# The Nevada Tax System: The Short-Run Dynamics and Long-Run Dynamics of Nevada Taxes

## A Framework for Public Policy Analysis

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THEODORE ROOSEVELT INSTITUTE

# The Nevada Tax System:
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## A Framework for Public Policy Analysis


STUDY GROUP

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*"Everyone is entitled to their own opinions, but not their own facts"*
Daniel Patrick Moynihan

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Several State agencies assisted with required data sets which we acknowledge in the report. Nevada State Controller Kim Wallin reviewed our summary balance sheet of State accounts and transfers included in this study.

Local jurisdictions within Southern Nevada and their administrative budget personnel were both forthcoming with budget information and agreed to discuss and review their reports. We appreciate this assistance.

Finally, as our Nevada reader, we wish to thank Ms. Carole Vilardo, President, Nevada Taxpayers Association for her time and efforts. Given her extensive knowledge of Nevada's tax history, her comments were much appreciated.

# SUMMARY BIOS

## Senior Fellows
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### *Alan Schlottmann*

Alan Schlottmann is a scholar in urban and regional economics serving as Professor of Economics at the University of Nevada Las Vegas. He has an honorary appointment as Research Fellow, Claremont Graduate University. Prof. Schlottmann has received national awards from organizations as the Regional Science Association and international recognition from the Netherlands Organization for Scientific Research. His investigative public policy studies include work for both houses of Congress, US General Accounting Office, and numerous federal, state, and local entities.

Dr. Schlottmann is the author of the 2003 policy proposal to modify Nevada's sales tax collection procedures in *An Analysis of Nevada Sales Tax Collection Procedures: A Legislative Suggestion.* As acknowledged by Governor Kenny Guinn, legislation similar to these recommendations was adopted by the Legislature and was passed during the 20th Special Session. The administrative change has been estimated to create annually recurring revenue enhancements of $15 million to $20 million.

### *Roy Bahl*

Roy Bahl is Founding Dean and Regents Professor, Andrew Young School of Policy Studies, Georgia State University. One of the nation's recognized experts in local public finance, Roy Bahl has extensive experience with state and local government and public and private agencies, including Standard & Poor's Corp. and federal agencies. He has served as principal economic advisor to IBM's Worldwide Tax Practice.

Prof. Bahl is past President of the prestigious National Tax Association and headed the research staffs of the Ohio Tax Reform Commission and the Georgia Tax Commission. He has served on the editorial boards of the *National Tax Journal* and *Journal of Public Budgeting and Finance.*

Dr. Bahl has received the Aaron Wildavsky Award for Lifetime Achievements in Public Budgeting in recognition of his accomplishments for improving public finance in government.

### *William F. Fox*

William Fox is Director of the Center for Business of Economic Research at the University of Tennessee and has served as a visiting scholar on several occasions to include Distinguished Fulbright Chair for American Studies at the University of Frankfurt, Germany. He has worked extensively with the National Tax Association and his work has appeared in the *National Tax Journal.*

In addition to extensive experience on a wide range of state tax committees and revenue departments throughout the nation, Dr. Fox is a recognized national expert on the impact of electronic commerce and the new retail mobility on state tax collections.

Dr. Fox's pioneering work has provided the research basis for the current national effort on the *Streamlined Sales Tax*. He is often quoted on this issue. The State of Nevada is a full member state of the *Streamlined Sales Tax Project.*

## *Matthew N. Murray*

Matthew Murray is Graduate Director and Professor of Economics at the University of Tennessee. His research has focused heavily on the role of state taxes on business conditions and firm location. This includes the roles of the sales tax in influencing the location of retail trade and the implications of telecommunications and electronic commerce for the existing state and local sales tax and regional economic development.

An expert on state econometric models, Dr. Murray has developed procedures for the development of monthly leading indicators for states and major metro areas. He has worked closely with state and local governments on a wide range of public policy issues, including economic development incentives and education finance reform. His publications appear in leading journals on regional economic growth and tax policy and Prof Murray is author of very well received papers on state sales taxes.

### Associate Director
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## *Marcus Conklin*

Marcus Conklin holds an MA in Political Science from Midwestern State University and is currently completing an MA in Economics from UNLV. He has been an active member of the Nevada community for nearly a decade, founding and serving as Chairman of the Board for the Nevada Partnership for Homeless Youth. Additionally, he has represented district 37 in the Nevada Assembly since 2002 and currently serves as the Assistant Majority Leader of that body. Education, community service, and more than 15 years of business and sales management experience give Mr. Conklin a unique pragmatic outlook on issues.

Recently, Mr. Conklin was selected to attend the Council of State Government's prestigious "Toll Fellows Program."

## *Ms. Carole Vilardo*

Ms. Carole Vilardo is currently President of the Nevada Taxpayers Association (www.nevadataxpayers.org) and has a significant history and involvement with Nevada tax issues and related policies. Ms. Vilardo is a regular contributor to State committees analyzing tax and budget issues as well as local government entities.

The Nevada Taxpayers Association (NTA) is member of the National Taxpayers Conference and the Governmental Research Association. Established in 1922, NTA is a statewide, non-profit and non-partisan Nevada Corporation. NTA serves as a source of significant publications and resources to policy makers, taxpayers and others.

Note: This report is designed solely to facilitate public discussion of the issue. Although accuracy was strived for, the validity of assumptions is subject to the reliability of the cited sources and materials. Thus, we highly encourage other analyses to more completely develop this topic for public discussion.

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# Executive Summary

Nevada, like many states, has rediscovered a rather fundamental truth of the nature of state revenue systems, namely that a historically positive long-term growth rate in revenues does not insure planned services on an annual basis. Unfortunately, much popular discussion and overly broad rhetoric in Nevada has missed the basic underlying causes of the current (negative) variation in revenues.

The primary purpose of this study is to address the structural short-run dynamics and long-run dynamics of the Nevada tax system in order to provide a framework for public policy discussion. Specifically, information is provided for the first time on actual magnitudes of short-run volatility and long-run growth potential of major Nevada tax sources.

The reason for this focus on the underlying dynamics of the tax system is that Nevada's current fiscal crisis, given planned expenditures, is based upon revenue declines during a downturn in the business cycle. This situation is, of course, not unique to Nevada. Thus:

- How volatile are major Nevada revenue sources in the short-run with changes in the business cycle, volatility that abstracts from longer term trends?
- Moving forward in the years ahead, what type of long-run growth potential do major revenue sources appear to have given changes in the structure of the Nevada economy?

- Is there a tradeoff between short-run volatility and long-run growth in Nevada taxes that are major revenue sources?

As documented in this report, recent events help explain the need for Nevada policymakers to be aware of these issues:

- Nevada is similar to most states in that they currently face a fiscal crisis. More importantly, these states have a disparate set of tax revenues and funding mechanisms. Thus, there is no "magic" tax or lack thereof that can explain the current fiscal situation. Not only do most states (including Nevada) currently have budget deficits or expect to do so by 2010 but it appears that more states will join their ranks as the end of the year approaches.
- Unfortunately, simple measures of tax variability for Nevada entangle both short-run volatility and variation in long-run trends. These measures cannot explain either Nevada revenue volatility or fiscal problems in other states such as the well-known state fiscal crises of the first few years of the 1990's, the fiscal crises of many states in 2001, the slow pace of state revenue recovery in many states over the period 2003 to 2005 and a continuation of the above issues with current problems of the majority of states.

The specific estimates of both the short-run volatility and long-run growth of major sources of Nevada revenues within our dynamic economy presented in this report suggest several observations.

General Observations:

- Growth and variability in the major tax instruments of Nevada are actually two separate issues. Each issue requires attention at the policy making level. It is easy to assume in times of a major economic slowdown that slow or falling revenue growth is the culprit of volatility and raising the absolute level of revenue through increased taxation is the solution. Unfortunately, as this research has shown, all Nevada tax revenues are tied to the economy and react to it in varying degrees. Simply raising the rate of a specific tax or taxes does not necessarily reduce the volatility of revenue and to assume so is a major mistake inconsistent with the Nevada data. The absolute level of taxation necessary to

provide required services and an appropriate quality of life for Nevada residents is an important discussion but one that needs to be disentangled from the issue of volatility.

- Volatility of state revenues over the business cycle such as the recent experience in Nevada implies that a reexamination of the appropriate rules governing "rainy day" funds is appropriate in order to provide a more flexible policy response to fiscal stabilization.

Specific Observations:

Using modern tax elasticity models and base level data on tax revenue sources, we have analyzed the four primary taxes in the state's general revenue fund. We observe:

- Gaming Revenue is a tax instrument that consistently exhibits long-run growth which lags State economic growth and changes in the composition of the Nevada economy. While it's relatively low volatility to the State business cycle does have a stabilizing effect on the general revenue fund, it is more volatile to the national business cycle and thus to economic influences outside Nevada. Unless a policy decision is made to continually reexamine the level of the tax, the base of the tax, or a combination of these factors it does not match growth in the Nevada economy.

- Sales and use taxes and the MBT tend to generally match growth in the Nevada economy over time and tend to exhibit "average" volatility with the business cycle. However, in so doing, these sources do not provide additional, or new, revenue beyond a level consistent with Nevada's economic growth. The long- run growth of the insurance premium tax does outpace general State growth and, in addition, it does exhibit very low volatility over the business cycle. However, it is a tax on insurance products which are generally seen as positive for businesses and households to maintain.

This report provides estimates of revenue elasticities for several other tax instruments as well. These include two major sources of tax revenues, property taxes and motor fuel taxes.

It is important to note that these two major tax sources are generally not directly associated with the Nevada General Fund and reflect actual historical revenues as opposed to base level performance.

- Historically, property taxes as a revenue source have shown good growth and been largely stable. As a revenue source, property taxes outpace growth in the Nevada economy and, as

a general statement, increase about 10% faster than the State economy. Cyclical increases and decreases in property tax revenue closely follow the Nevada business cycle. Property taxes serve as important sources of funding for schools and local jurisdictions in Nevada rather than the General Fund.

