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The National Association of Manufacturers mission is to enhance the competitiveness of manufacturers and improve American living standards by shaping a legislative and regulatory environment conducive to U.S. economic growth, and to increase understanding among policy-makers, the media and the general public about the importance of manufacturing to America's economic strength.

The Manufacturing Institute, the education and research arm of the NAM, serves to build intellectual support among policy-makers, the media and the public for a pro-growth, pro-employee agenda, while encouraging recognition of manufacturing's contribution to the well-being of the nation.

Acknowledgments

The information contained in this paper comes from a number of sources, including studies and surveys conducted by the National Association of Manufacturers (NAM), The Manufacturing Institute (the NAM's education and research arm), the NAM's Center for Workforce Success, the Modernization Forum, the U.S. Departments of Commerce and Labor, and the U.S. Small Business Administration. This paper was written by Patrick Holten, with assistance from Colleen Appleby-Carroll.

Strategic insight and direction was provided by NAM Small and Medium Manufacturers Vice President Dean Garritson and Bill Canis, executive director of The Manufacturing Institute. Much of the new data on SMMs was developed by NAM economist David Huether. Thanks also to the NAM's Nancy Fullerton for her many invaluable suggestions.

Foreword

America's small and medium manufacturers (SMMs), those companies employing fewer than 2,000 employees, are an integral part of the U.S. economy, yet their contributions in terms of employment and production are often overlooked. This is due partly to their own success and partly because the parts, components and other things they produce are rarely visible to everyday American consumers. Many SMMs anchor their local communities with a solid, steady payroll and significant tax base.

SMMs are succeeding. They are increasingly sophisticated in the use of technology, the Internet, e-business, worker training, environmental compliance and marketing overseas.

Still, challenges persist. The unknown costs and benefits of e-business have many SMMs unsure about investing hard-earned profits in untested territory. Trade barriers and economies of scale make it difficult to break into overseas markets. The skills gap is another daily concern, as SMMs endeavor to train workers who often lack the skills needed to compete in a high-tech manufacturing plant.

To ensure the vitality and continued growth of small and medium manufacturers and the millions of workers they employ, Washington policy-makers need to act. Pro-growth tax relief—permanent repeal of the death tax, enhanced capital cost recovery, AMT repeal, a permanent R&D tax credit and international tax reforms—would help these firms invest more in their people and equipment. Smarter and more flexible regulations that address proven needs and/or real dangers would ensure every dollar invested by SMMs helps the environment or protects worker safety. The near universal health coverage provided by SMMs should not be put at risk by new legal exposure. Likewise, our current product-liability laws should be reformed to end frivolous suits and class actions that serve only to enrich trial attorneys at the expense of America's productive manpower and resources.

Enacting these and similar measures will ensure that America's small and medium manufacturers remain a potent force in today's changing economy.

It's about time someone put together a comprehensive look at the state of America's small and medium manufacturers.

When people think of American manufacturing, few recognize or even know that about half of America's 18 million manufacturing employees make their living at smaller manufacturing firms. Many, if not most, of these firms are family-owned and operated shops with factory-floor technology that would impress even the most technically savvy person. SMMs blend computer-aided design, machinery and worker skills to create millions of component parts and consumer products seen and used every day by every American. Still, their story is rarely heard. This paper changes that.

These pages document the fantastic story of small and medium manufacturers and the challenges they face. Far too many reporters, educators, economists and even members of Congress have virtually no understanding of this sector of the American economy. The popular myth is that American manufacturing is past its prime; the truth is manufacturing is as vibrant as ever, and small and medium manufacturers play a big part in this success. Read on to learn just how important this economic sector is to America's prosperity now and in the years ahead.

You'll truly be amazed at the strength and innovation these firms continue to display.

Sincerely,

Rep. Don Manzullo (R-IL-16)
House Small Business
Committee Chair

Introduction

Small and medium manufacturers (SMMs) comprise one of the most vital sectors of our economy. Understanding the critical role SMMs play in our economy, and developing laws and policies to enhance the competitiveness of SMMs, enhances opportunities for economic growth.

Medium manufacturers are defined as those with 2,000 or fewer employees; small manufacturers have 500 or fewer. Such small employers, the Federal Reserve said in a recent report, "are an integral part of the economy. They account for about half of private-sector output, employ more than half of private-sector workers and provide about three-fourths of net new jobs each year." Consider that SMMs—

- comprise about 95 percent of all manufacturing firms and employ about half of all manufacturing employees;
- account for 37 percent of all manufacturing receipts—more than $1 trillion a year;
- pay their workers 20 percent more than employees in other types of small business; and
- export increasingly more each year—the number of SMMs that export more than 10 percent of their sales tripled over the past decade.

SMMs play a crucial role in our industrial mix, providing a variety of products to large corporations, thus enabling these large companies to focus on their primary product lines. The extraordinary advances in efficiency, productivity and profitability of our industry leaders in recent years were made possible by their ability to rely upon a vigorous SMM sector for a wide variety of specialized products.

SMMs are widely recognized as incubators of creative innovations—work processes and revolutionary products—that are the hallmark of American ingenuity. Their relatively small size and less cumbersome bureaucracies enable them to experiment with new ideas more readily than larger corporations. A disproportionately high percentage of our most important breakthroughs in industrial processes and products originate in SMMs.

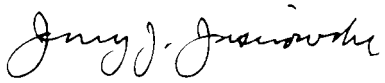
Though they share many of the basic characteristics of small businesses in other sectors, SMMs differ in many important respects. SMM workplaces are more technologically advanced than other companies and thus

require well-educated and trained employees. Better educated and trained means better paid.

Because SMM jobs pay more, they boost their local communities with measurable benefits to other area businesses. SMM employees earn more and spend more; ancillary businesses profit from that spending. Every new job in a community has a positive residual effect in other sectors. But, generally speaking, new jobs created by SMMs are even more beneficial than jobs created in other sectors because of their greater multiplier effect on employment and output in those sectors.

Though SMMs provide extraordinary benefits to our society, so do they contend with extraordinary challenges. Large increases in basic costs, such as energy, and regulatory mandates, are not easily funded. Only by cutting costs and increasing productivity are SMMs able to stay in business when costs rise.

This report was developed specifically for elected officials, policy-makers and the media who seek to understand the directions of the U.S. economy and the challenges we face. Key to understanding is a better grasp of the importance of this vital sector of our economy. We believe this publication — the first the NAM and The Manufacturing Institute have devoted solely to the role of SMMs in the economy — will help fulfill this need.



Jerry J. Jasinowski
Vice Chairman,
The Manufacturing Institute
President,
National Association of Manufacturers

The SMM Story

On a windswept North Carolina beach in late December 1903, two men named Wilbur and Orville trotted out an awkward-looking machine that would revolutionize the world. Their contraption, a 4-cylinder, 12-horsepower machine with wings and propellers, was built in their bicycle shop in Dayton, Ohio. It did what no other machine before it had done. After an initial test in which the motor stalled, at 10:35 a.m., the Wright Brothers machine flew. The first heavier-than-air craft held Orville Wright aloft for 12 seconds, travelling 120 feet. Things would never be the same.

This amazing story is a tribute to American manufacturing, particularly small manufacturers. Wilber and Orville Wright owned a machine shop in Ohio that made bicycles. Their tinkering and fascination with locomotion, both earthbound and through the air, led to one of the most important contributions to industrial advancement.

The Wright story is famous. The fact that they were small manufacturers is not. That's a shame and indicative of the position of small manufacturers today. Their importance is masked by their own success. Small and medium manufacturing firms are often the invisible value-adders in our economy.

Given the volatility of today's global market and the rapidly changing ways in which we do business, the success of SMMs is all the more remarkable. The seamless way in which they conduct their business often disguises an amazing ability to analyze, innovate and respond to customer needs. Despite their small size—or perhaps because of it—smaller firms are unsurpassed in their ability to adapt and find solutions to new and often difficult challenges.

Succeeding in today's economy is a tough job. You have to do more than put out a good product: You must update it continually, maintain stringent quality control and ensure your product is delivered when and where your customer specifies, anywhere in the world.

That's the easy part. In addition, you must hold down costs; offer competitive wages and benefits; tap a shrinking labor pool; train and educate workers who often lack basic skills; and deal with an ever-increasing tangle of government regulations, red tape and a punitive litigation regime. Still, America's small and medium manufacturers are coping and succeeding. This is their story.

What Is Small and Medium Manufacturing?

For purposes in this report, small manufacturers (SMMs) are defined as manufacturing firms that employ 500 or fewer employees. Those that employ between 500 and 2,000 employees are medium manufacturers. In either case, these companies are typically family-owned and operated. Many are subchapter S-corporations where income and losses flow through to individual shareholders. Although initial profits may seem large, much of the money is not available for distribution. SMMs must plow a significant share of their profits back into the company to remain competitive. This reinvestment allows SMMs to update machinery, install computer systems and provide employee training.

It's not unusual for an SMM to have millions of dollars in machinery, equipment and computer-information systems on the factory floor. On paper this makes these family-owned firms appear fabulously wealthy. But that's not the case. Their situation is analogous to a family farmer who owns millions of dollars worth of land but struggles to turn a profit each year. For SMMs, tight margins and downward pressure on prices are a daily fact of life. The challenge to meet payroll and make a profit is constant.

