State Notes

TOPICS OF LEGISLATIVE INTEREST

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Half Empty or Half Full: Perspectives on Adjusting Tax Provisions for Inflation
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Michigan statute refers to inflation in 55 different sections, and "price index" in 106 sections. In contrast, there is only one reference to an implicit price deflator. The overwhelming majority of references to price level considerations such as inflation occur in sections related to taxes, and almost exclusively refer to either the United States Consumer Price Index (U.S. CPI) or the Detroit Consumer Price Index. This article will discuss different ways to evaluate inflation and how some alternative measures might affect selected aspects of Michigan's tax system.

What is Inflation and Why Adjust for it?

Inflation is defined as an increase in the overall level of prices. Under most circumstances, inflation reflects a change in the value of money rather than the value of goods. The price of an item or service can rise because people feel it is more valuable, but most price changes reflect changes in the value of money. If preferences for an item, such as a gallon of milk or a pair of socks, remain constant and there is no change in the characteristics of the item, then a change in the price will reflect a change in the value of money. If the price of a gallon of milk rises from $2 per gallon to $3 per gallon, and nothing else has changed with respect to milk, then the value of the money has declined because it costs 50% more to purchase the same item.

Moderate inflation, which economists and monetary authorities tend to place in the 2% to 3% range, is often regarded as a good thing, particularly in a consumption-based economy. If prices did not rise, there would be less incentive for consumers to purchase items sooner rather than later. In fact, in an economy experiencing deflation (a decline in the overall price level), consumers will reduce their spending because they anticipate that prices will be lower in the future. However, significant inflation is also problematic, particularly for lenders who may not have charged a sufficient interest rate to offset the decline in the value of money, or for consumers, such as those on fixed incomes or in retirement, who find that prices are rising more rapidly than expected and may not have sufficient income to maintain their standard of living. Some countries have occasionally experienced periods of "hyperinflation", when the inflation rate may rise more than 100% in a year, or even more than 1,000%, or even 1,000,000%. Hyperinflations in Germany and Hungary after World War I led to political instability, and years of hyperinflation in Zimbabwe eventually caused the country to phase out its own domestic currency in favor of the U.S. dollar in 2015 (at an exchange rate of $35 quadrillion Zimbabwean dollars to one U.S. dollar, or Z$35,000,000,000,000,000 to $1 U.S.).

Monetary measures allow economists to compare output across different types of economic output, such as the number of vehicles manufactured, the number of gallons of milk sold, or the number of hours of legal services rendered by attorneys. The outputs can be converted to their dollar value and either combined or compared. However, many economic measurements need to be adjusted for inflation in order to measure the "real" changes in the economy. Using the example for the price of milk above, if an economy only produces milk, and the value of the milk production rises from $20 billion to $30 billion, it is impossible to determine whether economic output has grown. However, if milk production increases from 10 billion gallons to

15 billion gallons, then one can tell that economic output has increased. Nominal, or current dollar, figures for measurements like Gross Domestic Product reflect the value of output without adjusting for inflation, while real, or constant-dollar, figures adjust for inflation. If milk output rises from 10 billion gallons to 12 billion gallons, but the nominal value of that output rises from $20 billion to $30 billion, then the real output (in constant dollars) has increased 20%, while inflation has increased 25%.

Accounting for inflation is important in order to evaluate how consumers', businesses', and governments' income and expenditures change over time. If a consumer was spending $40,000 per year to maintain his or her standard of living, and now is spending $42,000, it does not necessarily mean the consumer is 5% better off. If inflation was 10% over the period, the consumer would need to be spending $44,000 in order to maintain his or her standard of living. In other words, inflation has eroded the consumer's buying power such that his or her standard of living has fallen even though his or her nominal income increased. Similarly, if government revenue rises from $5.0 billion to $5.1 billion (a 2% increase), that does not necessarily mean that the government can purchase more goods and services. If inflation rose 4%, the government would need $5.2 billion to purchase the same goods and services. Like the consumer who has seen his or her standard of living decline due to inflation, the government would be able to do less for the public.

