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For Supply Chain  
Innovation  
**2012**  
Annual  
Re-Shoring  
Report

**FINDINGS FROM THE 2012 MIT FORUM FOR  
SUPPLY CHAIN INNOVATION RE-SHORING STUDY**



# U.S. Re-Shoring: A Turning Point

*This year, almost half of survey respondents say that re-shoring manufacturing jobs to the U.S. is on their companies' mind.*

By MIT Forum for Supply Chain Innovation and  
Supply Chain Digest



# Author

David Simchi-Levi, MIT

# Contributors

Dan Gilmore, Supply Chain Digest  
Ioannis Kyratzoglou, MIT  
William Killingsworth, MIT (formerly)  
Leslie Sheppard, MIT  
Janet Kerrigan, MIT

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For more information or permission to reprint, please contact the MIT Forum at:  
E-mail: [LSheppard@MIT.EDU](mailto:LSheppard@MIT.EDU)  
Phone: 1-617-500-5274





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# U.S. Re-Shoring: A Turning Point

## Introduction

On December 6, 2012, Apple's CEO, Tim Cook announced a plan to invest \$100M in manufacturing a line of Mac Computers in the U.S. While cynics may say that this is only assembly, will create only 200 jobs and is partly motivated by public relations, there may still be practical considerations for the move and it may ultimately have some positive unintended consequences for U.S. manufacturing.

The next day, Foxconn, the largest contract manufacturer in the world and manufacturer of Apple's iPhone, indicated that it wants to expand operations in North America due to increased demand for products with 'made in America' labels.

In the last two years, there has been a lot of discussion and excitement around re-shoring, as the trend to move manufacturing back to the U.S. is called. In parallel, a growing number of U.S. executives are repatriating their manufacturing capabilities—moving some production operations back from overseas. One such company is Ford, which, in August 2010, announced plans to bring back approximately 2,200 parts-production jobs. Another example is Caterpillar, which is investing \$120 million in a new Victoria, TX, plant to make excavator machines—devices formerly made at a Caterpillar plant in Japan. Similarly, in the last two years, GE has announced 15 new manufacturing plants or existing facility expansions in the U.S., from a new locomotive manufacturing plant in Texas and an aircraft engine composites factory in Mississippi to appliance and lighting facilities in Kentucky, Alabama and Ohio. And now Apple!

This trend has picked up pace in the last few years not only because of job losses in the U.S. but also because the economics that made off-shoring attractive in the first place have changed.

To understand whether there is a shift in the manufacturing sector, the MIT Forum for Supply Chain Innovation launched a U.S. Re-shoring survey, in conjunction with Supply Chain Digest, to understand what U.S. manufacturers are really thinking about in terms of re-shoring, what factors are driving their decision process and to determine, if in fact, a geography shift is occurring.

The survey was distributed to members of the **MIT Forum for Supply Chain Innovation** and members of the **Supply Chain Digest community**. In total, 340 participants completed the survey, providing the input for this report.

## Historical Perspective

Since 1997, six million American manufacturing sector jobs were lost – a 34 percent drop. At the same time, the number of manufacturing facilities in the U.S. dropped by 17 percent. And, if you take a historical view you realize that over a period of 60 years, between 1940 and 2000, manufacturing employment in the U.S. remained more or less flat but productivity increased significantly, see Figure 1. The main reason for this success was the introduction of Information Technology that allows companies to significantly improve productivity without requiring more employees.

