

# **The Wrong and Right Reasons to Support California Manufacturing**

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In 1993 the California legislature enacted a tax incentive to encourage manufacturing investment in the state. The Manufacturing Investment Credit (MIC) was contingent upon employment growth in the sector: it was designed to automatically expire (“sunset”) if the number of manufacturing jobs failed to remain at least 100,000 jobs above their level in 1993. This condition was met until 2003, when, following the decline in employment after the dot-com boom and the 2001 recession (each of which affected California disproportionately), the MIC expired.

This briefing outlines the economic arguments for supporting manufacturing, focusing on reinstating a similar tax incentive. It does not include any new economic modeling, but rather synthesizes results from previous analyses, and responds to past criticism of the MIC.

## **Summary of Findings**

- **Due to the high wages and ripple effect of manufacturing investment and employment in the overall economy, it is important to give manufacturing special preference. This industry’s special characteristics override the traditional argument against industrial policy (that the market is superior to government for allocating resources among industries.)**
- **Contrary to the critics of the MIC, it almost certainly did stimulate employment, helping to slow the slide in manufacturing jobs in California from 1993 to 2002 by two-thirds compared to the U.S. trend.**
- **Critics misinterpret the recent decline in manufacturing employment, arguing that the MIC “didn’t work” to increase manufacturing jobs. This is an inappropriate standard. Its main realistic goal is not manufacturing job growth, but retention.**
- **Because manufacturing investment often reduces industry jobs, but stimulates employment in *other* industries, any employment standard for a new incentive should be based on *total* employment, not manufacturing employment.**
- **Based on modeling by the Milken Institute, projected ten-year revenue gains exceed losses by almost 3:1 (including the time value of money). The incentive’s 39% rate of return to the General Fund should not be taken lightly.**

## **Manufacturing’s Special Role in the Economy**

While most policy advocates with a free-market orientation do not believe in favoring particular sectors through public policy (we believe the market is superior to government for allocating resources among industries), many proponents, including this author, consider manufacturing an exception, for four main reasons.

- First, it is reasonable to give policy preference to exporting industries, which bring income from outside the state, over local population-serving industries. Manufacturing is one of the most export-intensive (exports as a percentage of total sales) industries in California.
- Second, manufacturing is highly productive (i.e., adds more value per worker than most other industries), which meant that it can pay above-average wages. Furthermore, California manufacturing is especially productive: its value added per worker in 2001 was \$191,000, 16% higher than the U.S. manufacturing average of \$165,000.<sup>2</sup> Any increase in manufacturing employment will have a greater “ripple effect” (multiplier) on the rest of the economy than would an equal increase in most other industries.
- Third, California’s high costs of doing business, as established by a number of national comparisons<sup>3</sup>, particularly disadvantage manufacturers. Not coincidentally, Economy.com found that high-cost states such as Massachusetts, New York, Connecticut, New Jersey and California had less than half of the manufacturing output as a share of the state economy as low-cost states like Oregon, Kentucky, Indiana, and Ohio<sup>4</sup>. Proponents argued that a sector-specific tax incentive would partly compensate for other sector-specific handicaps imposed by public policies.
- Finally, manufacturing’s high productivity allows it to pay superior wages workers of even relatively modest skills (e.g., a high school education). Manufacturing is one of the fundamental enablers of the American middle class.

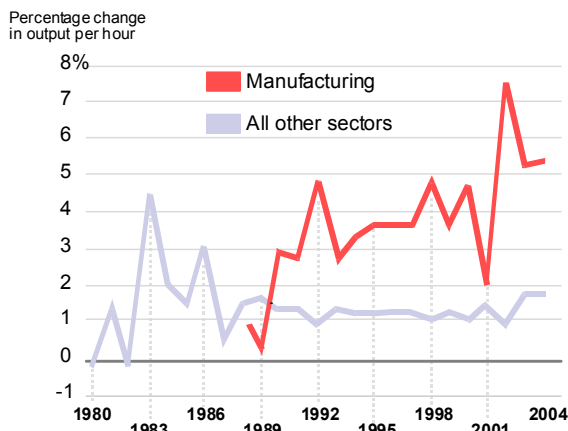
As McKinsey & Co. has put it, “California manufacturing is at a crossroads. It is mature and diverse, yet in many ways it is a poster child for manufacturing in high-cost countries...[Manufacturers] must deal with regulatory challenges that are greater than in other states and are absent from many developing, low-cost countries.”

