



# **Economic Forecast for the Merrimack Valley**

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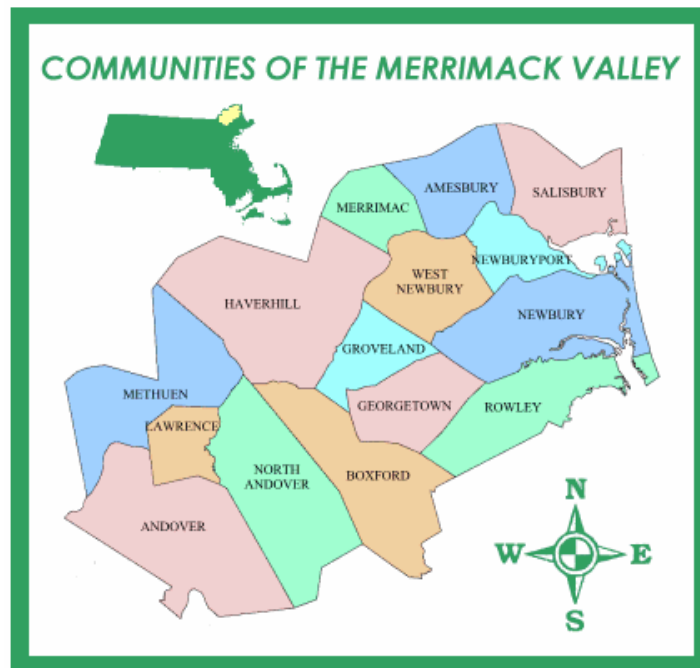
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## 1. BACKGROUND

The Merrimack Valley is widely known as the Birthplace of the American Industrial Revolution. While manufacturing is still an important activity here, high-tech, telecommunications and service related industries are growing at a fast rate due to an excellent transportation network, an educated work force and available land. The Merrimack Valley represents about half of Essex County, Massachusetts. This area has considerable historical significance and was home to many famous people throughout this country's history, including Henry Cabot Lodge.

The Merrimack Valley Planning Commission (MVPC) is a regional planning agency providing professional services to 15 communities in Northeastern Massachusetts (see map). The MVPC assists communities with issues related to transportation, the environment, and economic development. It is one of 13 regional planning agencies operating in the Commonwealth of Massachusetts. The MVPC is a public non-profit organization committed to assisting our communities in issues related to transportation, environment and economic development.

Economic Development Research Group (EDRG) was hired by the MVPC to prepare a business and economic analysis of the Merrimack Valley. Funding was provided by the U.S. Department of Housing and Urban Development and the MVPC. This report provides a profile and forecast of the economy. A number of critical indicators were analyzed, including employment levels, personal income, gross income for the region, purchasing power, population, imports to the region and exports.

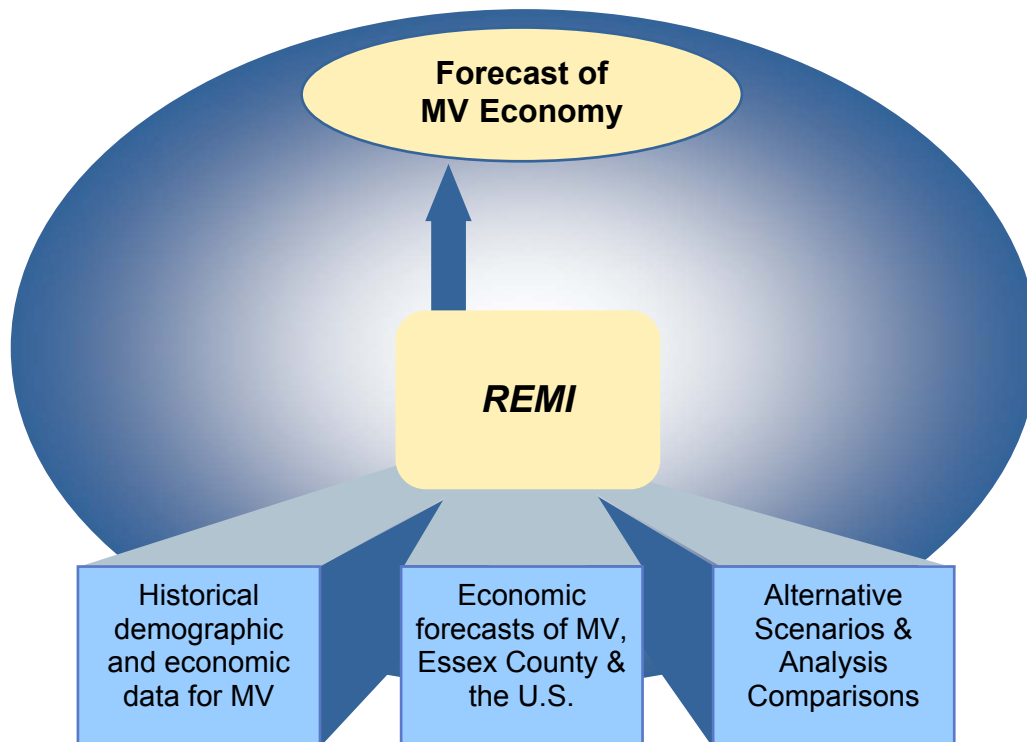


EDRG used the Regional Economic Models, Incorporated (REMI) software to develop a regional economic forecast for the Merrimack Valley. The REMI model is one of the most widely used and respected regional policy analysis forecasting tools available. The REMI analysis builds on data from national forecasts of industry growth by the Bureau of Labor Statistics and the Bureau of Economic Analysis. For comparison purposes, the forecasted rates of economic change for the Merrimack Valley were compared to forecasts for two larger areas - Essex County and the overall United States.

There are three key elements to this analysis. The first is historical demographic and economic data for the Merrimack Valley. This is used to characterize the region today and as a basis for the projections of future economic conditions. The second major component is economic forecasts of the Merrimack Valley, Essex County and the U.S. Lastly, alternative scenarios and analyses were developed by EDRG. The result is the analysis and forecast of the Merrimack Valley that is presented in this report.

The overall analytical framework is shown in Figure 1 below.