Inflationary adjustments also can be important because of how the interaction of tax policy and inflation might change tax burdens. For example, before Public Act 179 of 2015 was enacted, eligibility for a Homestead Property Tax Credit under the Michigan Individual Income Tax was determined by a set amount that was not adjusted for inflation. If a taxpayer's household resources exceeded $50,000, the taxpayer would no longer be eligible to receive the credit. As a result, assuming 3% inflation each year, a taxpayer whose income was $45,000 in 2012 would be eligible for the credit, but by 2016 would no longer be eligible for the credit because, if his or her income had risen with inflation, it would now be $50,648. The taxpayer's relative economic status, and real level of economic well-being, would not have changed, yet the taxpayer would no longer be eligible for the credit and would experience an increase in real net tax liability. Public Act 179 of 2015, in addition to making several other changes, modified the Homestead Property Tax Credit to adjust income eligibility for the credit by inflation.

Different Measures of Inflation

The economy produces a seemingly infinite variety of goods and services, and price changes will differ among various goods and services. As a result, any measure of inflation must find a way to aggregate the information for individual goods and services into a measure for the economy as a whole.

Perhaps the most well-known measure of inflation is the Consumer Price Index (CPI). The Consumer Price Index looks at the movement in the prices of the goods and services that would be purchased by a "representative urban consumer" in the form of a fixed "basket of goods and services" and weights the different price changes by the proportion spent on each of the goods or services. Furthermore, as will be discussed in more detail in the next paragraph, the purchases are adjusted for changes in quality. The U.S. Department of Labor's Bureau of Labor Statistics (BLS) produces CPI figures for a wide array of goods and services,

as well as different groups of goods and services, on both a regional basis and a national basis. For example, while the U.S. CPI is released monthly, the BLS also produces a Detroit Metropolitan Statistical Area (MSA) CPI every other month. The Bureau of Labor Statistics also produces narrower CPI figures, such as a CPI for housing, medical care, apparel, and energy; as well as broad indices that remove certain components that tend to exhibit more volatile prices, such as the Core CPI--which is like the overall CPI but omits energy and food prices.

While the CPI is a common measure of inflation, at least at the consumer level, it does not cover many sectors of the economy and can occasionally misrepresent the situation faced by consumers. For example, due to quality adjustments, the price of an entry-level computer may rise from $300 to $325 but productivity gains and technological changes allow the computer to do what would have previously required the consumer to spend $1,000. The CPI for computers would exhibit a decline, yet a consumer who purchases an entry-level computer still will need to spend $325, a nominal price increase. Under this example, the consumer expenditure increased slightly but the CPI declined. As a result, a declining CPI does not necessarily represent that prices are falling and that consumers may spend less; rather, it may represent that consumers are spending the same (or even more) but getting proportionally "more" for their expenditures.

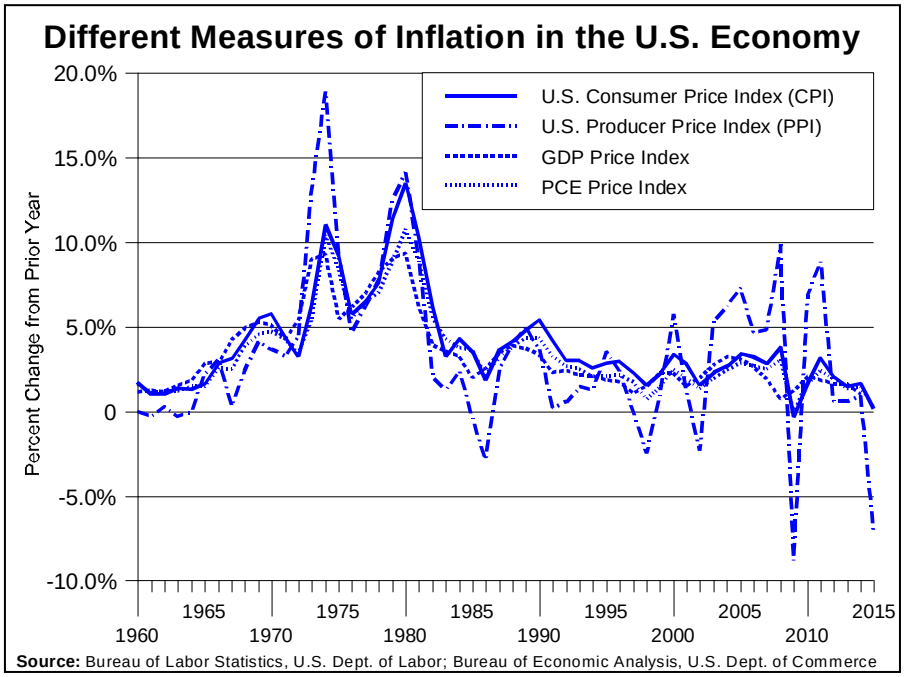
Furthermore, the CPI measures prices at the consumer level--it provides no information on the prices producers face. As a result, the BLS also produces a Producer Price Index (PPI) which, like the CPI, has a variety of measures to subdivide price movements that sellers experience into categories that reflect final demand or intermediate demand, reflect different commodity prices, or are divided by industry classification.