- As a revenue mechanism, the motor fuels tax appears to follow the growth of the economy. The long-run growth tends to track the Nevada economy. This is a specific tax which is levied as cents per gallon, not as a percentage of retail prices. It also tends to have very low volatility over the business cycle. Except for a quite small amount, motor fuel taxes are not part of the General Fund but rather are directly earmarked to the State highway fund. This tax may be affected in the future with both increased fuel efficiency and alternative fuel vehicles.

This report also provides information on the growth of fees and other non-tax revenues within Nevada as well as simple summaries of revenues and expenditures of local jurisdictions within Southern Nevada. In Nevada, state and local taxes are so intertwined that it is difficult to separate the two in any meaningful discussion of Nevada taxes. This is due to the fact that Nevada is classified as a "Dillon Rule" state where local taxing authority is not independent of legislative action. Thus, local jurisdictions in Nevada face significant constraints in the methods they may use to raise revenue.

As shown, local jurisdictions provide a wide range of services to residents within their communities. Thus, local governments not only provide local services to residents but also both extend and complement State services.

The scale on which these services are provided in Southern Nevada is often not appreciated given the concentration of State population residing in Southern Nevada of approximately 72%. For example, Clark County is the largest government entity in Clark County, with the Unicorporated County representing an estimated 42% of the population of the county as of July 1, 2007. Thus, Clark County revenues were in excess of 5 billion dollars for the fiscal year ended June 30, 2007 ($5,124,698,039) including all accounts such as the general fund and non-general fund.

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# I. Introduction

Nevada, like many states, has rediscovered a rather fundamental truth of the nature of state revenue systems, namely that a historically positive long-term growth rate in revenues does not insure planned services on an annual basis. Unfortunately, much popular discussion and overly broad rhetoric in Nevada has missed the basic underlying causes of the current (negative) variation in revenues.

The primary purpose of this study is to address the structural short-run dynamics and long-run dynamics of the Nevada tax system in order to provide a framework for public policy discussion.[1] Specifically, information is provided for the first time on actual magnitudes of short-run volatility and long-run growth potential of major Nevada tax sources.

In this regard, this report provides policy makers with specific estimates of both the short-run and long-run variation of major sources of Nevada revenues within our dynamic economy. The reason for this focus on the underlying dynamics of the tax system is that Nevada's current fiscal crisis,

[1] Our explicit goal in this study is to present these issues in a nonpolitical manner. Our interest is in the actual dynamics of the Nevada tax system independent of rhetoric. Thus our citations to prior studies, think tanks, and organizations include a range of the political spectrum (as conservative, liberal, Democratic, Republican, various combinations, etc.) when, in our opinion, there exists a valid empirical observation. The original research presented in this report is absolutely and unambiguously that of TRI and its research associates and is not influenced by any political perspective or any other organization which has one.

given planned expenditures, is based upon revenue declines during a downturn in the business cycle. This situation is, of course, not unique to Nevada. Thus,

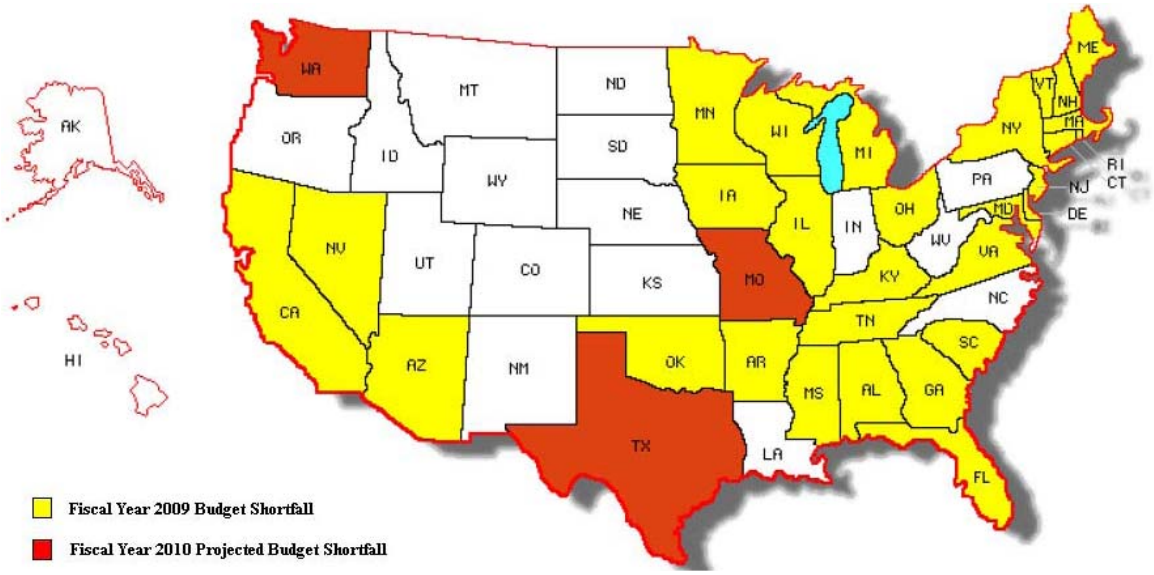
- How volatile are major Nevada revenue sources in the short-run with change in the business cycle, volatility that abstracts from longer term trends?
- Moving forward in the years ahead, what type of long-run growth potential do major revenue sources appear to have given changes in the structure of the Nevada economy?
- Is there a tradeoff between short-run volatility and long-run growth in Nevada taxes that are major revenue sources?

Three examples help explain the need for Nevada policymakers to be aware of these issues.

First, Nevada is similar to most states in that a majority of states currently face a current fiscal crisis. More importantly, these states have a disparate set of tax revenues and funding mechanisms. Thus, there is no "magic" tax or lack thereof that can explain the current fiscal situation. As shown in Figure I-1, 32 states (including Nevada) currently have budget deficits or expect to do so by 2010. It appears that more states will join their ranks as the end of the year approaches.

## FIGURE I-1

**States Facing Budget Gaps in FY2009 and States Projected to Have Budget Shortfalls in FY2010**




Eight states have forecasted budget deficits exceeding 9.0% of planned expenditures and are shown in Table I-1.

## TABLE I-1

**Size of FY2009 Budget Gaps**

| State | Amount | Percent of FY2008 General Fund |
|---|---|---|
| Alabama | $784 million | 9.2% |
| Arizona | $1.9 billion | 17.8% |
| California[1,2] | $22.2 billion | 21.3% |
| Florida | $3.4 billion | 11.0% |
| Nevada | $898 million | 13.5% |
| New Jersey | $2.5 - $3.5 billion | 7.6 - 10.6% |
| New York | $4.9 billion | 9.1% |
| Rhode Island | $430 million | 12.6% |

1. The stability of the recently adopted budget for FY2009 has been questioned.
2. In a special session earlier this year, California adopted measures to close $7.0 billion of this shortfall. A gap of $15.2 billion remained to be closed. Assumes that FY08 gap would have carried over to FY09.

Source: Center on Budget and Policy Priorities.

This table also helps illustrate the point that states with a wide array of tax mechanisms such as California are still facing cyclical variation. Some observers have suggested the simple notion that state revenue volatility can be addressed as if it were analogous to an investment portfolio.

Specifically, states can simply adopt the well-known principle of portfolio diversification where a range of stocks are held to minimize volatility at any point in time. The suggested notion is that, by analogy, states can add a tax here and a tax there to broaden the "tax portfolio" and volatility goes away.[2] For example, there is reasonable agreement that various major tax sources have different levels of volatility (such as lower volatility with a sales tax on all consumer purchases versus a sales tax which excludes groceries, the personal income tax versus business profits taxes).

However, the data above suggest that this is not necessarily the correct answer. Why not? The reason for the misunderstanding is because Nevada's fiscal crisis is similar to other states and is related to falling revenue from a business cycle downturn rather than general revenue fluctuations among different tax mechanisms. This is analogous to a diversified stock portfolio purchased at a Dow Jones Industrial Average (DJIA) of 14,000 trying to increase its value as the DJIA falls to 11,000 due to a recession. Hence, our emphasis on providing Nevada policy makers for the first time information on estimates of cyclical variability of major revenue sources and their short-run dynamics while recognizing the long-run dynamics.

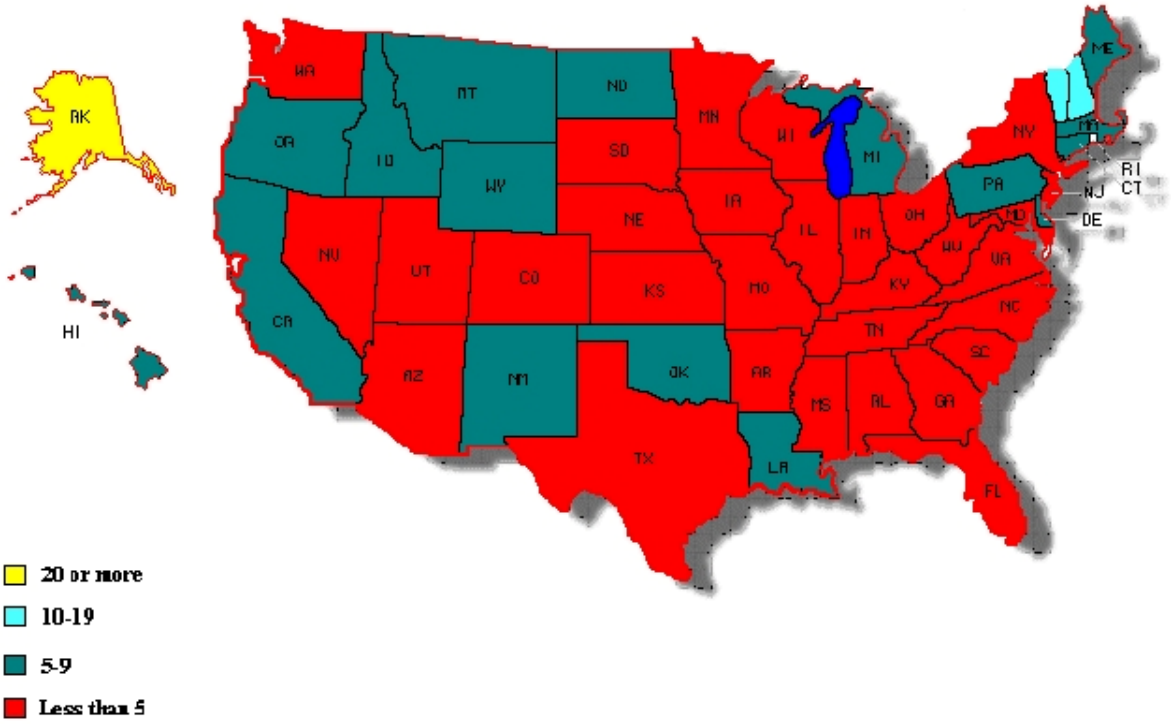
Second, simple (statistical) measures of tax variability entangle both short-run volatility and variation in long-run trends. Legions of college students in introductory statistics classes learn to compute averages, or means, of variables and explore variation through such measures as, for example, the standard deviation. As shown below for the period 1986 to 2005, the majority of states have quite stable measures (based upon a standard deviation of less than 5 percent) of year-to-year changes in per capita state government revenues.