**Figure 1: Analytical Framework**

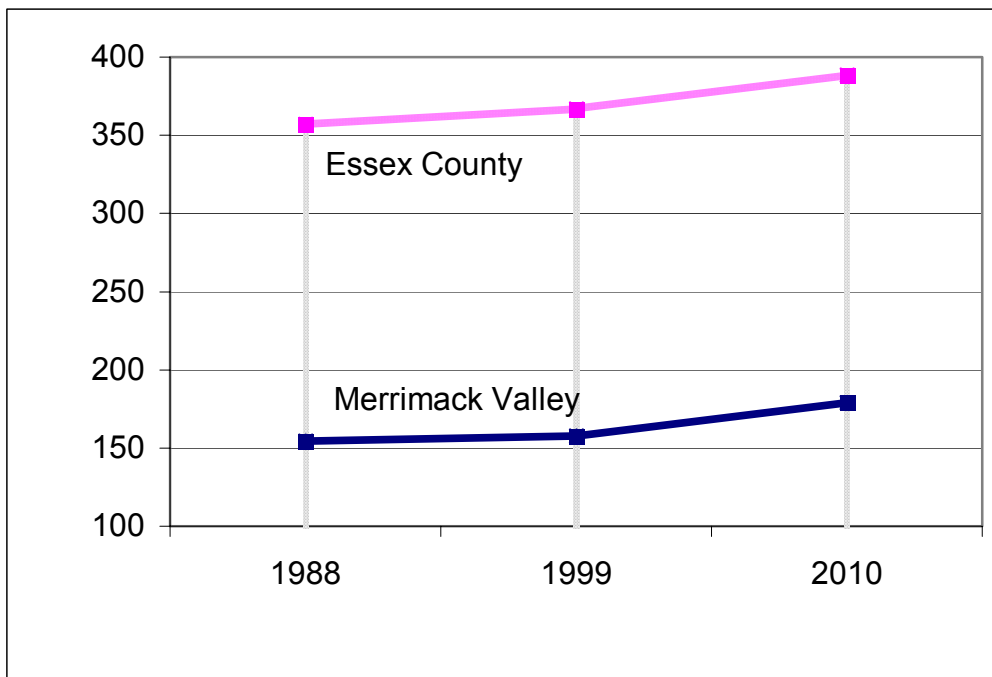


Two of the most commonly reported indicators used to characterize a region are its population and employment levels. The Merrimack Valley has an estimated population of over 307,000 people. This accounts for over half of Essex County’s total population of 367,000 people.

Over half of the population in the region (people of all ages) is employed in paying jobs. This amounts to 158,000 employed people in the Merrimack Valley, representing half of the 367,000-person labor force of Essex County.

Figure 2 illustrates current and projected employment levels for the Merrimack Valley and Essex County. Three points of time were considered—1988, 1999 and 2010. While employment grew slowly during the past ten years, it is projected to pick up momentum in the next decade.

**Figure 2: Employment Levels\* (in thousands)**





\* Source: REMI model (historic, estimated, and projected values).

## 2. EMPLOYMENT OUTLOOK

One of the most common indicators of the economic health in an area is the level of paid employment. Employment can be considered in two key ways—(1) by the occupations in which people work (e.g. executive, clerical, technical) or (2) by the industries in which they are employed (e.g. manufacturing, retail, utilities). This analysis considers employment in both of these ways.

### Forecasted Job Creation in the Merrimack Valley

 **Occupations.** The largest net employment increases over the next decade will be in administrative, professional and service-related occupations.

 **Industries.** The largest net employment increase will be in non-manufacturing jobs, particularly those related to services and retail trade industries.

The Merrimack Valley is projected to experience strong net job growth in key occupational groups over the next decade. The projection is for the net addition of 21,200 new jobs, which represents a 13% increase over the current level. Table 1 shows that the largest number of new jobs will be service-related, with 3,880 new jobs expected to be added over the next ten years. This is followed by jobs in various professional specialties, with a net increase of 2,620 new jobs over the next decade. The fastest percent growth (25%) is expected to be in these professional specialties. Table 2 on the following page shows employment data, both historic and forecasted.

**Table 1: Forecasted Job Growth (1999 to 2010)**

| Occupations              | Percentage Increase | Number of New Jobs |
|--------------------------|---------------------|--------------------|
| Professional specialties | 25%                 | 2,620              |
| Technicians              | 19%                 | 1,230              |
| Service Occupations      | 16%                 | 3,880              |
| Executives               | 15%                 | 2,320              |

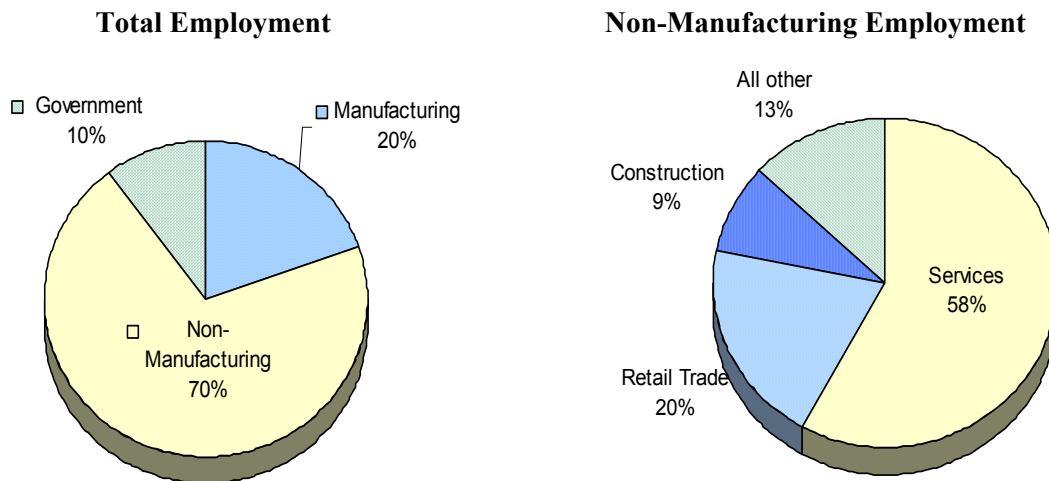
**Table 2: Employment Levels for the Merrimack Valley\***