### Productivity Growth: the Two-Edged Sword

Since the early 1990s the face of manufacturing has changed profoundly. The wave of robotic- based automation that was then still in its infancy has now pervaded the sector. Its productivity growth had long outpaced the rest of the economy, but in the 90s the sector’s lead widened, as illustrated in Figure 1<sup>5</sup>. At 4.2% productivity growth (the 1993-2004 average), a firm can cut its workforce in half to service a constant demand, every 17 years.

These increases in efficiency—a manufacturing trend throughout the

**Figure 1**  
Change in labor productivity (output per hour), manufacturing vs. all nonfarm workers



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis

industrialized world—meant that firms could satisfy growing demand without hiring new workers. In many industries, capacity outstripped demand, necessitating layoffs. While high productivity meant that surviving manufacturing workers were well paid, fewer and fewer workers were necessary, as shown in Figure 2<sup>6</sup>.

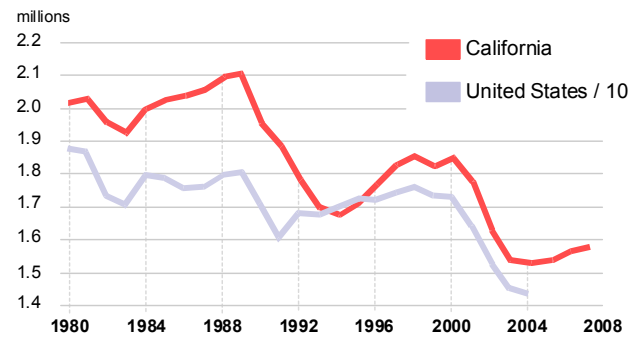
Manufacturing has been “declining” in terms of employment, both in absolute numbers (from 19 to 14 million since 1979) and as a share of total employment (from 32% to 12%) since 1955<sup>7</sup>. But its share of output (gross national product), has been remarkably stable at about 15% throughout. The difference between employment decline, and output stability, is due to productivity growth.

In addition, as international transportation costs have declined, and many formerly destitute countries have improved the skill level of their workforces, many American manufacturers have relocated or expanded overseas. Because investments have long lead times, manufacturers are making investment decisions now, based on current and expected conditions, that will affect employment rates in this state for decades to come. California’s high costs and the relative attractiveness of other locations lead McKinsey & Co. to state that 1 million jobs—about 65% of those remaining—are “up for grabs”, that is, have no compelling business rationale to remain in the state<sup>8</sup>.

### Implications for a California Manufacturing Tax Incentive

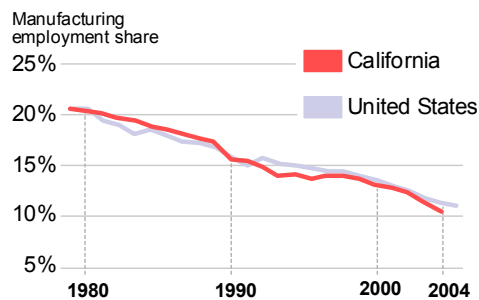
California has not been immune to these trends. As illustrated by Fig. 2, since 1980 the state’s manufacturing employment has fallen along with the nation’s. But during the period the MIC was in force, California’s slide was only about one-third as steep—0.34% per year, vs. 0.92% for the nation. (These are average annual rates of change in manufacturing employment in each jurisdiction. Like any average, it conceals changes during the period. For example, state manufacturing employment actually *grew* in the latter half of the 1990s, even while U.S. employment remained flat.) While some may attribute the disparity to differences in our industrial composition compared to the rest of the country, this seems unlikely. California did indeed benefit from the boom in electronics investment in the 1990s, but it also was hit very hard by downsizing of defense purchases. It seems quite plausible that California’s success in limiting manufacturing job losses was due in part to tax incentives.

**Figure 2**  
Manufacturing employment (in millions)  
1980-2008



Source: U.S. Dept. of Labor, Bureau of Labor Statistics

**Figure 3**  
Manufacturing’s share of total employment  
1980-2004



Source: California Dept. of Finance, BLS

## Misunderstandings About Economic Claims for the MIC

Skeptical observers of the MIC's record have misunderstood several important elements of its economic impacts.

Projections of the job-creation potential of this tax incentive, such as a report by AUS consultants in 1993<sup>9</sup>, or a 2002 report by the Milken Institute<sup>10</sup>, estimated job growth *compared to an unspecified baseline* if a tax incentive were adopted. Because the baseline was not explicit, many readers misinterpreted this projection as “growth compared to the last year before the credit was instituted”, and discredited these findings. For example, manufacturing employment in 2002 was below its 1993 level (1,638,000 in 2002 vs. 1,695,000 in 1993), although AUS had projected in 1993 that total California employment would be augmented by 500,000 as a result of the MIC.