[2] Clearly any single revenue source with high variability that was designated to fund a specific single program would be not recommended. In this respect, tax diversification for the specific program is an obvious correct principle. If combined with relatively stable funding sources, the high variability revenue source would cause fewer problems in revenue forecasting. However, during a recession most major sources of state revenues tend to be under pressure and even diversified investor portfolios will fluctuate with overall market conditions related to the economy.

FIGURE I-2

**Swinging Revenues**

**Standard deviation of year-to-year percentage changes in real per capita state government tax revenue, 1986 to 2005 (larger values indicate more volatility)**




Source: Governing.com.

However upon reflection, how does this measure reflect a series of state fiscal problems over this period? Over this period, there has occurred:

- The well-known state fiscal crises of the first few years of the 1990's
- The fiscal crises of many states in 2001
- The slow pace of state revenue recovery in many states over the period 2003 to 2005 and
- A continuation of the above with current problems of the majority of states

This historical record certainly does not seem consistent with the data shown above. What is going on? As noted, the period 1986 to 2005 experienced both long-term trends in the economy with structural change and, in addition, short-run volatility in the economy as well. Simple measures of so-called stability hide two separate issues, namely the short-run dynamics and long-run dynamics

of state tax systems. Thus, new information on the dynamic nature of the Nevada tax system is provided for Nevada policy makers in this report.

Third, Nevada policy makers need to be aware that simple discussions of so-called "stability" are often provided without a frame of reference and can be manipulated to alter results relatively easily.[3] A simple example will illustrate the potential for misinformation. Suppose that we have a tax system or revenue source that is of a known size, say **X.** Like all taxes or revenues dependent upon economic activity from consumers and businesses the tax or revenue stream is, of course subject to variability. Now suppose we add twice the number of payers into the system with similar characteristics as our first group and have a "new" tax system which is **2X.** The underlying economic behavior of the revenue source is, of course, exactly the same. However, simple statistical measures of variability or so-called "stability" will have increased simply because the size of the stream has increased.[4] However, this is not short-run volatility with a recognition of long-run trends that underlies current state fiscal crises. It thus provides little useful information for public policy.

In addition, in order to provide a frame of reference for the research results and background information, additional information is provided in this report. Thus, this report is organized as follows. In Section II, we present a set of observations on the Nevada tax system that are relevant for public policy discussion and are tied to our estimates of volatility in the Nevada tax system. Our research results on Nevada's short-run dynamics and long-run dynamics are presented in Section III. We also provide estimates of the increasing role of fees in Nevada as a source of government revenues in Section IV. Finally, summary data on the budgets of local government in Southern Nevada is shown in Section V for completeness of information.

[3] For example, as indicated in Figure I-2, Nevada is "stable". Yet, using various ratios, etc. from the same source, one can also say "Only Nevada, among the states heavily reliant on sales tax, had above-average volatility" (same source above). Thus, our conclusion is exactly what? The reader should also be aware that simple studies of the Nevada tax system may entangle gaming taxes with sales and use taxes or accidentally delete gaming taxes.

[4] The discussion above is based upon the straightforward concept that if we have a random variable **X** and make a new random variable **cX** then the standard deviation of the new variable is **c** times the standard deviation of **X** [or, alternatively, the variance of the new variable is **squared c** of the original variance].

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# II. Nevada Tax System: Observations on Internal Structure

The purpose of this section is to provide a series of observations on the allocation mechanism for taxes within Nevada's tax system that are relevant to the dynamic tax analysis addressed in this report.

Comprehensive overviews of the Nevada tax system are publicly available elsewhere as cited below. Thus, this section is not intended to cover accounting details but, as noted, to suggest major issues as a frame of reference for the exploration of dynamic aspects of Nevada's tax system. However, overall revenue summaries can be bit confusing between various State agencies. Thus, at the end of this section an overall statement of State of Nevada revenue sources and expenditures is provided as supporting data.

In our opinion, there are three general sources of recommended information for overviews of the Nevada tax system which are exhaustive and fully complement the observations presented here. These three sources are the publications of the Nevada Taxpayers Association (NTA), the annual report of the Nevada Department of Taxation, and the annual fiscal report of the Nevada

Controller.[1] In addition, a current snapshot of the general fund is maintained by the Nevada Division of Budget and Planning.[2]

Nevada revenues and taxes are not collected by a single administrative agency but are rather split among several administrative entities. For example, the Nevada Department of Taxation does not directly collect gaming fees and taxes, etc. Thus, overall revenue summaries can be bit confusing between various agencies since "total" revenue figures from different government agencies can vary considerably.[3] Thus, as noted, at the end of this section we provide an overall balance sheet of revenues, expenditures, and changes in fund balance for the Nevada accounts.

The purpose of the discussion below is to point out that there are always policy options for a given tax or revenue source unless, of course, there are constitutional provisions that are required to be met. Thus, how a specific tax or revenue source is utilized can be considered as dependent upon three dimensions. These three dimensions are:

- Designations to fund a specific program or programs,
- Designation to either a general fund or a specific fund, and
- Determining the specific allocation mechanism (or sharing) of any revenue source between the State and local jurisdictions. As noted below, this issue relates to the fact that local jurisdictions in Nevada face significant constraints in the methods they may use to raise revenue.

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[1] NTA has an excellent publication on the historical path of the Nevada tax system as well as current summaries in "Nevada Tax Facts 2007-2008" (regularly updated). Also highly recommended is NTA "Understanding Nevada's Property tax System" Other publications are available at the NTA publication section of the website (http://www.nevadataxpayers.org/). The Nevada Department of Taxation annual report (2007) has a lengthy but readable section on each of the individual taxes under its administrative responsibility. Specifically, see P. 17 through P.79 at (http://tax.state.nv.us/pubs.htm). The comprehensive annual financial report of the State Controller reports additional taxes and revenue sources not shown in the annual report of the Department of Taxation at (http://controller.nv.gov/).

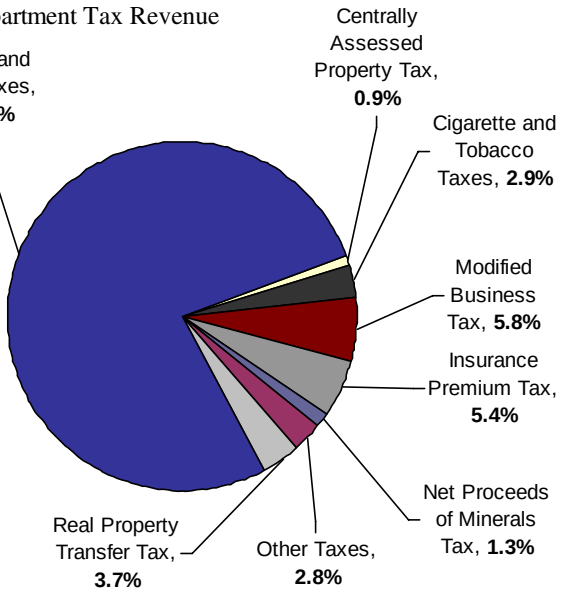
[2] The general fund snapshot is directly available at the website of the Nevada Division of Budget and Planning; the specific address is: (http://budget.state.nv.us/).

[3] For example, since most motor fuel taxes are allocated directly to the State highway fund, total collections will appear in the annual report of the State Controller but not as general revenue funds in the annual report of Nevada Department of Taxation.

## *State Government and Local Government Tax Revenues: The Joint Nature of Collection and Distribution*

As is well-known, Nevada is classified as a "Dillon Rule" state where local taxing authority is not independent of legislative action. As noted by the Nevada Taxpayers Association (NTA), revenue sources for local governments are set in statute through the legislative process or local governments can ask voters for approval (or the legislature) for the authority to impose a source of revenue or rate (2008, p.12).[4]

**FIGURE II-1.**
Total Department Tax Revenue



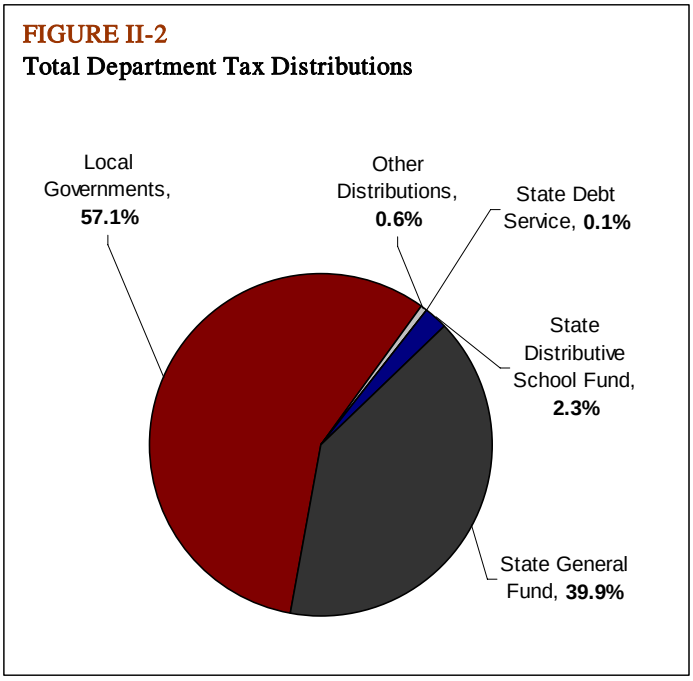

Source: State of Nevada Department of Taxation.