As an integral link in the manufacturing supply chain, some SMMs produce component parts and machinery that are then purchased and shipped to other manufacturers for insertion into larger products. Other SMMs manufacture products that are shipped directly to store shelves.

There are about 329,000 small manufacturing firms in the United States, employing roughly 7 million workers. Medium manufacturers include about 3,300 firms, employing 2.5 million workers. Together, that's 332,300 firms and 9.5 million people, or more than half of all the manufacturing workers in the country. About 95 percent of all manufacturers are small and medium firms.

Together, SMMs account for 36 percent of the value of all manufactured goods in the United States. That means SMMs alone account for more than 6 percent of the GDP.

SMMs can be found virtually anywhere in America. However, large concentrations of these firms are found in the Northeast, Midwest and California.

On average, manufacturing employees are paid very well, earning more than $13 an hour. That's 20 percent more than the average American worker makes. They also enjoy more and better employer-provided benefits than many of their counterparts in other sectors, such as service industries.

Overall, the contributions of SMMs to economic growth, innovation, exports and job growth are strong and growing. SMMs are a vital part of the American economy.

A Local and National Anchor

Small Firms Have a Big Impact on Regional and State Economies

No doubt about it, manufacturing contributed mightily to the economic growth of the '90s. Manufacturing also plays a significant role in the health of state and regional economies— even in those areas where manufacturing has declined as a portion of the Gross State or Regional Product.

As the chart below suggests, from 1986 to 1999, manufacturing's contribution to the regional economies of New England, the Mid-Atlantic and Southeast regions of the United States fell, while it rose substantially in the Rocky Mountain states, Far West and Southwest regions of the nation. The Great Lakes States remain the most manufacturing-intensive. Even in the areas where it declined as a proportion of the economy, it remained a significant force.

Manufacturing's Contribution to Regional Economies

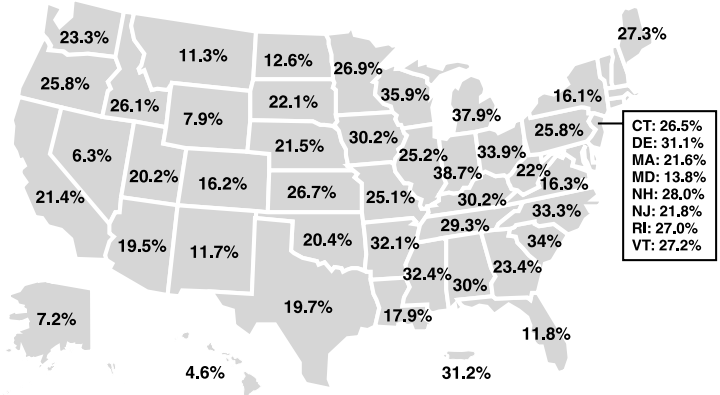
Region	1986	1999	Percent Change
United States	16.5%	17.1%	3.5%
New England	18.0%	16.9%	-5.9%
Mid-Atlantic	14.6%	12.6%	-13.3%
Great Lakes	24.4%	25.2%	7.5%
Plains States	17.6%	18.9%	23.4%
Southeast	18.2%	16.7%	-8.3%
Southwest	11.3%	16.3%	44.6%
Rocky Mtn. States	10.6%	12.7%	20.0%
Far West	12.6%	15.7%	25.0%

Source: U.S. Department of Commerce, Bureau of Economic Analysis, 2001

At the state level, manufacturing's contribution is equally compelling. According to the 1998 *Briefing Book,* issued by The Modernization Forum, many states have both a high proportion of manufacturing employment and a large share of payroll from manufacturers. In half of the states, manufacturers account for 20 percent or more of the labor force and 25 percent or more of the private payroll (see map on the next page). Nationwide, manufacturers are responsible for nearly a quarter of all business receipts and payrolls. Small manufacturers' share is large by any standard. In 1997, manufacturers paid more than $688 billion in payroll—with SMMs accounting for 44 percent ($301 billion) of it. Similarly, manufacturers earned more than $3.9 trillion in revenue that year, with 37 percent ($1.5 trillion) earned by SMMs.

Manufacturing comprises a healthy part of each state's economy. In 38 states, manufacturing is either the largest or second-largest sector

Manufacturing's Share of Private State Payrolls



Source: *US Bureau of Census, County Business Patterns, 1997*

based on the business receipts it generates; and in 28 states, it is number one. In many states where manufacturing is not thought of as a dominant sector, such as Vermont, New Mexico and South Dakota, it comes out on top. Nationwide, manufacturing is the second largest generator of business receipts, right after wholesale distribution.

Small manufacturers have a big part in generating this economic activity. In all but 3 states, small manufacturers generate at least one-quarter of the state's manufacturing receipts; in 20 states, they generate more than 40 percent.

For example, as the accompanying chart shows, in 1997, manufacturing receipts from business activity in Indiana totaled $145 billion,

State	Industry	Receipts (in millions of dollars)	Share of Manufacturing Receipts from SMMs
Indiana	Manufacturing	145,039	31.8%
	Wholesale	71,373	
	Retail	59,321	
	Services	43,268	
	Receipts from other sectors	86,397	

while wholesale generated $71 billion, retail $59 billion and services $43 billion. Small and medium-sized manufacturers generate 31.8 percent of Indiana's manufacturing receipts. (For a state-by-state breakdown, see *Appendix A* in the back of the booklet.)

Employees of small and large manufacturers are paid above the national average. Within the small business sector of each state, small manu-

facturers pay above what their small business counterparts in other industry sectors pay. This is a manufacturing premium for working in the industry and in 21 states, it is 25 percent higher than compensation in other small businesses. For example, average manufacturing compensation in Oregon is $31,442 but only $23,806 for other small business employees in other industries. That's a 32 percent premium for working in manufacturing. (For a state by state breakdown and the manufacturing premium that is paid to small manufacturing employees, see *Appendix B.*)

Small and medium manufacturers comprise a significant share of total manufacturing employment in each state. In New Jersey, for example, 58 percent of manufacturing employment is in small firms, compared with 63 percent in all other industries in the state. Interestingly in the largest manufacturing state in the nation, California, it is tied, with small business comprising 64 percent of manufacturing as well as other industries. In Hawaii, Florida, the District of Columbia, Nevada, Alaska and Rhode Island the intensity of small business employment is stronger in manufacturing than in other industries. (See *Appendix C.*)

Making Innovation and Technology Work

According to the U.S. House of Representatives Small Business Committee, small companies are responsible for 55 percent of workplace innovations. On a per-employee basis, they produce double the number of product innovations as large companies and garner more patents per sales dollar than big firms.

Step inside virtually any small or medium-size factory and you'll see a seamless blend of people and technology. Where once an industrial design engineer scribbled out product specifications (specs) on blueprints, today that person designs it on a computer screen, using the latest computer-aided drafting software. The engineer sees the product in three dimensions on the computer screen. With a mouse click, he or she can strip away its outer housing to reveal inside components for customers and equipment operators to see. Product specs are plugged into the factory-floor equipment via computers on the production line. The best SMMs closely monitor each step of the production process to strip out any wasteful steps.

Production Techniques: Lean Manufacturing and Just in Time

A growing number of SMM executives are adherents of Lean Manufacturing, a system-wide management process that continually seeks to increase profits by stripping out wasted time, material and manpower from the manufacturing process. Managers map, then analyze the production process or value stream, from finished goods to raw materials and repeatedly ask: "Are my customers willing to pay for this?" The results are often surprising and lead to refinements that further hone the manufacturing process.

Virtually every SMM uses the inventory-management process known as Just in Time (JIT). Simply put, a JIT plant manufactures goods only when needed, using as little inventory as possible, in the shortest time possible. To do it requires continual communication up and down the supply chain. Companies save a tremendous amount of space and money by not stockpiling raw materials. The material instead arrives precisely when the company needs it.

Parts arriving at the loading bay go directly to the production line. Likewise, finished products don't collect dust in factory warehouses until a customer is found to buy them. The finished goods come off the line and must be shipped immediately to fill customer purchase orders. There's little room for error. A mistake or delay on the line leaves customers waiting and raw materials piling up at the back door.

CASE STUDY

Lean Manufacturing

At United Electric Controls in Watertown, Mass., Lean Manufacturing is the centerpiece of a business plan that has significantly transformed this small but growing manufacturer of pressure, temperature switches and temperature-sensing probes.

UE designs and manufactures a very broad line of products with countless options. Management realized several years ago that it needed to overhaul UE's manufacturing system to stay competitive. Company President Dave Reis decided to take the Lean Manufacturing path. Instead of expanding the existing facilities, he shrank them by two-thirds, reduced employment by more than 50 percent through attrition and voluntary retirement, and cut the number of suppliers in half. Along the way, quality greatly improved, delivery lead times dropped from 10 to 20 weeks to less than a week and often only an hour. UE was able to completely eliminate a large inventory stockroom that was previously thought indispensable. Sales and profits went up.