| Merrimack Valley (in thousands)       |       |       |       |                    |                    |
|---------------------------------------|-------|-------|-------|--------------------|--------------------|
| Employment by Occupation              | 1988  | 1999  | 2010  | % Growth 1998-1999 | % Growth 1999-2010 |
| Adminis spprt, incl clerical          | 29.21 | 29.08 | 31.44 | -0.45%             | 8.14%              |
| Professional specialty                | 19.95 | 24.64 | 30.90 | 23.52%             | 25.38%             |
| Service                               | 21.39 | 23.97 | 27.85 | 12.06%             | 16.17%             |
| Execut, admin & managerial            | 14.39 | 15.08 | 17.40 | 4.79%              | 15.35%             |
| Marketing and sales                   | 13.44 | 13.92 | 16.02 | 3.62%              | 15.08%             |
| Mach setters/oper/tenders             | 9.22  | 7.46  | 7.45  | -19.10%            | -0.19%             |
| Help, labrs & mat movers hand         | 6.39  | 6.50  | 7.28  | 1.72%              | 11.99%             |
| Technicians & rel support             | 5.81  | 6.42  | 7.65  | 10.59%             | 19.19%             |
| Mechan, installers & rep              | 5.90  | 6.04  | 6.80  | 2.36%              | 12.55%             |
| Transp/mater moving mach/vehicle oper | 5.29  | 5.60  | 6.36  | 6.02%              | 13.58%             |
| Hand wrkrs, incl assemb/fabricat      | 6.08  | 4.72  | 4.92  | -22.37%            | 4.26%              |
| Production, precision                 | 6.14  | 4.72  | 4.74  | -23.13%            | 0.53%              |
| Construction trades                   | 3.83  | 4.14  | 4.33  | 8.11%              | 4.46%              |
| Agri, for, fish & rel                 | 2.00  | 2.77  | 3.08  | 39.05%             | 11.10%             |
| Blue collr wrker supervisors          | 2.62  | 2.30  | 2.34  | -12.23%            | 1.65%              |
| Plant and system                      | 0.28  | 0.27  | 0.29  | -3.87%             | 4.76%              |
| Extract & rel wrkrs, incl blaster     | 0.12  | 0.16  | 0.18  | 26.83%             | 17.31%             |

\* Source: REMI model (historic, estimated, and projected values).

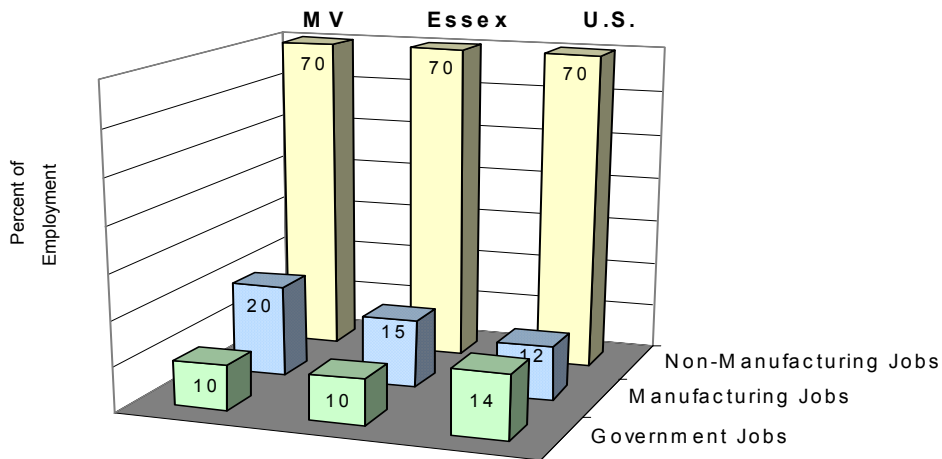
Overall, 70% of the paid workers in the Merrimack Valley are employed in the non-manufacturing sector of the economy, which is made up predominantly of services, followed by retail trade and construction. Manufacturing represents 20% of total employment in the Merrimack Valley, and government is the remaining 10%. The pie charts in Figure 3 below illustrate this breakout in paid employment.

**Figure 3: Employment in the Merrimack Valley**



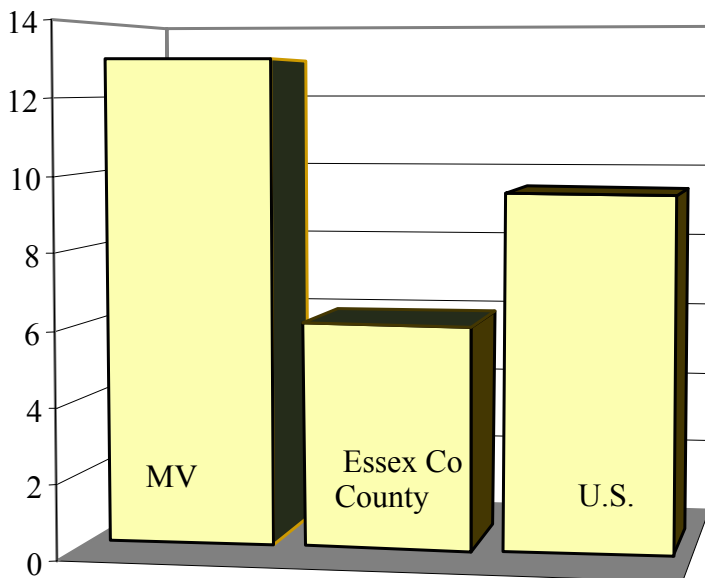
The Merrimack Valley is similar to Essex County and to the overall U.S. in terms of the proportion of non-manufacturing jobs in the economy. Figure 4 shows that there is a somewhat larger manufacturing base in the Merrimack Valley than the county and the overall country. The Merrimack Valley has a somewhat smaller share of government jobs than the average for the U.S.

**Figure 4: Employment Comparison**



The Merrimack Valley is in a strong position with regard to growth in paying jobs. Projected employment growth over the next decade in the Merrimack Valley is well above that expected for both Essex County and the overall U.S. As shown in Figure 5, employment in the Merrimack Valley is expected to grow at 13%, which is twice the projected rate of growth for employment in Essex County.

**Figure 5: Forecasted Employment Growth (1999 to 2010)**





The number of paying jobs in the Merrimack Valley, historical and forecasted, is shown in Table 3 by industry. It is interesting that some of the sectors with highest percent growth over the past ten years, such as wholesale trade, are not projected to sustain such growth over the next decade. However, there are significant exceptions, such as services, in which growth is expected to be even stronger over the forecast horizon. Significant growth is anticipated in other sectors in which growth was sluggish over the previous ten years. This is indicative of changes in the structure of the local economy.

It is important when interpreting Table 3 to understand that some sectors that are fairly small appear to have large percentage growth associated with them. For example, the number of mining-related industry jobs appears to have a high percentage growth over the past ten years; in reality, that only reflects an increase from an estimated 49 jobs to 159 jobs. From a practical standpoint, this is not of significant consequence to the overall Merrimack Valley economy.