In Nevada, state and local taxes are so intertwined that it is difficult to separate the two in any meaningful discussion of Nevada taxes. For example, Figure II-1 illustrates the source of revenues collectively administered by the Nevada Department of Taxation. As shown, the largest single source of revenues is, not surprisingly, sales and use taxes. A reasonable assumption might be that these represented Nevada state government revenues.

[4] Tax and Budget Workshop Book, Las Vegas June 19, 2008 and Reno June 24, 2008, NTA. See the section titled "State and Local Budgets Part 1". This is in contrast to what are often termed "home rule" states. For purposes of disclosure, TRI is a member of NTA.

However, the majority of this revenue is not retained by the State but is rather administratively transferred to local jurisdictions. This allocation reflects, of course, the provision of required government services to local communities and residents by the local jurisdictions. Local governments not only provide local services to residents but also both extend and complement State services. As shown in Figure II-2, the majority of the total collection (57%) is not retained by the State but actually represents local jurisdictions revenues. The Nevada general fund itself is only allocated approximately 40% of the revenues.

**FIGURE II-2**
**Total Department Tax Distributions**




Source: State of Nevada Department of Taxation.

Thus, taxes collected by the State of Nevada may entail significant distribution to local governments and in some cases directly to the entity where the original transaction took place, for instance, local school support taxes. An example of the distribution of tax revenues within a given tax can be illustrated with the funding of schools in conjunction with sales taxes. For example, the "local school support tax" is a component of what we commonly know as "Sales and Use Tax".

The state portion of the sales tax (taxed at a rate of 2% on all taxable sales and taxable items of use) goes to the State General Fund. However, nearly all (99.25%) of the larger local school support tax revenue (taxed at a rate of 2.25% of taxable sales and taxable items of use) is distributed back to the school district within the county of origin (with the remaining .75% going to the General Fund).

**FIGURE II-3a**
**Sales and Use Tax Revenue**
Basic 2% on all taxable sales and taxable items of use

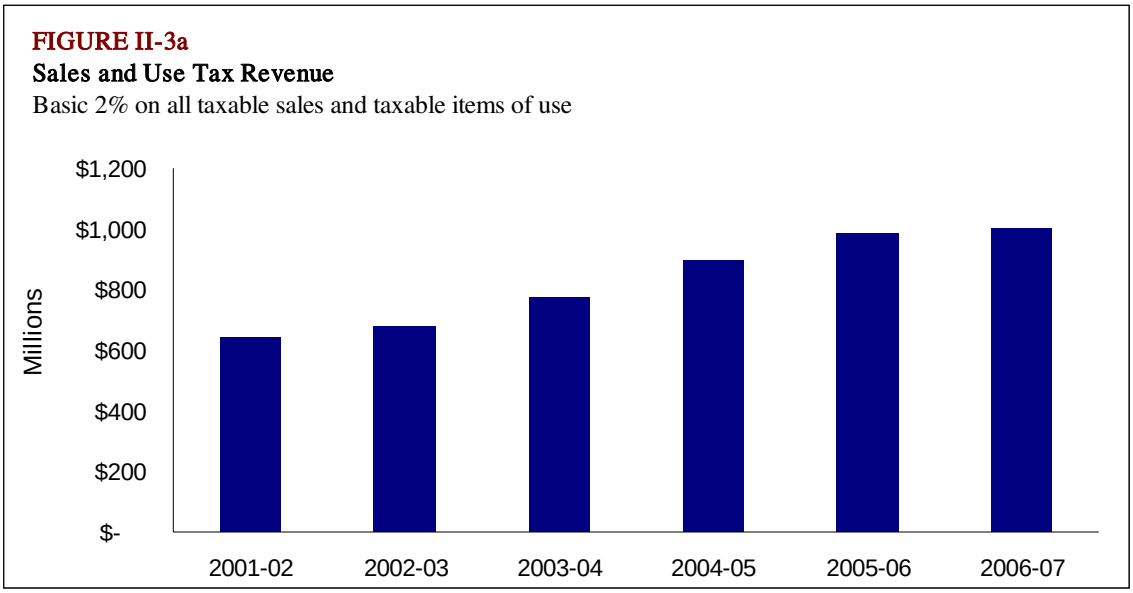
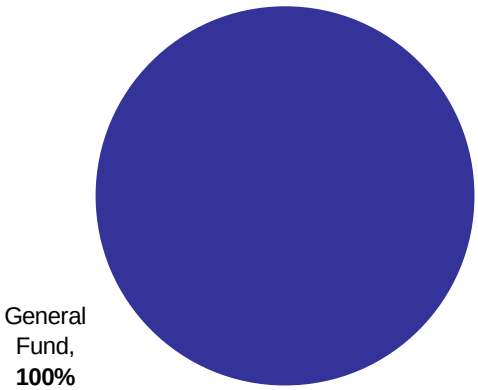



**FIGURE II-3b**
**Distribution of Sales and Use Tax Revenue**




Source: State of Nevada Department of Taxation.

Thus, the relative distribution is as follows:

**FIGURE II-4a**
**Local School Support Tax Revenue**
2.25% on all taxable sales and taxable items of use

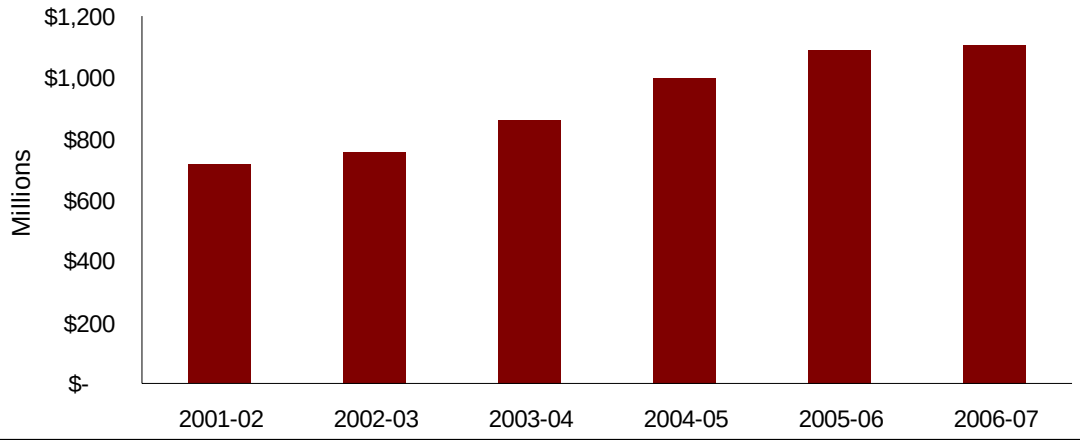
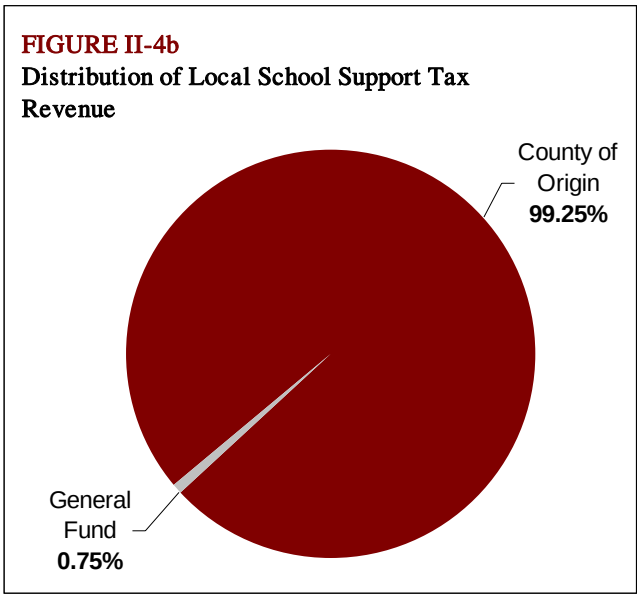


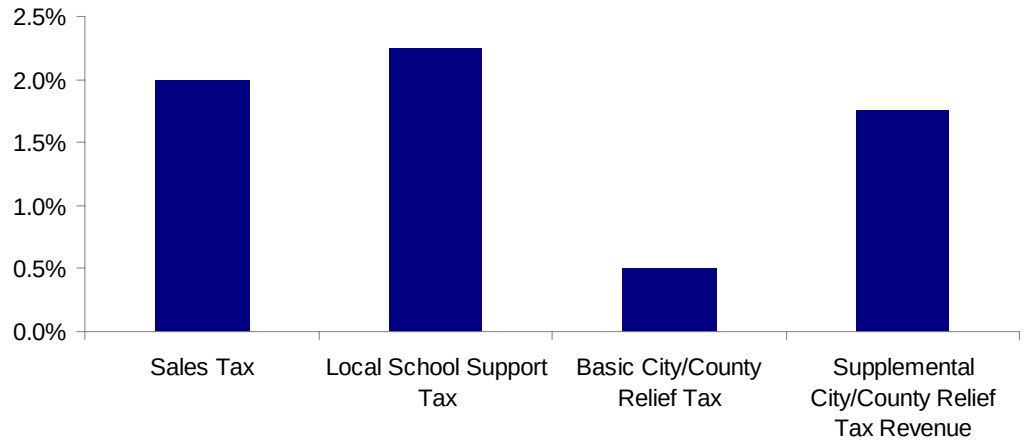

**FIGURE II-4b**
**Distribution of Local School Support Tax Revenue**




Source: State of Nevada Department of Taxation.