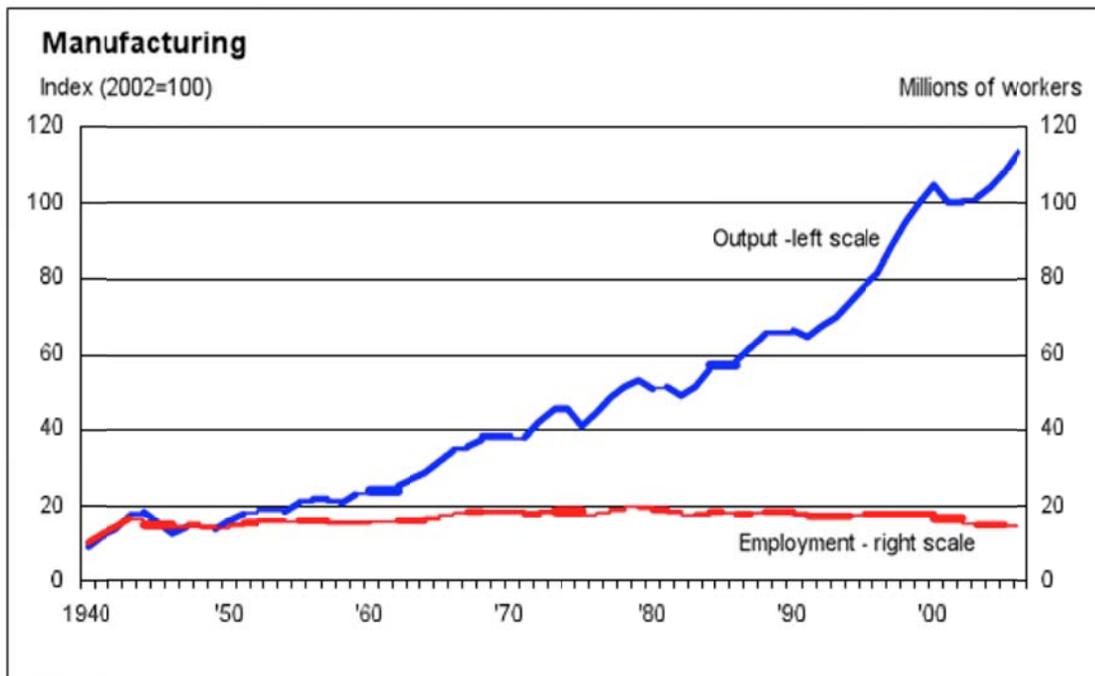


Figure 1 U.S. Manufacturing Output Increased 3.7% per Year over 60 Years Mostly Flat Employment (1940-2000)

## Survey Participants and Data Summary

In total, 340 participants completed the survey, of which 198 were manufacturing-only companies. Out of the 198 manufacturing-only companies, 156 were U.S. companies, defined as having their headquarters in the U.S.

The top three manufacturing-only industries that responded to this survey were: Computers and Electronics (19.2%), Food and Beverage (10.6%) and Chemicals (8.1%), see Figure 2. The category, "Other Manufacturing Companies" includes manufacturers of Personal care products, Golf equipment and various other companies.

