THE STATE OF MONTANA MANUFACTURING

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

MONTANA MANUFACTURING EXTENSION CENTER
An affiliate of the NIST Manufacturing Extension Partnership

2012 EDITION

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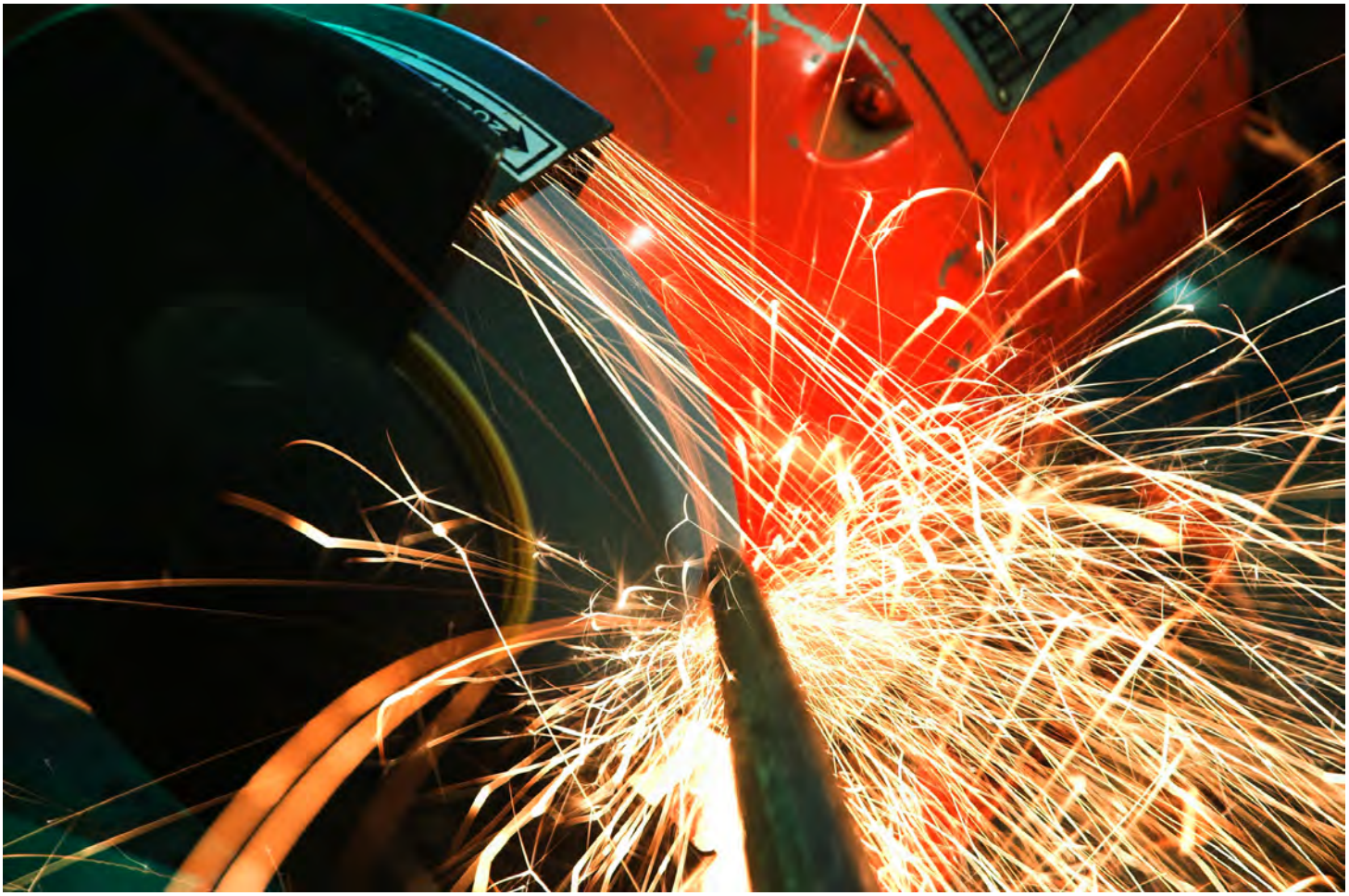
Contents

Acknowledgements

This report was prepared by the Montana State University Montana Manufacturing Extension Center and the University of Montana Bureau of Business and Economic Research under award 70NANM10H144 from the National Institute of Standards and Technology Hollings Manufacturing Extension Partnerships, U.S. Department of Commerce. The statements, findings, conclusions, and recommendations are those of the author(s) and do not necessarily reflect the views of the National Institute of Standards and Technology Hollings Manufacturing Extension Partnership or the U.S. Department of Commerce.



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by Paul E. Polzin

Introduction

The U.S. economy is now in the third year of an exceedingly slow recovery that began from a cyclic trough in the second quarter of 2009. The national economy seemed to be poised for a takeoff into sustained growth in 2011, but a "soft patch" in mid-year kept the overall increase to a very modest level. The same pattern appears to be repeating in 2012 with strong economic data in the first part of the year followed by far poorer performance in mid-year, perhaps reflecting the financial meltdown in the Euro zone.

Business cycle economists have an explanation for the extraordinarily lethargic performance of the U.S. economy. They point out that the 2007-2009 recession was accompanied by a financial crisis and that the ensuing recoveries tend to be very slow in these instances. The last such case in the U.S. occurred in 1929, but there have been many more similar situations in other countries during the past 50 years. In fact, the U.S. is right on track with respect to the average recovery in these countries from similar financial crises. Unfortunately, based on the past experiences in these other countries, the U.S. can look forward to further below trend growth for the next few years.

Manufacturing was one of the first industries to recover. Early in the economic recovery, there were increases in the traditional power houses of autos, fabricated metals, as well as other sectors. To some extent, these recovering industries were those serving long dormant markets or with significant exports to developing countries less impacted by the Great Recession. There will be more about manufacturing exports later in this report, but dependence on developing economies could be a two-edged sword if their growth falters.

The Montana economic recovery has also been slow and halting and with a pronounced regional dimension. Between 2009Q2 and 2011Q4, Montana's inflation adjusted nonfarm earnings increased at less than one percent annualized rate, far below the long-run average of more than two percent per year. But this statewide average hides very different conditions. The Bakken oil boom has led to double digit growth rates in far eastern Montana and has boosted the economies of nearby towns such as Glendive, Miles City, and even Billings. In contrast, areas in western Montana, such as Missoula and Flathead

Table 1
Maufacturing Employment, U.S. and Montana
2009 Q2 and 2011 Q3

	2009 Q2	2011 Q3	Percent Change
U.S. Manufacturing	11,719,500	11,805,500	0.7
Montana Manufacturing	17,500	17,000	-2.9
Wood and Paper Products	3,450	2,750	-20.3
All Other Manufacturing	14,100	14,250	1.1

Sources: U.S. Bureau of Labor Statistics. Bureau of Business and Economic Research, The University of Montana.

counties, have barely budged from their recession lows. In between are Gallatin, Lewis and Clark, and Cascade counties which have started to grow again and show a few signs of life.

Table 1 presents manufacturing wage and salary employment for the U.S. and Montana during the second quarter of 2009 (the cycle trough) and the third quarter of 2011 (the latest data available). Comparing the trends in employment reveals how manufacturing has fared in the U.S. and Montana during the recovery phase of this business cycle.

U.S. manufacturing wage and salary employment rose slightly from 11.7 million workers in 2009Q2 to 11.8 million in 2011Q3, an increase of 0.7 percent. In contrast, Montana manufacturing employment decreased from 17,500 in 2009Q2 to 17,000 in 2011Q3, a decrease of 2.9 percent.

