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REVENUE FORECASTING METHODOLOGY

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Discussion of the forecast

Real Gross Domestic Product (GDP) is forecasted to grow by 3.8% in FY 2005, 3.5% in FY 2006, and 3.2% in FY 2007. In nominal terms, GDP is forecasted to increase by 6.2% in FY 2005, 5.9% in FY 2006, and 5.4% in FY 2007. U.S. Personal Income is forecasted to increase by 5.9% in FY 2005, 5.7% in FY 2006, and 5.9% in FY 2007. Nonfarm Personal Income in Indiana is forecasted to increase by 5.1% in FY 2005, 5.2% in FY 2006, and 5.2% in FY 2007.

Discussion of the equations used in the forecast

Sales Tax

The Committee retained the equation it used in December, 2004. This equation uses fiscal year nominal Indiana Nonfarm Personal Income (FY_NFIPI) and a dummy variable (D1) to account for the rapid increase and destruction of wealth during the years of 1996 through 2001. The model used by the Committee is replicated as Equation (1) below. The Committee adjusted the results from this equation to account for the response of consumers to increases in the sales tax and cigarette tax in 2002.

Equation (1)
$$\text{Sales Tax} = 164.855908 + 0.021064(\text{FY_NFIPI}) + 111.369330(\text{D1}) + \text{Adjs.}$$

$$\text{D1} = 1 \text{ if year } >1995 \text{ and } < 2002$$

Individual Income Tax

In December, 2004, the Committee determined that the approach it adopted in January, 2004 to account for the rapid increase in wealth in the late 1990's and the rapid destruction of much of that wealth had become inadequate. The Committee retained the approach it adopted in

December, 2004 to remove the effects of capital gains and losses above long-term trend in the late 1990s. The Committee also retained the equation it adopted in December, 2004. The equation uses fiscal year nominal Indiana Nonfarm Personal Income. In retaining the approach it took in December, 2004, the Committee is assuming that the realization of capital gains and losses has returned to its historical relationship to growth in the U.S. economy and will remain there throughout the forecast period. The equation used is replicated as Equation (2) below.

$$\text{Equation (2)} \quad \text{Individual Income Tax} = -104.973478 + 0.023375(\text{FY_NFIFI}) + \text{Adjs.}$$

Corporate Income Tax

The corporate income tax has historically been the most difficult for the Committee to forecast. The Committee elected to retain the equation it used in January 2004 and to account separately for the effects of *Azta Indiana Gaming Corporation vs. the Indiana Department of State Revenue* and its increased experience with the Utilities Receipts Tax. The equation employed by the Committee is replicated as equation (3) below.

$$\text{Equation (3)} \quad \text{Corporate Adjusted Gross Income} = 3,353.934782 + 0.693312(\text{CY_RGDP}) - 24,901.941964 (\text{Rate Differential}) - 2,981.207759(\text{D1}) + \text{Utility Receipts Tax} + \text{Adj.}$$

Where D1 = 1 if year > 2001

Cigarette & Tobacco Products Tax

The Committee adopted two equations to estimate the Cigarette Tax and Tobacco Products Tax. Cigarette Sales, measured in packs of 20, depend upon fiscal year real Indiana Nonfarm Personal Income (RFY_NFIFI), and estimate of the sum of the four surrounding states real prices (RALLPRICE), the real Indiana price (RINPRICE), a dummy variable for 1985 and years after (D85), a variable which takes the real Indiana price multiplied by D85 (PRICED85), the real cigarette excise tax rate (CIGRATE) and a trend variable equal to the fiscal year forecasted minus 1965 (TREND). Tobacco Product sales are estimated based on fiscal year real Indiana Nonfarm Personal Income (RFY_NFIFI), a price index for tobacco products (PRICE), and the excise tax on tobacco products (TOBRATE). The sales, income, price, and tobacco product excise tax variables are expressed in natural logarithms.