The U.S. Department of Commerce's Bureau of Economic Analysis (BEA) measures economic output and produces estimates for indicators like the growth in Gross Domestic Product (GDP). The BEA has different, but related, price measures, including measures for major sectors of the economy such as GDP, business investment, residential investment, government expenditures, exports, imports, and consumer spending. For consumers, the BEA produces a Personal Consumption Expenditure (PCE) price index, which measures price changes in goods and services purchased by the personal sector in the U.S. national income and product accounts. Like the CPI, the PCE also produces narrower measures, such as the Core PCE price index or the PCE price index for durable goods. However, the two price indexes have different purposes and uses, and are constructed differently (even using different formulas rather than just different weights and purchases). As a result, the PCE price index and the CPI will behave somewhat differently over time.

Additional variations exist between the price measures produced by the BLS and the BEA. While the CPI and PPI cover price changes from the perspective of personal consumers and producers, only the BEA's measures include price indices for government (as a consumer). Among the government-related price indices, the BEA produces one limited to state and local governments (the State and Local Government price index). However, unlike the CPI, which offers measures for more limited geographic areas such as the Detroit MSA, the BEA's price indices are only available for the U.S. as a whole.

Figure 1 illustrates the annual change in the U.S. CPI, U.S. PPI, GDP price index, and PCE price index over the last 55 years. Reflecting the fact that consumption swings are less common than production swings, the PPI is the most volatile index. Given that the PCE price index and the CPI primarily differ only by issues related to quality adjustments and the relative mix of goods and services used to compute the indices, the two measures track each other very closely. The GDP price index, reflecting not only changes in consumption but also business investment, international trade, and government activity, is more stable than the PPI but can deviate significantly from strictly consumption-based measures.

Figure 1



Inflation Adjustments Required by Law

A wide variety of provisions in either Michigan statute or the Michigan Constitution of 1963 require adjustments for inflation. Rather than provide a comprehensive list of such provisions, the following paragraphs highlight several provisions that are significant and/or apply different adjustments.

The year-to-year change in the taxable value of an individual parcel of property is limited by Article IX, Section 3 of the Michigan Constitution. The limit dictates that taxable value, adjusted for additions and losses, may increase by not more than the lesser of 5% or a measure of calendar year inflation determined by the U.S. consumer price index. The choice of the U.S. consumer price index ties the cap to the behavior of prices on a national level, rather than the Detroit metropolitan area. Furthermore, because an overall CPI figure is used, taxable values are linked to quality-adjusted changes in overall prices for a representative basket of goods purchased by urban consumers, and not just housing prices or prices representative of total consumption or the economy as a whole.

Similarly, the millage reduction provisions in Article IX, Section 31 (one of the "Headlee" amendment provisions adopted in 1978) are linked to calendar year increases in the overall U.S. CPI. However, rather than being applied to individual parcels, the limits are applied to increases in the total assessed value of property in a local unit of government (adjusted for the value of new construction and improvements).