But note the “apples to oranges” comparison: AUS projected change in *total* employment, not manufacturing employment. Most manufacturing investments make labor more efficient, which obviates the need to expand manufacturing hiring. But that increased productivity leads manufacturers to increase purchases from firms in other industries, which will hire more workers to meet increased demand from manufacturing. And in fact, California *total* employment in 2002 was 2,412,000 above 1993 levels. In the Milken Institute's prospective analysis of a 5% sales tax exemption on manufacturing investment, they estimate that non-manufacturing jobs will increase about three times as much as manufacturing jobs.<sup>11</sup>

Because the baseline was not specified, readers understandably assumed that projected growth in employment was from a base year (e.g., 1993), not compared to the hypothetical trajectory without the MIC. Given the profound shrinkage in manufacturing employment throughout the industrialized world, it would not be reasonable to expect any policy intervention to increase *absolute* manufacturing employment. The best that could be expected would be to retard the employment decline, which the MIC did, cutting the rate of decline by two-thirds compared to the nation.

In addition, the performance of tax incentives is influenced by forces outside of the state's control. Investment incentives are supply-side instruments. If demand declines, as happened in manufacturing following the end of the late 1990s investment boom, and throughout the entire economy during the 2001 recession, employment will have to follow. But if the “pie” of worldwide manufacturing capacity shrinks, incentives can help maintain or grow the state's share. That is why 49 states, including each of the top twelve industrial states, have manufacturing investment tax incentives on their books.<sup>12</sup>

Two other arguments against incentives surfaced in the 2002-03 debate about letting the MIC expire. Opponents argued that such incentives simply rewarded investments that firms would make anyway. But in the 2003 Area Development Corporate Survey of 114 large companies (75% of which were manufacturers), 92.7% considered state and local tax incentives as “very important” or “important” in making facility location decisions<sup>13</sup>, more than any other factor. Some also argued that, as noted, investment often reduces, not increases, direct employment. But as indicated, by making manufacturers more productive and competitive, it allows them to purchase more from other industries, boosting indirect employment.

As the previous paragraph implies, the correct performance measure is not manufacturing employment, but total employment. As mentioned, investments generally reduce the need for more labor, thereby increasing productivity and making the firm more competitive. This allows the firm to purchase more from other sectors, and thereby increase employment elsewhere in the economy. *The main purpose of a manufacturing tax incentive is not to increase manufacturing employment—although that may be a small bonus—but to compensate for other public policy handicaps to allow this crucial sector to remain competitive, and thereby pull along other sectors of the economy.*

## Fiscal Impact

Some who are receptive to these economic arguments nevertheless are resistant to a manufacturing tax incentive because of the expected cost to state revenues. The 2002 Milken study (illustrated in Figure 4) estimated that, compared to a no-incentive baseline, a 5 cent reduction in sales taxes on manufacturing investment would cause the state to lose about \$180 million in revenue in the first year, break about even in the second year, than reap additional revenue thereafter from the added economic activity (e.g., equipment purchases, construction, and “ripple effects” in other sectors.) Some policy makers are unwilling to accept the early revenue loss.

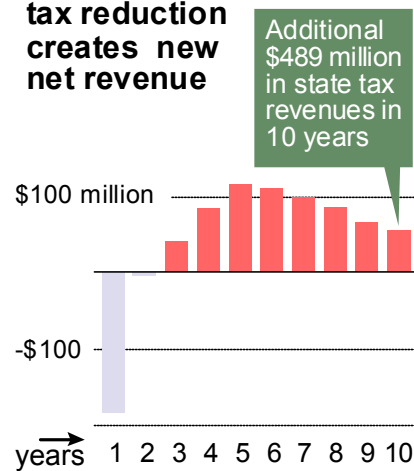
But as the cliché goes, it takes money to make money. The rate of return to the state (i.e., revenue gained compared to revenue lost) is 39%—far above the state’s borrowing cost<sup>14</sup>. (This is the standard test that corporations use in choosing investments.) Any investor would be ecstatic at such a successful investment.

Another standard financial calculation known to every MBA student is the incentive’s “net present value” (NPV)—the excess of benefits over costs, after the time value of money is considered. Based on Milken’s fiscal analysis, the manufacturing incentive’s NPV is \$311 million at a 5% discount rate (the rate by which a payment one year in the future is discounted to account for time value of money) over the first ten years<sup>15</sup>. In other words, the sacrifice of \$180 million in the first year will yield nearly three times as much added revenue (\$491 – 180 = 311 million) over the following nine years. Leaving this amount of money on the table is penny-wise and pound-foolish.

By the Milken Institute’s estimate, this first-year revenue loss will generate 60,000 jobs (total employment in all industries) by the fifth year. This translates to a cost of \$3,000 per job, which is more cost-effective than almost any other economic development program.