**Table 3: Merrimack Valley Employment Growth\***

|                    | Merrimack Valley (in thousands) |        |        |                       |                       |
|--------------------|---------------------------------|--------|--------|-----------------------|-----------------------|
|                    | 1988                            | 1999   | 2010   | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| Manufacturing      | 42.68                           | 30.87  | 30.38  | -27.7%                | -1.6%                 |
| Durables           | 31.64                           | 21.45  | 22.17  | -32.2%                | 3.4%                  |
| Non-Durables       | 11.04                           | 9.42   | 8.21   | -14.7%                | -12.8%                |
| Non-Manufact       | 94.23                           | 110.16 | 130.62 | 16.9%                 | 18.6%                 |
| Mining             | 0.05                            | 0.16   | 0.16   | 224.5%                | -0.6%                 |
| Construction       | 8.70                            | 8.64   | 8.87   | -0.7%                 | 2.7%                  |
| Trans/Pub Util     | 6.13                            | 6.09   | 7.07   | -0.7%                 | 16.1%                 |
| Fin/Ins/Real Est   | 9.09                            | 7.99   | 8.42   | -12.1%                | 5.4%                  |
| Retail Trade       | 21.59                           | 19.78  | 21.32  | -8.4%                 | 7.8%                  |
| Wholesale Trade    | 6.07                            | 7.45   | 8.37   | 22.7%                 | 12.3%                 |
| Services           | 41.61                           | 58.06  | 74.07  | 39.5%                 | 27.6%                 |
| Agri/For/Fish Serv | 0.99                            | 2.00   | 2.33   | 101.4%                | 16.9%                 |
| Total Government   | 17.07                           | 16.29  | 17.61  | -4.5%                 | 8.1%                  |
| State & Local      | 12.36                           | 13.31  | 14.54  | 7.6%                  | 9.3%                  |
| Federal Civilian   | 4.70                            | 2.98   | 3.07   | -36.6%                | 3.0%                  |
| Federal Mil        | 0.00                            | 0.00   | 0.00   | 0.0%                  | 0.0%                  |
| Farm               | 0.27                            | 0.48   | 0.42   | 73.7%                 | -12.8%                |
| Total Employment   | 154.25                          | 157.80 | 179.02 | 2.3%                  | 13.4%                 |
| Population         | 283.47                          | 307.34 | 330.29 | 8.4%                  | 7.5%                  |

\* Source: REMI model (historic, estimated, and projected values).

For comparison purposes, Essex County employment and overall U.S. employment in each major industrial group is summarized in Tables 4 and 5 on the following page. These three regions are contrasted on subsequent pages.

**Table 4: Essex County Employment Growth\***

|                    | Essex County (in thousands) |        |        |                       |                       |
|--------------------|-----------------------------|--------|--------|-----------------------|-----------------------|
|                    | 1988                        | 1999   | 2010   | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| Manufacturing      | 77.89                       | 59.18  | 49.30  | -24.0%                | -16.7%                |
| Durables           | 55.76                       | 39.20  | 31.28  | -29.7%                | -20.2%                |
| Non-Durables       | 22.13                       | 19.98  | 18.02  | -9.7%                 | -9.8%                 |
| Non-Manufact       | 237.45                      | 268.67 | 299.46 | 13.1%                 | 11.5%                 |
| Mining             | 0.19                        | 0.30   | 0.28   | 57.0%                 | -8.6%                 |
| Construction       | 20.32                       | 17.22  | 18.83  | -15.2%                | 9.3%                  |
| Trans/Pub Util     | 11.95                       | 12.21  | 13.05  | 2.2%                  | 6.9%                  |
| Fin/Ins/Real Est   | 22.18                       | 19.50  | 19.86  | -12.1%                | 1.9%                  |
| Retail Trade       | 66.68                       | 66.87  | 64.14  | 0.3%                  | -4.1%                 |
| Wholesale Trade    | 15.02                       | 15.94  | 14.24  | 6.1%                  | -10.7%                |
| Services           | 97.35                       | 132.02 | 163.75 | 35.6%                 | 24.0%                 |
| Agri/For/Fish Serv | 3.76                        | 4.61   | 5.31   | 22.5%                 | 15.2%                 |
| Total Government   | 40.91                       | 38.22  | 39.31  | -6.6%                 | 2.8%                  |
| State & Local      | 31.22                       | 31.31  | 32.55  | 0.3%                  | 3.9%                  |
| Federal Civilian   | 6.41                        | 4.56   | 4.46   | -28.9%                | -2.1%                 |
| Federal Mil        | 3.28                        | 2.36   | 2.31   | -28.1%                | -2.2%                 |
| Farm               | 0.94                        | 0.73   | 0.59   | -21.9%                | -19.9%                |
| Total Employment   | 357.19                      | 366.81 | 388.66 | 2.7%                  | 6.0%                  |
| Population         | 664.52                      | 692.55 | 705.25 | 4.2%                  | 1.8%                  |

\* Source: REMI model (historic, estimated, and projected values).

**Table 5: United States Employment Growth\***

|                    | United States (in thousands) |            |            |                       |                       |
|--------------------|------------------------------|------------|------------|-----------------------|-----------------------|
|                    | 1988                         | 1999       | 2010       | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| Manufacturing      | 19,886.00                    | 19,153.56  | 18,554.64  | -3.7%                 | -3.1%                 |
| Durables           | 11,721.70                    | 11,245.58  | 10,763.21  | -4.1%                 | -4.3%                 |
| Non-Durables       | 8,164.30                     | 7,907.98   | 7,791.43   | -3.1%                 | -1.5%                 |
| Non-Manufact       | 91,149.91                    | 118,012.38 | 136,533.59 | 29.5%                 | 15.7%                 |
| Mining             | 1,089.30                     | 740.96     | 568.42     | -32.0%                | -23.3%                |
| Construction       | 7,172.40                     | 8,713.32   | 8,670.35   | 21.5%                 | -0.5%                 |
| Trans/Pub Util     | 6,225.70                     | 7,811.54   | 8,533.27   | 25.5%                 | 9.2%                  |
| Fin/Ins/Real Est   | 10,662.40                    | 12,234.46  | 13,307.06  | 14.7%                 | 8.8%                  |
| Retail Trade       | 22,124.50                    | 27,421.09  | 28,887.61  | 23.9%                 | 5.3%                  |
| Wholesale Trade    | 6,480.80                     | 7,422.78   | 7,996.27   | 14.5%                 | 7.7%                  |
| Services           | 36,038.60                    | 51,663.95  | 66,236.41  | 43.4%                 | 28.2%                 |
| Agri/For/Fish Serv | 1,356.20                     | 2,004.27   | 2,334.19   | 47.8%                 | 16.5%                 |
| Total Government   | 20,363.00                    | 22,342.28  | 24,768.39  | 9.7%                  | 10.9%                 |
| State & Local      | 14,436.00                    | 17,144.77  | 19,089.06  | 18.8%                 | 11.3%                 |
| Federal Civilian   | 3,113.00                     | 2,864.94   | 2,949.33   | -8.0%                 | 2.9%                  |
| Federal Mil        | 2,814.00                     | 2,332.57   | 2,730.00   | -17.1%                | 17.0%                 |
| Farm               | 3,277.00                     | 2,878.83   | 2,508.47   | -12.2%                | -12.9%                |
| Total Employment   | 134,675.91                   | 162,387.05 | 182,365.08 | 20.6%                 | 12.3%                 |
| Population         | 244,496.00                   | 272,341.00 | 298,240.00 | 11.4%                 | 9.5%                  |