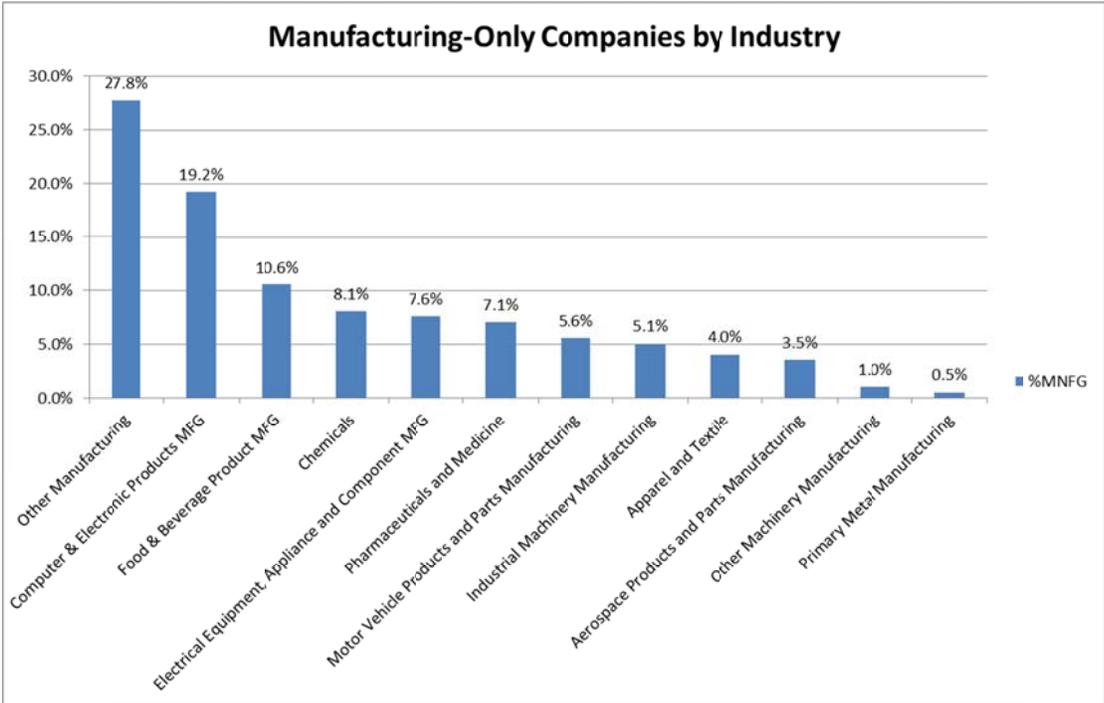


Figure 2 Manufacturing Only Companies--by Industry

Figure 3 provides the distribution of manufacturing companies by revenue size. Of the 198 manufacturing companies, 25.2% had revenue greater than USD\$10 Billion; 22.2% had revenue between \$1B and \$10B and finally 52.6% had revenue smaller than \$1B.

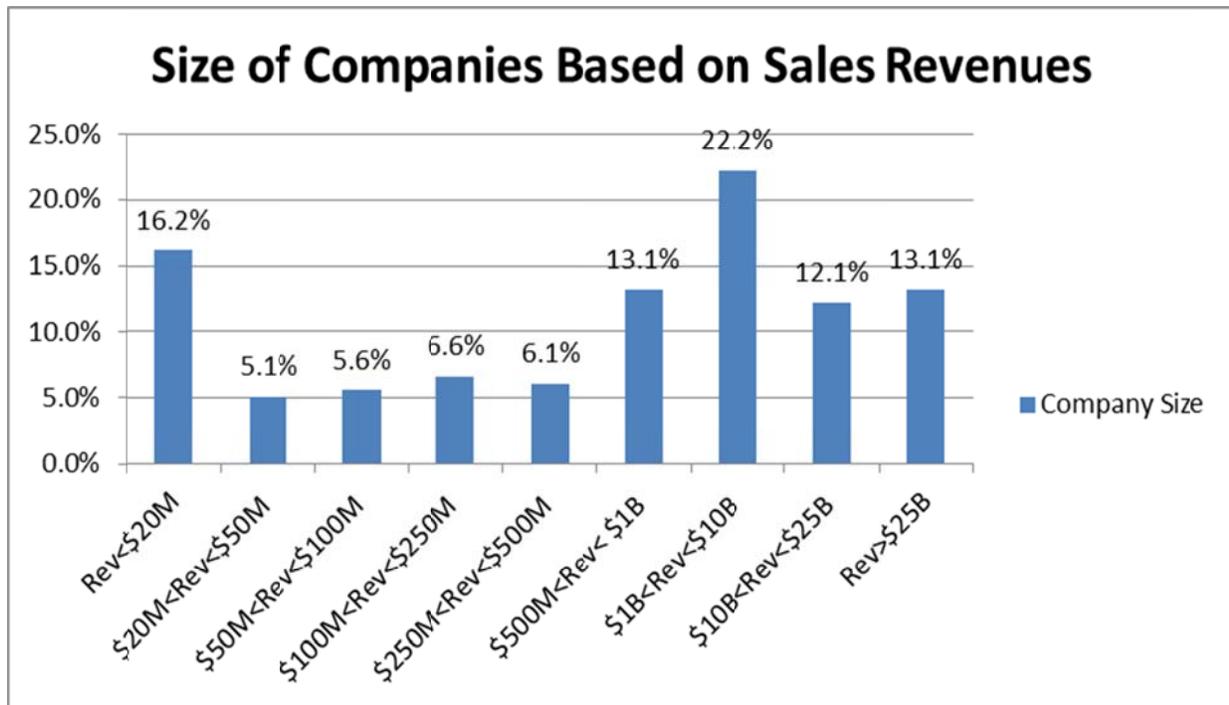


Figure 3 Manufacturing Only Companies--by Size

## Manufacturing and Sales

Our first objective is to understand the distribution of manufacturing activities and sales by region. Every company provided information on the distribution of manufacturing activities by region. This is used in Figure 4 where we provide a summary of the geographical distribution of manufacturing operations for the 198 manufacturing companies. As you can see, our data suggests that more than half (52.6%) of the manufacturing activities are in the U.S., followed by China with 21.1%, and 7.5% in Mexico/Central America.