As shown, the State sales tax between these two components provides more of a school funding revenue source than a purely State sales tax. Figure II-5 shows all the components of the Minimum State Sales and Use Tax (without the options available at the local level).[5]

**FIGURE II-5**
**Components of Sales and Use Tax-Minimum Statewide Tax Rate = 6.5%**




Source: State of Nevada Department of Taxation.

The point of the above exercise is to show that the actual use of a State tax is not a fixed concept but is rather a possible source of policy change and changing emphasis based upon the legislative process (subject to constitutional provisions and voter initiatives). Thus, the specific composition of any Nevada tax remains a potentially fluid concept in the future.

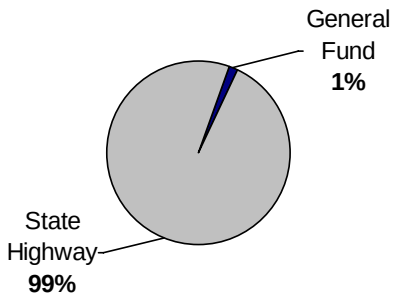
As an example of a tax or fee directed to a specific purpose or entity, the state motor vehicle fuel tax and special fuel taxes are distributed in this manner, where 99 percent of the State portion of the tax goes to the State Highways Fund (see Figure II-6). In addition to Federal Funds, this allocation provides for the maintenance, construction and regulation of public highways. In a perfect world, any specific revenue allocation matches State service requirements although, in practice, this may be difficult to attain.[6]

[5] For a list of local jurisdiction options, see NTA, op. cit. ,pp. 93-96.

[6] See the *Blue Ribbon Task Force to Evaluate Nevada Department of Transportation Long-Range Projects 2008-2015*, December 5, 2006.

The distribution mechanisms of revenues from taxes and fees and, in some instances, the instruments themselves can be governed by more than legislative (statue) authority. Provided on the next page in Table II-1 is a summary table of Nevada taxes that are subject to constitutional provisions, have major exemptions in their application, or have been earmarked to a specific purpose or purposes.

**FIGURE II-6**
**Motor and Special Fuel Taxes Distribution**




Note: Percentages above refer to the portion retained by the State (see NTA, op cit., p.24).
Source: State of Nevada Department of Taxation.

**TABLE II-1**
**Tax Instruments**

| | Constitutional Provisions | Major Exemptions | Earmarked |
|---|---|---|---|
| Aviation Fuel Tax | | | ✓ |
| Car Rental Tax | | | ✓ |
| Estate Tax "Pick-up"[1] | ✓ | | ✓ |
| Intoxicating Liquor Tax | | | ✓ |
| Motor Vehicle Taxes | | | ✓ |
| (Fuel & Governmental Services) | ✓ | | |
| Net Proceeds of Minerals | ✓ | | ✓ |
| Property Tax | ✓ | ✓ | ✓ |
| Real Property Transfer Tax | | | ✓ |
| Room Tax | | | ✓ |
| Sales Tax | ✓ | ✓ | ✓ |
| Slot Machine Excise Tax | | | ✓ |
| Tire Tax | | | ✓ |
| Universal Energy Charge | | ✓ | ✓ |

[1] The Federal Estate Tax was fully phased out in 2005. However, the Congressional legislation which created the phase out sunsets in 2010. If Congress does not re-authorize the phase out, the Federal Estate Tax will be reinstated
Source: Nevada Taxpayers Association.

Finally, in order to provide a basic overview of the basic revenue and expenditure patterns and functions of Nevada, the following statement of revenues, expenditures, and fund balances is provided in Table II-2 based upon the latest fiscal statements for fiscal year 2007.

One can see that Total Government Funds of approximately $6.7 Billion significantly exceed the revenues associated with the General Fund (of approximately $5.5 Billion). It is interesting to note that most debate in Nevada involves the smaller fund amount of the General Fund.

Total government expenditures were approximately $7.2 Billion of which approximately $5.2 Billion is associated with the General Fund. This resulted in an approximate $500 million deficiency of revenues over expenditures before inclusion of other financing sources. These additional sources are shown in the second half of Table II-2. Thus, fund balances decreased by about $56 million with a remaining fund balance of about $2.6 Billion.

## TABLE II-2

**Statement of Revenues, Expenditures and Changes in Fund Balances Government Funds**

| | General Fund | State Highway | Municipal Bond Bank | Consolidated Bond Interest and Redemption | Stabilize the Operations of State Government | Other Governmental Funds | Total Governmental Funds |
|---|---|---|---|---|---|---|---|
| **REVENUES** | | | | | | | |
| Gaming taxes, fees, licenses | $1,013,322,783 | | | | | $15,340,673 | $1,028,663,456 |
| Sales Taxes | 1,132,418,101 | | | | | | 1,132,418,101 |
| Modified Business Taxes | 278,952,602 | | | | | | 278,952,602 |
| Insurance Premium Taxes | 259,274,816 | | | | | | 259,274,816 |
| Property and transfer taxes | 120,374,961 | | | 154,038,931 | | 22,084,499 | 296,498,391 |
| Motor and special fuel taxes | 3,040,230 | 220,760,416 | | | | 76,381,573 | 300,182,219 |
| Other taxes | 305,536,124 | 20,908,818 | | | | 46,990,768 | 373,435,710 |
| Intergovernmental | 1,700,396,210 | 331,089,288 | | 18,822,732 | | 58,607,704 | 2,108,915,934 |
| Licenses, fees and permits | 212,700,365 | 185,564,162 | | | | 31,236,077 | 429,500,604 |
| Sales and charges for services | 56,291,687 | 25,549,133 | | | | 15,537,151 | 97,377,971 |
| Interest and Investment Income | 120,503,293 | 36,937,227 | 42,651,424 | 9,698,023 | 432,050 | 29,439,286 | 239,661,303 |
| Tobacco Settlement Income | | | | | | 37,351,364 | 37,351,364 |
| Land Sales | | | | | | 5,756,070 | 5,756,070 |
| Other | 54,525,626 | 23,495,761 | | 2,043,688 | | 11,021,007 | 91,086,082 |
| **Total Revenues** | 5,257,336,798 | 844,304,805 | 42,651,424 | 184,603,374 | 432,050 | 349,746,172 | 6,679,074,623 |
| **EXPENDITURES** | | | | | | | |
| Current: | | | | | | | |
| General government | 148,009,776 | 12,421,343 | 47,008 | 3,107,398 | 154,355 | 66,270,814 | 230,010,694 |
| Health and social services | 2,145,702,052 | | | | | 74,510,369 | 2,220,212,421 |
| Education and support services | 38,619,354 | | | | | 637,844 | 39,257,198 |
| Law, justice and public safety | 418,187,442 | 148,973,732 | | | | 16,439,622 | 583,600,796 |
| Regulation of business | 78,607,953 | | | | | 21,511,397 | 100,119,350 |
| Transportation | | 776,852,427 | | | | | 776,852,427 |
| Recreation and resource development | 117,645,250 | | | | | 26,599,813 | 144,245,063 |
| Intergovernmental | 2,278,032,900 | 47,617,814 | | 276,465 | | 176,294,991 | 2,502,222,170 |
| Capital outlay | | | | | | 71,998,835 | 71,998,835 |

TABLE II-2 (continued)

Statement of Revenues, Expenditures and Changes in Fund Balances Government Funds

| | General Fund | State Highway | Municipal Bond Bank | Consolidated Bond Interest and Redemption | Stabilize the Operations of State Government | Other Governmental Funds | Total Governmental Funds |
|---|---|---|---|---|---|---|---|
| Debt service: | | | | | | | |
| Principal | 481,929 | 828,826 | | 305,480,000 | | 41,280,913 | 348,071,668 |
| Interest, fiscal charges | 308,020 | 48,317 | | 107,482,904 | | 30,132,943 | 137,972,184 |
| Debt issuance costs | 171,776 | 744,039 | | 1,278,831 | | 971,840 | 3,166,486 |
| **Total expenditures** | 5,225,766,452 | 987,486,498 | 47,008 | 417,625,598 | 154,355 | 526,649,381 | 7,157,729,292 |
| Excess (deficiency) of revenues over expenditures | 31,570,348 | 143,181,693 | 42,604,416 | (233,022,224) | 277,695 | (176,903,209) | (478,654,669) |
| **OTHER FINANCING SOURCES (Uses)** | | | | | | | |
| Capital Leases | 8,486,832 | | | | | | 8,486,832 |
| Sale of general obligation bonds | 24,809,313 | 192,440,549 | | 987,102 | | 168,918,283 | 387,155,247 |
| Premium on general obligation bonds | 278,100 | 7,268,915 | | 3,985,967 | | 6,102,257 | 17,635,239 |
| Sale of certificates of participation | | | | | | 5,760,000 | 5,760,000 |
| Discount on certificates of participation | | | | | | (78,087) | (78,087) |
| Sale of capital assets | 632,158 | 2,968 | | | | 10,390 | 645,516 |
| Sale of general obligation refunding bonds | | | | 118,346,026 | | | 118,346,026 |
| Payment to refunded bond agent | | | | (122,039,659) | | | (122,039,659) |
| Transfers in | 92,458,535 | 708,712 | | 268,175,757 | 37,617,689 | 188,176,589 | 587,137,282 |
| Transfers out | (234,640,390) | (33,281,652) | (256,454,564) | (31,277) | (2,935,894) | (52,625,821) | (579,969,598) |
| **Total other financing sources** | (107,975,452) | 167,139,492 | (256,454,564) | 269,423,916 | 34,681,795 | 316,263,611 | 423,078,798 |
| Net change in fund balances | (76,405,104) | 23,957,799 | 213,850,148 | 36,401,692 | 34,959,490 | 139,380,402 | (55,555,869) |
| Fund balances, July 1 | 521,495,665 | 343,472,667 | 831,280,341 | 107,190,753 | 242,119,809 | 558,483,198 | 2,604,042,433 |
| **Fund balances, June 30** | **$445,090,561** | **$367,430,466** | **$617,430,193** | **$143,592,445** | **$277,079,299** | **$697,863,600** | **$2,548,486,564** |

Source: Nevada State Controller and State of Nevada Comprehensive Annual Financial Report, Fiscal Year Ended June 30, 2007.

