



Massachusetts Tax Revenue Forecasts for FY 2009 and FY 2010

Beacon Hill Institute at Suffolk University

8 Ashburton Place, Boston, MA 02108

www.beaconhill.org

617-573-8750

bhi@beaconhill.org

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The Beacon Hill Institute at Suffolk University is pleased to offer its revenue forecast for FY 2009 and FY 2010 to the Joint Committee on Ways and Means.¹ We divide our report into four sections, beginning with a presentation of our current forecast and a summary of the forecasts we and others offered over the past two years. We follow with background information on the U.S. and Massachusetts economies and conclude with an exposition of our methodology.

Current Forecast and Past Forecasts

BHI predicts that tax revenues will be

- \$19.564 billion in FY 2009, a decrease of 6.3% from FY 2008, and
- \$18.980 billion in FY 2010, a decrease of 3.0% from FY 2009.

The forecast for FY 2009 is an update of the forecast we offered in December 2007. Table 1 shows the forecasts by the Beacon Hill Institute, the Massachusetts Taxpayers Foundation and the Department of Revenue, along with the consensus forecast provided in the state budget, for the past and current fiscal years. The current, unexpected recession necessitates the downward revision for FY 2009 that we provide here.

¹ The staff of the Beacon Hill Institute at Suffolk University, including Paul Bachman, Michael Head, Alfonso Sanchez-Penalver, Frank Conte and David G. Tuerck assisted in the preparation of this report.

**Table 1:
Projected v. Actual Tax Revenues (\$000)**

	<i>Projected FY 2008 Tax Revenues, January 2007</i>	<i>Projected FY 2009 Tax Revenues, December 2007</i>
The Beacon Hill Institute	\$20,270,000	\$21,038,000
The Massachusetts Taxpayers Foundation	\$19,850,000	\$21,118,000
Department of Revenue (average)	\$19,183,000	\$20,859,000
Consensus Forecast	\$19,879,000	
Actual FY08 /Predicted FY09	\$20,879,000	\$19,564,000

Background: The U.S. Economy

The U.S. economy entered 2008 in full recession according to the National Bureau of Economic Research. After growing by 2.9% in 2006 and 2.0% in 2007, U.S. real GDP fell by 0.2% in the final quarter of 2007. After registering weak positive growth of 0.9% in the first quarter of 2008 and a strong second quarter of 2.9%, aided by the federal economic stimulus payments, the wheels came off the economy in the third quarter with a 0.5% drop in output as the credit and financial markets froze.²

In 2008 the problems in the housing market finally spilled over in the real economy as housing prices fell nationally for the first time since the Great Depression. The Case/Shiller 20 cities Home Price Index fell by 17.4%.³ Residential mortgage foreclosures continue to mount and spread beyond sub-prime mortgages, and the securitization of mortgages has led investors to lose confidence in the nation's financial institutions. The ensuing panic led to the failure or government rescue of several venerable institutions including Lehman Brothers, American International Group, Merrill Lynch, Washington Mutual, Fannie Mae and Freddie Mac.

The chaos in the financial markets spread fear and caution in the private economy. In response firms and consumers cut spending sharply. In the third quarter, real personal consumption expenditures fell by 3.7%, fixed nonresidential investment fell by 1.5%, purchases of equipment and software fell by 5.7% and residential fixed investment fell by 17.6%. The only bright spot in the quarter was the trade balance, as exports increased by 3.4% and imports fell by 3.2%.⁴

² U.S. Department of Commerce, Bureau of Economic Analysis; News Release: Gross Domestic Product (GDP) and Corporate Profits, <http://www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm> (accessed December 9, 2008).

³ The McGraw-Hill Companies, Standard and Poor; S&P/Case-Shiller Home Price Indices, http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices_csmahp/0,0,0,0,0,0,0,0,2,1,0,0,0,0.html (accessed December 9, 2008).

⁴ U.S. Department of Commerce, Bureau of Economic Analysis; News Release: Gross Domestic Product (GDP) and Corporate Profits, <http://www.bea.gov/newsreleases/national/gdp/gdpnewsrelease.htm> (accessed December 9, 2008).

However, trade will surely weaken as the downturn becomes global and recession spreads to our trading partners.