\* Source: REMI model (historic, estimated, and projected values).

A useful concept referred to as “location quotients” were used in this analysis to identify the industries in which employment is particularly concentrated in Merrimack Valley. Employment concentrations were compared at three points in time: 1988, 1999, and 2010 (See Table 6). As Table 6 demonstrates, employment concentrations in Merrimack Valley (and the rest of the country) will be changing as the overall economy continues to change.

The employment concentrations in Table 6 are expressed as the percentage of total employment in Merrimack Valley that each sector represents in the three years shown. For example, total manufacturing employment represented 19.56% of total employment last year, whereas it is expected to represent only 16.97% of total employment by the year 2010. In contrast to this net decrease, the concentration of labor in non-manufacturing (particularly services and retail trade) is projected to increase over the forecast horizon from approximately 70% in 1999 to 73% by 2010. For comparison purposes, employment concentrations for Essex County and the overall U.S. are shown on Table 7 on the following page.

**Table 6: Merrimack Valley Employment Concentrations\***

|                    | Merrimack Valley |         |         |
|--------------------|------------------|---------|---------|
|                    | 1988             | 1999    | 2010    |
| Manufacturing      | 27.67%           | 19.56%  | 16.97%  |
| Durables           | 20.51%           | 13.59%  | 12.38%  |
| Non-Durables       | 7.15%            | 5.97%   | 4.59%   |
| Non-Manufact       | 61.09%           | 69.81%  | 72.96%  |
| Mining             | 0.03%            | 0.10%   | 0.09%   |
| Construction       | 5.64%            | 5.47%   | 4.96%   |
| Trans/Pub Util     | 3.97%            | 3.86%   | 3.95%   |
| Fin/Ins/Real Est   | 5.89%            | 5.06%   | 4.70%   |
| Retail Trade       | 14.00%           | 12.54%  | 11.91%  |
| Wholesale Trade    | 3.94%            | 4.72%   | 4.67%   |
| Services           | 26.98%           | 36.79%  | 41.38%  |
| Agri/For/Fish Serv | 0.64%            | 1.26%   | 1.30%   |
| Total Government   | 11.06%           | 10.32%  | 9.84%   |
| State & Local      | 8.02%            | 8.43%   | 8.12%   |
| Federal Civilian   | 3.05%            | 1.89%   | 1.72%   |
| Federal Mil        | 0.00%            | 0.00%   | 0.00%   |
| Farm               | 0.18%            | 0.30%   | 0.23%   |
| Total Employment   | 100.00%          | 100.00% | 100.00% |

\* Source: REMI model (historic, estimated, and projected values).

Table 8 compares relative employment concentrations for the Merrimack Valley and the two comparison areas. These ratios are sometimes referred to as "location quotients". A value of 1 means that the share of employment in a particular sector of the economy in Merrimack Valley is the same as its share in the broader economy of Essex County (or the U.S.). A value greater than 1 means that the concentration is higher in the Merrimack Valley, and a value below 1 means that the concentration is lower in the Merrimack Valley.

**Table 7: Essex County and U.S. Employment Concentrations\***

|                    | Essex County |         |         | United States |         |         |
|--------------------|--------------|---------|---------|---------------|---------|---------|
|                    | 1988         | 1999    | 2010    | 1988          | 1999    | 2010    |
| Manufacturing      | 21.81%       | 16.13%  | 12.69%  | 14.77%        | 11.80%  | 10.17%  |
| Durables           | 15.61%       | 10.69%  | 8.05%   | 8.70%         | 6.93%   | 5.90%   |
| Non-Durables       | 6.20%        | 5.45%   | 4.64%   | 6.06%         | 4.87%   | 4.27%   |
| Non-Manufact       | 66.48%       | 73.25%  | 77.05%  | 67.68%        | 72.67%  | 74.87%  |
| Mining             | 0.05%        | 0.08%   | 0.07%   | 0.81%         | 0.46%   | 0.31%   |
| Construction       | 5.69%        | 4.70%   | 4.84%   | 5.33%         | 5.37%   | 4.75%   |
| Trans/Pub Util     | 3.34%        | 3.33%   | 3.36%   | 4.62%         | 4.81%   | 4.68%   |
| Fin/Ins/Real Est   | 6.21%        | 5.32%   | 5.11%   | 7.92%         | 7.53%   | 7.30%   |
| Retail Trade       | 18.67%       | 18.23%  | 16.50%  | 16.43%        | 16.89%  | 15.84%  |
| Wholesale Trade    | 4.21%        | 4.35%   | 3.66%   | 4.81%         | 4.57%   | 4.38%   |
| Services           | 27.26%       | 35.99%  | 42.13%  | 26.76%        | 31.82%  | 36.32%  |
| Agri/For/Fish Serv | 1.05%        | 1.26%   | 1.37%   | 1.01%         | 1.23%   | 1.28%   |
| Total Government   | 11.45%       | 10.42%  | 10.11%  | 15.12%        | 13.76%  | 13.58%  |
| State & Local      | 8.74%        | 8.54%   | 8.37%   | 10.72%        | 10.56%  | 10.47%  |
| Federal Civilian   | 1.79%        | 1.24%   | 1.15%   | 2.31%         | 1.76%   | 1.62%   |
| Federal Mil        | 0.92%        | 0.64%   | 0.59%   | 2.09%         | 1.44%   | 1.50%   |
| Farm               | 0.26%        | 0.20%   | 0.15%   | 2.43%         | 1.77%   | 1.38%   |
| Total Employment   | 100.00%      | 100.00% | 100.00% | 100.00%       | 100.00% | 100.00% |

\* Source: REMI model (historic, estimated, and projected values).