The overall decline in Montana manufacturing employment was due to special circumstances in a few industries. The Smurfit-Stone paper mill near Missoula permanently closed in early 2010. This facility was the largest manufacturing plant in the state. In addition, there were shutdowns and closures in the wood products industry. Even though the closures in both industries occurred during a period of poor markets, the long-term cause was a significant decrease in the supply of raw material due to the diminished harvests on federal and some industrial land. The paper mill and some sawmills have been dismantled and these jobs will not return even when the economy fully recovers.

The Columbia Falls Aluminum Company also closed during this period. Employment at this facility has been gradually declining for years as the supply of appropriately priced electricity has become scarcer. The plant could reopen but it is unlikely given the overall market for electricity in the Pacific Northwest.

As shown in Table 1, employment in the wood and paper products industry decreased by 700 workers between 2009Q2 and 2011Q3. Employment in all the other components of Montana manufacturing increased by about 150 workers, or 1.1 percent.

In summary, since the start of the recovery Montana manufacturing employment has decreased while the corresponding national figures show a modest increase. But closer look reveals a different story. Most of the Montana decrease was in a few industries experiencing structural change and/or supply-side issues. Montana manufacturing employment actually grew faster than the national average, if these industries are excluded.

Analyzing Manufacturing

Manufacturing is one of the few industries for which reliable data are available for both the nation and states. There is information for output (value of shipments), costs, investments, exports, employment, and workers earnings. This wealth of information allows detailed analysis of trends within manufacturing but sometimes leads to confusion when manufacturing is compared to other industries.

Manufacturers are constantly trying to improve their competitive position by controlling costs and increasing productivity. But these actions may lead to differing trends in the various manufacturing data series. For example, increased labor productivity is often reflected in rising output per worker. This, in turn, implies that the numerator (output) increases more than the denominator (workers).

Non-manufacturing firms also attempt to control costs and increase productivity. But their ability to achieve productivity increases may be less (or greater) than manufacturing firms. In addition, data for non-manufacturing industries may be less complete than for manufacturing, making it more difficult to identify and measure productivity changes.

The following sections use a variety of data to analyze manufacturing as well as to compare manufacturing to other industries. Sometimes employment statistics will be analyzed, sometimes worker earnings, and sometimes output and production. Which data is chosen will depend on the purpose of the analysis. For example, comparing manufacturing with other industries requires that similar data be available for both. On the other hand, analysis of the latest trends for manufacturing requires figures with the most recent release date. In each case, the characteristics of the data will be discussed so that they may be interpreted correctly.

Manufacturing and the U.S. Economy

Manufacturing continues as a major sector in the U.S. economy. Whether manufacturing outperforms or underperforms the rest of the economy depends on the data and the period analyzed. This section looks at the latest data for inflation-adjusted Gross Domestic Product (GDP) in manufacturing (which measures real output and production) and concludes that over the past decade it has grown at about the same rate as the other sectors of the economy. Manufacturing employment and earnings will be examined and different trends will be found.

Inflation-adjusted GDP for the U.S. manufacturing is presented in Table 2. Manufacturing GDP rose from $1.4 trillion (2005$) in 2000 to about $1.6 trillion (2005$) in 2010,

Table 2
Gross Domestic Product (GDP), U.S.
(Billions of Chained 2005 Dollars)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
GDP	11,223,130	11,364,239	11,560,341	11,807,823	12,212,645	12,554,538	12,895,854	13,143,678	13,100,045	12,773,853	13,099,722
Manufacturing	1,396,514	1,332,119	1,365,339	1,404,830	1,517,861	1,568,037	1,636,594	1,690,414	1,608,640	1,469,701	1,554,402
Percent of Total	12.4	11.7	11.8	11.9	12.4	12.5	12.7	12.9	12.3	11.5	11.9

Sources: U.S. Bureau of Economic Analysis.

an average annual growth rate of about 1.4 percent per year. This overall increase in manufacturing output occurred despite two recessions: the 2001 recession and the most recent "Great Recession" from 2007 to 2009.

Manufacturing's share of total real GDP remained relatively constant at between 12 and 13 percent over the entire decade, but with a cyclic pattern. This figure declined slightly during the recession years of 2001 and 2002 and then again in 2008 and 2009. This reflects the greater cyclic sensitivity of manufacturing. The percentage rose during the recovery period beginning in 2003 and appears to be rising again during 2010.

The Great Recession significantly impacted U.S. manufacturing. As shown in Table 2, real GDP in manufacturing declined for two straight years in 2008 and 2009. The overall peak-to-trough decrease was about 13.1 percent. IHS Global Insight Inc., the world's largest economic forecasting company, reports that real GDP in manufacturing regained its prerecession peak in late 2011, more than three years after the recession began. In comparison, real GDP in manufacturing during the 2001 recession dropped 4.7 percent during only one year and regained its prerecession level in slightly more than two years.

Over the long-run, prices for manufactured goods have risen much slower than most other prices. This may reflect the greater than average increases in manufacturing productivity. There is a continuous downward trend in manufacturing's share of nominal (non-deflated) GDP.

Manufacturing and the Montana Economy

The trends in the Montana economy are primarily determined by the basic (or export) industries. Basic industries are those that are located in a state but sell most of their products elsewhere, or are otherwise influenced by factors beyond that state's borders. Basic industries inject new funds into a state economy and are responsible for creating further income and jobs, and these dollars are spent and re-spent. Manufacturing, mining, and agriculture are basic industries in every state. The federal government and rail/truck transportation industries do not export products, but are dependent on factors external to a single state and are usually classified as basic. Service industries may also be basic. For example, financial services in New York, insurance in Connecticut and Indiana, and amusement places (casinos) in Nevada all serve non-local markets and have part of their state's economic base.

The role of manufacturing in every state (plus the District of Columbia) is shown in Table 3. Manufacturing's share of each state's economic base as measured by GDP was calculated for 1997 and 2010. The economic base of each state was estimated using a method developed by the U.S. Bureau of Economic Analysis. There are other methods of identifying the basic industries and they may yield slightly different findings.

During 1997 the top five states in terms of manufacturing's share of the economic base were Indiana, North Carolina, Wisconsin, South Carolina, and Michigan. The major difference

Table 3
Manufacturing as Percent of Economic Base Gross State Product for States 1997 and 2010