Recently enacted changes in motor fuel taxes also link future increases in the tax rate on motor fuels to the U.S. CPI, although the rate is determined on a fiscal year basis rather than a calendar year basis. As with the taxable value cap, the provisions tie gas tax increases to national-level price movements in quality-adjusted prices of a representative basket of goods purchased by urban consumers. Since the increase is determined on a fiscal year basis rather than a calendar year basis, the change in tax rates will be known in time for them to be effective by January of each year.

While the three preceding examples associate inflation adjustments with the U.S. CPI, a wide variety of provisions in statute link inflation adjustments to the Detroit CPI. The provisions of the Management and Budget Act regarding recommended transfers into or out of the Countercyclical Budget and Economic Stabilization Fund refer to the Detroit CPI, calculated on a July-to-June basis. Many fees, such as those associated with food service establishment licenses, grain dealer license fees, campground fees, dry cleaning license fees, and medical records fees, are also tied to the Detroit CPI, although usually on a calendar year basis. Similarly, under the Corporate Income Tax and the Michigan Business Tax, the income thresholds determining eligibility for the small business credit are linked to the Detroit CPI. In contrast, the inflationary adjustments in Michigan's minimum wage laws are linked to the overall CPI for the Midwest region.

Perhaps the broadest measure of inflation employed in Michigan statute appears in the Nonprofit Health Care Corporation Reform Act, which links provider reimbursements to the implicit price deflator for Gross National Product. This measure is closely related to the GDP Price Index (or GDP deflator), but is based on a different measure of national output that differs in the treatment of income and payments made to or from the rest of the world.

Which Inflation Measure is "Best"?

As indicated earlier, various inflation definitions measure different parts of the economy and/or measure inflation in different ways. Much like "using the right tool for the job", the "best" measure of inflation to use when adjusting tax provisions may depend on the goal or purpose of the adjustment. If an adjustment is meant to provide the government with constant inflation-adjusted buying power, a different inflation measure may be more relevant than if the purpose is to maintain the inflation-adjusted burden on consumers to support government activities.

Although exceptions exist, inflation adjustments under Michigan law tend to look at the U.S. CPI when they concern the tax code and the Detroit CPI when they concern fees. Differences as to whether inflation is computed on a calendar year, fiscal year, or some other time period, such as July to June, generally reflect administrative issues. Both broader and narrower measures of inflation than those employed under current law exist. As a result, it is unclear

whether the inflation measures in statute were chosen under the belief that those measures would best further a specific goal or merely because they were, and are, well known, popular measures of inflation.

As shown in Figure 2, over the last 55 years, the U.S. and Detroit CPIs have generally moved together. The figure does not indicate that prices are necessarily the same in Detroit as at the national level, only that the rates of change in the prices are generally similar. As a result, the choice between using the U.S. CPI or the Detroit CPI to adjust for price changes over time is more a matter of personal preference than a substantive decision.