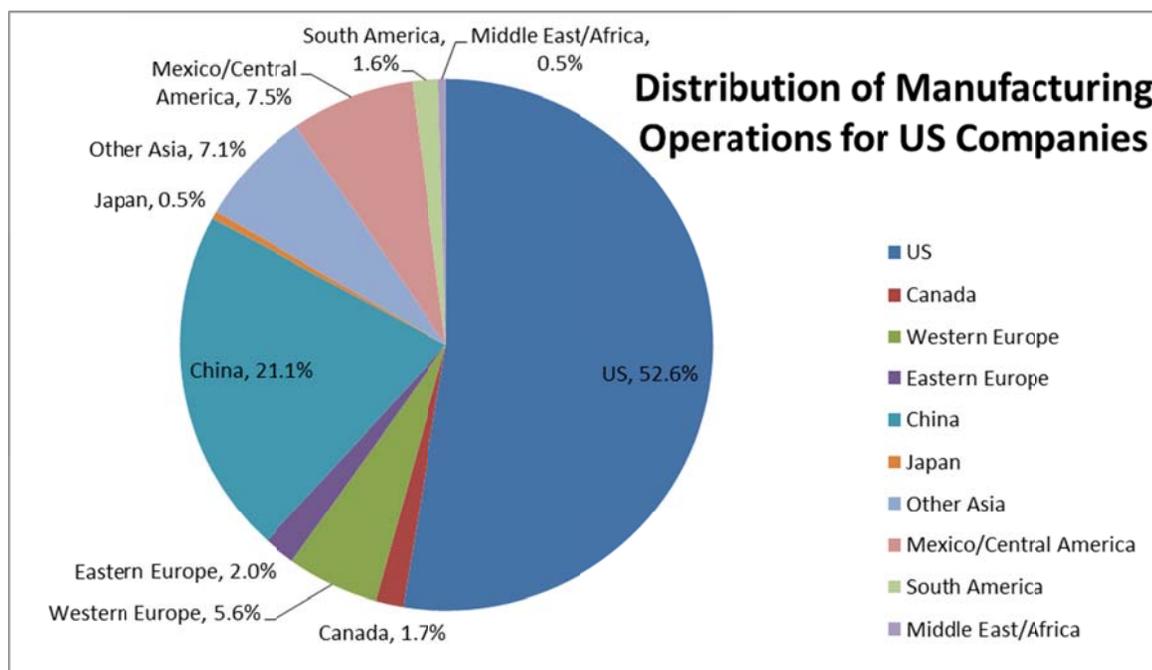


Figure 4 Geographical Distribution of Manufacturing Operations

An interesting question is whether this distribution depends on company size. This is addressed in Figure 5, which indicates that as a company's revenue increases, its proportion of manufacturing in the U.S. decreases. Indeed, when the company size is greater than \$10B, the proportion of manufacturing in the U.S. is 35.3%, while when the size is between \$1B and \$10B, the proportion is 50.4% and when the size of the firm is smaller than \$1B, the proportion of manufacturing in the U.S. is 60%.

The same is true when considering the distribution of sales by company size. Figure 6 suggests that as the company's revenue increases, the proportion of sales in the U.S. decreases. For example, when the company's revenue is greater than \$10B, our data suggests that 43.9% of the revenue, on average, is generated from sales in the U.S. This proportion increases to 55.6% for companies whose size is between \$1B and \$10B of sales revenue and to 69.4% for those companies whose size is smaller than \$1B.