1997			2010		
Rank	State	Percent	Rank	State	Percent
1	Indiana	74.6	1	Oregon	78.8
2	North Carolina	70.4	2	Indiana	70.7
3	Wisconsin	70.3	3	Wisconsin	59.3
4	South Carolina	68.8	4	South Carolina	58.9
5	Michigan	66.7	5	Michigan	55.3
6	Oregon	66.0	6	Louisiana	55.3
7	Ohio	65.4	7	North Carolina	52.5
8	New Hampshire	65.1	8	New Hampshire	50.1
9	Kentucky	63.1	9	Iowa	49.8
10	Arkansas	61.9	10	Arkansas	49.3
11	Pennsylvania	59.3	11	Ohio	49.0
12	Iowa	58.6	12	Maine	47.0
13	Maine	56.2	13	Kentucky	46.7
14	Vermont	56.2	14	Kansas	46.3
15	Arizona	56.2	15	Alabama	45.2
16	Alabama	51.4	16	Texas	45.1
17	Kansas	50.7	17	Pennsylvania	44.4
18	Missouri	50.1	18	Vermont	42.3
19	Tennessee	50.1	19	Tennessee	41.5
20	Georgia	50.0	20	Mississippi	41.4
21	New Mexico	49.1	21	Minnesota	41.2
22	Minnesota	48.9	22	Idaho	41.2
23	Mississippi	48.6	23	Washington	41.2
24	Texas	48.4	24	Georgia	40.2
25	Washington	46.4	25	Missouri	40.0
26	California	45.2	26	Arizona	39.9
27	Louisiana	43.2	27	California	39.2
28	Utah	42.3	28	Utah	35.4
29	Illinois	41.0	29	Nebraska	33.4
30	West Virginia	40.2	30	Illinois	32.3
31	Idaho	40.2	31	Oklahoma	32.0
32	Oklahoma	40.2	32	West Virginia	26.1
33	Nebraska	38.1	33	New Jersey	24.8
34	Rhode Island	38.0	34	Connecticut	24.5
35	New Jersey	36.4	35	Rhode Island	24.4
36	Connecticut	35.1	36	Virginia	22.8
37	Virginia	33.6	37	Massachusetts	22.5
38	Massachusetts	30.2	38	Montana	21.5
39	South Dakota	29.5	39	New Mexico	21.0
40	Colorado	26.9	40	South Dakota	20.3
41	Delaware	25.6	41	North Dakota	19.6
42	Montana	24.4	42	Colorado	19.1
43	Maryland	23.6	43	Florida	18.1
44	Florida	23.6	44	Maryland	17.1
45	North Dakota	22.9	45	Delaware	15.0
46	New York	17.4	46	Nevada	13.8
47	Wyoming	13.4	47	Wyoming	12.7
48	Nevada	12.9	48	New York	11.7
49	Alaska	7.2	49	Alaska	8.5
50	Hawaii	6.2	50	Hawaii	6.1
51	District of Columbia	0.6	51	District of Columbia	0.3

Sources: U.S. Bureau of Economic Analysis.

in the top tier states between 1997 and 2010 is that Oregon vaulted to the top spot and North Carolina dropped to seventh. The reason for Oregon's rise is the rapid growth of computer and electronics manufacturing in that state.

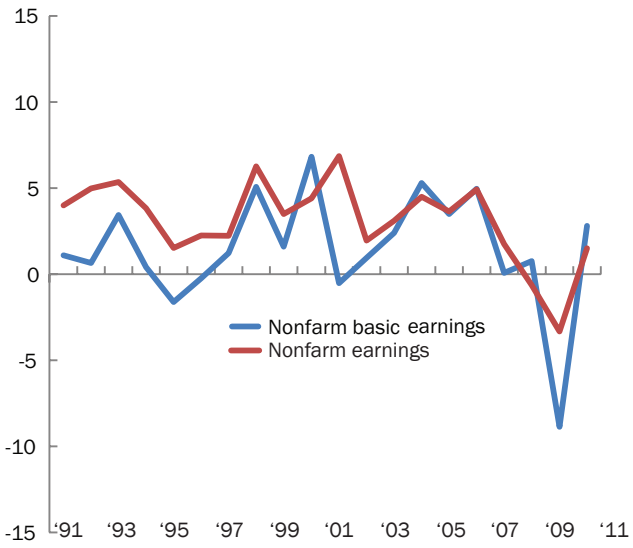
Montana has traditionally ranked relatively low in terms of its contribution to the economic base. Montana was 42nd in 1997 when manufacturing accounted for 24.4 percent of the economic base. Twelve years later in 2009, Montana had risen to 38th with about 21.5 percent of the economic base in manufacturing. Almost all states (with Oregon being the major exception) experienced declines in manufacturing's share of the economic base. This is a result of using nominal GDP data and the overall decline in manufacturing's share of the U.S. economy as measured by these data mentioned earlier. Real GDP data may not show the same overall declines, but real GDP is estimated using industry level price indices and this may introduce other biases.

GDP data is not well-suited to analyzing trends in manufacturing from one year to the next. The disadvantages of GDP data is that it is not available prior to 1997, and the most current figures are usually several years old and do not provide detail for specific components of manufacturing.

Earnings data are more appropriate for examining trends from one year to the next and for periods of a decade or more. But, earnings data also has its own characteristics. For example, net farm income of family-owned farms and ranches (a major component of farm earnings) is extremely volatile and not a reliable measure of output, revenues, and overall economic conditions in the agricultural sector. Consequently, the following sections will report nonfarm earnings to identify overall economic trends. Using nonfarm earnings does not imply that agriculture is ignored—in fact, earnings in agricultural services are explicitly included. Rather, excluding farm earnings eliminates an extremely volatile component that could mask important trends elsewhere in the economy.

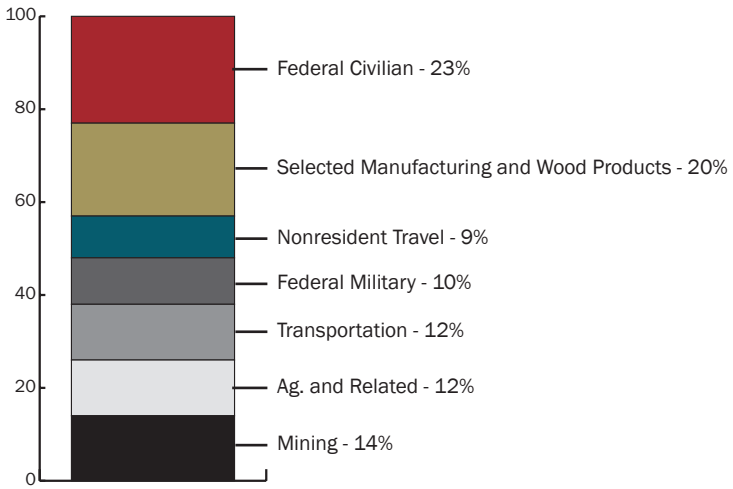
An accurate description of manufacturing's contribution to the Montana economy must take into account the economic data characteristics mentioned earlier. In addition, there have been revisions to all economic data and also structural changes within manufacturing. The U.S. government in 2000 significantly revised the definitions and reporting formats for economic data. These modifications were intended to better measure an economy becoming more and more dependent on services. One of the other consequences of these changes was that statistics referring to years before 2000 may not be exactly comparable to those for years after that date.

Figure 1
Nonfarm Labor Income and Nonfarm Basic Labor Income, Montana



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

Figure 2
Earnings in Basic Industries, Montana, 2009-2011 (Percent of Total)



Sources: Bureau of Business and Economic Research, The University of Montana; Bureau of Economic Analysis, U.S. Department of Commerce.

Specific industries within manufacturing may themselves be changing due to evolving and improving practices. One example is the greater emphasis on supply chain management. Increased use of supply chain methods suggests that today's production processes may be very different from those of only a few years ago.

Montana's basic industries are the major determinant of the overall trends in the state's economy. Figure 1 pictures the high correlation between changes in the basic industries and the overall trends in the economy. Every up and down in nonfarm earnings (which measures the overall economy) were accompanied or preceded by a similar change in basic earnings. Looking at the most recent decade, there were decelerations in basic earnings associated with the 2001 recession and the September 11 aftermaths. A year later, nonfarm earnings also decelerated, signaling that the impacts were felt in the rest of the economy. There were significant accelerations in the basic industries in 2004, 2005, and 2006 caused by the energy/ commodity boom. These were quickly followed by faster growth in the other sectors of the economy. The layoffs and closures in the wood products industry plus the onset of the Great Recession in 2007 led to economy-wide declines in 2008 and 2009. Finally, the upturns in 2010 signal the beginning of the recovery.

Manufacturing is definitely a basic industry because most its output and production is shipped out of Montana. As shown later in Figure 4, about 60 percent of the state's manufacturing GDP is produced in industries such as wood products, petroleum, and machinery where almost all of the products immediately leave the state. Even the smaller industries within manufacturing, such as fabricated metal products and chemicals, include many firms that sell nationwide or even worldwide.