"Lean manufacturing isn't at all about huge investments in expensive capital equipment. It is all about making deep cultural shifts within the company, overcoming resistance and changing the way people think about their work," Reis says. "We borrowed a lot of brilliant yet simple ideas that were developed many decades ago by Shigeo Shingo and Taiichi Ohno, the creator of Toyota's Just-In-Time production system. People, not expensive equipment, are the greatest asset any company has. Lean Manufacturing's magic lies in its simplicity. Its essence is in learning how to see the invisible waste within an operation and then to get rid of it. If you can't see it, then it will remain a part of the manufacturing process silently working against you every day. Many companies have no idea what the price tag is for all the waste. It is a very big number."

JIT works today where it could never have in the past. Improved communication technologies that can be synchronized with vendors and customers up and down the supply chain are largely responsible. Wireless phones, online order tracking, e-mail and company Intranets keep everyone informed about each stage of the process.

The Switch to Internet Operations and E-Business

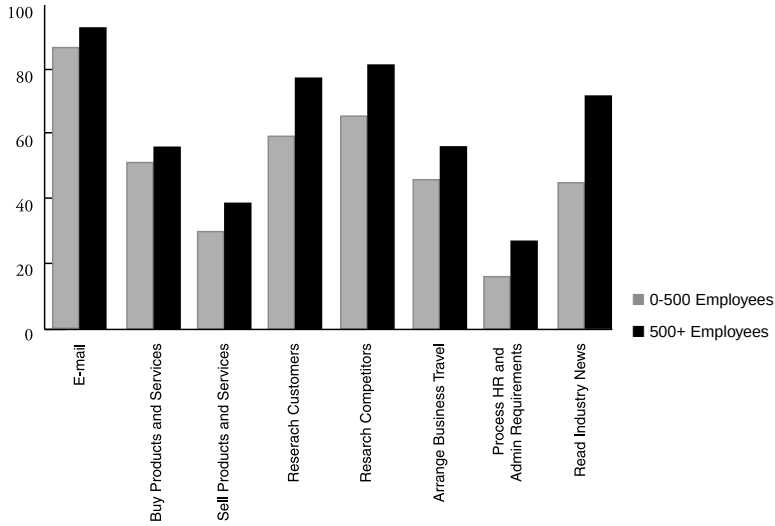
SMMs are slowly increasing their use of the Web and e-business to increase efficiency and grow. They certainly got an early jump on the

competition. In a survey the NAM conducted of SMMs in late 1999, fully 80 percent of respondents said they have a Web site—four times the estimated rate of businesses as a whole. The Small Business Administration (SBA) reports that small manufacturing firms log onto the Internet more often and for a wider range of applications than any other small business sector. At the same time, though, SMMs have been reluctant to commit their core business practices to the Web.

Of the SMMs using the Web, nearly two-thirds use the Internet to market their goods and almost as many use it to keep up on federal regulations. Even more (72 percent) use it to research the competition. "We check every Web site of every competitor we can find," says Gerald Letendre, president, Diamond Casting & Machine Company, Inc. Obviously, he's not alone.

Slightly more than 20 percent of SMMs are using e-business to shop for the best prices on materials and other purchases. This increase in efficiency and competitive pressure no doubt helps keep a check on price increases. However, few buy anything but indirect goods on the Web. E-business is also gaining some ground on EDI (electronic data interchange), an electronic platform for ordering, invoicing, etc., that links SMMs to larger customers. EDI is efficient but was, and still is, an expensive investment demanded by many customers. Nearly 8 percent of SMMs are using e-business in place of EDI as a relatively

How Is the Internet Used Inside Your Company?



Source: 2000 NAM SMM Survey

inexpensive electronic link to cover traditional EDI functions where their customers demand interaction.

The customer still drives many of the decisions on how and where to use e-business. More than 25 percent say that one of the key reasons they switch to e-business is that major customers require it. More than half say it enhances customer service. Unfortunately, the majority of SMMs are not convinced that e-business offers an adequate value proposition.

SMMs see some potential in using the Internet to find and retain new customers and expand sales into new domestic and overseas markets. Perhaps that is the reason that almost 40 percent of SMMs say the CEO or senior management has primary responsibility for e-business within their company.

There are some significant challenges SMMs must overcome before they can exploit all the benefits of e-commerce. There is some wariness, as nearly one-third say they can't yet make an informed judgment on e-commerce and e-business operations. Nearly 40 percent question their ability to use it properly and the same number are uncertain about the short- and long-term costs of e-commerce. Indeed, expert software and information-systems personnel are hard to come by for almost every employer. Economies of scale make it especially difficult for SMMs to attract and retain these professionals. Many simply can't afford to staff a full-time IT office at their plant.

Becoming fully engaged in e-commerce is likewise expensive, especially the trial-and-error aspects of this new venue. Indeed, more than half say they are uncertain about the intermediate and long-term costs of e-commerce. Choosing the right options and vendors can be bewildering. In addition, technology is changing so rapidly, what appears to be a perfect solution right now could be obsolete within a matter of months. Still, businesses that fail to take advantage of the Internet risk their future viability.

New Technology and Equipment on the Factory Floor

SMMs continue to boost their profits by investing in and using technologies such as computer-aided design, computer-aided manufacturing and robotics. The accuracy of these technologies has significantly raised productivity, trimmed error rates, and reduced scrap and rework.

Computer-integrated manufacturing (CIM), a "big-company" software tool that enables SMMs to integrate all computer systems in their facility—and beyond—is finally beginning to take hold. By using

CIM, a small manufacturer can integrate with other manufacturing facilities in one or more countries, as well as with vendors and customers.

CIM coordinates all aspects of manufacturing—from order to shipment of a final product. It integrates the SMM's accounting, finance, management, engineering, design, production, manufacturing and equipment. SMMs use this vital tool to manufacture products right the first time, and get them to the customer when they're needed.

Although SMMs don't enjoy the economy of scale that larger manufacturers do in applying technologies, they still reap significant benefits in time, expense and reduced defects. About 72 percent of small manufacturers attribute lower costs to technology investment and even more report faster cycle times. Sixty percent or more report increased production capability, higher returns on investment and a bigger market share—all due to technology investments.

It's no secret that the best technology is expensive. For perspective, consider that NAM survey data shows that 41 percent of SMMs peg the replacement cost of major equipment on the factory floor at more than $1 million. Cost is, no doubt, the major reason why SMMs trail their larger counterparts in the application of hard and soft technologies. That gap probably won't ever entirely close. But with technology advances moving rapidly forward and the price of ever more powerful computer systems going down, it's safe to say SMMs will continue to reap the benefits of cutting-edge technologies.

Building a Better Workforce: Education and Training

During the '90s, declining skills among high school graduates combined with an increasingly competitive global economy to create a scarcity of skilled employees available to work in today's high-tech manufacturing plant. Today, the United States still has a critical lack of skilled workers. Estimates are that we will need 10 million new skilled workers by 2020 to make up for the massive retirements of the baby boom generation.

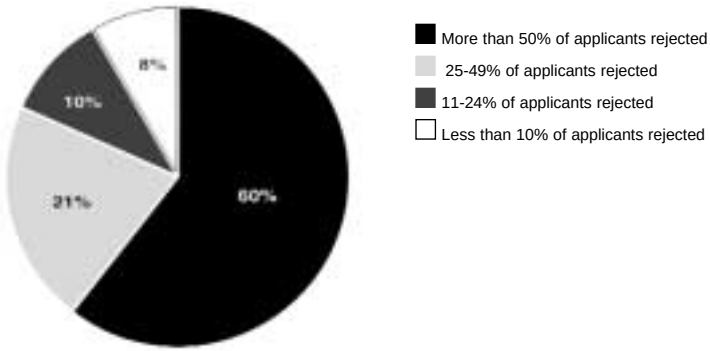
Manufacturers of all sizes face what's known as the skills gap—the wide divide between needed high-tech skills and the actual ability of many job applicants. High-tech manufacturing needs high-tech workers. But our schools at all levels aren't succeeding in producing those kinds of employees.

A number of forces have converged to create this situation: an education system that is out of touch with the business community; rapidly changing technologies; and an outdated image of manufacturing as low-tech and low paying that steers away qualified workers.

The Skills Gap, a landmark study conducted by the NAM in 1998, the Center for Workforce Success and Grant Thornton, offers a sobering perspective. The survey found that—

- *60 percent of manufacturers typically reject at least half of all of applicants* as unqualified, lacking both relevant skills and work experience. Some report having to reject all candidates; and

Manufacturers' Rejection Rate of Hourly Job Applicants



Source: *The Skills Gap*, Center for Workforce Success, 1998 (Excerpt)

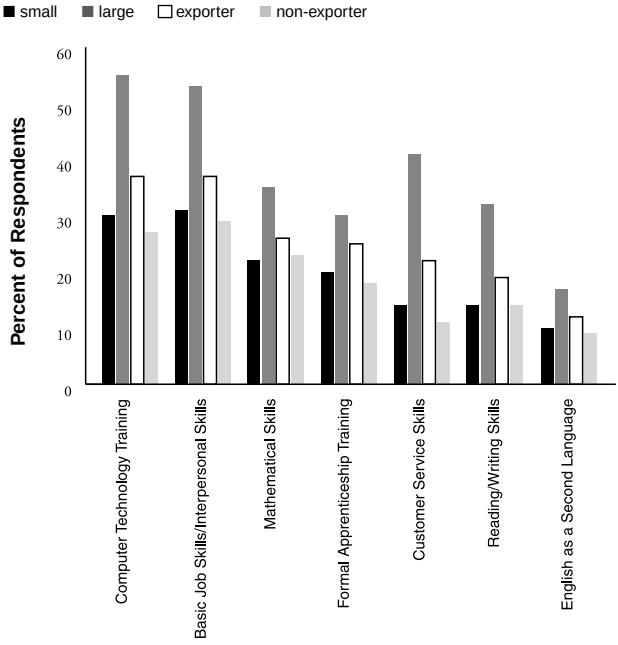
- *88 percent of responding manufacturers report difficulties in finding qualified candidates* in at least one job function—from lower-skilled positions to highly technical computer programmers.