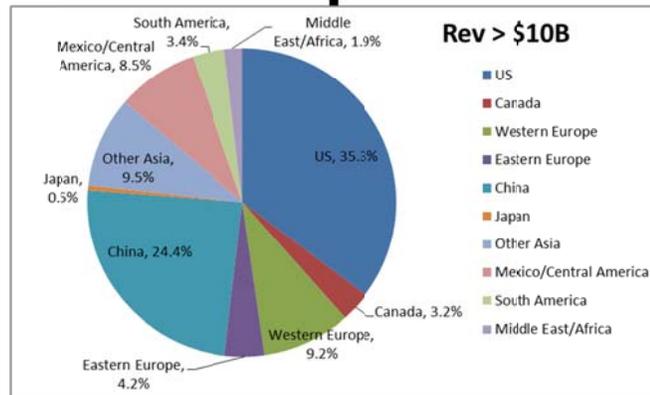
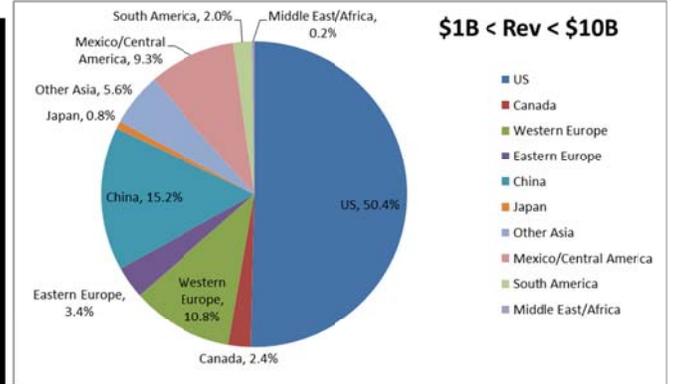
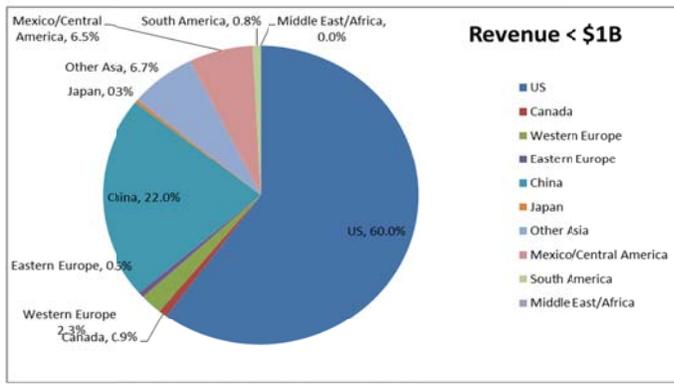


Figure 5 Distribution of Manufacturing Activities by Company Size

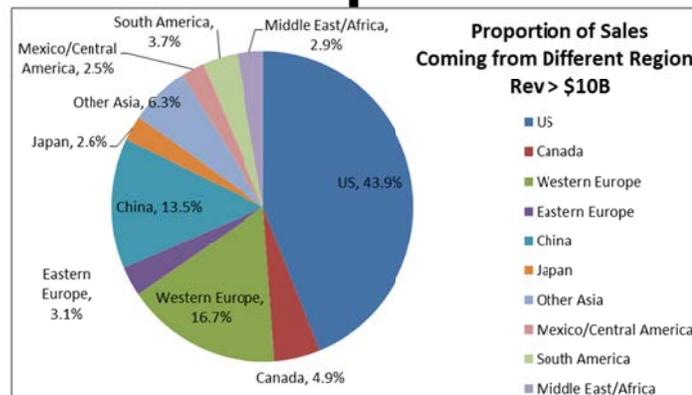
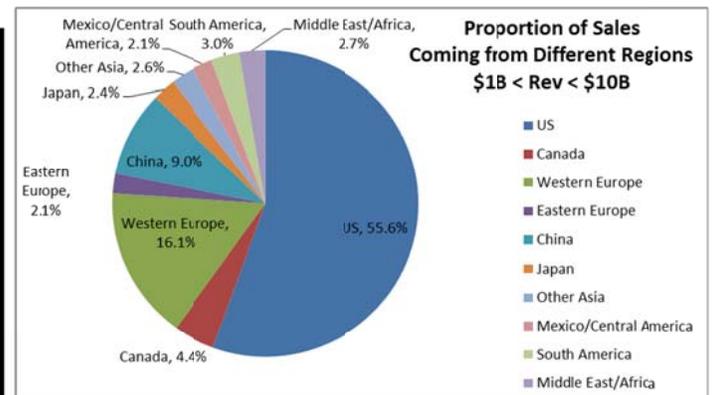
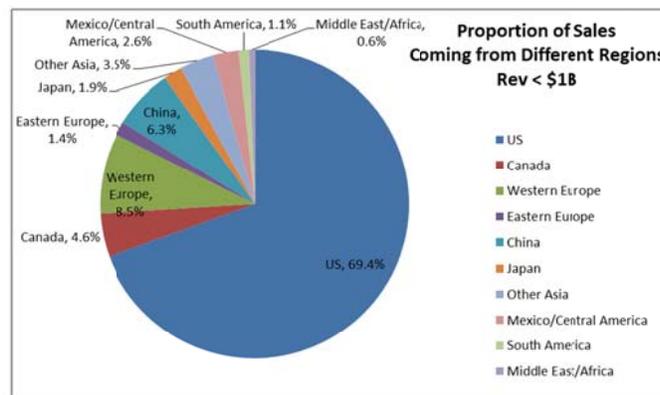