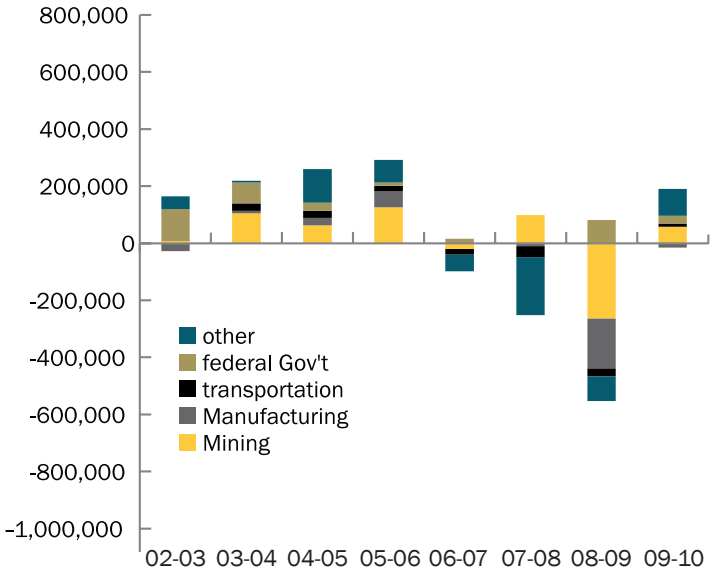
The Montana Department of Labor and Industry reported that the employment multiplier for manufacturing is 3.58. This means that there will be 2.58 new jobs created elsewhere in the economy as a result of one new manufacturing job. The earnings multiplier is 2.72, suggesting that an additional $1.72 will be created in other Montana industries for each $1.00 in new manufacturing earnings.

Earnings in each of Montana's basic industries are shown in Figure 2. Manufacturing accounts for about 20 percent of total earnings in basic industries. This percentage differs from that reported in Table 2 because GDP is a measure of the value of production or output while the data in Figure 2 refers to the earnings of workers. Manufacturing is the second largest basic industry as measured by earnings ranking behind the federal civilian and military government at 33 percent. Nonresident travel accounts for most of the "Other" basic industries category.

Manufacturing is a major contributor to recent economic trends in Montana despite accounting for only 20 percent of the economic base. This importance is illustrated by the data in Figure 3 which presents the year-to-year changes in basic earnings by industry from 2002 to 2010. The changes in basic earnings may be decomposed by major sector. Starting in mid-decade;

- 2005-06. Nonfarm basic earnings increased about $291 million, and all of the basic industries grew. The greatest increases were in mining ($126 million), other ($79 million), and manufacturing ($56 million).
- 2006-07. The Great Recession was just beginning. Nonfarm basic earnings declined about $83 million with some industries increasing and some decreasing. Small increases in

Figure 3
Change in Nonfarm Basic Labor Income, Montana



Source: U..S. Bureau of Economic Analysis.

manufacturing ($3 million), transportation ($19 million), and the federal government ($12 million) were more than counterbalanced by declines in mining ($21 million) and other ($59 million).

- 2007-08. The full impact of the Great Recession was felt as four of the five major nonfarm basic industries declined. The largest decline was in in the other category ($202 million), followed by transportation ($38 million), manufacturing ($11 million). These declines were somewhat offset by growth in Mining ($99 million).
- 2008-09. The second year of the recession again saw decreases in four of the five components of nonfarm basic earnings. Total nonfarm basic earnings decreased about $472 million. The largest decrease was in mining ($265 million) followed by manufacturing ($174 million), other ($86 million), and transportation ($28 million). The federal government was the only industry to post an increase ($81 million).
- 2009-10. The economic recovery begins. Total basic earnings grew $175 million. The largest increases were in the other category ($93 million), mining ($59 million) and the federal government ($28 million). Manufacturing continued to post a small decline ($15 million).

This analysis illustrates a number of important points about the causes of economic growth in Montana. First, overall growth or decline in the basic industries is the net result of events in each of the basic industries. There are always some industries that are growing (or declining) faster or slower than others.

Table 4
Manufacturing Establishments
Montana, 2009

NAICS Code	Industry	Number of Establishments
311	Food Products	320
312	Beverages & Tobacco	42
313	Textile Mills	15
314	Textile Product Mills	58
315	Apparel	149
316	Leather & Allied Products	121
321	Wood Products	378
322	Paper Manufacturing	8
323	Printing & Related	158
324	Petroleum & Coal Products	27
325	Chemicals	73
326	Rubber & Rubber Products	36
327	Nonmetalic Mineral Products	132
331	Primary Metals	45
332	Fabricated Metal Products	427
333	Machinery	112
334	Computer and Elec. Products	48
335	Elec. Equipment and Appliances	24
336	Transportation Equipment	66
337	Furniture and Related	287
339	Miscellaneous	572
	Total	3,098

Sources: U.S. Bureau of the Census.
Note: Includes establishments with no employees.

Table 5
Manufacturing Establishments by Employment Size
Montana, 2010

Employment	Number of Establishments
Total	1,210
1 to 4	655
5 to 9	222
10 to 19	172
20 to 49	95
50 to 99	35
100 to 249	25
250 to 499	5
500 to 999	1
1,000 or more	0

Sources: U.S. Bureau of the Census.
Note: Includes establishments with no employees.

Secondly, there is usually no single cause of growth. None of the nonfarm basic industries was consistently the fastest (or slowest) growing during this eight year period.

Finally, and perhaps most important, industries that represent a relatively small share of the economic base – such as manufacturing – can be major contributors to overall economic growth or decline during specific periods. For example, during 2005-06, manufacturing ranked right behind mining and other in terms of its contribution to the increase in the total increase in basic earnings. On the minus side, manufacturing was the second largest contributor to the decline in 2008-09.

A Closer Look at Montana Manufacturing

Manufacturing Establishments

There were 3,098 manufacturing establishments in Montana during 2009, as shown in Table 4. The largest category is miscellaneous manufacturing (NAICS 339) with 572 establishments. The next largest categories were fabricated metal manufacturing (NAICS 332) with 427 establishments and wood products (NAICS 321) with 378 establishments.

Employment Size

Montana manufacturers are mostly small businesses. As shown in Table 5, establishments with one to four workers represented 54.0 percent of the 1,210 establishments with employees. There were 877 establishments with less than ten workers, or 72.5 percent of the total. There were no Montana manufacturers with 1,000 employees or more.

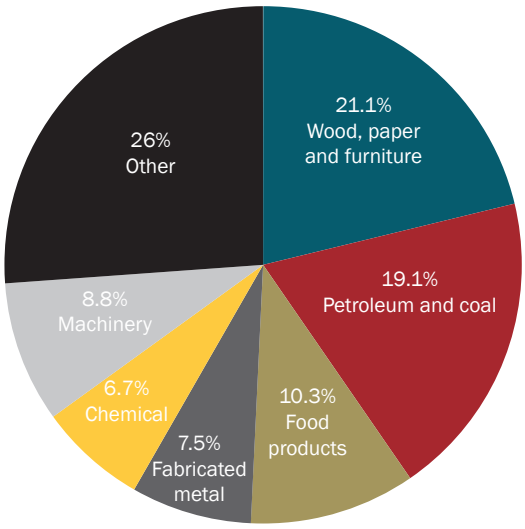
Composition of Manufacturing

The Montana manufacturing industry is not the same as its national counterpart. Industries that are important in Montana are not necessarily the same as those that are important nationwide. Figures 4 and 5 present the composition of manufacturing earnings in Montana and the United States during 2010. The recent increases in world energy prices have distorted value of output measures for certain industries (such as petroleum refining), consequently earnings becomes a better measure of the composition of manufacturing because it is the amount earned by manufacturing workers in the state.