**Table 8: Comparison of Employment Concentrations\***

|                    | MV to Essex Employment Concentrations |      |      | MV to USA Employment Concentrations |      |      |
|--------------------|---------------------------------------|------|------|-------------------------------------|------|------|
|                    | 1988                                  | 1999 | 2010 | 1988                                | 1990 | 2010 |
| Manufacturing      | 1.27                                  | 1.21 | 1.34 | 1.87                                | 1.66 | 1.67 |
| Durables           | 1.31                                  | 1.27 | 1.54 | 2.36                                | 1.96 | 2.10 |
| Non-Durables       | 1.15                                  | 1.10 | 0.99 | 1.18                                | 1.23 | 1.07 |
| Non-Manufact       | 0.92                                  | 0.95 | 0.95 | 0.90                                | 0.96 | 0.97 |
| Mining             | 0.59                                  | 1.22 | 1.24 | 0.04                                | 0.22 | 0.28 |
| Construction       | 0.99                                  | 1.17 | 1.02 | 1.06                                | 1.02 | 1.04 |
| Trans/Pub Util     | 1.19                                  | 1.16 | 1.18 | 0.86                                | 0.80 | 0.84 |
| Fin/Ins/Real Est   | 0.95                                  | 0.95 | 0.92 | 0.74                                | 0.67 | 0.64 |
| Retail Trade       | 0.75                                  | 0.69 | 0.72 | 0.85                                | 0.74 | 0.75 |
| Wholesale Trade    | 0.94                                  | 1.09 | 1.28 | 0.82                                | 1.03 | 1.07 |
| Services           | 0.99                                  | 1.02 | 0.98 | 1.01                                | 1.16 | 1.14 |
| Agri/For/Fish Serv | 0.61                                  | 1.01 | 0.95 | 0.64                                | 1.02 | 1.02 |
| Total Government   | 0.97                                  | 0.99 | 0.97 | 0.73                                | 0.75 | 0.72 |
| State & Local      | 0.92                                  | 0.99 | 0.97 | 0.75                                | 0.80 | 0.78 |
| Federal Civilian   | 1.70                                  | 1.52 | 1.49 | 1.32                                | 1.07 | 1.06 |
| Federal Mil        | 0.00                                  | 0.00 | 0.00 | 0.00                                | 0.00 | 0.00 |
| Farm               | 0.68                                  | 1.51 | 1.53 | 0.07                                | 0.17 | 0.17 |
| Total Employment   | 1.00                                  | 1.00 | 1.00 | 1.00                                | 1.00 | 1.00 |

\* Source: REMI model (historic, estimated, and projected values).

**Economic Change**

An economic development concept known as “shift share” was applied to identify the employment categories that are gaining (shrinking) faster (slower) in Merrimack Valley than in the two comparison areas. This is a way of comparing net job creation in the Merrimack Valley with Essex County and the overall U.S. The general findings from this shift share analysis are summarized as follows. Shift share ratios are shown in Table 9.

| Shift Share Findings |   |
|----------------------|---|
| ●                    | Net job creation in the Merrimack Valley is forecasted to far surpass Essex County in finance/insurance/real estate, state/local government and transportation/public utilities.                              |
| ●                    | Merrimack Valley is expected to far surpass the U.S. in growth of non-durable manufacturing jobs. Faster than job growth is anticipated in transportation/public utilities, wholesale trade and retail trade. |
| ●                    | Merrimack Valley is expected to be ahead of the nation in the shift away from manufacturing of durable goods.   |

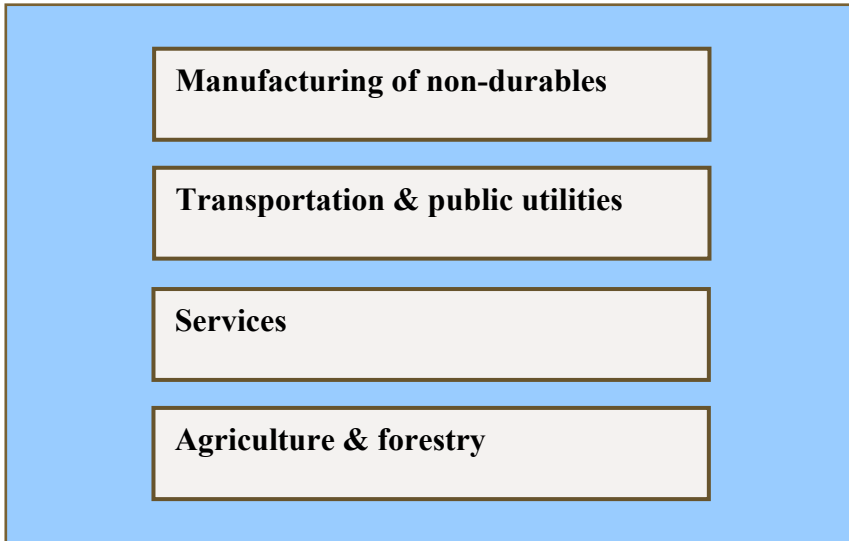
**Table 9: Shift Share Ratios\* (Comparison of Growth Rates)**

|                    | MV to Essex Trend Ratios     |                              | MV to US Trend Ratios        |                              |
|--------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|                    | <i>Trend Ratio 1988-1999</i> | <i>Trend Ratio 1999-2010</i> | <i>Trend Ratio 1988-1999</i> | <i>Trend Ratio 1999-2010</i> |
| Manufacturing      | 1.15                         | 0.09                         | 7.51                         | 0.51                         |
| Durables           | 1.08                         | -0.17                        | 7.93                         | -0.78                        |
| Non-Durables       | 1.51                         | 1.31                         | 4.67                         | 8.71                         |
| Non-Manufact       | 1.29                         | 1.62                         | 0.57                         | 1.18                         |
| Mining             | 3.94                         | 0.07                         | -7.02                        | 0.03                         |
| Construction       | 0.04                         | 0.29                         | -0.03                        | -5.45                        |
| Trans/Pub Util     | -0.30                        | 2.33                         | -0.03                        | 1.74                         |
| Fin/Ins/Real Est   | 1.00                         | 2.92                         | -0.82                        | 0.62                         |
| Retail Trade       | -28.50                       | -1.91                        | -0.35                        | 1.46                         |
| Wholesale Trade    | 3.72                         | -1.15                        | 1.56                         | 1.59                         |
| Services           | 1.11                         | 1.15                         | 0.91                         | 0.98                         |
| Agri/For/Fish Serv | 4.50                         | 1.11                         | 2.12                         | 1.03                         |
| Total Government   | 0.69                         | 2.85                         | -0.47                        | 0.75                         |
| State & Local      | 26.19                        | 2.35                         | 0.41                         | 0.82                         |
| Federal Civilian   | 1.27                         | -1.41                        | 4.59                         | 1.00                         |
| Federal Mil        | 0.00                         | 0.00                         | 0.00                         | 0.00                         |
| Farm               | -3.36                        | 0.64                         | -6.07                        | 1.00                         |
| Total Employment   | 0.85                         | 2.26                         | 0.11                         | 1.09                         |

\* Source: REMI model (historic, estimated and projected values).