Figure 6 Distribution of Sales by Company Size

These results are summarized in Figure 7, which confirms that the larger the size of the company, the smaller the revenue generated in the U.S and, hence, the smaller the manufacturing activities in the U.S.

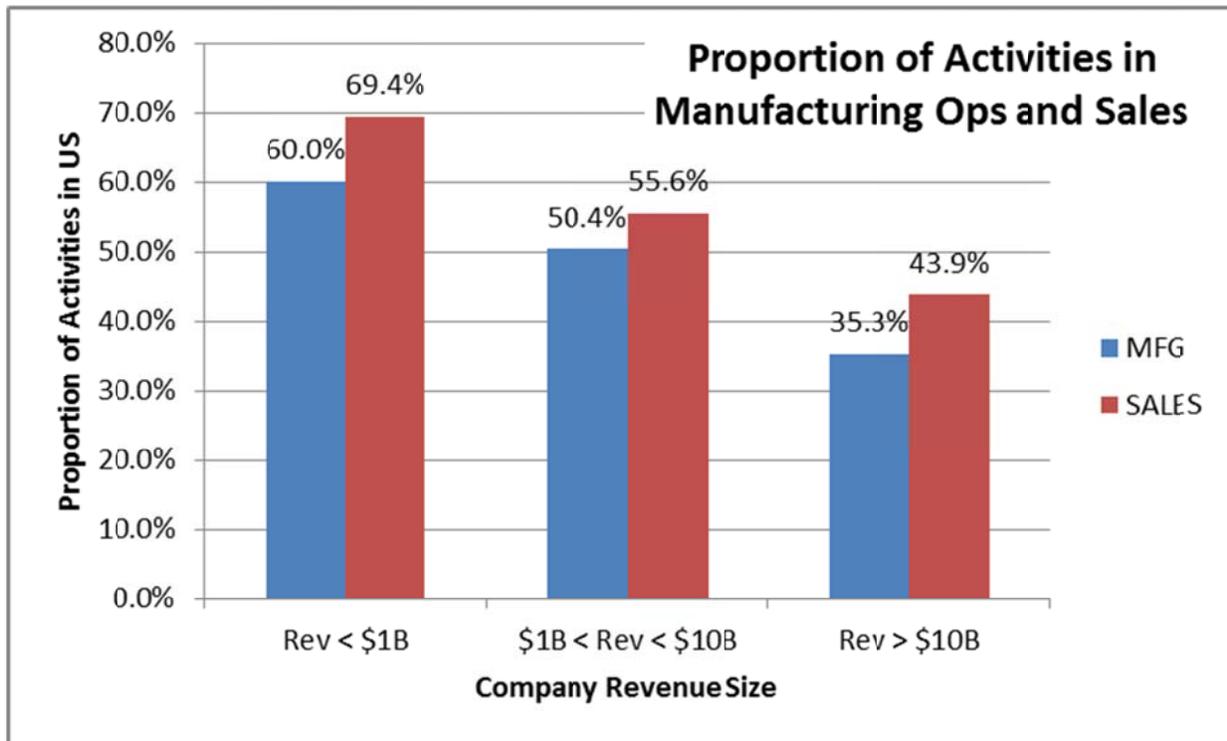


Figure 7 Proportion of Manufacturing Activities and Sales in U.S., Based on Company Size

Finally, an interesting question is how different developed countries (U.S., Canada, Japan, W. Europe) are from emerging markets (China/Asia, Mexico, Central America, South America, Middle East, Africa, E. Europe), in terms of sales and manufacturing activities. This is addressed in Figure 8.