The largest component of U.S. manufacturing during 2010 was computers and electronics, which accounted for 13.3 percent of manufacturing earnings. The next four industries were chemical products (10.6 percent), fabricated metals (9.8 percent), food products (8.5 percent), and machinery (11.3 percent).

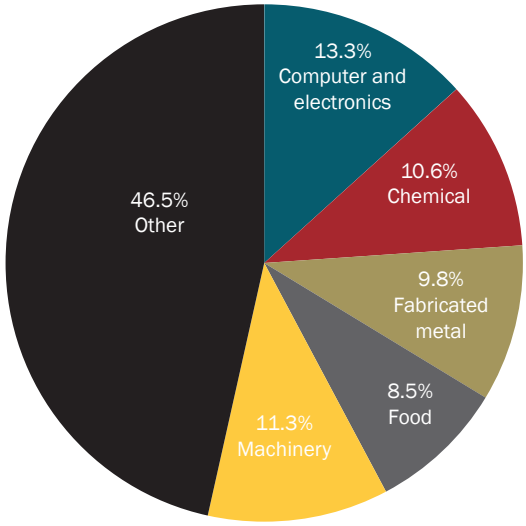
The two largest Montana manufacturing industries in 2010 were associated with the processing of forest resources and crude oil. Wood and paper products and furniture manufacturing account of 21.1 percent to Montana manufacturing earnings in 2010. The next largest industry was petroleum and coal products, which is mostly the oil refineries in Billings and Great Falls. If the downward trend in wood and paper

Figure 4
Compostition of Manufacturing, Montana, 2010



Source: U.S. Bureau of Economic Analysis.

Figure 5
Compostition of Manufacturing, United States, 2010



Source: U.S. Bureau of Economic Analysis.

products continues due to further shutdowns and closures, petroleum and coal products may become the largest Montana manufacturing sector as measured by earnings (but not employment). Food products and fabricated metals are the third and fourth largest sectors, accounting for 10.3 percent and 7.5 percent respectively. Earnings in chemical products (which includes REC Silicon, formerly AsiMi) represented 6.7 percent of the total and machinery (which includes Applied Materials, formerly Semitool) accounted for 8.8 percent.

Manufacturing Employment

The number of manufacturing workers in the U.S. has declined steadily from 2000 to 2010, as shown in Table 6. In Montana, manufacturing employment also declined during this period, but the rate of decrease was much less than the U.S. figure and there were even short periods of modest growth.

U.S. manufacturing employment decreased from 17.8 million workers in 2000 to 12.2 million in 2010, a drop of 31.5 percent. Manufacturing's share of total employment declined from 10.8 percent to 7.0 percent during this period.

Montana manufacturing employment declined from about 24,700 workers in 2000 to approximately 20,500 workers in 2010, a decrease of roughly 17.0 percent. Most of this decrease was concentrated in a few industries; wood products, paper products, and primary metals refining. Despite this overall decrease from 2000 to 2010, total Montana manufacturing employment remained approximately stable, with even a few small increases between 2002 and the onset of the Great Recession in 2008. Manufacturing's share of total statewide employment decreased from 4.5 percent in 2000 to 3.3 percent in 2010. Montana's decrease in relative importance was 1.2 percentage points as compared to 3.8 percentage points nationwide.

Montana Manufacturing Employment by Industry

The overall decline in Montana manufacturing employment hides very different conditions in specific sectors. As shown

Table 6
Full and Part-time Employment Total and Manufacturing Montana and United States

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total, United States (Millions of Workers)	165.4	165.5	165.0	166.0	169.0	172.3	176.1	179.9	179.6	174.2	173.8
Manufactoring (Millions of Workers)	17.8	16.9	15.7	15.0	14.8	14.7	14.7	14.5	14.0	12.5	12.2
Percent of Total	10.8	10.2	9.5	9.0	8.8	8.5	8.3	8.1	7.8	7.2	7.0
Total, Montana (Thousands of Workers)	555	560.4	568.1	575.3	589.0	603.3	622.5	640.6	641.9	625.7	623.7
Manufacturing (Thousands of Workers)	24.7	24.4	23.2	22.0	22.3	22.6	23.4	23.9	23.3	21.2	20.5
Percent of Total	4.5	4.4	4.1	3.8	3.8	3.7	3.8	3.7	3.6	3.4	3.3

Sources: www.wisertrade.org (accessed June 4, 2012)

in Table 7, total manufacturing employment decreased by 4,274 workers from 2000 to 2010. The largest declines were in wood products (3,040), primary metal refining (889), paper (616), furniture and related (497), and nonmetallic mineral products (285). In each case, the decrease can be attributed to long-term structural change within the industry and/or impacts of the Great Recession. If these five industries are excluded, the remainder of manufacturing actually posted a 556 workers increase (or 3.6 percent) during this decade.

The 3,040 decrease in wood products employment can be attributed to both cyclic and long-run influences. The impacts of the Great Recession were disproportionately concentrated in housing and construction, leading to significant decreases in the demand for wood products. The long-term decrease in the supply of timber from federal lands and some industrial lands in Montana imply that inputs will not be available once U.S. demand bounces back. Therefore, many of the mill closures in 2008 and 2009 are permanent shutdowns.

The Smurfit-Stone paper mill near Missoula, the largest manufacturing facility in the state, shut down in early 2010 due to a combination of market and structural factors. This accounted for almost all of the 616 worker decrease in the paper industry from 2000 to 2010. This plant is currently being scrapped and will not reopen.

The 889 decrease in primary metals refining employment reflects the shutdown of the refinery in East Helena and the winding down of the Columbia Falls Aluminum Company in Columbia Falls. The East Helena facility was a lead-zinc refinery that closed in 2002. The aluminum refinery has been gradually reducing production as the supply of available electricity has decreased. This facility is currently dormant with no employment or production, but could reopen if electricity supplies improved.

Furniture and related employment decreased by 497 workers between 2000 and 2010. The trends in this industry appear correlated with the business cycle. There were sizable declines during the recession years of 2001 and 2002 and again from 2007 to 2010. Employment was relatively stable from 2003 to 2006.