Overall, the Merrimack Valley is projected to experience robust employment growth over the next ten years in several important industry groups. Some employment declines are projected in certain industries that are also declining nationwide.

**Strong relative position in these industries:**

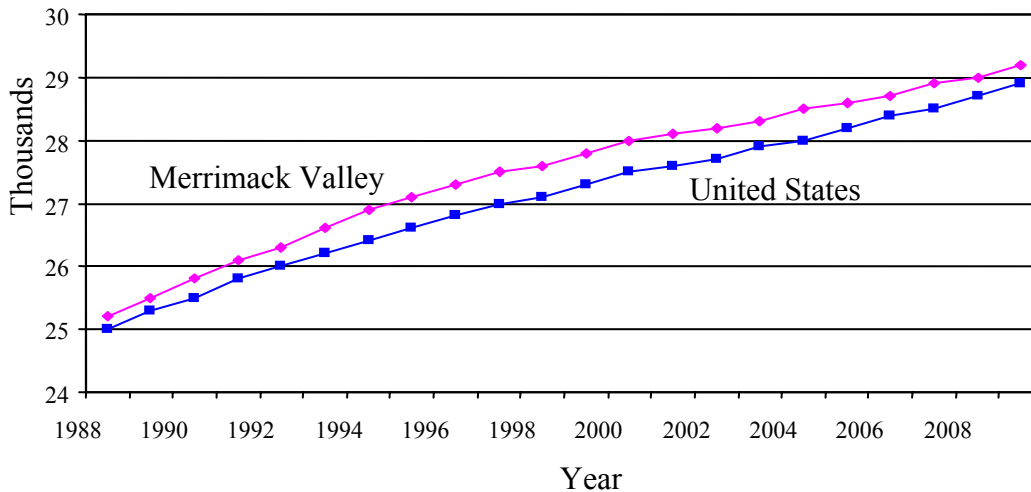


### 3. OTHER BUSINESS INDICATORS

The overall economic outlook for the Merrimack Valley over the next decade is projected to be positive. Personal income in the Merrimack Valley is expected to keep up with the U.S. and outpace that of Essex County, as shown in Figure 6 below. Inflation is projected to roughly mirror the U.S. rate. Population growth is projected to be faster than in Essex County, although slightly slower than in the overall U.S. Gross product for the region is also projected to grow steadily.

Personal income in the Merrimack Valley has been growing steadily since the recession in the early 1990s. The forecast is for continued growth over the next decade.

**Figure 6: Real Disposable Personal Income (per person)\***

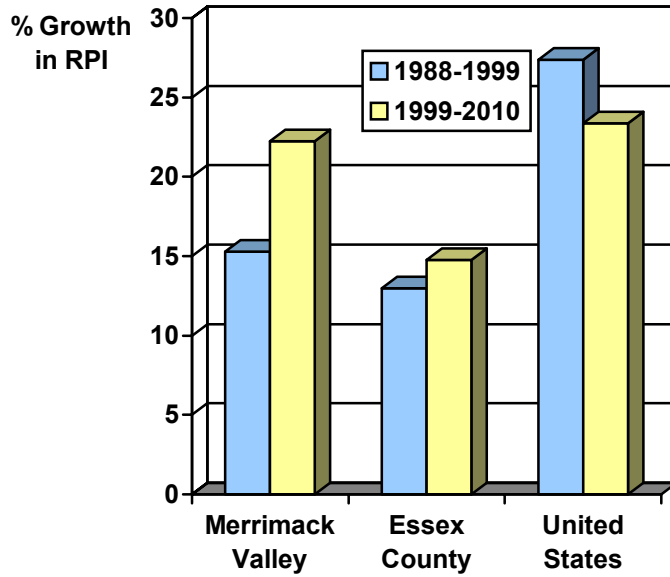


\* Source: REMI model (historic, estimated and projected values).

Figure 7 on the next page shows projected growth in real personal income for Merrimack Valley and the two comparison areas. Real personal income growth in Merrimack Valley is projected to grow faster than in Essex County, and to keep up with the overall U.S. rate, even though historical growth in the Merrimack Valley has been lower. Table 10 on the following page contrasts real personal income in the Merrimack Valley with the two comparison regions for the 1988-1999 time period and the 1999-2010 forecast period.

Figure 8 on the next page shows projected growth in gross regional product (GRP) for the Merrimack Valley and the two comparison areas. GRP in the Merrimack Valley grew 16% over the past decade and is projected to grow 35% over the next decade, as shown in Figure 8 on the following page. In spite of slower than average growth in GRP over the past decade, economic growth over the next 10 years is projected to surpass rates for both Essex County and the overall U.S. Table 11 on the following page contrasts GRP for Merrimack Valley with the two comparison regions over two time periods, 1988-1999 and 1999-2010.