An alternative version of the incentive would prohibit manufacturers from claiming the tax benefit fully in the first few years, to delay and spread out the initial fiscal impact. Since those deferred tax savings have a time value, each year’s delay will probably reduce stimulated

**Figure 4**  
5-cent sales tax reduction creates new net revenue



Source: The Milken Institute (Study does not include telecommunications purchases)

investment by between 8 and 12%.<sup>16</sup> Policymakers will need to decide how much economic (and long-run revenue) growth they are willing to forego to reduce the credit's short-term fiscal impact.

## Conclusion

Manufacturing in California is worth taking special efforts to retain: it remains highly productive, and that competitiveness helps elevate other sectors of the economy. But powerful forces have been reducing manufacturing employment for decades: the very productivity that makes the sector so vibrant, and public policies that impose high costs.

Notwithstanding arguments to the contrary, the manufacturing tax incentive in place from 1993 through 2003 *worked*: It was very likely one of the major factors that decelerated the decline in California's manufacturing employment by two-thirds—despite severe defense downsizing—and for five years (1995-2000) bucked the national trend entirely. The realistic goal of a new tax incentive will not be *absolute* expansion of manufacturing employment, but *retention* of employment. And its support of manufacturing's competitiveness will pay great dividends for the rest of the economy, because of the sector's high productivity.

While the incentive has a non-trivial initial fiscal impact, over the first ten years it will generate through economic growth added revenues of almost three times its initial cost (after reflecting the time value of money). That 39% rate of return would be the envy of any investor. This is an opportunity that even fiscal hawks should embrace.

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<sup>1</sup> Professor Philip J. Romero served as dean of the Lundquist College of Business at the University of Oregon from 1999-2004, where he teaches strategy and economics. Previously, he served as chief economist to Gov. Pete Wilson of California from 1991-99. He helped design California's MIC, which remained in law from 1993-2003. This report was sponsored by the California Manufacturing and Technology Association (CMTA). All opinions expressed are those of the author and do not reflect those of CMTA or the University of Oregon.

<sup>2</sup> McKinsey & Co. for the Bay Area Economic Forum, "One Million Jobs at Risk: The Future of Manufacturing in California", March 2005

<sup>3</sup> For example, the Milken Institute's 2001 Cost of Doing Business Survey found that manufacturers' costs in California are 32.2% above the national average. DeVol, Ross, et al, "The Economic Impact of a Sales Tax Reduction on Manufacturing Equipment", Milken Institute, 6/02.

<sup>4</sup> Cited in DeVol, op cit.

<sup>5</sup> Productivity data from U.S. Department of Labor, Bureau of Labor Statistics, [www.bls.gov](http://www.bls.gov).

<sup>6</sup> Employment data from California Dept. of Finance, [www.dof.ca.gov](http://www.dof.ca.gov). In Fig. 2, U.S. manufacturing employment has been divided by a factor of 10 to put it on the same scale as California employment. Data for 2012 in figs. 2 and 3 are from forecasts by BLS (for the U.S.) and EDD (for California). The author considers this forecast (only 0.1% decline per year for the next ten years, versus 0.6% per year for the past ten) optimistic, given the substantial remaining structural excess capacity in many manufacturing industries (e.g., autos, commercial airplanes.)

<sup>7</sup> Congressional Budget Office, "What Accounts for the Decline in Manufacturing Employment?", Feb. 18, 2004, Figure 3.

<sup>8</sup> But McKinsey believes that many manufacturing industries will see an advantage in locating production near their markets. The size of the U.S. market encourages firms to remain here, unless other factors, such as public policy, exert too strong a countervailing influence.

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<sup>9</sup> AUS Consultants, “Impact for the California Economy of an Exemption for the Manufacturing Sector from the 6 Percent Sales Tax on Machinery and Equipment Spending”, August 1993.

<sup>10</sup> DeVol, op cit.

<sup>11</sup> DeVol, op cit.

<sup>12</sup> Legislative Analyst’s Office (LAO), “An Overview of the California Manufacturers’ Investment Credit”, October 2002.

<sup>13</sup> Cited in McKinsey, op cit.

<sup>14</sup> California’s long-term borrowing rate at present is somewhat above 4% (*Wall Street Journal*, June 29, 2005.)

<sup>15</sup> NPV calculations usually uses a firm’s rate of interest when borrowing for the discount rate. A 5% discount rate is slightly conservative since California’s current borrowing rate at present is in the 4%+ range.

<sup>16</sup> Risk-adjusted discount rates for large firms are lower than this range, but a considerable share of the MIC was utilized by small firms, which generally bear greater risk.