Nonmetallic mineral products include the processing of

Table 7
Full-and Part-Time Manufacturing Employment, Montana 2000-2010

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Percent Change '00-'10
Manufacturing	24,744	24,390	23,229	22,054	22,255	22,596	23,390	23,949	23,319	21,238	20,470	-4,274
Durable goods	16,374	16,330	15,209	14,183	14,068	14,395	14,898	15,270	14,593	12,743	12,264	-4,110
Wood products	6,163	5,911	5,802	5,324	5,296	5,290	5,214	4,957	4,391	3,355	3,123	-3,040
Nonmetallic mineral products	1,226	1,090	1,015	1,138	1,109	1,112	1,106	1,169	1,088	996	941	-285
Primary metals	1,056	925	562	445	330	342	340	487	439	269	167	-889
Fabricated metal products	1,494	1,601	1,497	1,512	1,541	1,583	1,783	1,985	2,049	1,988	1,982	488
Machinery manufacturing	1,311	1,904	1,493	1,310	1,285	1,427	1,572	1,566	1,547	1,205	1,226	-85
Computer and electronic products	684	708	614	483	477	502	582	587	594	545	546	-138
Electrical equipment and appliances	(T)	143	137	134	197	201	217	232	259	235	222	(T)
Motor vehicles and parts	386	359	(D)	(D)	(D)	341	402	408	(D)	(D)	284	-102
Other transportation equipment	(T)	229	(D)	(D)	(D)	238	220	222	(D)	(D)	289	(D)
Furniture and related	1,534	1,383	1,297	1,308	1,344	1,329	1,307	1,240	1,216	1,086	1,037	-497
Miscellaneous	2,245	2,077	2,228	2,010	1,948	2,030	2,155	2,417	2,372	2,494	2,447	202
Nondurable goods	8,370	8,060	8,020	7,871	8,187	8,201	8,492	8,679	8,726	8,495	8,206	-164
Food products	2,671	2,585	2,629	2,499	2,746	2,760	2,903	2,988	2,916	2,873	2,819	148
Beverage and tobacco	776	780	816	824	826	800	854	773	761	754	784	8
Textile mills	(T)	(D)	(D)	(D)	(D)	(D)	(D)	55	36	44	(D)	(D)
Textile product mills	(T)	239	252	248	239	215	221	255	250	235	240	(T)
Apparel	(T)	308	286	266	292	309	333	(D)	(D)	(D)	(D)	(D)
Leather and allied products	(T)	171	212	196	202	214	221	176	200	206	219	(T)
Paper	794	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	178	-616
Printing and related	1,276	1,188	1,171	1,171	1,204	1,217	1,296	1,337	1,340	1,176	1,109	-167
Petroleum and coal	908	924	940	924	887	938	961	984	1,077	1,113	1,093	185
Chemical	809	683	710	777	798	772	752	874	955	968	1,016	207
Plastics and rubber products	(T)	488	357	335	364	374	364	367	395	336	332	(T)

Note: Includes the Income of the self-employed. (T) and (D) denote not shown to avoid disclosure of confidential information.

Source: U.S. Bureau of Economic Analysis.

sand, gravel, concrete, and related products. Overall, employment decreased 285 workers from 2000 to 2010. This industry also displays a cyclic profile reflecting the overall trends in construction-related activity. There were employment losses in 2001 and 2002 and then again from 2007 to 2010.

The largest increase in employment between 2000 and 2010 was the 488 worker growth in fabricated metal products. This industry consists of about 200 small and medium-sized firms producing a variety of products from metal barns and other buildings to machine shops making screw products.

The 185 worker increase in petroleum and coal products represents expansions and upgrades at the oil refineries near Billings and Great Falls. There was at one time concern about these refineries and their ability to process changing sources of crude oil with different supply and chemical characteristics. There have been significant capital investments in the refineries, and their future appears much more secure.

The Montana manufacturing industry contains notable "high-tech" firms. The first is the Applied Materials plant in Kalispell, which is classified in machinery manufacturing. The expansion of this firm led to sizable industry growth in 2005, 2006, and 2007. This firm was formerly known as Semitool. The transition to the new owner appears to have been successful and there may be further hiring and expansion.

REC Silicon located near Butte is another Montana high-tech manufacturing firm. It is classified in chemicals and produces raw materials for the international solar and electronic industries. It was formerly called ASiMi and had a recent ownership change and a more secure future.

Manufacturing Earnings

Montana manufacturing earnings from 2000 to 2010 are presented in Table 8. The earnings figures have been corrected for inflation by converting them to constant 2008 dollars. Earnings are the wages and salaries plus certain employer-paid fringe benefits (such as retirement and health insurance) paid to full- and part-time manufacturing workers.

It takes only a quick comparison of the data in Tables 7 and 8 to determine that the earnings figures paint a very different picture of manufacturing trends than employment. Instead of the sizable decrease in manufacturing employment between 2000 and 2010, earnings decreased only 7.5 percent during the same period. Furthermore, earnings in 2008 were almost eight percent higher than the 2000 figure.

Earnings provide solid evidence that the much discussed

Table 8
Manufacturing Labor Income, Montana
(Thousands of 2008 Dollars)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Percent Change '00-'10
Manufacturing	1,095,280	1,121,939	1,094,700	1,075,060	1,078,264	1,114,416	1,171,240	1,179,581	1,181,260	1,015,547	1,013,297	-7.5
Durable goods	704,949	692,348	658,087	623,773	625,888	651,223	668,259	686,273	629,137	518,700	523,375	-25.8
Wood products	292,953	274,607	270,211	252,895	255,665	254,625	244,198	233,768	199,644	146,443	140,377	-52.1
Nonmetallic mineral products	55,221	50,234	45,541	54,423	51,704	52,500	48,901	53,652	50,333	44,053	40,369	-26.9
Primary metals	59,145	45,089	35,642	25,439	28,998	30,727	36,258	43,074	26,690	13,908	3,292	-94.4
Fabricated metal products	52,807	57,774	57,836	58,216	58,470	62,061	71,166	80,756	82,829	75,272	76,091	44.1
Machinery manufacturing	61,421	92,121	77,572	66,728	67,320	75,103	86,008	80,291	79,146	65,519	89,095	45.1
Computer and electronic products	33,864	30,710	26,930	22,480	21,684	28,232	25,777	27,884	26,614	24,042	20,108	-40.6
Electrical equip. and appliances	(T)	7,113	7,269	7,769	9,406	10,089	10,633	11,138	14,151	12,368	12,151	(T)
Motor vehicles and parts	18,096	16,881	(D)	(D)	(D)	16,690	19,280	19,984	(D)	(D)	-12,833	-170.9
Other transportation equipment	(T)	9,407	(D)	(D)	(D)	9,661	9,284	8,551	(D)	(D)	3,544	(T)
Furniture and related	43,057	39,157	38,526	37,873	38,080	38,177	38,743	37,059	38,506	29,730	49,902	15.9
Miscellaneous	78,122	69,254	73,961	69,997	68,051	73,357	78,010	90,115	87,564	87,074	101,278	29.6
Nondurable goods	390,331	429,592	436,613	451,287	452,376	463,193	502,981	493,309	552,123	496,847	489,922	25.5
Food Products	94,225	97,857	98,638	96,896	105,546	104,169	108,687	108,204	109,383	106,762	104,614	11.0
Beverages and tobacco	30,726	36,015	33,176	35,525	35,651	33,335	33,586	29,031	31,155	30,367	32,221	4.9
Textile mills	(T)	(D)	(D)	(D)	(D)	(D)	(D)	732	543	685	(D)	(T)
Textile product mills	(T)	7,231	6,635	5,437	6,419	6,393	5,597	5,974	6,069	6,014	6,036	(T)
Apparel	(T)	4,020	4,881	6,932	8,383	7,564	8,234	(D)	(D)	(D)	(D)	(T)
Leather and allied products	(T)	3,279	2,631	3,942	2,661	2,728	3,179	2,497	2,989	3,406	3,104	(T)
Paper	54,950	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	23,832	-56.6
Printing and related	37,247	37,753	37,724	38,410	39,069	39,629	42,623	46,307	46,830	41,055	37,662	1.1
Petroleum and coal products	100,234	137,540	147,023	152,728	137,276	150,563	186,826	170,508	226,341	184,430	193,224	92.8
Chemicals	47,469	45,999	44,447	50,766	54,856	56,999	51,739	62,814	65,718	65,481	68,392	44.1
Plastics and rubber products	(T)	10,078	9,759	9,131	10,291	10,894	12,044	13,474	13,249	13,080	13,929	(T)

Note: Includes the income of the self-employed. (T) and (D) denote not shown to avoid disclosure of confidential information.

Source: U.S. Bureau of Economic Analysis.

decline in manufacturing in Montana (and the United States) is only reflected in certain data. The divergent trends between manufacturing earnings and employment are mostly due to the fact that the former incorporate improvements in labor productivity and the effects of structural change. Trends in earnings more closely mirror those of production and value of output rather than just labor input.

