Federal Reserve Bank of Kansas City, *Economic Review*, Second Quarter 2002.

⁶ Rob Melnick, et al., “Economic Development Via Science and Technology: How Can Arizona Improve Its Standing?,” Arizona State University, June 2003, <http://www.asu.edu/copp/morrison/Science-TechnologyReport.pdf>

Colorado's Nonpartisan Legislative Council Staff Finds that Colorado Would Have Boomed in the 1990s With or Without TABOR

“When TABOR passed in late 1992, Colorado was well on its way to emerging from the economic doldrums of the 1980s as employment increased by 3.4 percent that year. ... Colorado was well positioned in 1992 to outperform the country as its relative costs for labor, housing, and commercial and industrial buildings were lower than those in competing areas.”

Source: Colorado Legislative Council, *House Joint Resolution 03-1033 Study: TABOR, Amendment 23, the Gallagher Amendment, and Other Fiscal Issues*, September 2003, p. 31.

percent.)⁷ Colorado's status as one of the very best-educated states gave it a major competitive advantage, particularly during the high-tech economic transformation of the 1990s.

Colorado's Somewhat Weaker 1980s Primed the State for Growth in the 1990s

Colorado's economic expansion in the 1990s appears even more dramatic when it is compared to the economic downturn that the state experienced in the 1980s. This slump was caused mainly by a real estate bust and a huge drop in oil prices (Denver is the regional headquarters for the Rocky Mountain energy industry). Other contributing factors were massive layoffs at mines and a decline in agriculture. While the effects of this decline were felt throughout the economy, the real estate market was hit particularly hard. For example, at the height of the state's economic problems in 1985-86, Denver had a 30 percent office vacancy rate, the highest in the nation. By 1987, downtown office space that was once worth \$40 per square foot was being auctioned off for \$5 per square foot.⁸ By the late 1980s, the cost of living and doing business in Colorado had been greatly reduced. These low costs gave Colorado an additional competitive edge entering the 1990s.

Colorado's High-tech Investments Paid Off in the 1990s

When the U.S. high-tech sector took off in the 1990s, Colorado was primed to enjoy a disproportionate share of the benefits. The high tech share of all Colorado nonfarm private establishments increased 73 percent from 1989 to 1997.⁹ Computer services and communications services were two of the fastest growing industries in Colorado during the 1990s.¹⁰ Indeed, Colorado's employment and average earnings in the communications industry doubled between 1990 and 2000.¹¹ In more general terms, Colorado's high-tech employment base grew 33 percent between 1990 and 1996, as 30,000 jobs were created.¹²

⁷ U.S. Census Bureau, *Educational Attainment in the United States: March 1991 and 1990*, Table 13. Using a slightly different measure, the share of adults with a bachelor's degree or higher, the 1990 Census found that Colorado ranked third among the 50 states, just behind Massachusetts and Connecticut.

⁸ Thomas Noel, "Mile High City," 1997, http://www.denvergov.org/AboutDenver/history_narrative_7.asp.

⁹ See Melnick et al.

¹⁰ William Keeton, "Economic and Banking Conditions in Colorado," Federal Reserve Bank of Kansas City, May 1997.

¹¹ See Kendall.

¹² William T. Archey, President and CEO of the American Electronics Association. Testimony before the House of Representatives, April 23, 1998.

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Other Factors Contributing to Growth in the 1990s: Recreation, Second Homes, Capital Gains and More Public Investment

While the booming high-tech market was a major driver of Colorado's growth in the 1990s, other factors played key supporting roles.

Recreation

Colorado has been a popular tourist destination for many years, thanks in large part to its geography and the recreational activities it provides. The mountainous western half of the state contains world-renowned ski resorts like Aspen and Vail. The state also boasts over 41 state parks and offers a wide variety of outdoor activities—skiing, hiking, mountain biking, and kayaking. Its location in the middle of the country and the presence of a major airport, linked to the mountains by well-maintained highways, supported the growth of the ski and other industries. As the nation became wealthier during the 1990s, more people were able to travel and take advantage of Colorado's natural assets. By 1997, tourism jobs accounted for eight percent of all jobs statewide and 26 percent of all jobs in the Western Slope, the region with the highest concentration of ski resorts.¹³

Second Homes

During the 1990s, tourism was not limited to out-of-towners making short visits to the state. According to a 1997 study by the Center for Business and Economic Forecasting, the traditional definition of tourism began to change during this time, as more wealthy visitors began building second homes in Colorado. Such homes allowed visitors to stay longer and visit more frequently, creating a new demand for services and jobs.¹⁴ Construction, in particular, benefited from this new trend.

Capital Gains

Investments in high technology began to soar in the 1990s, creating what would later be dubbed an "Internet bubble." These investments flourished in the longest-running bull market the US has ever experienced. Capital gains on these investments also increased, especially in states—like Colorado—that had a huge high-tech sector. Realized capital gains increased nearly six-fold between 1992 and 2000 in Colorado, making income taxes on capital gains realizations an important source of revenue in the state.¹⁵ (The state's strong revenue growth in the 1990s, which was largely driven by

¹³ This does not take into account indirect services or jobs resulting from tourism, such as landscaping for hotels or laundry. Center for Business and Economic Forecasting, "Tourism Jobs in Colorado," Colorado Department of Local Affairs, March 15, 20001, www.dola.state.co.us/demog/cbef/tourism.pdf.