**Figure 7: Real Personal Income**



**Figure 8: Gross Real Product**

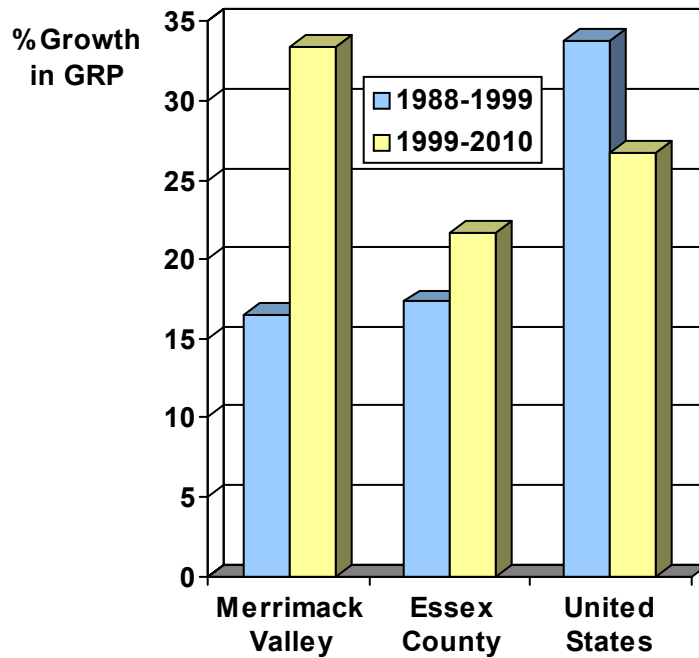




Table 10: Merrimack Valley Summary Economic Data\*

|                               | Merrimack Valley |        |        |                       |                       |
|-------------------------------|------------------|--------|--------|-----------------------|-----------------------|
|                               | 1988             | 1999   | 2010   | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| GRP (Bil 99\$)                | 7.81             | 9.10   | 12.33  | 16.5%                 | 35.4%                 |
| Real Disp Pers Inc (Bil 99\$) | 6.17             | 7.12   | 8.70   | 15.3%                 | 22.2%                 |
| Population (Thous)            | 283.47           | 307.34 | 330.29 | 8.4%                  | 7.5%                  |
| Priv Non-Farm Emp (Thous)     | 136.90           | 141.03 | 160.99 | 3.0%                  | 14.2%                 |
| Reg Pur Coeff (SS/Dem)        | 0.37             | 0.37   | 0.35   | 1.1%                  | -4.9%                 |
| Demand (Bil 99\$)             | 13.99            | 16.03  | 21.65  | 14.6%                 | 35.0%                 |
| Imports (Bil 99\$)            | 8.89             | 10.12  | 14.05  | 13.9%                 | 38.7%                 |
| Slf Suppl (Bil 99\$)          | 5.10             | 5.91   | 7.60   | 15.8%                 | 28.7%                 |
| Exp to US/ROW (Bil 99\$)      | 8.79             | 10.34  | 14.62  | 17.7%                 | 41.3%                 |
| Output (Bil 99\$)             | 13.89            | 16.25  | 22.22  | 17.0%                 | 36.7%                 |
| Val-Add (Bil 99\$)            | 7.03             | 8.34   | 11.49  | 18.7%                 | 37.7%                 |

\* Source: REMI model (historic, estimated and projected values).

Table 11: Essex County Summary Economic Data\*

|                               | Essex County |        |        |                       |                       |
|-------------------------------|--------------|--------|--------|-----------------------|-----------------------|
|                               | 1988         | 1999   | 2010   | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| GRP (Bil 99\$)                | 16.88        | 19.80  | 24.10  | 17.3%                 | 21.7%                 |
| Real Disp Pers Inc (Bil 99\$) | 15.67        | 17.70  | 20.32  | 13.0%                 | 14.8%                 |
| Population (Thous)            | 664.52       | 692.55 | 705.25 | 4.2%                  | 1.8%                  |
| Priv Non-Farm Emp (Thous)     | 284.00       | 249.00 | 241.00 | -12.3%                | -3.2%                 |
| Reg Pur Coeff (SS/Dem)        | 0.43         | 0.42   | 0.42   | -3.5%                 | -0.2%                 |
| Demand (Bil 99\$)             | 30.12        | 35.08  | 42.11  | 16.5%                 | 20.0%                 |
| Imports (Bil 99\$)            | 17.12        | 20.44  | 24.60  | 19.4%                 | 20.3%                 |
| Slf Suppl (Bil 99\$)          | 13.00        | 14.64  | 17.52  | 12.6%                 | 19.6%                 |
| Exp to US/ROW (Bil 99\$)      | 16.54        | 20.36  | 25.38  | 23.1%                 | 24.7%                 |
| Output (Bil 99\$)             | 29.54        | 35.00  | 42.89  | 18.5%                 | 22.5%                 |
| Val-Add (Bil 99\$)            | 15.21        | 18.24  | 22.40  | 20.0%                 | 22.8%                 |

\* Source: REMI model (historic, estimated and projected values).

**Table 12: Overall U.S. Summary Economic Data\***

|                               | United States |            |            |                       |                       |
|-------------------------------|---------------|------------|------------|-----------------------|-----------------------|
|                               | 1988          | 1999       | 2010       | % Growth<br>1998-1999 | % Growth<br>1999-2010 |
| GRP (Bil 99\$)                | 6,719.09      | 8,988.56   | 11,390.41  | 33.8%                 | 26.7%                 |
| Real Disp Pers Inc (Bil 99\$) | 4,936.40      | 6,288.91   | 7,759.36   | 27.4%                 | 23.4%                 |
| Population (Thous)            | 244,496.00    | 272,341.00 | 298,240.00 | 11.4%                 | 9.5%                  |
| Priv Non-Farm Emp (Thous)     | 111,035.90    | 137,165.94 | 155,088.22 | 23.5%                 | 13.1%                 |
| Reg Pur Coeff (SS/Dem)        | 0.94          | 0.90       | 0.87       | -4.5%                 | -3.0%                 |
| Demand (Bil 99\$)             | 10,568.53     | 14,540.78  | 18,106.26  | 37.6%                 | 24.5%                 |
| Imports (Bil 99\$)            | 657.26        | 1,513.26   | 2,374.67   | 130.2%                | 56.9%                 |
| Slf Suppl (Bil 99\$)          | 9,911.27      | 13,027.52  | 15,731.59  | 31.4%                 | 20.8%                 |
| Exp to US/ROW (Bil 99\$)      | 511.82        | 1,151.95   | 2,261.37   | 125.1%                | 96.3%                 |
| Output (Bil 99\$)             | 10,423.09     | 14,179.47  | 17,992.96  | 36.0%                 | 26.9%                 |
| Val-Add (Bil 99\$)            | 5,709.65      | 7,832.46   | 10,086.03  | 37.2%                 | 28.8%                 |

\* Source: REMI model (historic, estimated and projected values).

#### 4. CONCLUSIONS

The REMI analysis indicates that the Merrimack Valley will be in a strong economic growth position over the next decade. While growth was slow over much of the previous decade as a result of the recession in the early 1990s, it is expected to gain moderate momentum over the forecast horizon.

The forecast is for strong growth in personal income, on the order of 22% over the 1999 to 2010 time period. Likewise, gross income will grow at a healthy rate, at a total of 35% over the next decade. There is expected to be a net gain in new jobs in Merrimack Valley, on the order of a 21,200 job gain during this time period. Inflation is expected to remain under control over the next ten years, essentially mirroring rates anticipated for the overall U.S.