Investing in Training Strengthens Worker Loyalty

SMMs have an especially difficult time attracting qualified workers. They simply don't have the resources and benefits to compete with larger corporations. The answer for many is to invest more money and resources in education and training. Today, approximately 15 percent of SMMs offer up to 40 hours of training per employee, per year. The highest performing firms routinely offer more than 40 hours. However, the great majority of SMMs—60 percent—provide nearly 21 hours.

There is a strong correlation between learning and loyalty. Employers find that workers who are given the opportunity to upgrade their learning and skills tend to stay longer with the company, even when offered a job elsewhere at higher pay. That's important to SMMs—especially when the labor market is tight and competitors prey on each other in the search for highly skilled workers.

Remedial Programs in the Workforce



Source: *The Skills Gap*, Center for Workforce Success, 1998 (Excerpt)

Everyone Has a Stake in Education and Training

Having a skilled, educated workforce is crucial to business survival. Manufacturers have a vested interest in ensuring employees have appropriate education and training. More than 96 percent of *The Skills Gap* survey respondents said they spend some amount on training non-exempt workers. Nearly half (47 percent) invest close to 2 percent or more of payroll to train shop-floor and other hourly workers. That's an impressive jump since 1991, when respondents were spending an average of less than 0.5 percent. Still, more can be done and the NAM continues to encourage members to spend at least 3 percent of their payroll on training.

The education and training of workers has value for an entire community. With a skilled labor pool, communities attract new businesses. That, in turn, expands the tax base so the community can offer its citizens greater amenities: new schools, libraries, parks, recreation facilities and improved infrastructure, like new roads and transportation—all of which attract even more industry.

Government and families reap the rewards of any investments in education and training, too. When people are working, they pay taxes and are far less likely to need government assistance.

The big winners are the workers themselves. As they acquire more experience and increase their skills and knowledge, they improve their opportunities for advancement and for remaining employable.

Bridging the Skills Gap

Any long-term solution to the skills gap requires a concerted effort that involves employers, government representatives, educators, workers and non-profits that serve our communities.

One of the first things that must be done is to change the public's perception of manufacturing—and the career opportunities it represents. Parents, schools and the general public need to understand that manufacturing plants operate on brains, not brawn, and that manufacturing is a lucrative, stable career option.

Although many workers still harbor the idea that a college education is the only path to success and prosperity, that's not necessarily true. SMMs need both college and competent high school graduates to succeed. Basic math and writing skills are prized in any manufacturing firm. Core life skills, such as punctuality, proper interpersonal communication, honesty and a good work ethic, are also critical but are in short supply.

That's why SMMs in growing numbers are initiating partnerships with local school systems to groom potential workers. Seventy percent of SMMs who responded to *The Skills Gap* survey said they have taken part in efforts to improve their educational system. Nearly half (46 percent) have participated in summer-job programs for students.

While such programs are laudable, they lack a comprehensive approach and don't address the dilemma of finding and retaining adults already in the labor force. Congressional passage of the Workforce Investment Act (WIA) in 1998 was a good start. The WIA consolidated and decentralized federally funded job-training programs, helping to eliminate duplication and red tape. Business leaders know what skills are needed and the WIA actually gives business leaders a prominent role in forging public-private partnerships to direct community resources where they'll have the greatest educational impact.

CASE STUDY

Education and Training

"When you're a manufacturing employee, education doesn't end with a high school or college diploma," says Tony Raimondo, CEO of Behlen Mfg. Co. His Nebraska company trains employees consistently to improve worker skills and the bottom line. Currently, Behlen's training amounts to approximately 2 percent of payroll. "Our Partners in Progress [employees] love it," Raimondo says. "They appreciate the investment we make and the opportunity it affords to advance in the company." Case in point is Gary Schmale, a Behlen employee whose hard work and commitment to learn has paid big dividends.

Gary started in 1995 as a part-time welder trainee. Weeks of training and practice led to a full-time position a few months later. Through more training, Gary has been promoted to a team leader position and is certified to perform many other factory tasks. "Behlen took a risk and gave me an opportunity to succeed," says Schmale.

Behlen's commitment to training is not unusual among SMMs. "Education pays big dividends in employee performance, loyalty and morale," says Raimondo. "Our turnover rate among employees who take advantage of Behlen training is substantially lower than industry averages. Behlen Partners in Progress are starting to understand that continuous improvement is a way of life and we are now transitioning to continuous learning."

Trade: A New Opportunity, A New Challenge

Years ago, SMMs were almost unilaterally dependent on large domestic manufacturing firms for orders and profits. If things went sour for a large customer, SMMs down the supply chain invariably saw orders dry up. Large domestic manufacturers still comprise a big share of many SMMs' customer base, but SMMs are increasingly looking beyond U.S. borders for business. The results are often wider markets, growing profits and a diversified income flow that won't sink or rise on the performance of one customer.

It's surprising to some that nearly 93 percent of exporting manufacturers are firms with fewer than 500 employees. That's a strict numerical figure, but still impressive. The actual share of exports of manufactured goods by SMMs is about 30 percent, according to SBA and Commerce Department data.

CASE STUDY

Exporting

It's quite a claim to fame to be able to say you're protecting Michelangelo's frescos in the Vatican's Sistine Chapel and Leonardo Da Vinci's "The Last Supper." Bill Weiller, CEO of Purafil, Inc., can make that claim. His company and its 70 employees make air-filtering equipment that's exported around the globe.

Just 12 years ago, Purafil exported next to nothing. Today, 60 percent of the company's annual revenue comes directly from exports.

"Getting in the export business is tough for small firms," explains Weiller. "You need to develop contacts and relationships abroad. That takes time and money." Weiller made the investment because a bigger market increases profits and secures a safer future for the company and its employees. Indeed, NAM data shows that companies that export pay higher salaries and are less likely to go under—two facts organized labor might want to digest before railing against freer trade.

"If I'm not in a refinery in Saudi Arabia, somebody else is going to solve their problem, then come attack me on my home turf," says Weiller. "Small manufacturers need to look at exports as an opportunity, not a threat."

NAM survey data show export revenue growing as a percentage of SMM total revenue. In 1989, only 4 percent of SMMs exported more than 10 percent of their sales. Today, the number of SMMs who export more than 10 percent of their sales has tripled to almost 12 percent.

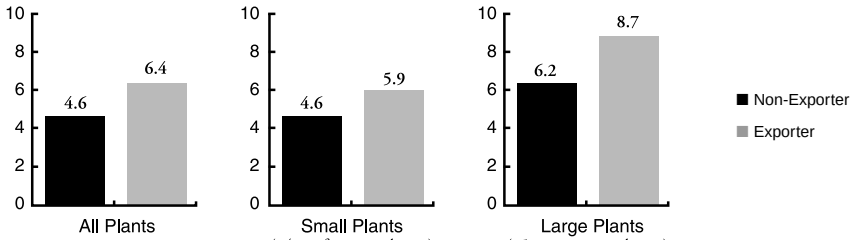
Free trade is paying dividends for SMMs and their employees. NAM economic studies reveal that exporting manufacturing firms of all sizes expand and add jobs 20 percent faster than firms that stay domestic. Exporting firms pay their employees more and have higher employee benefits. They're also 9 percent less likely to go out of business.

The strong domestic economy of the 1990s explained some of the uptick in exports. "If you're in a saturated market," observes Azon, USA CEO James Dunstan, "the only way to expand your business is to go overseas." His company employs just 68 people, but generates as much as 30 percent of its revenue from international business. Azon, USA may be the exception today, but clearly trends indicate that non-exporting SMMs may soon be a rarity.

China trade is particularly illuminating. More than 8 out of 10 companies that export to China are small and medium firms. Their number has more than doubled in the past five years, from 3,100 to 7,600. These smaller companies account for more than one-third of the value of all exports to China.

Average* Workers at Exporting Plants Have Higher Benefits

Benefits per Employee ($000), Exports by Size



**Averages on the left are for plants of all sizes in locations and industries. Averages on the right are for plants in all locations and industries. 1987 dollars.*

Source: *Why Exports Matter: More!* by David Richardson and Karin Rindal, Institute for International Economics and The Manufacturing Institute, 1996

Challenges To Meet

Going global has its share of start-up costs. Language barriers, export financing, letters of credit, local customs and foreign production standards are just some of the factors that must be successfully managed to get a toehold in a foreign market. It's expensive. Economies of scale make it even more so for SMMs.