THEODORE ROOSEVELT INSTITUTE

# III. Volatility and Growth: The Evidence for Nevada's Major Tax Instruments and Other Taxes

## *Introduction*

As noted, the primary purpose of this study is to address the structural short-run and long-run dynamics of the Nevada tax system in order to provide a framework for public policy discussion. Specifically, information is provided for the first time on actual magnitudes of short-run volatility and long-run growth potential of major Nevada tax sources. This is in contrast to simple discussions of so-called "stability" which are often provided without a frame of reference and can be manipulated to alter results relatively easily.

In this section, we provide specific estimates of both the short-run and long-run variation of major sources of Nevada revenues within our dynamic economy. It is our intention to demonstrate the value of such considerations in answering critical policy questions.

- How volatile are major Nevada revenue sources in the short-run with changes in the business cycle, volatility that abstracts from longer term trends?
- Moving forward in the years ahead, what type of long-run growth potential do major revenue sources appear to have given changes in the structure of the Nevada economy?

- Is there a tradeoff between short-run volatility and long-run growth in Nevada taxes that are major revenue sources?

Most discussions on taxes address traditional philosophical and policy issues such as equity and efficiency. These issues are the subject of much debate and focus on topics of fairness and income distribution. In essence, they are broad political questions in the purest sense and have been debated throughout the modern era.

Our concern is to address the far more practical matters of actual evidence on growth and volatility as they directly impact the budget process. Unlike the question of equity and efficiency, growth and volatility deals with issues associated with budgets and the ability of government to address its agenda with certainty through careful planning.[1] It is critically important for the reader to review the subsection titled "*How to Interpret the Estimates*".

## *Growth*

The impact of growth on tax policy and revenue structures is profound. As a society grows in both size and wealth, it often places increasing service demands upon it government. Thus, does a tax structure have a growth trajectory that meets the growing demands of its society? Included in any comprehensive discussion of growth should be the recognition of three factors: population growth, income growth, and inflation (Ulbrich, 2003). A tax revenue stream that meets these growth criteria will grow at a rate relatively equal to the rate of growth of these factors. Such a stream is usually highly reflective of the local economy as that will be where the population works, where the income is made and where costs reflect inflation in the broadest sense.

[1] We are not suggesting that equity and efficiency debates are not necessary. They are necessary. However, we are also suggesting that there are other inherent issues that have a significant impact on government's ability to address the needs of its constituents.

## *Volatility*

If growth represents the ability of tax revenue to keep pace with the overall increases in population, income and inflation, then volatility represent its deviation from that trend at any moment in time. Fundamentally, it is this volatility that creates historical cycle of state fiscal crises. Simply put, as the business cycle changes, so will tax revenue.

Volatility is the extent to which the tax revenue is affected by small changes in growth in the short run. While growth deals with the ability of government to keep pace with the demands of society, volatility deals with cash flow. Tax revenue that closely follows the business cycle will increase/decrease at the same rate the business cycle does in each time period measured. The more volatile tax revenue is, the larger the change is relative the business cycle change. The less volatile tax revenue is, the smaller the change is relative to the business cycle change. Often this concept is called stability (in a true statistical sense) or cyclical volatility. For simplicity purposes, we will use the term volatility throughout this study.

## *Effects of Growth and Volatility*

While the concepts noted above are not complex and may even seem a bit obvious, the impact they have on government finance can be extreme. Imagine a government tax structure where the growth rate is half of the overall economic growth of the state economy, but the volatility is twice that of the business cycle rate. That is to say, imagine a revenue source that produces half that which is necessary to meet the needs of the people and having no idea when you will actually receive the money. How do you plan? How do you finance? What is your contingency plan? These standard questions become incredibly difficult to answer.

Thus, there is a critical need to provide measurement of the growth and volatility of tax revenues and tax bases. In this regard, this study provides new information on Nevada's major revenue sources.

## *Measuring Growth and Volatility*

For more than 50 years, economists have adapted what are termed "elasticity models" (i.e. how responsive is a specific tax to the economy) to measure the growth and volatility of taxes. All elasticity means is how responsive is a state tax to either change in the economy over time as the state economy changes (long-run estimates) or how responsive is the state tax to changes over the business cycle (short-run estimates).

Obviously, the ability to provide such estimates has been refined over time with advances in knowledge of how to measure trends and volatility. For example, how do you disentangle the two issues? Also, for example, how do you disentangle "normal" variation in the short run from the business cycle? A summary discussion of the methodology of our estimates is provided in the appendix at the end of this section. There is no reason to provide such details directly in this section. In summary, we use two distinct models.

The first measures growth by estimating the long-run elasticity of a tax against state income and national income. The second measures volatility by estimating the short-run elasticity using the same variables. The output of the model is interpreted as a 1% increase in state and national income results in a specific corresponding percentage increase in the tax revenue or base which may be less than 1%, a matching 1%, or greater than 1%.

## *How to Interpret the Long-Run and Short-Run Estimates*

Before presenting detailed results on Nevada's tax system, presented below is a guide to interpret the estimates of growth and volatility of the Nevada tax system.

### LONG-RUN GROWTH POTENTIAL AND ELASTICITY VALUES

**Elasticity Value**

**Less than 1:**

The specific tax provides a revenue stream that lags behind growth in the Nevada economy and its changing composition. Thus, as a long-term revenue source it lags behind the Nevada economy. If this is not an acceptable policy result, then there will be a continual stress to increase the tax rate, broaden the base, or a combination of the two factors.

**Equals 1 (or relatively close to 1):**

The specific tax is a revenue stream that matches (or equals) growth in the Nevada economy. Thus, as a long-term revenue source it keeps up with the Nevada economy. However, it does not provide any "extra" revenue stream beyond growth in Nevada's economy.

**Greater than 1:**

The specific tax is a source of future revenues that outpaces growth in the Nevada economy and its changing composition. Thus, relative to growth in the Nevada economy, the specific tax provides new revenue.

## SHORT-RUN VOLATILITY, THE BUSINESS CYCLE, AND ELASTICITY VALUES

### Elasticity Value

**Less than 1:**

The specific tax is a relatively non-volatile revenue stream that is among the most resistant to changes in the business cycle compared to other tax instruments. Thus, the tax will change somewhat with the business cycle but not as dramatically as either the business cycle itself or as other tax sources.

**Equals 1 (or relatively close to 1):**

The specific tax represents a revenue stream that matches (or equals) the volatility over the business cycle of the business cycle itself. Thus, as a short-term revenue source, it tends to keep pace with Nevada's business cycle but does not suffer any extraordinary unexpected swings.

**Greater than 1:**

The specific tax is a major source of volatility in Nevada's revenue steam over the business cycle. Thus, relative to fluctuations over the Nevada business cycle, the specific tax can experience potentially dramatic swings.

## *Results and Analysis*

Most analyses of state fiscal issues prefer, when possible, to use a measure of the relevant tax base rather than using a direct measurement of tax revenues per se.[2] Fortunately, reliable information on the tax base is available for the four major sources of state revenues within the general fund.[3] As is well-known, the four principal components of the general fund are the revenue instruments of gaming taxes and fees, sales and use taxes, the modified business tax (MBT), and the insurance premium tax.

Additionally, we will measure the tax elasticity of five additional taxes in the Nevada system of tax instruments using revenue elasticities. These five taxes are the property tax, alcoholic beverage tax, amusement tax, motor fuels tax, and the tobacco products tax.[4]

### A. RESULTS: THE "BIG FOUR" REVENUE SOURCES WITHIN THE GENERAL FUND

Estimates for the long-run elasticities and short-run elasticities of the four major revenue sources within the State's general fund are presented in Table III-1.

[2] Revenue elasticities are impacted not only by the behavior of the economic activity being taxed but also by the tax itself which can, of course, be altered over time. In the use of the tax base, it is the actual base of revenue being taxed as opposed to the tax revenue per se. This measurement removes policy consideration from its estimation and gives us only the behavior of the base revenue compared with the economy. Its value comes from the understanding that regardless of the actually tax policy, some sources of taxation are simply faster growing or more volatile than others. This measure helps us predict what our tax structure will yield in the future and what types of policies might be necessary to smooth out the volatility of peaks and troughs. The basic choice of method is often reliant on the availability of data and professional judgment on the reliability or measurement error of the relevant data series.

[3] The use of elasticity estimates are the best indicators of the fundamental economic trends impacting State tax instruments. However, they are not "perfectly precise" figures that can explain every monthly shift or quarterly change in a tax instrument. For example, at the national level, elasticity measurements of the national debt certainly could not predict the recent increase in the national debt exposure from the mortgage meltdown and government intervention.

[4] Definitions of categories from the Census for revenue are discussed in the appendix. In our opinion, amusement tax is a proxy for the gross gaming tax but it does appear to include the live entertainment tax.

TABLE III-1
Base Source Elasticities[5]

| Base Source | NV Long-Run | NV Short-Run | U.S. Short-Run |
|---|---|---|---|
| Gaming Tax Revenue | 0.594 | 0.499 | 0.947 |
| Taxable Sales | 0.963 | 0.950 | 1.797 |
| MBT | 0.965 | 0.964 | 1.188 |
| Insurance Premium | 1.257 | 0.430 | 1.016 |

Note: U.S. short-run data has been population adjusted.

### 1. Gaming Revenue

The gaming tax revenue stream over the long-run lags the changing Nevada economy. With a long-run elasticity of .594, gaming tax revenue grows approximately 40% slower than, for example, a 10% growth in the Nevada economy. While intuitively this may seem low, it appears consistent with changes in both the economy of Nevada and the growth of other activities (retailing, entertainment options, restaurants, etc.) within the casino industry itself.