To illustrate the difference that earnings data make, the printing and furniture industries are examined in detail. The employment data in Table 7 report a 497 worker decline in furniture employment between 2000 and 2010. In contrast, earnings rose 15.9 percent. Similarly, printing employment decreased by 167 workers while earnings rose 1.1 percent. In both cases, decreased employment does not indicate reduced production. Instead, improved productivity or structural change was probably the cause of the divergence in trends.

Within Montana manufacturing, earnings tell about the same story as employment. Wood products, paper, primary metals, and nonmetallic minerals experienced the greatest declines. The scale of the upgrades at the petroleum refineries are better pictured using earnings. Inflations adjusted earnings in petroleum and coal almost doubled between 2000 and 2010 while the number of employees increased only 20 percent.

Wage and Salary Employment and Per Worker Wages

This section examines Montana employment and per worker wages and salaries in manufacturing and compares them to other industries in the state and to corresponding nationwide data. Montana 2010 employment and per worker wages and salaries are presented in Table 9. These employment figures differ from those reported in Tables 6 and 7 because they do not include the self-employed.

Wages and salaries directly measure the payments to workers and represent the amount they have available for current spending. Other compensation measures (such as earnings) include estimates of employer-paid benefits that may not lead to local spending by workers.

The average Montana manufacturing worker earned $42,577 in 2010 about 22.5 percent higher than the average of $34,764 for all workers. The highest wages within manufacturing reported in Table 9 were the $110,017 in paper products. This figure should be interpreted cautiously and may be unrepresentative.

Table 9
Employment and Wages and Salaries per Worker by Industry, Montana 2010

	Wages and Salary Employment	Wages and Salaries per Worker	
		(Current Dollars)	(Percemt of U.S.)
Total, All Industries	449,720	34,764	73.9
Farm	4,832	39,894	127.4
Nonfarm	444,888	34,708	73.6
Forestry, fishing, and Other	2,528	27,244	104.8
Mining	6,838	74,555	82.2
Utilities	3,047	74,993	84.6
Construction	23,781	40,834	81.4
Manufacturing	16,445	42,577	72.8
Durable goods	9,501	39,344	63.5
Wood products	2,629	38,237	102.6
Nonmetallic minerals	805	38,504	78.4
Primary metals	116	30,328	51.0
Fabricated metal products	1,559	37,547	74.9
Machinery	1,009	54,514	88.6
Computer and electronics	479	42,169	44.7
Electrical equipment and appliances	178	47,938	81.8
Motor vehicles and parts	281	43,786	74.7
Other transportation equipment	188	38,777	49.9
Furniture and related	630	29,895	77.4
Miscellaneous	1,627	35,691	65.1
Nondurable goods	6,944	47,000	88.7
Food	2,509	32,363	78.5
Beverage and tobacco	714	30,305	55.3
Textile mills	(D)	(D)	(D)
Textile product mills	198	23,460	67.3
Apparel	(D)	(D)	(D)
Leather and allied products	59	19,017	50.2
Paper	173	110,017	184.3
Printing and related	872	33,803	76.1
Petroleum and coal	1,075	95,654	99.9
Chemical	928	54,647	65.5
Plastics and rubber products	293	37,003	78.6
Wholesale trade	15,782	45,197	70.0
Retail trade	55,553	24,213	88.7
Transportation and warehousing	13,398	43,960	93.7
Information	7,408	41,620	55.2
Finance and insurance	16,238	48,894	57.4
Real estate and rental and leasing	5,412	26,535	59.7
Professional and technical services	18,937	49,571	63.5
Management of companies	1,695	58,060	57.9
Administrative and waste services	18,516	27,141	79.2
Educational services	5,439	20,562	55.9
Health care and social assistance	59,897	37,711	85.4
Arts, entertainment, and recreation	10,878	20,835	57.0
Accommodation and food services	45,349	15,508	79.7
Other services	20,562	24,609	81.5
Government	97,185	38,312	80.6
Federal, civilian	14,853	57,325	82.3
Military	8,097	36,671	76.7
State and local	74,235	34,687	78.7

Sources: U.S. Bureau of Economic Analysis.

The Smurfit-Stone paper mill near Missoula closed very early in 2010. There may have been significant severance pay is included in wages and salaries which boosted the average per worker figure.

After paper products, the highest per worker wages and salaries were the $95,654 earned in petroleum and coal—these include mostly the oil refinery workers. The next highest was the $54,647 earned in chemical manufacturing, and then came the $54,514 earned in machinery manufacturing. The lowest paying manufacturing jobs were in leather and allied products ($19,017) and textile product mills ($23,460), both very small sectors employing less than 200 Montanans.

Montana incomes are generally less than their corresponding U.S. averages. This is also true for wages and salaries per worker. Average wages and salaries for all Montana workers were $34,364 in 2010, about 73.9 percent of the national average. Montana manufacturing wages per worker were about 72.8 percent of the U.S. figure. Within manufacturing, only wood products and petroleum and coal workers had average wages at or above their respective national average—excluding the dubious figure for paper products. The Lowest was for computer and electronics workers, who earned only 48.3 percent of their national counterparts.

Montana's Manufacturing Exports

Montana's manufacturers have increasingly been expanding internationally to broaden their markets and enhance their sales. Table 10 presents manufacturing exports by industry for 2002 and 2007 along with the value of shipments for many of the same industries. The shipment data are reported in the Census of Manufactures and are the most complete data available. Table 11 presents more current export data for 2009 to 2011, but the value of shipments data are either not available or are the far more limited figures published in the Survey of Manufacturers.

As shown in Table 10, Montana manufacturing exports rose from $290,417,000 in 2002 to $880,704,000 in 2007, about tripling in nominal dollars. Overall, exports rose from 5.8 percent of shipments in 2002 to 8.3 percent of shipments in 2007.

The chemical industry exported 33.3 percent of it shipments in 2002 and 66.7 percent in 2007. There are no data for individual firms, but REC Silicon is classified in chemicals

Table 10
Export and Value of Shipments, 2002 and 2007 (Thousands of Current Dollars)

		2002			2007		
		Exports	Shipments	Exports as a percent of Shipments	Exports	Shipments	Exports as a percent of Shipments
	Manufacturing, Total	290,417	4,987,577	5.8	880,704	10,638,145	8.3
311	Food Products	13,218	482,611	2.7	28,651	741,151	3.9
312	Beverages and tobacco	5	(D)		42	164560	0.0
313	Textile mills	235	(D)		114	(D)	
314	Textile product mills	145	(D)		438	(D)	
315	Apparel	628	15,409	4.1	2,174	(D)	
316	Leather and allied products	416	(D)		1,320	(D)	
321	Wood products	20,363	854,352	2.4	36,599	935,340	3.9
322	Paper	29,989	(D)		42,085	(D)	
323	Printing and related	153	(D)		949	106,695	0.9
324	Petroleum and coal products	1,259	1,807,038	0.1	9,219	5,450,695	0.2
325	Chemicals	59,462	178,695	33.3	261,133	391,280	66.7
326	Plastics and rubber products	2,021	56,039	3.6	7,435	(D)	
327	Nonmetallic mineral products	27,794	167,927	16.6	43,400	291,377	14.9
331	Primary metals	7,295	(D)		96,663	1,045,308	9.2
332	Fabricated metal products	3,027	198,579	1.5	7,274	278,351	2.6
333	Machinery manufacturing	71,989	197,393	36.5	172,506	297,310	58.0
334	Computer and electronic products	17,042	(D)		24,287	(D)	
335	Electrical equipment and appliances	9,424	15,547	60.6	12,004	(D)	
336	Transportation equipment	8,541	70,968	12.0	122,671	113,325	108.2
337	Furniture and related	341	75,067	0.5	408	85,738	0.5
339	Miscellaneous	17,069	186,048	9.2	11,331	186,703	6.1

Note: (D) denotes not shown to avoid disclosure of information.