That's why government programs that assist exporters are especially important for SMMs. The Export-Import Bank, the Overseas Private Investment Corporation (OPIC) and trade assistance and information-gathering programs sponsored by the Commerce Department and Small Business Administration are invaluable. These programs help offset the vast government export assistance afforded to America's overseas competitors.

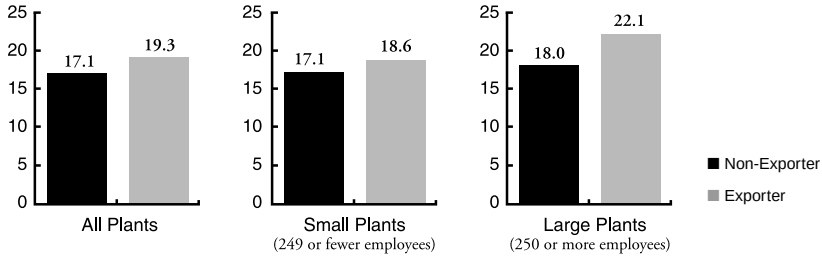
Export Tax Incentives

One other important export incentive is the now-defunct foreign sales corporation (FSC) regime. As originally created more than 15 years ago, FSCs are foreign entities created by parent companies to market products and services abroad. Part of FSC income is exempt from U.S. income tax, which helps these firms export more.

In late 1997, the European Union (EU) challenged FSCs as an illegal export subsidy under the World Trade Organization (WTO) subsidies agreement, which resulted in a 2000 ruling against the United States.

Average* Exporting Plants Pay Higher Blue-Collar Wages

Benefits per Employee ($000), Exports by Size



**Averages on the left are for plants of all sizes in locations and industries. Averages on the right are for plants in all locations and industries. 1987 dollars.*

Source: *Why Exports Matter: More!* by David Richardson and Karin Rindal, Institute for International Economics and The Manufacturing Institute, 1996

The United States complied with the decision by repealing the FSC rules and replacing them with an extraterritorial income (ETI) regime. The goal of ETI was to preserve the benefits of the old FSC regime while responding to the WTO's concerns. While industry, the Administration, and Congress were all in widespread agreement that ETI is a good system and addressed the issues that the WTO had with the FSC regime, the EU saw it differently. They challenged the ETI system immediately, and in July 2001, the panel officially ruled against the United States, finding that ETI is also in violation of WTO rules.

Although many policy-makers see this issue as merely a large company issue, thousands of SMMs benefit, through either individual or shared FSC's — or now through ETI. A shared FSC allowed up to 25 companies to band together as exporting "shareholders," defraying the overhead costs among many partners, while maintaining the full tax benefits.

A recent NAM survey of SMMs showed average annual savings of approximately $124,000 for SMMs using an FSC. More than two-thirds of respondents report annual tax savings between $10,000 and $200,000. Not surprising is the fact that two-thirds said the elimination of the FSC would harm sales and employment. With so much at stake for these firms, it's imperative that the United States reach an agreement with the European Union to maintain these benefits in a WTO-consistent manner.

Before leaving the topic of trade, it must be said that virtually every SMM is an exporter, maybe not directly, but indirectly. The vast number of component parts moving up the supply chain end up in products shipped overseas. That's one big reason why opening markets and tearing down domestic barriers to global trade helps manufacturers of all sizes, especially SMMs.

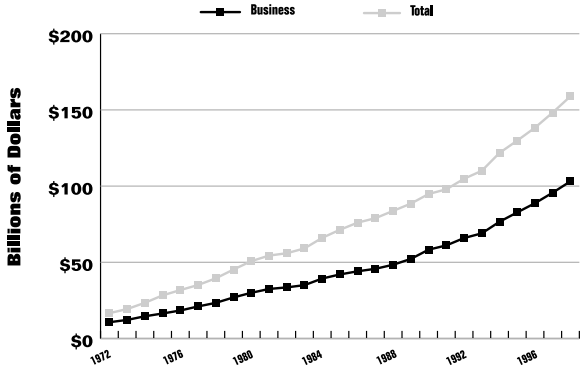
An Environment for Growth And Energy To Do It

The annual cost of environmental compliance in the United States is unknown, but is often estimated to be between $150-200 billion a year. Because SMMs share a disproportionate regulatory burden according to SBA, it can safely be assumed that SMMs shoulder a big portion of that total compliance cost figure. Moreover, that burden is growing. SBA reports that manufacturing regulation costs have climbed sharply since 1982, while other sectors have experienced little change.

SMMs don't begrudge the need for cleaner air, land and water. In fact, most are proud environmentalists, who are more than happy to invite neighboring communities and school kids to visit for a plant tour that includes an explanation of its pollution controls and waste-management systems. But, as former Sen. Patrick Moynihan (D-NY) has suggested, while the large investment in environmental regulation is not necessarily too much, it's certainly too much to invest unwisely.

SMMs do think environmental regulation—and virtually all government regulation, for that matter—could be vastly improved. One common myth is that manufacturers need to be led by the nose when it comes to environmental performance. That's simply not true. A recent NAM survey shows that more than 40 percent of SMMs voluntarily reduce emissions beyond regulatory requirements.

Spending on Environmental Compliance



Source: U.S. Department of Commerce and NAM calculations

Better still, almost 75 percent say they reduce, reuse and recycle non-regulated material, and nearly 20 percent contribute to environmental causes. Their own modesty contributes to the public's unawareness of this good record, as less than 8 out of 100 companies bother to tell anyone.

Energy To Grow

Finding ways to reduce energy consumption is particularly important for smaller manufacturers, who pay higher energy costs than their larger counterparts. In 1994, SMMs consumed 37.9 percent of all energy used in manufacturing, but paid 51.6 percent of the total energy bill.

In 1999, energy costs increased an astounding $115 billion for all manufacturing businesses — a cost equal to 1 percent of GDP. In other words, had energy prices held steady, our economy as a whole would have likely grown a full percentage point faster.

In 2001, the NAM and the Manufacturing Alliance jointly surveyed members about their energy use. Eighty-five percent of the respondents

CASE STUDY

Environment

Superior environmental performance isn't just a slogan at Riverdale Mills, a company that manufacturers steel wire mesh in Massachusetts. It's an everyday goal. Ask CEO James M. Knott, Sr., and he will tell you that his company has a duty to operate in a manner that is both profitable and environmentally friendly. In fact, the company's commitment to environmental protection was honored with the 1999 Governor's Award for Outstanding Achievement in Toxics Use Reduction. Two key production improvements helped the company win the award. The first was an innovative process for applying plastic coating to wire mesh using an aqueous-based adhesive system that eliminates solvent-based adhesives. The firm also implemented a process for galvanizing wire that has reduced energy use, eliminated the need for hydrochloric and sulfuric acids and eliminated the disposal of toxic-waste products. The new, more efficient process is expected to pay for itself in less than four years.

"Riverdale's success will help promote the benefits of pollution prevention and toxic-use reduction activities to other Massachusetts businesses," says Environmental Affairs Secretary Bob Durand.

had fewer than 500 employees, so the results are a snapshot of how small manufacturers are using energy at the outset of the 21st century.

The survey shows that for SMMs, 53 percent rely on natural gas as their major source of energy. So it was not surprising to learn that recent increases in natural gas prices hit the small manufacturing sector hard. Respondents reported that natural gas prices rose by an astonishing 58 percent between 1999 and 2000. Eighty percent said that these price increases reduced their profitability by an average of 13 percent, but by as much as 150 percent for some companies.

SMMs are looking for opportunities to reduce these large price increases. Consider these eye-opening facts:

- Of those companies making energy efficiency investments, more than a third of their total capital budget is being devoted to more efficient plants and offices;
- Over the past five years, nearly 60 percent of SMMs have invested in HVAC (heating, ventilating and air conditioning) upgrades to reduce energy use; and
- More than half of the SMMs have improved plant motors and machinery to reduce energy use. More than one-third train managers in energy efficiency.

Not surprising is the fact that most (71 percent) say that saving money is the most important reason for these investments. Still, more than one-third say that their desire to voluntarily improve the environment is the primary motivation. More than half say that an investment tax credit would help them upgrade their boilers, the largest single energy user in most plants. More than 60 percent said they would take advantage of voluntary federal programs such as DOE's Energy Star. Interestingly, just 5 percent say emissions regulations forced the investment—a strong rebuke to the charge that manufacturers need to be dragged kicking and screaming toward a cleaner environment. While there's still work to be done on cleaning up the environment, these numbers indicate that SMMs may just get to the finish line before anyone, especially Washington, realizes it.

Small and medium manufacturers have a big stake in the communities in which they operate. That's why they treasure clean air, land and water. Too often Uncle Sam thinks and regulates as if manufacturing is the problem.