The labor market generated fewer jobs steadily throughout 2007 and turned negative at the start of 2008, worsening throughout the year. In the first eight months of 2008, the labor market shed 655,000 jobs, or an average of 82,000 per month and the unemployment rate surged from 4.9% in January to 6.1% in August. As in the financial markets, the real carnage began in September with the economy losing a staggering 1.2 million jobs in the last three months and the unemployment rate climbing to 6.7% by November.⁵

Looking forward, we project the U.S. economy to continue weakening, causing further job losses and recession to continue into 2009, reaching a trough in the second or third quarter. The recovery will be tepid with investment and employment slow to bounce back. The only positive note is that inflation will slow as lower commodity prices reduce its burden. With this comes the risk of deflation. However, the U.S. Federal Reserve's loose monetary policy will most likely spark higher inflation down the road. Nationally, this recession looks similar to the Massachusetts slump of the late 1980s and early 1990s, which was characterized by a housing crash and subsequent bank failures.

Background: The Massachusetts Economy

The nature of this recession makes it difficult to predict the effects on the Massachusetts economy. On the one hand, the weakness in the financial industry will hurt the local economy. On the other, the local housing market has held up better than the nation's, with the Case/Shiller Home Price Index for the Boston area down only 5.7% for the year up to September and down only 11.5% from its peak in July 2005.⁶ Moreover, the Commonwealth's higher education and healthcare sectors have traditionally been viewed as bulwarks against recessions. However, heavy losses in the financial markets have prompted several large, private universities, including Harvard and MIT, to announce cutbacks.

In the most recent economic recovery, Massachusetts was late to turn around, and its economy had just begun build momentum when the national economy began to falter. The Massachusetts economy grew by 3.0% in 2006 and 2.5% in 2007, faster than the national economy for both years.

Meanwhile, the state economy created jobs at rate of 1% in 2007, after lagging the nation since early in the decade. However, after creating 7,400 jobs in the first half of 2008, Massachusetts lost 11,200 in the last four months. It now appears that state job growth in 2008 will be flat or

⁵ U.S. Department of Labor, Bureau of Labor Statistics, "The Employment Situation: October 2007," http://www.bls.gov/news.release/archives/empsit_12082006.pdf (accessed December 9, 2008).

⁶ The McGraw-Hill Companies; Standard and Poor; S&P/Case-Shiller Home Price Indices, http://www2.standardandpoors.com/portal/site/sp/en/us/page.topic/indices_csmahp/0,0,0,0,0,0,0,0,2,1,0,0,0,0,0.html (accessed December 9, 2008).

slightly negative, at best. Correspondingly, the state unemployment rate ended 2007 at 4.5%, but rose throughout 2008, reaching 5.5% in October. It is likely to rise further in the current quarter and throughout next year.⁷

Thus BHI finds no basis for questioning the pessimistic forecast from the New England Economic Partnership (NEEP) that the Massachusetts economy has fallen into a recession that will last into the second or third quarter of 2009. However, we are slightly more optimistic about the labor market since Massachusetts employers were slow to add new jobs during the last expansion and should have fewer cuts to make during the subsequent downturn.

Methodology

The contraction of the Bay State economy will translate into lower tax revenues for the state. BHI revenue forecasts assume that there will be no additional change in Massachusetts tax policy for the forecast period, which runs through the end of fiscal year 2010.

Table 2 shows the forecasts by year and by major tax. Revenue for the first five months of FY 2009 fell by 1.0%. We see continued contraction of economic activity in the months ahead, which is why we estimate that total revenue will fall by 6.3% for the full fiscal year. For FY 2010, we forecast a further 3.0% decrease in tax revenue from FY2009. The major taxes will reflect this slowdown: Personal income tax receipts will fall by 6.4% and sales tax revenue by 2% while other tax revenue will expand by 6.6%, driven by a 24.3% rise in the often volatile business excise tax.

The statewide average will be affected by a drop in personal and in corporate income taxes and general sales tax revenues. The trend during past recessions suggest that the revenues could hold steadier in FY2009 and fall further in FY2010, reflecting a different timetable for the economic weakness to impact tax revenues. The state and national economic outlook is bleak, uncertain and extremely volatile.

⁷ U.S. Department of Labor, Bureau of Labor Statistics, Regional and State Employment and Unemployment, http://www.bls.gov/news.release/archives/laus_01182008.pdf (accessed December 10, 2008).