Figure 2

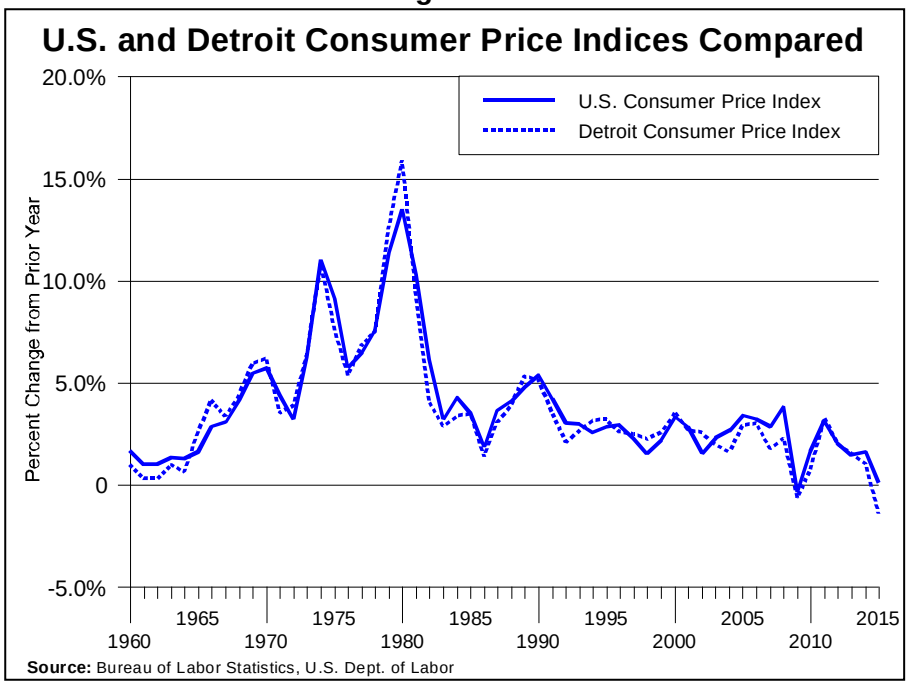
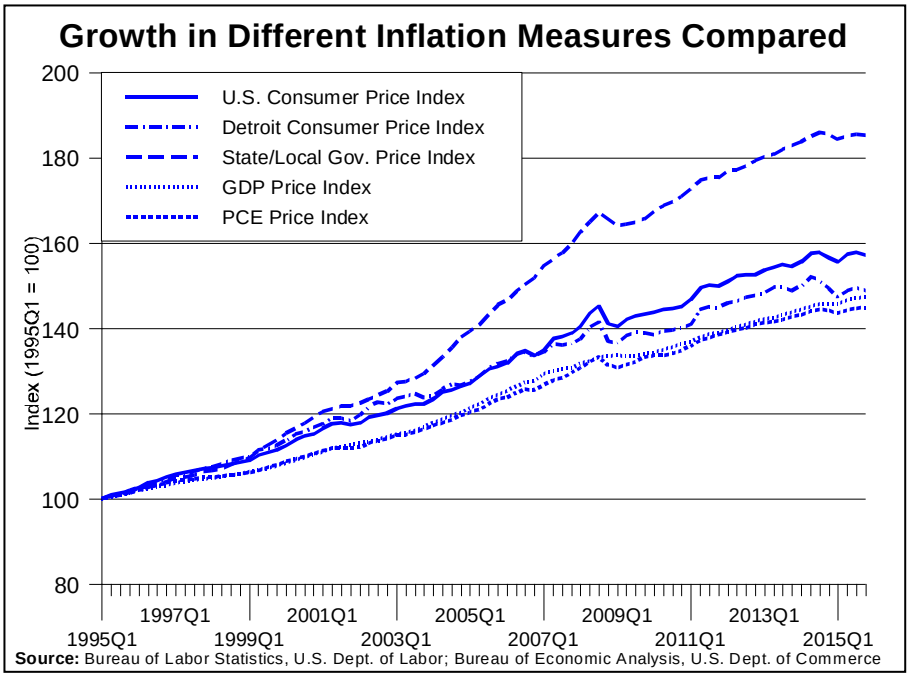


Figure 3 compares the cumulative impact of different inflation measures since the first quarter of 1995. Figure 3 begins with 1995 for three reasons: 1) during the 1970s, inflation was dominated by both a drastic change in energy markets and the demographic impact of baby boomers entering the economy as both workers and consumers, 2) during the 1980s, inflation was dominated by monetary policy designed to substantially reduce high inflationary expectations that had developed during the 1970s, and 3) for Michigan, 1995 was the first full year under a new tax structure adopted as a result of the passage of Proposal A.

As can be seen in Figure 3, although the U.S. CPI and Detroit CPI have tended to move together, in some circumstances the cumulative difference between different CPI and non-CPI inflation measures are significant. Between the first quarter of 1995 and the fourth quarter of 2015, the U.S. CPI increased more than 57%, or approximately 2.3% per year. The Detroit CPI, the GDP price index, and the PCE price index all increased more slowly, rising between 47% and 49% over the period, or an average of 1.9% to 2.0% per year. Virtually all of the difference in growth between the U.S. CPI and Detroit CPI reflects the impact of the 2008-2009

recession, when for seven consecutive quarters the Detroit CPI rose markedly more slowly than the U.S. CPI. In contrast, the State and Local Government price index increased more than 85%, or approximately 3.2% per year.