First, gaming revenue is exclusively the revenue collected from the casino industry through gaming activities such as table games and slot machines. It is not a comprehensive measure of the casino industry and its overall hospitality function or total revenue stream. Second, the tourism industry as Nevada's major industry has diversified its products and growth in ancillary entertainment attractions, hospitality services, and retailing as alternative reasons for visitor trips to both Nevada and the casino sector. Third, any trend to successful diversification of the Nevada economy will be reflected in overall State growth but not necessarily gaming revenue per se as taxed through gaming taxes and fees.

In spite of such low growth, gaming revenue appears to be fairly stable in the sense that it moves with the Nevada business cycle, but with lower volatility. The short-run elasticity of .499 suggests that a change of 1% in the business cycle results in a change of .499% in gaming revenue. There is an obvious trade off here, low growth for low volatility.

[5] Elasticities with less predictability (with, in a statistical sense, larger standard errors) have been shaded in grey. Generally, prior studies suggest that larger standard errors indicate that the source of variability is not necessarily the business cycle but other less predictable or unknown factors. This observation is usually associated with short-run estimates. A trend exists but it is relatively unstable.

Comparing gaming revenue with the national economy reinforces the results above. Gaming revenue appears to closely follow the national business cycle, with a short-run elasticity of .947. Generally speaking, a 1% change in the national business cycle results in a .947% change in gaming revenue. This makes practical sense if we assume that a large portion of gaming win and related fees comes from discretionary spending from out of state visitors.

### 2. Taxable Sales

The long-run and short-run elasticities for taxable sales against the Nevada economy reflect values that appear to move closely with growth in the Nevada economy. The long-run elasticity of .963 demonstrates that taxable sales growth is fairly even with economic growth. Generally, it appears to be a good barometer of the Nevada economy. The short-run elasticity of .950 also demonstrates that taxable sales follow the cyclical changes in the business cycle at a rate of near one to one.

Results comparing taxable sales against the national economy provide additional information about the behavior of this base stream. The short-run elasticity of 1.797 is high. This is the most volatile base source for tax revenue that we measure and reflects, in part, the role of the national visitor base to our hospitality sector with associated purchases and expenditures of a wide range of goods and services. The results suggest that a 1% change in the business cycle produces a 1.8% change in taxable sales. Recent evidence of large shortfalls in sales tax revenues certainly gives some credibility to this volatility measure.

### 3. Modified Business Tax

Nevada's modified business tax as a tax instrument has a blend of growth and variability that makes it somewhat unusual. It behaves in some ways much like property tax in the sense that both growth and volatility are traded off for a predictable source. Against the Nevada economy, the long-run and short-run elasticities are .965 and .964 respectively. The growth rate is approximately equal to the growth rate of the economy, while the volatility of the base approximately mirrors the business cycle. This result should not be surprising at all. Employment is a key figure in any analysis of the economy and payroll is a function of employment. Furthermore, both income and inflation are encompassed in payroll as better producing jobs pay more and raises reflect competition and inflation in the market place.

Against the national economy the results are slightly different. The short-run elasticity is 1.188 suggesting slightly more volatility against the national business cycle. Again, this should not be surprising given our tourist driven economy. Some payroll will fluctuate with the business cycle as tourist fluctuates with it. However, the fluctuation is significantly smaller that the fluctuation seen in taxable sales.

#### 4. Insurance Premium

Insurance premiums present us with an entirely unique tax base. While the other bases we've evaluated demonstrate some trade-off between growth and variability, this base does not. Within the Nevada economy framework, the long-run elasticity is 1.257. While this base exhibits very good long-run growth potential, it also exhibits no consistent (statistical) volatility over the business cycle.[6] In general, it simply does not follow the business cycle with any significant traditional volatility. However, with the current outside influences of tight credit and foreclosures, it is experiencing a nontraditional volatility.

Considering the nature of insurance, this should make some economic sense. On the one hand, the cost and amount of insurance is on the rise and has been for some time with increased income and population. All the factors are there for this to be a good growth revenue stream. On the other hand, most insurance is not considered discretionary spending by the consumer. In fact, the incentive to have insurance in many cases is mandated by law or contract. Therefore, it is not surprising to see that this source does not consistently follow the business cycle. Elasticity results against the national business cycle reinforce this discussion.

### B. RESULTS: OTHER REVENUE SOURCES

Presented in Table III-2 are revenue elasticity results for five additional revenue instruments.[7] It is important to remember that tax revenue elasticities represent a historical performance of a tax including the effect of possible radical policy decisions made and implemented during the period being evaluated. Thus, the reader should be aware that some prior studies on a national basis of

[6] Refer to the weak significance of these results.

[7] As a statistical note, all long-run elasticities are highly significant under any specification for the Nevada economy. This is also true for measurement against the national economy except for alcoholic beverage taxes. For short-run elasticities, short-run elasticities among the two measures are both significant or for one measure except for the alcoholic beverage tax.

state tax elasticities have rendered results that are counterintuitive because of this feature. In the case of Nevada, this does not appear to be an issue.[8]

It is also important to note that consistent estimators of elasticity measurements are often difficult for so-called "sin taxes" as alcohol or tobacco, particularly over the short run when such taxes are a fixed fee or levied at wholesale rather than a percentage of retail price. In addition, data on motor fuel taxes can present estimation problems. Fortunately for Nevada, we are able to present below consistent long-run elasticity estimates for all four tax instruments. As discussed below, several (but not all) short-run elasticities have reliable estimates relative to the business cycle.

**TABLE III-2**
**Revenue versus Nevada Personal Income[9]**

| Revenue Source | NV Long-Run | NV Short-Run | U.S. Short-Run |
|---|---|---|---|
| Property Tax | 1.100 | 1.024 | 1.734 |
| Alcoholic Beverage Tax | 0.373 | 1.020 | 1.050 |
| Amusement Tax | 0.842 | 0.576 | 0.692 |
| Insurance Premium Tax | 1.126 | 0.783 | 1.822 |
| Motor Fuels Tax | 0.950 | -0.557 | -0.587 |
| Tobacco Product Tax | 0.877 | 0.621 | 1.829 |

Note: U.S. short-run data has been population adjusted.

### 1. Property Tax

Historically, this revenue source has shown good growth and been largely stable. Its comparative numbers relative to the Nevada economy are 1.100 in the long run and 1.024 in the short run. Generally, that means that property tax revenue increases about 10% faster than the economy and cyclical increases and decreases in property tax revenue closely follow the Nevada business cycle. A trend for second home ownership in Nevada where the owners are not counted in population increases augments this measure. In addition, the historical magnet of Nevada for in-migrants

[8] See the historical path of the Nevada tax system as outlined in NTA, op. cit. 2007-2008. For example, some tax may be thought to be very low growth but because of frequent annual rate increases it can appear to have elasticity near a value of 1.00. Additionally, annual frequent rate increases may cause increases or decreases to volatility depending on when they take effect. Increases that become effective during peaks add volatility while increases that become effective during troughs decrease volatility. In each case we will attempt to remind the reader of this potential but our statistical analysis of the five Nevada taxes presented here did not, in general, reveal such oddities.

[9] As noted previously, elasticities with less predictability (with, in a statistical sense, larger standard errors) have been shaded in grey. Generally, prior studies suggest that larger standard errors indicate that the source of variability is not necessarily the business cycle but other less predictable or unknown factors. This observation is usually associated with short-run estimates. A trend exists but it is relatively unstable.

during strong periods of economic growth and for retirement migration may give additional boosts to revenues.

The elasticity measure of property tax against the national economy is also shown for reference. The short-run measure of 1.734 is however, surprising. A tax that most public finance studies would consider the most stable appears volatile. This, of course, begs the question whether property values are volatile or the national business cycle may not be the most appropriate measure for a more localized housing market. We would submit the latter is most likely true.[10] It is possible that policies pertaining to the collection of property taxes are adding volatility to the measure. For example, if the perceived penalty for late payment is not substantial, property tax payments may fall during cycle declines. Then when the cycle turns up payments are made. This would add significantly to the cyclical volatility of this tax revenue when measured against the national business cycle.

### 2. Alcoholic Beverage Tax

The source of tax revenue is with the Nevada economy has a long-run elasticity of .373. Thus, this tax mechanism exhibits low growth. One plausible reason this could be is that alcoholic beverage taxation is not levied as a percentage of retail price. A specific tax is imposed as a flat amount on some unit of measurement. For example, sixteen cents per gallon of beer would be a specific tax.[11] Given the nature of a specific tax, increases in product price have no impact on the tax rate per se but only reductions in consumption. This would have a tendency to reduce the growth measurement of this tax revenue. Considering population considerations are rinsed from the data in the second measurement, this may be an expected result. The short-run elasticity suggests a weak near-one cyclical volatility to the revenue stream suggesting that the revenue from this tax closely follows the State business cycle.

[10] Recently, TRI Senior Scholars Thomas Boehm and Alan Schlottmann in a series of articles from 2007 to 2008 on the dynamics of housing markets over time have suggested that the traditional national business cycle is much less relevant than the regional economy with respect to housing markets. This is not surprising and in line with prior research on housing and property values. See *Cityscape: A Journal of Policy Development and Research*, 2007-2008.

[11] For a rate history of liquor taxes, see NTA, op. cit., p. 21.

### 3. Motor Fuels Tax

As a revenue mechanism, the motor fuels tax appears to follow the growth of the economy.[12] The long-run elasticity against the Nevada economy is .950. This relationship to state growth is near unitary. This is a specific tax which is levied as cents per gallon, not as a percentage of retail prices. This tax may be affected in the future with both increased fuel efficiency and alternative fuel vehicles.