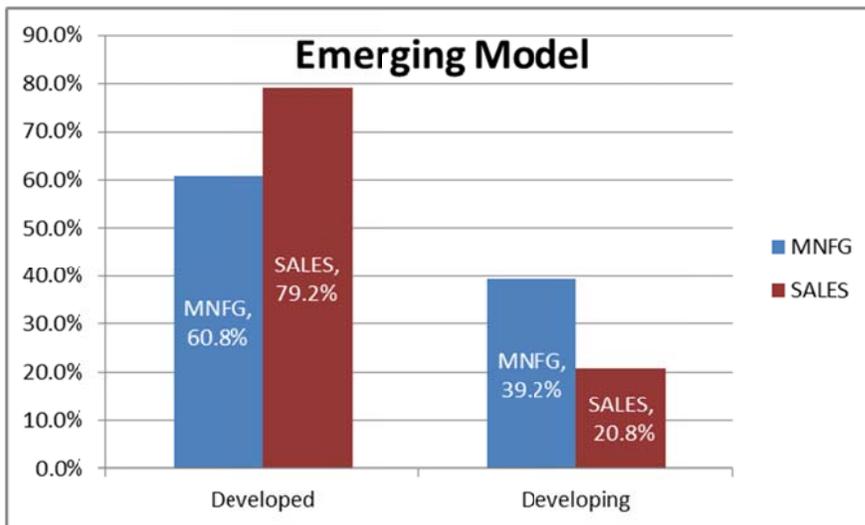


Figure 8 Sales exceeds Manufacturing for developed countries while Manufacturing exceeds sales for emerging markets

## Re-shoring

For U.S. manufacturing companies, the data indicates a significant disparity between companies that are "considering" versus those that are "definitively" planning re-shoring their manufacturing activities back to the U.S. This disparity was independent of company size.

Specifically, 33.6% of respondents stated that they are "considering" bringing manufacturing back to the U.S. while only 15.3% of U.S. companies stated that they are "definitively" planning to re-shore activities to the U.S. Interestingly, one-third of the respondents did not answer this question, possibly indicating a reluctance to discuss the topic due to its sensitive nature.

Of course, what is missing from the data is what type of activities are moving back to the U.S. Anecdotal evidence, not data in our survey, suggests that for now, many of these are low level jobs, often just assembly operations.

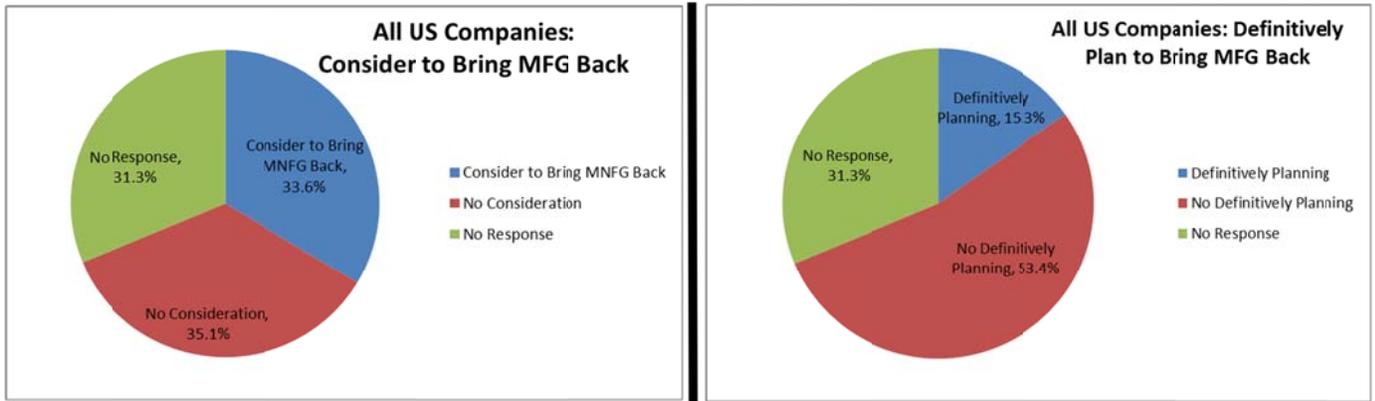


Figure 9 Comparison between those considering and those planning to move manufacturing back to the U.S.