Figure 3



From a taxpayer viewpoint of adjusting for inflation, in which the adjustments are designed to keep the tax burden constant relative to inflation, Figure 3 indicates that over the last 20 years CPI measures have risen by more than personal consumption expenditures. As a result, inflationary adjustments based on CPI measures in the tax code or for fees have tended to overadjust for inflation as measured by actual consumer spending.

From a government perspective of adjusting for inflation, in which the adjustments are designed to maintain the same level of service relative to inflation, Figure 3 indicates that inflation for state and local government purchases (as measured by the State and local government price index), has risen by more than CPI-based measures. As a result, inflationary adjustments based on CPI measures have tended to not keep pace with the cost pressures faced by state and local governments and reduced the real level of government-provided goods and services.

Combining the two perspectives, given the way inflationary provisions are incorporated into the tax code and absent any other changes in tax policy, the structure of the Michigan tax system has resulted in the burden of the tax system falling in real terms *and* the costs of government-provided goods and services increasing in real terms. By over-adjusting for inflation as indicated by total consumer spending, CPI-based tax provisions have lowered the real burden of the tax system (absent any other tax policy changes). In contrast, by under-adjusting for the inflation experienced by state and local governments, CPI-based tax

provisions have lowered the purchasing power of State revenue and failed to keep pace with the real cost of providing government goods and services.

Conclusion

Many provisions in Michigan statute make adjustments for inflation. Although many different measures of inflation exist, with few exceptions only two inflations measures are used in Michigan statute: the overall U.S. CPI and the overall Detroit CPI. No record exists to identify why these inflation measures have been applied over other measures, although they are the most common measures known to the general public, or when employed, why the Detroit or U.S. measure was selected. Over longer time intervals, use of the Detroit CPI produces minimally different adjustments than the U.S. CPI. In most years between 1960 and 2003, the cumulative difference in U.S. and Detroit inflation was generally less than 2.0%, and even over the 1960 to 2015 period, the cumulative difference was approximately 8.7%.

State revenue and expenditures depend on more than just inflationary adjustments. Changes in tax policy, Federal transfers to State government, and the real growth in the economy all affect both State revenue and expenditure. Some of these changes may complement the effect of inflationary adjustments, while others may offset the impact of inflation. Furthermore, in a growing economy, personal income will increase more rapidly than inflation, due to both productivity growth and population growth. As a result, in a growing economy, if tax revenue grows only at the rate of inflation, the real burden of taxes will actually decline relative to personal income.

Total State revenue reflects more than taxes, thus evaluating the impact of inflation on state revenues requires examining more than tax revenue. Article IX, Section 26 of the Michigan Constitution limits the revenue the State can collect in a fiscal year. Certain types of revenue, such as revenue received from the Federal government, are excluded from the limit but generally the measure is a comprehensive total of State tax revenue, revenue from fees, and revenue from other State sources. In fiscal year (FY) 2013-14, revenue subject to the Section 26 limit totaled $27.4 billion, approximately 57.5% of total State government revenue from all sources; up from $18.6 billion in FY 1994-95, when it represented approximately 69.9% of total State revenue from all sources.

Table 1 compares the growth in total State revenue, as reported under Article IX, Section 26 of the Michigan Constitution, with the inflation measures discussed earlier and the growth in Michigan personal income. To illustrate the differences these inflation measures imply for State revenue, Figure 4 compares the actual revenue received in each State fiscal year from 1994-95 through 2014-15 with the revenue received in FY 1994-95, adjusted for various inflation measures and personal income growth. The respective series displayed in Figure 4 are calculated by growing total FY 1994-95 revenue by the growth in each inflation measure or the growth in personal income, and then subtracting that amount from the actual total State revenue for that year. If actual revenue grows at the same rate as the inflation measure or personal income, the line would stay flat. Upward sloping lines indicate actual revenue rising more rapidly than the inflation measure or personal income, while downward sloping lines reflect revenue that is not growing as rapidly as the inflation measure or personal income. As

a result, Figure 4 compares the impact of inflationary adjustments in statute inclusive of the effect of changes in tax policy and the real growth of the economy.