Table 2					
Revenue Forecasts for Massachusetts, FY2009 and FY2010					
Economy.com/NEEP, CY	Actual	Actual	Forecast	Forecast	Forecast
October 2008	2006	2007	2008	2009	2010
US economy (calendar year)¹					
Personal income (\$ billion)	10,994	11,663	12,373	12,769	13,242
% change p.a.	7.1	6.1	6.1	3.2	3.7
Employment (millions)	136.1	137.9	136.4*	139.2	141.6
% change p.a.	1.8	1.3	-1.1	2.0	1.7
Unemployment rate, %	4.6	4.6	6.8	5.8	5.4
Massachusetts (calendar year)¹					
Personal income ¹ (\$ billion)	298.3	317.0	326.8	337.9	353.1
% change p.a.	7.0	6.3	3.1	3.5	4.5
Real Personal income (\$ billion)	259.6	268.6	268.8	272.6	278.1
% change p.a.	3.3	3.5	0.1	1.4	2.0
Employment ('000)	3,246	3,278	3,283*	3,213	3,163
% change p.a.	1.1	1.0	0.1	-2.1	-1.6
Unemployment rate, %	4.8	4.5	5.6*	6.9	8.1
Population ('000)	6,434.39	6,449.76	6,464.37	6,474.60	6483.59
% change p.a.	0.1	0.2	0.2	0.2	0.1
BHI forecast, MA taxes, (fiscal year)					
Personal income tax (\$ million)	10,483	11,477	12,484	11,755	10,997
% change p.a.	8.2	9.5	9.6	-5.8	-6.4
Sales Tax	4,004	4,065	4,087	3,969	3,891
% change p.a.	3.0	1.5	0.5	-2.9	-2.0
Corporation Excise	1,391	1,588	1,512	1,123	1,094
% change p.a.	30.8	14.2	-4.8	-25.7	-2.6
Business Excises	865	888	1037	914	1,136
% change p.a.	34.5	2.6	16.7	-11.9	24.3
Motor Fuels	672	679	673	672	689
% change p.a.	-2.1	1.1	-0.9	-0.1	2.5
Total Taxes	18,487	19,736	20,879	19,564	18,980
% change p.a.	8.2	6.8	5.8	-6.3	-3.0

Notes: ¹ From New England Economic Partnership, *Fall Economic Outlook*, November 2008. BHI estimate

We prepared tax revenue forecasts for eleven categories for every month through June 2010. Three 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 our own projections of personal income to derive month-by-month growth rates of personal income, allowing us to project personal income on a monthly basis out through December 2011.
2. To account for the recent turn in the state economy and tax revenues, we took one of two approaches in order to give more weight to the period during the last state recession. We

truncated our data set to begin in July, 2001 or we created a new variable using the revenues beginning in July, 2001 and set it to begin July, 2008, leaving prior values a zero.

3. For each tax series, we estimated a regression equation that relied mainly on the past movements in the series to permit us to extrapolate into the future. For the major taxes (sales, income) we included personal income as an independent variable. In some cases (noted in Table 2) we included dummy variables in the regression equations in order to pick up the effect of major changes in the tax code.
4. 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 3.

Table 3 provides the BHI revenue forecast in detail. The left side of the table contains the revenues and the percentage increase from the previous year broken out into the individual tax categories – the actual revenues for FY 2008 and the BHI projections for FY 2009 and FY 2010. The right side of the table provides the model specification used to forecast each tax and the timeframe for each data series used in the model.⁸

⁸ A complete breakdown of revenue forecasts by month and by the 11 tax headings is available on request.

Table 3**Revenue forecasts, disaggregated, for FY09 and FY10, including technical estimation details (\$millions)**

	FY08	FY09	FY10	% change		AR	MA	Vars/Dummies	Dates
				FY09	FY10				
Income tax									
Estimated payments	2,940	2,772	2,451	-5.7	-11.6	12	1,4,12	FY02	79:6-08:11
Tax Withheld	9,056	8,752	8,011	-3.4	-8.5	1	1,12	01:1,02:1,FY02	79:6-08:11
Returns & Bills	2,265	2,060	2,142	-9.1	4.0	1,12	1,12	FY02	79:6-08:11
Refunds	1,777	1,829	1,608	2.9	-12.1	1,11,12	1	FY02	79:6-08:11
Income Net	12,484	11,755	10,997	-5.8	-6.4				
Sales & Use taxes									
Sales & Use taxes	4,087	3,969	3,891	-2.9	-2.0	1,12	1,12	PI,FY02	79:6-08:11
Corporation Excise	1,512	1,123	1,094	-25.7	-2.6	1,12	3,12		01:7-08:11
Business Excises	1,037	914	1,136	-11.9	24.3	12	1,12	FY02	79:6-07:10
Alcohol Beverages	71	73	73	2.6	-0.3	1,2,7,12	1,13		93:6-08:11
Cigarettes	437	540	593	23.6	9.8	12	12	83:7, 93:1, 96:10, 02:8, 08:7,FY02	79:6-07:10
Motor Fuels	673	672	689	-0.1	2.5	1,12	12	90:9, PI, C	79:6-07:10
Other taxes	468	519	508	10.8	-2.1	12,18	1,12	FY02	79:6-07:10

Effects of Tax Law Changes

Total Taxes	20,768	19,564	18,980	-5.8	-3.0				
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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." PI refers to Personal Income and C, a Constant variable. Totals may not add due to rounding.