SMMs are often an early target. For example, the plants are sometimes descended upon by a virtual SWAT team of pistol-packing EPA enforcement agents who take samples at the plant, interrogate employees and eventually cite the company for violations of various environmental statutes. A federal judge has frowned on these tactics and sided with Riverdale Mills, which claimed water test results were doctored to ensure a violation. The judge took the EPA to task for its "harassment" and "clearly vexatious" actions and said that "the EPA's collection of evidence in support of the government's charges is suspect." Even so, the EPA remains unbowed and adamant that it did nothing wrong. This guilty-until-proven-innocent attitude among regulators is a common occurrence for SMM CEOs.

The Future: A Look at Trends and Directions

Since 1989, the NAM has surveyed its small and medium members annually on a number of topics. Some of the questions are asked each year. Others reflect hot issues of the day. In any case, the data compiled from these surveys provide a strong historical map of SMM concerns, investments and demographics. Certain trends can be discerned from this reliable data.

Trade

SMM exports have grown, albeit in fits and starts. SMM survey data shows that in 1989, 48 percent of SMMs had no export revenue. By 1998, only 24 percent were not exporting; a strong sign that more SMMs are at least dipping their toe in the export market waters.

Just as encouraging is the fact that the number of SMMs that derive a big chunk of their overall revenue from exports is growing fast. Companies with more than 25 percent of their income flowing from exports today grew from 4 percent in 1990, to 8.8 percent in 1998. Today, about 17 percent of SMMs derive more than 10 percent of their income from exports. This steady growth of export activity survived economic downturns in Asia and elsewhere in the late 1990s, showing an unmistakable trend that should continue.

A side note: There has been a slight contraction in exports among SMMs in the past two years. This is likely due to factors such as the strength of the dollar, which has surged 30 percent against the Euro since 1997. A strong dollar makes American-made products costlier abroad.

Health-Care Benefits

Among SMMs, health benefits are an almost universal employee benefit. Ten years ago, 97 percent of SMMs offered health benefits. That figure is slightly higher today. The range of coverage is growing as well. Dental coverage expanded from just 39 percent 11 years ago to almost 65 percent today.

Although health coverage is ubiquitous among SMMs, increasing costs are a major concern. In 1994, as Congress debated President Clinton's health-care proposal, nearly one in four said the cost of health insur-

ance was their most serious concern. With the onset of managed care in the mid-1990s, that concern eased. In 1998, almost 23 percent still said health costs were their top concern.

Interestingly, the introduction of managed-care reform legislation, such as the Patient's Bill of Rights, has SMMs even more worried about health-care costs — more so than during President Clinton's ambitious attempt to mandate universal coverage. Today, 29 percent cite health costs as their biggest concern, which is not surprising when well over half say their health insurance costs increased 11 percent or more in 1999. For perspective, inflation in the general economy was closer to 1 percent.

With health-cost inflation heading skyward and Congress considering proposals that would only push costs higher, health coverage for SMM employees could slip. Today, nearly 40 percent say they would consider dropping coverage if the Patient's Bill of Rights passes. Almost 40 percent say any additional costs from this legislation would be passed along to employees.

There's a simple lesson here: When Congress tries to play doctor with private health coverage, the patient often gets worse, not better.

That's not to say that health care cannot be improved. Manufacturers of all sizes support managed-care reforms that provide additional patient protections and a fair complaint-appeal procedure without prohibitive cost increases.

Employer liability is the linchpin. If it's included in legislation, the projected costs become so high that it endangers affordable coverage. What's needed is a fair and timely independent review of disputed claims that can be expedited when appropriate. Such a mechanism is affordable and workable without the delays and costs inherent in expanded liability. People want a fair hearing, not more litigation. This is all the more true when the right to sue would come at the expense of having any coverage at all.

Manufacturers lead the nation in providing health care for their employees. At the same time, it remains a priority of the NAM and its members to expand coverage to the estimated 43 million uninsured Americans. To broaden health care, manufacturers support refundable health-insurance tax credits (usable in the workplace), allowing rollover of unused Flexible Spending Account funds and increasing small business purchasing power through association health plans. Steps like these

would drive down the numbers of the uninsured without the expense of costly mandates and regulations.

Employee Skills

Eleven years ago, SMMs reported that employee skills were a concern, but other issues were far more important. Back then, just 5 percent cited it as their top concern.

Through the years, finding high-skilled employees has grown increasingly difficult. NAM survey data bear this out. In 1990, one in five reported that it was "extremely difficult" to fill openings for skilled positions. In 1997, one in four said it was their most difficult problem. In 1998, it climbed to one in three and has stayed there ever since. Given the massive upcoming retirements of the baby boom generation, it will no doubt remain at the top of SMM concerns.

No doubt, some of the difficulties SMMs have in finding qualified employees were partly due to an unusually low unemployment rate. But full employment does not entirely explain the results. Our schools are failing the simple test of graduating students with skills needed to flourish in today's economy. The ability to read, write, reason and solve problems should be universal among high school graduates. These qualities are increasingly rare among manufacturing job applicants, which explains why so many SMMs train employees themselves.

Sales Growth

NAM survey data on SMM sales growth over the past 11 years generally track the ups and downs of the broader economy. In 1990, only 12 percent of SMMs reported that sales declined 10 percent. One year later, nearly half reported declining sales, no doubt reflecting the recession that began to take hold. In the late 1990s, sales exploded. For three years running more than a quarter reported sales increasing more than 10 percent every year. For three straight years, well over half of SMMs reported higher sales. As recession hit manufacturing again in 2001, most SMM sales fell, too.

Prescriptions for the Future: Decision-Makers Must Act

The future health of SMMs is by no means guaranteed. Foreign competition; heavy tax and regulatory burdens; downward pressure on prices; and tight margins are all factors working against the success of SMMs. Washington policy-makers can help. To ensure a growing economy, full employment and a reliable tax base, Congress and the President need to collaborate on a policy agenda that fosters growth for SMMs. They can start with the following:

Permanently Repeal the Death Tax. Those who think the death tax hits only the Rockefellers and the Kennedys are sadly mistaken. For SMMs, the death tax looms large in the minds of CEOs and on their balance sheets. Fortunately, legislation enacted in 2001 will gradually phase out the death tax. Unfortunately, because of a sunset provision in the bill, the repeal will last only through 2010. To maximize the benefit of death tax repeal, it must be made permanent and the effective date of repeal moved up.

A recent NAM survey of SMM members shows a staggering $51,875 average annual outlay by SMMs to minimize the death tax, in the event the owner dies. These planning costs won't go away and might even increase if changes aren't made to the new law. Moreover, the law adds a new level of uncertainty that could make estate-tax planning far more complicated.

Don't Mess With Health Care. The urge in Washington to "play doctor" with employee health benefits is hard to resist. The latest impulse is a Patient's Bill of Rights, which purports to address consumer problems with managed care. The "solution" is an avalanche of new insurance mandates and a new right to sue employers and health plans. The latter is particularly troubling for SMMs executives, who may find themselves the target of malpractice suits for no other reason than the fact that they offer employees health coverage. One thing is certain, these changes will drive up costs—as much as $835 per employee—for SMMs, according to NAM survey data. With higher costs and a bull's eye on their backs for lawsuits, many SMMs say they'll be forced to

CASE STUDY

Death Tax Repeal

No one likes to think about death. But for a family-owned firm, the issue is a daily concern. According to an NAM survey, SMMs spend, on average, $52,000 annually to minimize the potential impact of the estate tax on their businesses when they die. This is money that companies could otherwise use to expand their businesses, invest in new technology and hire more workers. In some cases, even the best-laid estate tax plans don't work and the family has to sell the business after the owner dies to pay the "death tax." The good news is that SMMs and other small business owners have done an effective job of educating Washington about the enormous burden of the estate tax on small businesses. On June 7, 2001, President Bush signed legislation that will gradually phase-out the "death tax" until 2010, when the tax will be totally eliminated.

Unfortunately, this is a good news/bad news scenario. The bad news is that the tax is totally repealed only for one year. Beginning in 2011, current law comes back. Lawmakers agreed to this temporary fix to get around budget rules in the Senate. Nonetheless, the law, as written, is of minimal value to small business owners since no one can predict when they will die. Thus, SMMs will continue to face the high planning costs and uncertainty surrounding the death tax.

Take the situation faced by Roger Hannay, CEO of Hannay Reels. His parents passed away before the recent tax law changes were enacted. However, unless they die in 2010, SMMs and their families are likely to face similar problems until the death tax repeal is made permanent.

In Hannay's case, both his mother and father died, unexpectedly, within the same year. As the CEO, executor and eldest son, he had to deal with the grief and funeral arrangements and the IRS. "You constantly live with the threat that the IRS will put an unrealistic price tag on closely held stock, above and beyond what the owners agree to accept as the fair share of the business, "says Hannay. "The IRS, in its infinite wisdom, can decide unilaterally the price of the business and thus how much it will collect in death taxes. The whole process is harrowing and unnerving, to say the least.

"Owners of closely held businesses have been accused of being 'selfish' by opponents of repeal," adds Hannay. "But what businessmen like myself are trying to do is provide continuity to a community, employment for workers and a solid tax base. The death tax is probably the most shortsighted tax on the books. It needs to be repealed on a permanent basis."

drop coverage and give employees a stipend to purchase coverage on their own.