¹⁴ Ibid.

¹⁵ In fact, capital gains is a more important source of income for Colorado than in other states. See Bill Keeton, "The New Financial System: What's in It for Colorado?," Federal Reserve Bank of Kansas City, May 2001, <http://www.kc.frb.org/spch&bio/colorado2001/co2001doc.pdf>.

these capital gains, is sometimes incorrectly attributed to TABOR. Colorado’s nonpartisan Legislative Council has pointed out drily that “the health of the stock market cannot be linked to the presence of Colorado's TABOR limits on government spending.”¹⁶⁾

Public Investment

Colorado also made a series of public investments in the mid 1980s and early 1990s that focused on further developing the state’s science and technology sector. These investments ranged from economic development initiatives, such as establishing enterprise zones, job training programs, and state business development and international trade offices, to increased funding for higher education, and infrastructure projects, the largest of which was the \$3 billion Denver International Airport.

The precise contribution of each of those initiatives is difficult to measure. But it appears likely that many of these public investments, along with the other factors described in this paper, have made Colorado particularly well-placed to succeed in a technology led economy. A team of researchers from the business school and the public affairs school at Arizona State University, in a multi-state study issued in 2003, reported that successful high-tech states including Colorado “show sustained intergovernmental funding for human and capital infrastructure, which was matched by private investments, linked by catalytic events, and sustained by leadership. And, whether by chance or design, they benefited from proximity to research institutions and good quality of life, both of which are powerful attractions for high tech businesses.”¹⁷

TABLE 2. ECONOMIC INDICATORS: AVERAGE ANNUAL CHANGE, 1992-2004			
	Jobs	Personal Income (\$2004)	Population
Arizona	3.8	4.8	3.2
Colorado	2.6	4.4	2.3
Idaho	2.9	3.5	2.2
Montana	2.2	2.6	1.0
Nevada	5.0	5.8	4.7
New Mexico	2.3	3.0	1.5
Utah	3.1	4.1	2.2
Wyoming	1.8	3.0	0.7
Mountain States	2.8	3.8	2.2

Source: CBPP analysis of data from Bureau of Labor Statistics, Bureau of Economic Analysis, and Census Bureau.

Colorado and Its Neighbors, Pre- and Post-TABOR

Colorado is the only state with TABOR, but it is not the only state with high levels of military investment, high-tech firms, a young and well-educated population, and Rocky Mountains ski resorts. If TABOR caused Colorado’s economic growth, then Colorado alone should have boomed in the 1990s. In fact, however, other states also grew strongly in the 1990s. Colorado’s Rocky Mountain State neighbors experienced similar and sometimes greater growth than did Colorado during the 1992-2004 time period. Nevada’s average annual job growth in the post TABOR years has been almost twice that of Colorado’s. Arizona, Idaho, and Utah also have had higher job growth

¹⁶ Colorado Legislative Council, House Joint Resolution 03-1033 Study: TABOR, Amendment 23, the Gallagher Amendment, and Other Fiscal Issues, September 2003, p. 31.

¹⁷ See Melnick et al, p. iii.

than Colorado. Personal income growth has also been higher in Arizona and Nevada than in Colorado in these last 12 years.

Furthermore, comparing Colorado’s performance to that of its neighbors in the 12 years prior to TABOR to the 12 years since its implementation shows that Colorado’s rankings on key indicators remained unchanged.

Conclusion

With or without TABOR, Colorado’s economy would have fared well in the 1990s. The state had benefited from decades of military, high-tech, and research investment by both the public and private sectors. It had perhaps the nation’s best-educated workforce, a great climate, low costs, and a strong public commitment to education and quality of life. These factors helped Colorado grow in the 1990s — just as they had helped Colorado grow in the decades before TABOR was enacted.

TABLE 3: COLORADO RANKINGS AMONG MOUNTAIN STATES		
Average Annual Growth	1980-1992	1992-2004
Jobs	5 th	5 th
Per Capita Personal Income	2 nd	2 nd

Even more than its Rocky Mountain neighbors, Colorado was hit hard by the 2001 recession. Whether Colorado will return to strong economic growth may depend in part on its ability to continue making the public-sector investments that have benefited the state in the past. Such investments, however, are threatened by TABOR’s artificial formula for determining state spending levels, which has contributed to sharp declines in education and other critical public services.¹⁸ Coloradoans’ recent approval of a statewide measure to suspend TABOR for five years marks an important first step in enabling the state to make the investments it needs to prosper in future decades.

¹⁸ The flaws in TABOR’s formula are described in David Bradley, Nicholas Johnson, and Iris J. Lav, *The Flawed ‘Population Plus Inflation’ Formula: Why TABOR’s Growth Formula Doesn’t Work*, Center on Budget and Policy Priorities, January 13, 2005, <http://www.cbpp.org/1-13-05sfp3.htm>. The impact on Colorado public expenditures is described on David Bradley and Karen Lyons, *A Formula for Decline: Lessons from Colorado for States Considering TABOR*, Center on Budget and Policy Priorities, October 19, 2005, <http://www.cbpp.org/10-19-05sfp.htm>.