



Massachusetts Tax Revenue Forecasts for FY2004 and FY2005

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Key Forecasts¹

In the fiscal year that ended June 30, 2003, the Commonwealth of Massachusetts collected \$14.96 billion in tax revenue. The Beacon Hill Institute forecasts that tax collections will be

- \$15.53 billion in FY2004, representing a 3.8% increase over FY2003, and
- \$16.15 billion in FY2005, an increase of 4.0% over FY2004.

Table 1 shows the forecasts by year and by major tax, and Table 2 gives some additional detail. A complete breakdown of revenue forecasts by month and by 11 tax headings is available on request.

In what follows we summarize the economic prospects of the Commonwealth over the next two years, and explain the procedures followed in arriving at our tax forecasts.

Background

According to the December poll of forecasters undertaken by *The Economist*, United States real GDP is expected to rise by 2.9% in 2003 and by a robust 4.2% in 2004. Belatedly, employment has begun to increase, and *Economy.com* expects non-farm employment to rise by 0.9% in 2004 and 2.1% in 2005. This will be enough to reduce the unemployment rate, which stood at 5.9% in November and is no longer rising.

Nationally, the most recent recession began in March 2001 and ended in November 2001. The pace of economic expansion has accelerated recently, with a remarkable 9.4% rise in productivity in the third

¹ This report was prepared by the staff of the Beacon Hill Institute at Suffolk University, including Paul Bachman, John Barrett, Sorin Codreanu, Jonathan Haughton and David Tuerck.

quarter.² Retail sales for the US rose at an annual rate of 5.2% in the year to September according to the United States Census Bureau.³ With improving employment levels and personal income, retail sales are expected to increase moderately over the coming two years.

Massachusetts fared less well than the rest of the nation, slipping into recession in December 2000, and only emerging definitively when the decline in gross state product ended in the second quarter of 2003.⁴ Having ridden the high-technology boom in the 1990s, Massachusetts suffered from the ensuing shakeout.

However, the high-technology sectors have begun to grow again, led by a rapidly rising demand for information processing equipment. This is driven, in part at least, by high and rising corporate profits, which provide the funds required for investment. According to estimates by First Call, companies within the S & P 500 increased earnings by 21.5% in the 3rd quarter of 2003 and Wall Street analysts expect them to increase earnings by 22.5% in the current quarter.⁵ The relatively weak dollar is also boosting the international competitiveness of local producers, and this effect is expected to persist.

We are thus in basic agreement with the most recent forecast from the New England Economic Project, which expects nominal personal income to rise by 2.3% this year, 3.6% next year, and 3.8% in 2005.⁶ A plausible case can be made, however, that economic growth this calendar year will be slightly lower, and next year slightly higher, than these forecasts. Employment is not expected to recover substantially until the second or third quarter of 2004 and the unemployment rate, currently 5.6 percent,⁷ is expected to persist until late 2004.

Revenue Forecasts

The improvements in the Bay State economy will translate into higher tax revenues for the state. The Beacon Hill Institute revenue forecasts assume that there will be no significant change in Massachusetts tax policy for the forecast period, which runs through the end of fiscal year 2005.

Revenue for eleven categories of tax was forecast for every month through June 2005. Several steps were needed to develop these forecasts.

1. Information on personal income in Massachusetts is available on a quarterly basis. Monthly estimates were obtained by interpolation. We then used the New England Economic Project projections of personal income to derive month-by-month growth rates of personal income, allowing us to predict personal income on a monthly basis out through June 2005.
2. For each tax series, we regressed monthly revenue collections on personal income, using quarterly data from July 1979 through May 2003 (the latest date for which personal income data could be interpolated). In some cases (noted in Table 2) we included dummy variables in the regression equations, to pick up the effect of major changes in the tax code.

² *The Economist*, December 6, 2003, p.92.

³ <http://www.census.gov/mrts/www/data/html/nsal03.html> [Accessed December 4, 2003.]