Tie Regulations to Strong Science and Cost-Benefit Analyses. Manufacturers believe in providing safe working conditions and promoting a healthy environment. But government bureaucrats often seem to justify their existence by churning out regulations regardless of proven need. In many cases, the law of diminishing returns on regulatory investments has been reached and surpassed. In 1994, manufacturers with 20 or more employees spent nearly $29 billion for pollution-abatement activities alone. Regulators must prioritize additional pollution and safety rules through the best peer-reviewed science available, with consideration of possible adverse consequences. Decision-makers can encourage efficiency in manufacturing by prioritizing risks and establishing a pro-growth environment that encourages performance standards; provides flexible and reasonable compliance; and reduces regulatory uncertainty and delays.

Congress took an enormous first step in this direction by voting to repeal the most expensive workplace rule ever—a mandate to track and correct repetitive motion injuries if just one employee reports such an injury. The demise of the ergonomic rule is strong evidence that lawmakers can act in the interest of common-sense rulemaking. Congress should not shrink from asserting its power to ensure that all regulations are based on sound science and achievable without undue economic costs.

Fix Our Product-Liability Laws. Each year, manufacturers spend millions of dollars defending themselves against frivolous, and often baseless, product-liability suits. Virtually every manufactured good in America has in its selling price a "liability tax"—the cost of insuring against any possible lawsuits. Just as bad, manufacturers can be held liable for even the most flagrant misuse of their products. All it takes is a sympathetic jury and a trial lawyer to lay the blame at the feet of manufacturers. Common-sense limits are in order to protect firms from predatory and frivolous litigation.

Further Reduce Taxes on Capital Gains. In 1997 Congress and the President wisely agreed to reduce capital-gains taxes for individuals. That should be the start—not the end—of debate on what, if any, tax should apply to capital gains. As Federal Reserve Chair Alan Greenspan notes, the capital-gain-tax rate should be zero for individuals and cor-

porations. SMMs agree. Further rate reductions would free up more investment capital and better reward risk-taking needed to expand the economy.

Substitute Command-and-Control Environmental Regulation with Voluntary Incentive-Based Programs. Manufacturers support continued environmental quality improvements. In fact, U.S. air and water has been getting cleaner partially due to industry's use of technology to reduce pollution, conserve resources and spur economic growth. Congress and the EPA need to start using voluntary incentive-based programs and smarter regulatory initiatives to allow manufacturers the flexibility to make products and change processes while remaining competitive in the world market.

Help Employers Bridge the Skills Gap. The NAM applauds passage of the Workforce Investment Act, which consolidates federal job-training programs; involves employers and educators in determining how those programs should work; and makes it easier for individuals to access the system. But more needs to be done. We must ensure that we prepare our current and future workforce for the rigors of work in the 21st century. Educators and students need greater accountability for proficiency and results. The 2001 reauthorization of the Elementary and Secondary Education Act (ESEA) will fundamentally restructure the K-12 system with an emphasis on high standards, continuous improvement and accountability. The U.S. immigration system should recognize and value the contribution of immigrant workers. American manufacturers need access to workers without regard to arbitrary caps, no matter what the worker's country of origin.

Make the R&D Tax Credit Permanent: Companies of all sizes benefit from this tax credit. Economies of scale sometimes preclude SMMs from conducting sophisticated in-house R&D, but the benefits of larger firms that do this type of work flow directly to SMMs in the form of new orders. A new product line requires a new stream of parts, components and services that SMMs inevitably supply.

Level the Playing Field for Exports: As the trend indicates, SMM export revenue should continue to grow, but more can be done to make it grow faster. To encourage more exports from manufacturers of all sizes, the President needs "Trade Promotion Authority" to help launch a new

round of global trade negotiations that include accelerated tarrif cuts on industrial products; and movement toward a Free Trade Area of the Americas pact. A reauthorized Export Administration Act (EEA) is needed to modernize export control laws to reflect the global U.S. economy. The Export-Import Bank needs reauthorizing to offset the tremendous government export assistance by America's competitors in Asia and Europe. Washington needs to avoid unilateral economic sanctions, which too often target only U.S. products and so make a statement but not a difference.

Conclusion

Small and medium manufacturing plays an important—but often overlooked—role in our economy. Whether the American economy resumes its vigorous growth of last decade will depend, in large part, on the success of these manufacturers, who too often seem to be overlooked by policy-makers, journalists, economists and the general public. In so many ways, these small and medium-size firms are the driving force of the American economy. The challenges they face each day in the domestic and international markets and in Washington deserve not only the attention of policy-makers, but policies that will help them better compete.

By meeting those challenges, Congress and the Administration can better secure the long-term health of the American economy.

Appendix A: *Business Receipts By Sector*

State	Industry	Receipts (in millions of dollars)	Share of MFG Receipts From SMMs
Alabama	Manufacturing	70,104	34.8%
	Wholesale	43,085	
	Retail	37,449	
	Services	28,603	
	Other Sectors	54,769	
Alaska	Mining	7,188	
	Retail	6,652	
	T/C/U**	5,641	
	Services	5,093	
	Manufacturing	3,721	69.1%
	Other Sectors	8,094	
Arizona	Wholesale	48,020	
	Retail	46,086	
	Manufacturing	43,704	31.9%
	Services	38,361	
	Other Sectors	68,509	
Arkansas	Manufacturing	46,575	34.6%
	Wholesale	28,992	
	Retail	21,925	
	Services	14,185	
	Other Sectors	25,444	
California	Wholesale	558,631	
	Manufacturing	396,145	48.2%
	Services	390,667	
	Retail	282,395	
	Other Sectors	492,686	
Colorado	Wholesale	62,888	
	Services	44,315	
	Retail	42,533	
	Manufacturing	42,270	33.5%
	Other Sectors	80,038	
Connecticut	Wholesale	76,890	
	FIRE*	75,008	
	Manufacturing	48,891	44.9%
	Services	41,964	
	Other Sectors	62,772	

*FIRE, Financial, Insurance, Real Estate
** T/C/U, Transportation, Communications, Utilities

Business Receipts By Sector

Delaware	FIRE*	32,404	
	Manufacturing	13,925	27.8%
	Wholesale	13,415	
	Retail	8,610	
	Other Sectors	13,541	
District of Columbia	Services	33,559	
	FIRE*	25,876	
	T/C/U**	5,553	
	Wholesale	4,147	
	Retail	3,861	
	Manufacturing	2,353	(n/a)
	Other Sectors	1,366	
Florida	Wholesale	193,953	
	Retail	160,240	
	Services	146,118	
	FIRE*	105,371	
	Manufacturing	82,755	47.0%
	Other Sectors	113,906	
Georgia	Wholesale	167,391	
	Manufacturing	127,263	30.0%
	Retail	76,523	
	Services	70,269	
	Other Sectors	136,634	
Hawaii	Retail	12,951	
	Services	12,504	
	FIRE*	8,622	
	Wholesale	7,743	
	T/C/U**	6,694	
	Construction	3,834	
	Manufacturing	3,421	(n/a)
	Other Sectors	219	
Idaho	Manufacturing	18,822	29.1%
	Retail	11,773	
	Wholesale	11,201	
	Services	7,462	
	Other Sectors	14,125	

*F/I/RE, Financial, Insurance, Real Estate
** T/C/U, Transportation, Communications, Utilities

Business Receipts By Sector

Illinois	Wholesale	285,804	
	Manufacturing	209,779	39.9%
	FIRE*	141,084	
	Services	131,094	
	Other Sectors	219,639	
Indiana	Manufacturing	145,039	31.8%
	Wholesale	71,373	
	Retail	59,321	
	Services	43,268	
	Other Sectors	86,397	
Iowa	Manufacturing	64,610	27.3%
	Wholesale	38,918	
	FIRE*	33,814	
	Retail	26,990	
	Other Sectors	39,323	
Kansas	Manufacturing	49,083	28.2%
	Wholesale	44,015	
	Retail	23,665	
	FIRE*	22,069	
	Other Sectors	43,349	
Kentucky	Manufacturing	89,114	24.3%
	Wholesale	39,586	
	Retail	35,536	
	Services	24,851	
	Other Sectors	53,367	
Louisiana	Manufacturing	82,581	21.8%
	Wholesale	48,827	
	Retail	38,146	
	Services	34,441	
	Other Sectors	74,967	
Maine	Manufacturing	15,043	42.7%
	Retail	13,362	
	Services	9,510	
	Wholesale	7,993	
	Other Sectors	13,778	

*FIRE, Financial, Insurance, Real Estate

Business Receipts By Sector

Maryland	Services	58,261	
	Wholesale	58,031	
	Retail	48,855	
	Manufacturing	38,023	38.2%
	Other Sectors	74,704	
Massachusetts	Wholesale	119,160	
	FIRE*	100,013	
	Services	92,836	
	Manufacturing	83,219	53.5%
	Other Sectors	111,200	
Michigan	Manufacturing	221,922	31.0%
	Wholesale	162,502	
	Retail	97,477	
	Services	82,559	
	Other Sectors	139,592	
Minnesota	Wholesale	103,478	
	Manufacturing	79,138	44.3%
	FIRE*	59,320	
	Retail	49,431	
	Other Sectors	90,469	
Mississippi	Manufacturing	40,129	34.6%
	Retail	21,044	
	Wholesale	19,833	
	Services	16,428	
	Other Sectors	23,681	
Missouri	Manufacturing	99,025	26.9%
	Wholesale	94,801	
	Retail	53,268	
	Services	49,126	
	Other Sectors	84,373	
Montana	Wholesale	8,247	
	Retail	8,191	
	Manufacturing	5,331	45.2%
	Services	5,249	
	Other Sectors	392	