Table 1

Growth in State Revenue, Inflation and Personal Income Compared FY 1995-96 to FY 2014-15

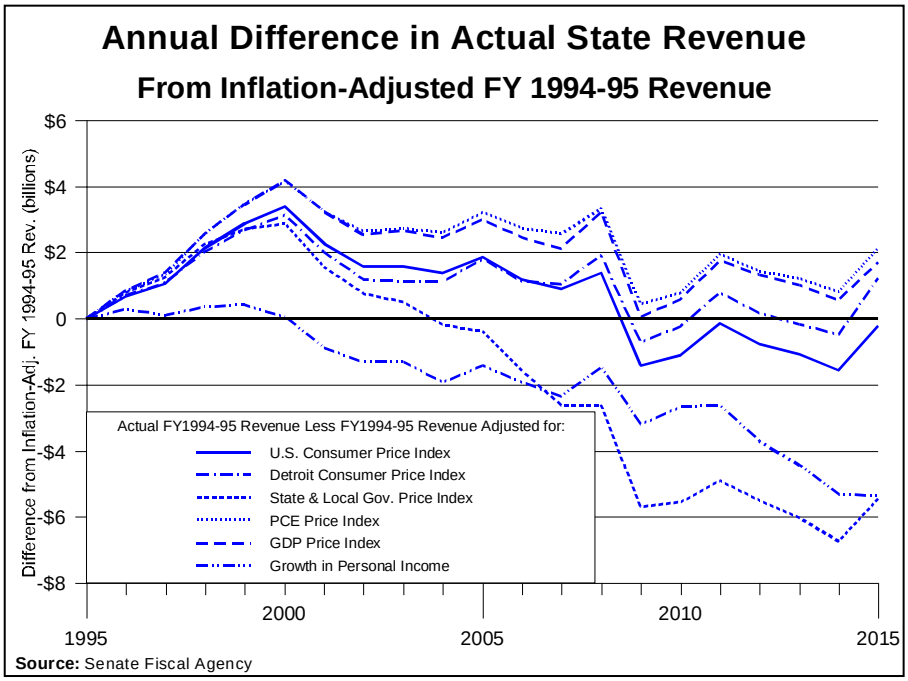
		Inflation Measures					
Fiscal Year	Total State Revenue	U.S. CPI	Detroit CPI	GDP Price Index	PCE Price Index	State/Local Gov't Price Index	Michigan Personal Income
1995-96	6.5%	2.8%	2.8%	1.9%	2.0%	2.3%	5.0%
1996-97	4.5	2.7	2.5	1.7	2.0	2.2	5.5
1997-98	6.7	1.6	2.2	1.2	0.9	2.0	5.5
1998-99	5.1	1.9	2.5	1.4	1.2	3.4	4.9
1999-2000	5.0	3.2	3.4	2.1	2.4	4.8	6.8
2000-01	(1.9)	3.2	3.3	2.4	2.2	4.1	1.9
2001-02	(1.5)	1.5	2.1	1.6	1.2	1.9	0.3
2002-03	2.2	2.3	2.5	1.9	2.0	3.3	2.0
2003-04	1.3	2.3	1.3	2.5	2.2	4.3	3.7
2004-05	5.1	3.3	2.5	3.1	2.8	5.9	2.8
2005-06	0.7	3.7	3.6	3.3	3.0	5.3	2.6
2006-07	1.2	2.3	1.6	2.7	2.1	5.0	2.6
2007-08	6.1	4.4	2.8	2.1	3.5	5.5	2.6
2008-09	(10.4)	(0.3)	(0.9)	1.1	0.0	0.6	(4.0)
2009-10	3.0	1.7	0.9	0.9	1.6	1.9	0.7
2010-11	6.6	2.7	2.6	2.0	2.1	3.3	5.8
2011-12	0.1	2.4	2.4	1.8	2.1	2.0	3.7
2012-13	0.6	1.6	1.9	1.7	1.5	2.1	2.8
2013-14	0.0	1.6	1.1	1.7	1.4	2.0	2.8
2014-15	5.1	0.3	(1.1)	1.1	0.5	0.4	4.3