To understand the reasons for the change in manufacturing footprint, we asked companies to identify the drivers of this decision. As you can see in the list below, the top reason to move manufacturing back to the U.S. is to cut Time-to-Market. Cost Reduction and Product Quality are not far below.

The top six decision drivers for companies to re-shore are:

1. Time-to-Market (73.7%)
2. Cost Reductions (63.9%)
3. Product Quality (62.2%)
4. More Control (56.8%)
5. Hidden Supply Chain Management Costs (51.4%)
6. Protect IP (48.5%)

Finally, we asked the participating U.S. companies to identify government actions that will accelerate the re-shoring process back to the U.S. According to our data, the number one government action that can make a difference is *Corporate Tax Reductions*. *Providing Tax Credits* and *R&D Incentives* are not far below

The top five actions, in order of importance, the U.S. government can take to incent re-shoring for U.S. companies are:

1. Corporate Tax Reduction (68.3%)
2. Tax Credits (65.9%)
3. R&D Incentives (60.0%)
4. Provide better education/Training for Required Skills (43.8%)
5. Provide Better Infrastructure (38.0%)

## Summary

Our survey indicates a significant shift in manufacturing footprint. 33.6% of respondents stated that they are "considering" bringing manufacturing back to the U.S., while 15.3% of U.S. companies responded that they are "definitively" planning to re-shore to the U.S. Of course, this (15.3%) is a significant number indicating that we are in the middle of a transformation from a global manufacturing strategy, where the focus is on low cost countries, to a more regional strategy, where China is for China, U.S. (or Mexico and Latin America) is for the Americas and Eastern Europe is for European markets.

This trend has picked up pace in the last few years not only because of job losses in the U.S., but also because the economics that made off-shoring attractive in the first place have changed for the following reasons:

- 1) **Oil price** - the move to low cost manufacturing in the 90s was driven in part by the cheap oil price. However, oil price has tripled in the last decade and as a result, logistics costs have increased significantly. Most recently, another twist has been added with the U.S. production of cheap natural gas, thus allowing certain industries to reduce manufacturing costs. Therefore, the combination of high transportation costs to ship from overseas and low manufacturing costs to produce in the U.S. can financially motivate re-shoring.
- 2) **Labor Costs** - in the last few years labor cost in China has increased, year-over-year by almost 20% while labor cost in the U.S. has increased year-over-year by 3% and in Mexico by 5%. So, if your company made production sourcing decisions five, seven or ten years ago, it may need to revisit these decisions today.
- 3) **Automation** - cheap sensors, fast computing and new technologies have led to new user friendly manufacturing automation that increases productivity. This improvement in productivity changes the economics and reduces the importance of low labor costs. As a result, the focus of manufacturing companies is more on skillful workers rather than low cost countries.
- 4) **Risk** - global companies have realized in the last few years that strategies such as outsourcing and off shoring have significantly increased risk because their supply chain is geographically more diverse and as a result exposed to all sorts of potential problems. This drives companies to reevaluate their supplier and manufacturing base in order to increase flexibility and reduce risk.

Manufacturing is now going through a genuine transformational period, driven particularly by the changes described earlier. Therefore, there exists a huge opportunity for U.S. companies and policy makers to accelerate this trend and return the country to an era of manufacturing growth.



## About The MIT Forum for Supply Chain Innovation

The MIT Forum for Supply Chain Innovation is a community composed of academics and industry members whose support allows forum researchers to provide customer-focused solutions to design and manage the new supply chain. The Forum has pioneered a deeper understanding of the supply chain and its relationship to corporate strategy and has broad support from a wide cross-section of industry.

<http://supplychain.mit.edu/>

### Manufacturing Technology Advisory board

In June 2012, the MIT Forum launched the **Manufacturing Technology Advisory Board** in response to Forum members' request for technology transformation guidance. The board consists of MIT academic and research leaders with major technology providers and industry leaders to collaborate on key issues around U.S. manufacturing.

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