⁴ Michael Goodman, "Massachusetts Economic Outlook," in New England Economic Project, *Economic Outlook*, October 2003.

⁵ <http://money.cnn.com/2003/12/03/markets/earnings/index.htm>. [Accessed December 5, 2003.]

⁶ New England Economic Project, *Economic Outlook*, p. 138, October 2003.

⁷ Bureau of Labor Statistics, Regional and State Employment and Unemployment, October 2003
<http://www.bls.gov/news.release/lous.nr0.htm>. [Accessed December 5, 2003.]

3. In estimating the regressions, we paid particular attention to the structure of the errors, in order to pick up the effects of seasonal, quarterly, and monthly variations in tax collections. This was done by estimating the equations with autoregressive (AR) and moving average (MA) components. The number and nature of AR and MA lags was determined initially by examining the autocorrelation and partial correlation coefficients in the correlogram, and fine-tuned after examining the structure of the equation residuals. The details are given in Table 2.
4. Recent changes in the financing arrangements for state unemployment insurance have had the effect of increasing the tax burden on businesses. This is likely to reduce output, employment and tax revenue below the level that would have occurred otherwise, and that would have been predicted by the regression models. To measure the reduction in tax revenue associated with the change in unemployment insurance financing, we used the Beacon Hill Institute's CGE-STAMP model, a computable general equilibrium model of Massachusetts that is designed to pick up the economic effects of tax changes. The net result of this adjustment is to lower state tax revenue by \$18 million in FY2004 and \$39 million in FY2005, relative to what it would have been otherwise.
5. In 2002, the tax on long-term capital gains was raised to 5.3%. This effect would not be picked up adequately using historical data. So we estimated what capital gains tax would have yielded in 2002 with, and without, the tax increase, and included the increment (\$112 million in additional income tax revenue) duly inflated for income growth, in our forecasts for FY2004 and FY2005.

Uncertainties

Revenue for the first five months of FY2004 was 6% higher than that of the comparable period of FY2003. Thus it might seem that a projected revenue increase of 3.8% is highly conservative.

However, caution is needed, for two reasons. First, the two largest sources of tax revenue are not growing very quickly; over these five-month periods, income tax withholdings rose by 3.4%, and sales and use tax by just 1.0%. Second, part of the increase in revenue was due to tax increases, and when they are stripped out, total revenue is running at 4.3% above the baseline level. Taken together these suggest that the economic recovery in Massachusetts remains hesitant; if it is delayed even by a month or two, revenues might rise by as little as 2.8% in this fiscal year, although the increase could be as high as 4.5% or more.

For FY2005 we forecast a 4% increase in tax revenue. This is further in the future, and so inherently subject to greater uncertainty. On balance we believe this to be a sober estimate, for there is a very real possibility that revenue could rise by at least 5% in FY2005. However, prudence, and the econometric results, caution against relying on overly optimistic forecasts in the budgetary process.