$$\text{Equation (4)} \quad \text{Cigarette Sales} = 1.907 + 0.657 (\text{RFY_NFIFI}) + 0.018 (\text{RALLPRICE}) - 0.669 (\text{RINPRICE}) - 1.886 (\text{D85}) + 0.381 (\text{PRICE 85}) - 0.140 (\text{CIGRATE}) - 0.010 (\text{TREND})$$

$$\text{Equation (4a)} \quad \text{Cigarette Tax} = 0.555 (\text{Cigarette Sales})$$

$$\text{Equation (5)} \quad \text{Tobacco Product Sales} = -11.118 + 1.053 (\text{RFY_NFIFI}) + 0.679 (\text{PRICE}) - 0.391 (\text{TOBRATE}).$$

$$\text{Equation (5a)} \quad \text{Tobacco Products Tax} = 0.18 (\text{Tobacco Products Sales})$$

Alcoholic Beverage Taxes

The alcoholic beverage tax model includes three equations: one for beer, one for liquor, and one for wine. All three equations include fiscal year real Indiana Nonfarm Personal Income (RFY_NFIPI), the real beverage price (BPRICE, LPRICE, WPRICE) and the lagged sales of the beverage in gallons (BLAGSALE, LLAGSALE, WLAGSALE). The beer equation has a trend variable (TREND). The liquor equation includes a trend variable (TREND), a dummy variable for 1991 and years after (D91), and a variable which takes the trend variable multiplied by D91 (TREND91). The wine equation includes a dummy variable for 1987 and years after multiplied by the log of real Indiana Nonfarm Personal Income (D87_RFY_NFIPI). For all equations, the income and price variables were adjusted by the Gross Domestic Product price deflator. The sales, income and price variables are expressed in terms of natural logarithms.

$$\text{Equation (6)} \quad \text{Beer sales} = -2.741 + 0.943(\text{LAGSALE}) + 0.331(\text{RFY_NFIPI}) - 0.144(\text{BPRICE}) - 0.009(\text{TREND})$$

$$\text{Equation (6a)} \quad \text{Beer tax} = 0.115(\text{Beer sales})$$

$$\text{Equation (7)} \quad \text{Liquor sales} = -1.859 + 0.625(\text{LAGSALE}) + 0.581(\text{RFY_NFIPI}) - 0.453(\text{LPRICE}) - 0.025(\text{TREND}) - 0.424(\text{D91}) + 0.016(\text{TREND91})$$

$$\text{Equation (7a)} \quad \text{Liquor tax} = 2.68(\text{Liquor sales})$$

$$\text{Equation (8)} \quad \text{Wine sales} = -0.559 + 0.838(\text{LAGSALE}) + 0.213(\text{RFY_NFIPI}) - 0.308(\text{WPRICE}) - 0.009(\text{D87_RFY_NFIPI})$$

$$\text{Equation (8a)} \quad \text{Wine tax} = 0.47(\text{Wine sales})$$

Riverboat Wagering Tax

The Committee adopted a riverboat wagering receipts equation to estimate the riverboat wagering tax base. The tax base estimate is then used to compute estimated wagering tax collections. The equation uses quarterly nominal Indiana Nonfarm Personal Income (Q_NFIPI).

The equation also contains dummy variables (DIN) to account for the impact of Indiana dockside gaming on wagering in Indiana; (DQ1_02) to account for facilities changes and other economic impacts on wagering during the 1st Quarter of 2002, and (DQ1_04) to account for relatively elevated activity during the 1st Quarter of 2004. The equation chosen is replicated as Equation (9) below.

$$\text{Equation (9)} \quad (\text{Total Wagering Receipts})^2 = -596,725,644,396.42 + (4,789.98 * \text{Q_NFIPI}) + (49,335,025,920.00 * \text{DIN}) + (39,507,526,514.67 * \text{DQ1_02}) + (33,628,876,981.84 * \text{DQ1_04}).$$

Where DIN = 1 if calendar quarter = 3rd Quarter 2002 or after

Where DQ1_02 = 1 if calendar quarter = 1st Quarter 2002

Where DQ1_04 = 1 if calendar quarter = 1st Quarter 2004

SPECIFIC METHODOLOGY
(April 11, 2005)

GENERAL FUND

Sales Tax:

For Each Fiscal Year to be Forecasted

1. Multiply 0.021064 times fiscal year Indiana Nonfarm Personal Income.
2. Add 164.855908 to the results of Step 1.
3. Divide the results of Step 2 by 0.05 and multiply the results by 0.06 to account for the sales tax rate increase effective December 1, 2002 under HEA 1001-2002ss.
4. Subtract 64.9 in FY 2005, 65.0 in FY 2006 and 65.1 in FY 2007 from the result of step 3 to account for the response of consumer to the cigarette tax and retail sales tax rate increase under HEA 1001-2002ss.
5. Multiply the results of Step 4 by 0.49192 to account for the percentage of sales taxes deposited in the General Fund under HEA 1001-2002ss.