Sources: www.wisertrade.org (accessed April 4, 2012). U.S. Bureau of the Census, Annual Survey of Manufacturers 2002 and 2007.

and exports much of its production of polysilicon. Fertilizer manufacturers are also classified in chemicals, and they have traditionally served certain Canadian markets. Machinery exported about 36.5 percent of it shipments in 2002 and 58.0 percent in 2007. Applied Materials (formerly Semitool) is classified in machinery and sells its high-tech products to customers worldwide. Electrical equipment exported 60.6 percent of its shipments in 2002, but the value of shipments is not disclosed in 2007. This category includes an electrical power tool maker (Jore Corp), which underwent financial reorganization.

There may be a data error for the transportation equipment industry (NAICS 337). Reported exports exceed the value of shipments ($122,671,000 vs. $113, 325,000). Since the value of exports is derived from a sample while the value of shipments is based on a census, the error is more likely in the former than the latter.

With only a few exceptions, all Montana manufacturing industries increased exports between 2002 and 2007, both in nominal dollars and as a share of shipments. Chemical industry exports (which include REC Silicon) grew more than four fold in nominal value, and their share of shipments doubled from 33.3 percent to 66.7 percent. Machinery industry exports (which include Applied Materials) more than doubled, and their share of shipments rose from 36.5 percent in 2002 to 58.0 percent in 2007.

More recent data for Montana manufacturing exports from 2009 to 2011 are presented in Table 11. Total manufacturing exports were at their recession low in 2009 and then increased 27.2 percent in 2010. Exports maintained their level in 2011. Exports increased from 10.6 percent of shipments in 2009 to 11.6 percent in 2010. There are no values of shipments data for 2011.

A closer look at the manufacturing industries reveals a mixture of trends between 2009 and 2011. The largest increases were in petroleum and coal products and transportation equipment. Paper products and primary metals experienced the greatest decrease. Both of these industries experienced plant closures during this period. The historically major exporting chemical and machinery industries continued strong and posted moderate increases between 2009 and 2011

The growth trends in Montana exports are confirmed by other statistics prepared by the U.S. Census Bureau. Table 12

Table 11
Export and Value of Shipments, 2009-2011 (Thousands of Current Dollars)

		2009			2010			2011		
		Exports	Shipments	Exports as a percent of Shipments	Exports	Shipments	Export as a percent of Shipments	Exports	Shipments	Export as a percent of Shipments
	Manufacturing, Total	876,500	8,293,186	10.6	1,115,672	9,586,897	11.6	1,162,912	NA	NA
311	Food Products	32,135	772,217	4.2	32,647	787,051	4.1	41,759	NA	NA
312	Beverages and tobacco	28	(D)		7,765	(D)		8,798	NA	NA
313	Textile mills	401	(D)		619	(D)		334	NA	NA
314	Textile product mills	391	(D)		530	(D)		533	NA	NA
315	Apparel	1,793	(D)		1,952	(D)		2,923	NA	NA
316	Leather and allied products	2,855	(D)		2,027	(D)		2,807	NA	NA
321	Wood products	19,751	580,252	3.4	25,720	591,703	4.3	26,457	NA	NA
322	Paper	32,805	(D)		1,419	(D)		550	NA	NA
323	Printing and related	959	(D)		1,040	(D)		1,148	NA	NA
324	Petroleum and coal products	22,800	4,117,780	0.6	54,404	5,325,367	1.0	160,221	NA	NA
325	Chemicals	302,928	(D)		369,301	(D)		349,595	NA	NA
326	Plastics and rubber products	3,716	(D)		3,011	(D)		6,443	NA	NA
327	Nonmetallic mineral products	39,500	244,985	16.1	59,437	(D)		58,307	NA	NA
331	Primary metals	121,453	(D)		124,071	(D)		64,211	NA	NA
332	Fabricated metal products	7,311	277,670	2.6	11,319	258,933	4.4	14,281	NA	NA
333	Machinery manufacturing	156,425	195,022	80.2	220,649	(D)		204,992	NA	NA
334	Computer and electronic products	22,293	(D)		22,904	(D)		29,556	NA	NA
335	Electrical equipment and appliances	16,305	(D)		17,705	(D)		17,009	NA	NA
336	Transportation equipment	76,731	(D)		137,889	(D)		149,480	NA	NA
337	Furniture and related	680	(D)		1,152	(D)		1,051	NA	NA

Note: (D) denotes not shown to avoid disclosure of information. NA denotes not available.

Sources: www.wisertrade.org (accessed June 4, 2012). U.S. Bureau of the Census, Annual Survey of Manufactures 2009 and 2010.

provides a somewhat broader picture of manufacturing exports. These figures include not only the value of export shipments themselves but also the value of supporting activities. The employment associated with these exports and supporting services are also presented. The value of manufacturing exports (plus supporting activities) rose from 8.2 percent of total shipments in 2006 to 16.0 in 2009. Similarly, the employment associated with these exports and supporting activities increased from 10.6 percent of total manufacturing employment in 2006 to 15.6 percent in 2009.

Table 13 identifies the destination of Montana manufacturing exports. Canada consistently ranks number 1 as the major destination. The big surprise is that China has jumped into second place as the destination of exports with an almost 21fold increase in value of exports between 2002 and 2011. In addition, Korea is right behind in third place with a 14 fold increase during the same period. Japan and Taiwan round out the remainder of the top export destinations. Four of the top five export destinations for Montana manufacturing are Asian countries. The largest non-Asian destinations after Canada are Germany and the United Kingdom, which rank 6th and 7th.

The changing orientation of Montana manufacturing exports has both pluses and minuses. On the plus side, the current European economic malaise may have less of an impact on Montana. On the other hand, Montana manufactures will certainly feel the effects when the Asian economic growth finally does moderate.

Table 12
Export-Related Shipments and Employment, Montana 2006 and 2009

	2006	2009
Export-Related Shipments (Millions)	$787.60	$1,326.30
Percent of Manufacturing Shipments	8.2	16.0
Export-Related Employment	1,800	2,200
Percent of Manufacturing Employment	10.6	15.6

Note: Export estimates include both "direct" exports (exports manufactured in the U.S. and consumed in foreign markets) and supporting shipments (intermediate goods and services required to manufacture export goods). These figures also include estimates of employment associated with transporting manufactured goods for export from the plant of manufacture to the port of export.

Source: U.S. Bureau of the Census. "Exports from Manufacturing Establishments," (Accessed June 4, 2012).

Table 13
Montana Manufacturing Exports, by Country, Selected Years (Thousands of Currrent Dollars)

	2002		2005		2011		2002-2011
Country	Exports	Rank	Exports	Rank	Exports	Rank	Percent Change
Total, All Countries	290,417		512,327		1,162,911		300.4
Canada	155,787	1	219,182	1	500,362	1	221.2
Japan	26,459	2	53,169	2	61,993	5	134.3
Taiwan	13,949	4	32,432	4	65,752	4	371.4
China	5,064	8	25,378	6	110,654	2	2,085.1
Korea	6,343	7	24,296	5	90,205	3	1,322.1
Belgium	3,370	24	1,877	25	30,681	8	810.4
Germany	22,784	3	48,957	3	42,587	6	86.9
United Kingdom	6,692	6	22,551	7	33,547	7	401.3
Mexico	4,232	18	7,461	9	20,048	9	373.7
Netherlands	10,911	5	17,775	8	18,248	10	67.2

Sources: www.wisertrade.org (accessed June 4, 2012).