Note: Total State Revenue is revenue reported under the Constitutional limit established in Article IX, Section 26. FY 2014-15 revenue reflects the January 2016 Consensus revenue estimates. See text for abbreviations.

Source: Bureau of Labor Statistics, U.S. Department of Labor; Bureau of Economic Analysis, U.S. Department of Commerce; and the State Budget Office, Michigan Department of Technology, Management, and Budget

Consistent with Figure 3, which indicated that both the GDP price index and the PCE price index have grown more slowly than CPI measures, Figure 4 illustrates that State revenue has generally remained above the level that would have been received if revenue had grown at the same rate as either the GDP price index or the PCE price index. However, it should be noted that most of the additional revenue reflects the fact that revenue grew more rapidly than these indices in the late 1990s. At the peak, the State received approximately $4.2 billion more in FY 1999-2000 than it would have if revenue had grown at the same rate as either the GDP price index or the PCE price index. The difference remained at roughly $3.0 billion per year through the 2000s until the recession of 2008-2009, when it fell substantially. Since FY 2010-11, actual State revenue, adjusted for either the GDP price index or the PCE price index, has exceeded FY 1994-95 revenue, by approximately $1.4 billion per year.

Figure 4



Compared with CPI measures of inflation and similar to the GDP and PCE price indices, actual revenue grew more rapidly than inflation in the 1990s, fell slightly relative to inflation in the 2000s, and dropped substantially during the 2008-2009 recession. However, the overall effect has been such that since FY 2010-11, actual State revenue adjusted for inflation by a CPI-based inflation measure, has averaged approximately $220 million per year *less* than FY 1994-95 revenue.

Under yet another measure, revenue has failed to keep pace with the State and Local Government price index since FY 1999-2000. After totaling $2.9 billion more than the inflation-adjusted amount in FY 1999-2000, the difference changed from positive to negative and since FY 2008-09 actual revenue has averaged $5.7 billion per year *less* than what FY 1994-95 revenue would have been if adjusted for the State and Local Government price index. This measure of inflation clearly indicates that the State has markedly less buying power than it did 20 years ago, with the combination of revenue changes and inflation leaving the State with an average 17.4% less buying power (relative to FY 1994-95) in each year since FY 2008-09.

The growth of personal income shows that the real burden of State revenue has declined steadily since FY 1999-2000. Unlike when revenue grew at a markedly faster pace than any of the inflation measures during the FY 1994-95 to FY 1999-2000 period, State revenue grew roughly as rapidly as personal income during that period. However, since FY 1999-2000, State revenue has consistently grown more slowly than personal income, increasing the gap between actual revenue and revenue adjusted for the growth in personal income. Figure 4 illustrates that actual FY 2014-15 revenue was $5.3 billion less that it would have been if had continued to grow at the same rate as personal income–despite the nearly decade-long recession in Michigan that started in 2000.

Using consumer price index measures of inflation, when the combination of economic changes, changes in tax policy, and inflationary adjustments in statute are applied to revenue over the last 20 years, total FY 2014-15 revenue was approximately the same as total revenue was in FY 1994-95. However, consumer price indices are not necessarily the best inflation measures to evaluate the impact of taxes on consumers, or to evaluate the impact of inflation on the buying power of State revenue. Both the impact of taxes on consumers and the impact of inflation on State revenue look different from CPI-adjusted figures if alternative inflation measures are considered. Determining whether State revenue has been appropriately adjusted by, or tracked to, inflation is akin to viewing a glass as half-empty or half-full: it largely reflects the perspective of the viewer.