Individual Income Tax:

For Each Fiscal Year to be Forecasted

1. Multiply 0.023375 times fiscal year Indiana Nonfarm Personal Income.
2. Subtract 104.973478 from the results of Step 1.
3. Subtract 229.0 for FY 2005, 236.9 for FY 2006, and 194.5 for FY 2007 from the results of Step 2 to account for tax measures enacted in 1997, 1999, and 2002.
4. Multiply the results of Step 3 by 0.86 to account for the percentage of individual income tax deposited in the General Fund under HEA 1001-2002ss.

Corporate Income Tax:

For Each Fiscal Year to be Forecasted

1. Multiply 0.693312 times calendar year U.S. Real Gross Domestic Product.
2. Add 3,353.934782 to the results of Step 1.
3. Multiply -24,901.941964 times 0.051 and add the result to the results of Step 2 to account for the impact of a differential between the corporate income tax rate and the individual income tax rate.
4. Subtract 2,981.207759 from the results of Step 3.

5. Multiply the results of Step 4 by the statutory corporate income tax rate of 0.085.
6. Subtract 51.5 from the results of Step 5 to account for the impact of changes to the Research and Development Expense Credit contained in HEA 1001-2002ss.
7. Add 155.0 to the results of Step 8 to account for the revenues from the Utility Receipts Tax.
8. Add 36.9 for FY 2005, 20.0 for FY 2006 and 20.0 for FY 2007 to the results of Step 7 to account for General Fund revenues from the Financial Institutions Tax.
9. Add 67.1 for FY 2005 and 14.1 for FY 2006 to the result of step 8 to account for the one-time impact of *Azstar Indiana Gaming Corporation vs. the Indiana Department of State Revenue*.
10. Add 31.6 for FY 2005, 34.0 for FY 2006 and 36.3 for FY2007 to the results of Step 9 to account for the ongoing impact of *Azstar Indiana Gaming Corporation vs. the Indiana Department of State Revenue*.

Cigarette Tax:

For Each Fiscal Year to be Forecasted

1. Multiply 0.657 by the logarithm of fiscal year real Nonfarm Indiana Personal Income.
2. Add 1.907 to the result of step 1.
3. Multiply 0.018 by the logarithm of the sum of the real cigarette prices in the four surrounding states.
4. Add the result of step 3 to the result of step 2.
5. Multiply -0.669 by the logarithm of the real cigarette price in Indiana.
6. Add the result of step 5 to the result of step 4.
7. Subtract -1.886 from the result of step 6 for years after 1985.
8. Multiply 0.381 by the logarithm of real Indiana prices for years after 1985.
9. Add the result of step 8 to the result of step 9.
10. Multiply -0.140 by the logarithm of the real cigarette excise tax rate.
11. Add the result of step 10 to the result of step 9.
12. Subtract 1965 from the fiscal year forecasted.
13. Multiply the result of step 12 by -0.010.

14. Add the result of step 13 to the result of step 11.
15. Take the exponential of step 14, to get sales.
16. Multiply the result of step 15 by 0.555 to get total revenue.
17. Multiply the result of step 16 by 0.8397 to get General Fund revenue.

Tobacco Products Tax:

For Each Fiscal Year to be Forecasted:

1. Multiply 1.053 by the logarithm of fiscal year real Nonfarm Indiana Personal Income.
2. Subtract -11.118 from the result of step 1.
3. Multiply 0.679 by the logarithm of the of the real tobacco product price.
4. Add the result of step 3 to the result of step 2.
5. Multiply 100 by the tobacco products excise tax rate.
6. Multiply -0.391 by the logarithm of the result of step 5.
7. Add the result of step 6 to the result of step 4.
8. Take the exponential of step 7, to get sales.
9. Multiply the result of step 8 by 0.8397 to get General Fund revenue.

Alcoholic Beverage Tax - Beer:

For Each Fiscal Year to be Forecasted

1. Multiply 0.943 by the logarithm of beer sales, lagged one year.
2. Subtract 2.741 from the result of step 1.
3. Multiply 0.331 by the logarithm of fiscal year real Nonfarm Indiana Personal Income.
4. Add the result of step 3 to the result of step 2.
5. Multiply -0.144 by the logarithm of the real beer price.
6. Add the result of step 5 to the result of step 4.
7. Multiply -0.009 by a trend term.