*FIRE, Financial, Insurance, Real Estate

Business Receipts By Sector

Nebraska	Wholesale	39,668	
	Manufacturing	28,020	32.4%
	FIRE*	17,675	
	Retail	16,297	
	Other Sectors	32,567	
Nevada	Services	27,595	
	Retail	19,529	
	Wholesale	14,036	
	Construction	11,287	
	FIRE*	9,685	
	Manufacturing	6,677	63.7%
	Other Sectors	10,151	
New Hampshire	Manufacturing	20,100	42.2%
	Retail	16,372	
	Wholesale	12,403	
	Services	11,533	
	Other Sectors	16,145	
New Jersey	Wholesale	232,937	
	Manufacturing	102,413	48.5%
	FIRE*	99,828	
	Services	95,811	
	Other Sectors	154,775	
New Mexico	Manufacturing	18,241	22.3%
	Retail	15,865	
	Services	12,175	
	Wholesale	8,228	
	Other Sectors	23,479	
New York	FIRE*	445,479	
	Wholesale	330,955	
	Services	233,588	
	Manufacturing	165,325	48.7%
	Other Sectors	289,129	
North Carolina	Manufacturing	165,450	29.7%
	Wholesale	103,276	
	Retail	75,747	
	Services	57,826	
	Other Sectors	109,965	

*FIRE, Financial, Insurance, Real Estate

Business Receipts By Sector

North Dakota	Wholesale	9,422	
	Retail	6,459	
	Manufacturing	5,242	47.7%
	Services	4,198	
	Other Sectors	8,544	
Ohio	Manufacturing	246,752	32.3%
	Wholesale	163,347	
	Retail	107,883	
	Services	93,761	
	Other Sectors	170,209	
Oklahoma	Manufacturing	38,576	34.7%
	Wholesale	33,766	
	Retail	28,726	
	Services	21,304	
	Other Sectors	47,528	
Oregon	Wholesale	57,312	
	Manufacturing	50,819	47.0%
	Retail	34,435	
	Services	26,218	
	Other Sectors	46,796	
Pennsylvania	Manufacturing	178,447	44.8%
	Wholesale	165,570	
	Services	123,879	
	Retail	113,959	
	Other Sectors	211,522	
Rhode Island	Manufacturing	10,624	68.9%
	Services	9,697	
	Retail	8,301	
	FIRE*	7,841	
	Other Sectors	14,240	
South Carolina	Manufacturing	72,267	28.6%
	Wholesale	36,433	
	Retail	35,088	
	Services	27,871	
	Other Sectors	38,139	

*FIRE, Financial, Insurance, Real Estate

Business Receipts By Sector

South Dakota	Manufacturing	12,401	27.6%
	Wholesale	10,268	
	Retail	7,145	
	FIRE*	7,042	
	Other Sectors	9,373	
Tennessee	Manufacturing	100,139	29.5%
	Wholesale	85,044	
	Retail	53,435	
	Services	44,596	
	Other Sectors	66,056	
Texas	Wholesale	344,063	
	Manufacturing	302,614	26.4%
	Retail	185,679	
	Services	173,136	
	Other Sectors	379,694	
Utah	Manufacturing	25,368	45.6%
	Wholesale	21,697	
	Retail	20,281	
	Services	17,415	
	Other Sectors	32,070	
Vermont	Manufacturing	8,131	45.7%
	Retail	6,037	
	Wholesale	5,060	
	Services	4,703	
	Other Sectors	8,009	
Virginia	Manufacturing	86,056	26.9%
	Services	74,099	
	Retail	65,555	
	Wholesale	65,119	
	Other Sectors	120,346	
Washington	Manufacturing	82,417	34.2%
	Wholesale	78,893	
	Retail	55,218	
	Services	52,113	
	Other Sectors	85,750	

*FIRE, Financial, Insurance, Real Estate

Business Receipts By Sector

West Virginia	Manufacturing	18,635	36.0%
	Retail	14,736	
	Wholesale	10,670	
	Services	10,444	
	Other Sectors	21,497	
Wisconsin	Manufacturing	121,262	40.2%
	Wholesale	61,423	
	FIRE**	53,366	
	Retail	51,296	
	Other Sectors	75,923	
Wyoming	Mining	7,184	
	Retail	4,774	
	Manufacturing	3,037	N.A.
	Retail	2,898	
	Other Sectors	8,317	
United States	Wholesale	4,222,553	
	Manufacturing	3,990,994	36.5%
	Services	2,657,047	
	Retail	2,578,150	
	Other Sectors	4,793,889	

*FIRE, Financial, Insurance, Real Estate

Source: U.S. Department of Commerce, 1997

Appendix B: *Average Compensation in Small and Medium Firms*

State	Manufacturing (in dollars)	Other Industries (in dollars)	Manufacturing Premium
Alabama	24,649	21,689	14%
Alaska	30,305	31,128	-3%
Arizona	29,594	23,535	26%
Arkansas	23,837	19,610	22%
California	32,976	29,125	13%
Colorado	31,284	26,029	20%
Connecticut	39,861	32,565	22%
Delaware	33,586	24,429	37%
Florida	27,201	24,184	12%
Georgia	27,329	25,449	7%
Idaho	26,086	20,198	29%
Illinois	33,668	28,146	20%
Indiana	30,046	22,500	34%
Iowa	27,911	20,801	34%
Kansas	27,971	21,954	27%
Kentucky	27,280	21,047	30%
Louisiana	28,750	22,280	29%

Average Compensation in Small and Medium Firms

Maine	27,017	22,013	23%
Maryland	33,307	26,563	25%
Massachusetts	37,251	30,080	24%
Michigan	35,180	25,528	38%
Minnesota	32,566	24,510	33%
Mississippi	20,915	20,107	4%
Missouri	28,078	23,515	19%
Montana	25,801	19,200	34%
Nebraska	26,025	21,373	22%
Nevada	31,671	26,090	21%
New Hampshire	32,483	25,271	29%
New Jersey	36,171	31,472	15%
New Mexico	25,555	20,798	23%
New York	32,373	32,288	0%
North Carolina	25,375	22,945	11%
North Dakota	23,768	19,813	20%
Ohio	32,119	23,620	36%
Oklahoma	27,155	20,910	30%
Oregon	31,442	23,806	32%
Pennsylvania	31,436	24,732	27%
Rhode Island	29,070	24,766	17%
South Carolina	26,176	21,068	24%
South Dakota	24,131	19,749	22%
Tennessee	26,664	23,722	12%
Texas	29,168	25,535	14%
United States	30,834	25,811	19%
Utah	29,126	22,387	30%
Vermont	28,847	21,630	33%
Virginia	27,952	25,940	8%
Washington	31,795	25,865	23%
West Virginia	26,525	20,266	31%
Wisconsin	31,249	22,641	38%

Note: Data not available for Hawaii, Wyoming and the District of Columbia.
Source: U.S. Department of Commerce, 1997

Appendix C: *Small and Medium Employment Intensity (MFG and Other Industries)**

State Name	Manufacturing	Other Industries
Alabama	48%	66%
Alaska	77%	73%
Arizona	50%	61%
Arkansas	43%	68%
California	64%	64%
Colorado	52%	65%
Connecticut	52%	63%
Delaware	31%	61%
District of Columbia	63%	62%
Florida	61%	58%
Georgia	42%	58%
Hawaii	77%	69%
Idaho	50%	73%
Illinois	55%	63%
Indiana	47%	67%
Iowa	46%	71%
Kansas	45%	69%
Kentucky	44%	65%
Louisiana	49%	69%
Maine	58%	76%
Maryland	55%	65%
Massachusetts	62%	62%
Michigan	47%	67%
Minnesota	54%	66%
Mississippi	48%	66%
Missouri	47%	63%
Montana	73%	81%
Nebraska	46%	68%
Nevada	74%	56%
New Hampshire	60%	70%
New Jersey	58%	63%
New Mexico	54%	69%
New York	62%	65%
North Carolina	44%	63%
North Dakota	69%	77%
Ohio	50%	63%
Oklahoma	55%	69%
Oregon	62%	70%
Pennsylvania	58%	64%
Rhode Island	74%	69%
South Carolina	41%	63%
South Dakota	53%	76%

Small and Medium Employment Intensity

Tennessee	44%	60%
Texas	47%	60%
United States	52%	64%
Utah	56%	59%
Vermont	60%	81%
Virginia	43%	63%
Washington	50%	70%
West Virginia	55%	70%
Wisconsin	54%	71%
Wyoming	73%	76%

* Employment in small and medium firms as a share of total employment.
Source: U.S. Department of Commerce, 1997