Table 1					
Revenue Forecasts for Massachusetts, FY2004 and FY2005					
Economy.com/NEEP, CY	Actual	Actual	Forecast	Forecast	Forecast
October 2003	2001	2002	2003	2004	2005
US economy¹					
Personal income (\$1996 billion)	7930	8033	8058	8395	8618
% change p.a.	1.3	1.3	1.6	2.9	2.7
CPI inflation, % p.a.	2.8	1.6	2.1	1.0	1.8
Employment (millions)	131.8	130.4	130.1	131.4	134.1
% change p.a.	0.0	-1.1	-0.2	0.9	2.1
Unemployment rate, %	4.8	5.8	6.2	6.4	5.8
Massachusetts¹					
Personal income (\$ billion)	248.8	251.0	256.7	266.0	276.1
% change p.a.	2.8	0.9	2.3	3.6	3.8
Personal income (\$1996 billion)	227.2	225.9	227.3	232.7	237.4
% change p.a.	0.8	-0.5	0.6	2.4	2.0
Employment ('000)	3329.3	3251.6	3214.7	3248.0	3305.1
% change p.a.	0.2	-2.3	-1.1	1.0	1.8
Unemployment rate, %	3.7	5.3	5.6	5.7	5.1
Population ('000)	6401.2	6427.8	6447.4	6468.7	6487.9
% change p.a.	0.6	0.4	0.3	0.3	0.3
	Actual	Actual	Actual	Forecast	Forecast
	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005
BHI forecast, MA taxes, FY					
Personal income tax (\$ million)	9,903	7,913	8,026	8,452	8,828
% change p.a.	9.5	-20.1	1.4	5.3	4.5
Sales Tax	3,756	3,696	3,708	3,814	3,986
% change p.a.	5.3	-1.6	0.3	2.8	4.5
Corporation Excise	945	587	799	903	931
% change p.a.	-16.4	-37.9	36.3	13.0	3.1
Business Excises	589	573	730	672	668
% change p.a.	22.2	-2.7	27.3	-8.0	-0.5
Motor Fuels	660	667	676	689	701
% change p.a.	1.1	1.0	1.5	1.8	1.8
Total Taxes	16,729	14,287	14,964	15,532	16,149
% change p.a.	6.6	-14.6	4.7	3.8	4.0
Total taxes for budget	15,689	16,075	14,279	14,824	15,410
% change p.a.	2.5	-15.1	4.6	3.8	4.0
Total taxes, low forecast				15,383	16,075
% change p.a.				2.8	3.5
Total taxes, high forecast				15,637	16,308
% change p.a.				4.5	5.0

Notes: ¹ From New England Economic Project, *Economic Outlook 2003-2007*, October 2003.

Table 2**Revenue forecasts, disaggregated, for FY04 and FY05, including technical estimation details**

	FY03	FY04	FY05	% change		AR	MA	Dummies	Dates
				FY04	FY05				
Income tax									
Estimated payments	1,552,014	7,338,680	7,654,922	3.5	4.3	12		01:1, 02:1	79:6-03:5
Tax Withheld	7,091,746	1,631,861	1,723,153	5.1	5.6	1, 12		01:1, 02:1	79:6-03:5
Returns & Bills	907,644	1,028,312	1,094,992	13.3	6.5	12		01:1, 02:1	79:6-03:5
Refunds	1,525,255	1,546,988	1,644,965	1.4	6.3	1, 12	12	01:1, 02:1	79:6-03:5
Income Net	8,026,149	8,451,865	8,828,102	5.3	4.5				
Sales & Use taxes									
Sales & Use taxes	3,708,069	3,813,735	3,986,168	2.8	4.5	12	1, 3	-	79:6-03:5
Corporation Excise	799,450	903,144	930,997	13.0	3.1	3, 12	3	-	79:6-03:5
Business Excises	729,787	671,750	668,472	-8.0	-0.5	3, 12	3	-	79:6-03:5
Alcohol Beverages	66,298	67,091	67,548	1.2	0.7	1, 12	2	-	93:6-03:5
Cigarettes	451,044	443,579	445,409	-1.7	0.4	12	1	83:7, 93:1, 96:10, 02:8	79:6-03:5
Motor Fuels	676,426	688,670	701,181	1.8	1.8	1, 12	1	90:9	79:6-03:5
Other taxes	729,787	491,700	521,249	-32.6	6.0	1, 12		-	79:6-03:5
Total Taxes	14,963,527	15,531,532	16,149,126	3.8	4.0				
MBTA	684,281	707,151	739,154	3.3	4.5				
Total Taxes for Budget	14,279,246	14,824,381	15,409,973	3.8	4.0				

Notes:

AR refers to autoregressive lags used in the regression. MA refers to moving average lags used in the regression. "Dummies" gives starting dates of each dummy variable used (e.g. 01:1 is a dummy that is set equal to 1 from January 2001 onwards, and to 0 otherwise). "Dates" refers to period of data used in regression estimates."