8. Add the result of step 7 to the result of step 6.
9. Take the exponential of the result of step 8 to get sales.
10. Multiply the result of step 9 by 0.115, to get total revenue; multiply the result of step 9 by .04 to get General Fund revenue.

Alcoholic Beverage Tax - Liquor:

For Each Fiscal Year to be Forecasted

1. Multiply 0.625 by the logarithm of liquor sales, lagged one year.
2. Subtract 1.859 to the result of step 1.
3. Multiply 0.581 by the logarithm of fiscal year real non-farm Indiana personal income.
4. Add the result of step 3 to the result of step 2.
5. Multiply -0.453 by the logarithm of the real liquor price.
6. Add the result of step 5 to the result of step 4.
7. Multiply -0.025 by a trend term.
8. Add the result of step 7 to the result of step 6.
9. Multiply -0.424 by a dummy for 1991.
10. Add the result of step 9 to the result of step 8.
11. Multiply 0.016 by the trend term multiplied by the dummy for 1991.
12. Add the result of step 11 to the result of step 10.
13. Take the exponential of the result of step 12 to get sales.
14. Multiply the result of step 13 by 2.68, to get total revenue; multiply the result of step 13 by 1.00 to get General Fund revenue.

Alcoholic Beverage Tax - Wine:

For Each Fiscal Year to be Forecasted

1. Multiply 0.838 by the logarithm of wine sales, lagged one year.
2. Subtract 0.559 from the result of step 1.
3. Multiply 0.213 by the logarithm of fiscal year real Nonfarm Indiana Personal Income.

4. Add the result of step 3 to the result of step 2.
5. Multiply -0.308 by the logarithm of the real wine price.
6. Add the result of step 5 to the result of step 4.
7. Multiply -0.009 by the dummy for 1987 multiplied by the logarithm fiscal year non-farm Indiana personal income.
8. Add the result of step 7 to the result of step 6.
9. Take the exponential of the result of step 8 to get sales.
10. Multiply the result of step 9 by 0.47, to get total revenue; multiply the result of step 9 by 0.20 to get General Fund revenue.

PROPERTY TAX REPLACEMENT FUND

Sales Tax:

For Each Fiscal Year to be Forecasted

1. Multiply the results of Step 4 of the General Fund Sales Tax calculation by 0.5 to account for the percentage of sales tax deposited in the Property Tax Replacement Fund under HEA 1001-2002ss.

Individual Income Tax:

For Each Fiscal Year to be Forecasted

1. Multiply the results of Step 3 of the General Fund Individual Income Tax calculation by 0.14 to account for the percentage of sales tax deposited in the Property Tax Replacement Fund under HEA 1001-2002ss.

Riverboat Wagering Tax:

For Each Fiscal Year to be Forecasted

1. Multiply 4,789.98 by quarterly nominal Indiana Nonfarm Personal Income in thousands.
2. Subtract 596,725,644,396.42 from the result of Step 1.
3. Add 49,335,025,920.00 to the result of Step 2 for the 3rd Quarter of 2002 and each calendar quarter thereafter.
4. Take the square root of the result of Step 3 to obtain quarterly total wagering receipts.

5. Sum the quarterly totals from Step 4 for the fiscal year to obtain fiscal year total wagering receipts.
6. Distribute fiscal year total wagering receipts from Step 5 among the 10 riverboats based on the actual FY 2004 percentage distribution of wagering receipts among the 10 riverboats.
7. Use the fiscal year wagering receipts distributed to each riverboat from Step 6 to compute the fiscal year wagering tax for each riverboat.
8. Sum the fiscal year wagering tax totals for each riverboat from Step 7 to obtain fiscal year total wagering tax collections.
9. Subtract from the Step 8 result, 2,169,011 each year to account for reimbursement to the Indiana Gaming Commission for administrative expenses; 33,000,000 each year to account for local revenue sharing; and 95,046,641 each year to account for wagering tax distributions to riverboat communities.
10. Add to the Step 9 result, 16,258,743 in FY 2005 only to adjust for collection of unpaid wagering taxes from FY 2003.