### 4. Tobacco Products Tax

This is a "sin tax" exhibiting growth in the long-run which is less than state economic growth. Considering rate increases over the 30-year period and given the attempts to limit access and use of these products, we'd expect tobacco products to be a declining source for future revenue. An elasticity of .877 against the state economy demonstrates the low growth nature of this tax stream. Against the state economy, the cyclical nature of this revenue is very weak or the data suggests that this instrument doesn't follow the state business cycle at all. The short-run elasticity against the national business cycle suggests volatility (a measure of 1.829) but is only weakly significant.

## C. TRADE OFFS

### 1. Growth or Volatility

As discussed above, there is a potential tradeoff or policy tension of a tax instrument between growth and volatility. A simple graph of the base or revenue elasticities helps to illustrate this issue. The sloping line through the graph represents an exact trade off, where higher growth comes with higher volatility and lower growth comes with lower volatility. Those base sources that appear above the line have higher volatility and lower growth and those below the line have lower volatility and higher growth. Those near the line exhibit trade-offs, those farther away do not. This tradeoff is a critical aspect of policy analysis that should be recognized and discussed. As a practical matter, taxes with clear trade-offs present us with an interesting question. How much volatility are we willing to accept to insure that our revenue streams grow adequately? Conversely,

[12] The data series on motor fuel prices reflects dramatic price increases over the last two years. With the motor fuel tax set at a specified rate of cents per gallon, unless we arbitrarily removed data points, the short-run estimation techniques were relatively unstable. Thus, there is no estimate of short-run elasticities in the table above.

how much growth are we willing to give up insuring our revenue stream is less volatile? This is an issue for public policy to address.

Analyzing the two figures below, the base elasticities suggest there is a trade off for between volatility and growth for gaming, sales and MBT. The insurance premium tax, in contrast, behaves as though there is no trade off. Given the unique non-tax policy considerations for the insurance premium tax, we may elect to disregard this result and conclude that there does appear to be a trade off for the general fund bases. The revenue elasticities do not appear on or near the trade off line suggesting that while we must understand the base behaviors, tax policy itself could have impacts on the volatility and growth of each revenue stream.

FIGURE III-1
**Base Source Elasticities: Short-run vs. Long-run**

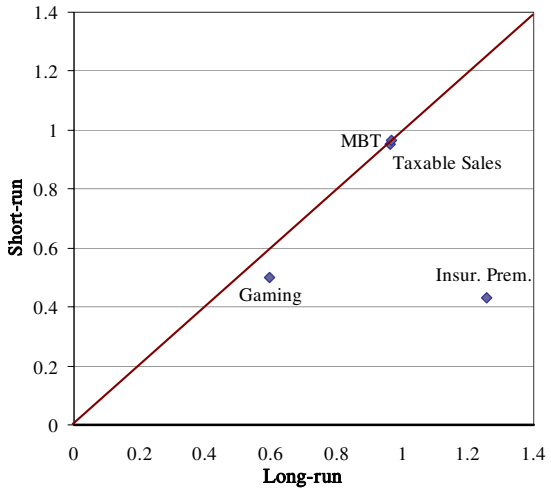
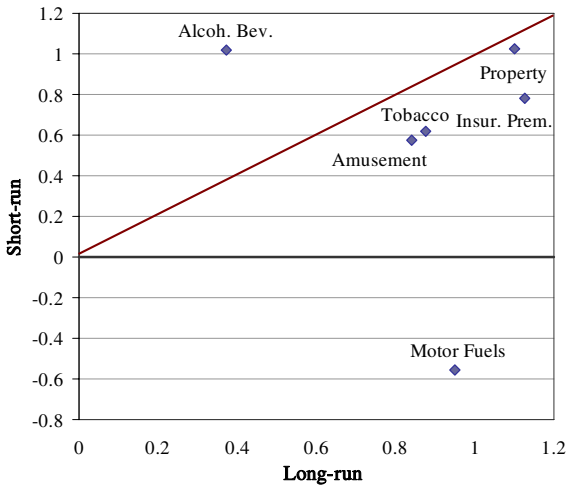



FIGURE III-2
**Revenue Source Elasticities: Short-run vs. Long-run**




## 2. Base Measurement versus Revenue Measurement

The reader is probably aware at this point that we've not discussed the Amusement Tax or Insurance Premium Tax from the revenue elasticities table. These were added to direct our attention to the potential impact of policy choices over time. To compare, we will use the Amusement Tax as a proxy for Gross Gaming Tax and Insurance Premium Tax as a proxy for the tax of the same name. There are several things we must keep in mind when comparing the revenue elasticities and base elasticities. First, the revenue elasticities are estimated using annual data over the past 30 years while base elasticities are estimated using quarterly data over the past 17 years. Any difference could be the result of a general economic increase or decline in the base over the

first 13 years of the revenue estimates or policy changes over the course of the 30 year period. We will discount shocks to the system at this point, since such an event would affect both the base and the revenue measurement. Second, from our perspective, the quarterly data provides a much richer and reliable set of data to investigate the dynamics of Nevada taxes.

### a. Gaming Tax

Comparing the Amusement Tax and Gaming Revenue elasticities provides us with some unusual insight. While the structure of this tax remains largely unchanged over the time period, the actual revenue performs better than the base. We offer two reasons for this to be the case. First, policy changes over the cycle have added both growth and variability to the actual revenue estimates. Consider a policy change of a tax increase. In a given year and every year after, the revenue will be higher for each period while the income variable remains on its current path. The shift in revenue, therefore, enhances the estimates upward. Second, gaming revenue relative to Nevada economy has been in decline for some time. Including data from the 1980 would tend to overstate the modern measurement of the elasticity giving us a false impression of a higher growth rate.

### b. Insurance Premium Tax

Unlike the gaming tax example, the Insurance Premium Tax revenue and base numbers are very similar. There appears to be a different trade off occurring in this revenue stream. The long-run elasticity from revenue to base is increasing, while the short-run elasticity is decreasing. Oddly enough, this does tell a believable story. If rates are rising, so would tax revenue which is evident in the base higher the revenue numbers given the more modern representation of the base. A possible disturbing explanation would be that as tax rates (and price) have increased, fewer people have purchased relative to economic growth and therefore the volatility continues to shrink. Why? As price sensitive consumers vacate the market, a larger percentage of purchases will be made by those abiding by statutory or contractual obligations as opposed to market conditions. Therefore, changes in the economy will be less likely to impact the purchase of insurance.

Traditional policy studies on taxes in Nevada have not adequately explored the long-run and short-run dynamics of the tax system. What we have attempted to show here is that there are, in fact, two distinct components to tax performance that we must consider prior to creating public policy. We

have demonstrated that both growth and variability must be considered if we are to have revenue that grows adequately and is, at a minimum, able to be forecasted with any degree of certainty. It is necessary to address both dimensions for public policy to meet the needs of Nevada over the long run. To address both without a thorough analysis of tax base behaviors could be disastrous.

# Appendix to Section III: Methodology & Reference Figures

## *DATA DISCUSSION*

There are three primary variables used in our analysis, tax revenue, tax base and income, and one secondary variable, population. Additionally, two procedures were used to adjust some of the data for analysis which requires disclosure.

### Tax Base

There are four primary tax bases evaluated in this study. They correspond to the four primary tax revenue sources for the State General Fund. The two largest tax bases are gaming revenue and taxable sales. Both data sets were proved by the Legislative Counsel Bureau's Fiscal Division and are quarterly data from 1990 to 2007. Insurance premium in Nevada was provided by the Nevada Division of Taxation and are quarterly data from 1997 to 2007. Finally, Nevada wage estimates were used to analyze the Modified Business Tax. These estimates were obtained from the wage estimates used in the Bureau of Economic Analysis' personal income measurements and are quarterly data from 1990 to 2007.

### Tax Revenue

The tax revenue data used are provided by the United States Census from State reports. It is annual data from 1977 to 2006. Included in the elasticity measurements are the aggregate groups Amusement Tax, Property Tax, Alcoholic Beverage Tax, Insurance Premium Tax, Motor Fuels Tax, and Tobacco Products Tax. It is important to note that several of the taxes include more than

one specific tax and each are measured as aggregated totals statewide from both local and state government.[13]

### Income

Since we compare Nevada's tax revenues and tax bases against both the Nevada and United States economies, two measurements are necessary. The Nevada economy is measured using Personal Income measurements from the Bureau of Economic Analysis (BEA). The United States economy is measured by Gross Domestic Product estimates also provided by the BEA. Annual data is used from 1977-2007. Quarterly estimates were available from 1990 to 2006 although at annual rates. This data was converted to quarterly data using level adjustments.

### Population

Population estimates for Nevada and United States were also retrieved from the Personal Income data provided by the BEA. These estimates were provided as annual amounts estimated at mid-year. In order to use the data with quarterly estimates, we estimated quarterly amounts using level growth rates by quarter.

Because of Nevada's high population growth over the past several decades, all data is converted to per capita values prior to comparing revenue or bases with national numbers. Without such an adjustment, all growth data would be grossly overstated as differences in population growth would be attributed to correlations with the economy.

### Seasonality and other adjustments

Quarterly data pulled from the BEA had been seasonally adjusted using the Census X-12 ARIMA model. To make all other quarterly data comparable, we also used the Census X-12 ARIMA model to seasonally adjust our data. This applies to all data under the "Tax Base" heading above excluding wage estimates which were provided by BEA and hence already adjusted. Additionally, all data is in nominal dollars to begin with. Real data series are derived by using a price index. There is no perfect price index series, with researchers choosing, in general, among a set of prominent price indices. This major set includes the Consumer Price Index (CPI), the Producer

[13] It is important to note that the census definitions are broader than the titles may suggest. Each is considered a proxy for purposes of this study. For exact Census definitions, please consult the following webpage: http://www.census.gov/govs/www/class_ch7_tax.html#t21.

Price Index (PPI), the Personal Consumption Expenditure index (PCE) and the GDP deflator. The empirical results reported in this study are insensitive to the specific price index chosen.

## *MODELING*

The purpose of this section is to briefly outline the methodological approach of the analysis. Although presented in a summary fashion, it represents the methodological approach developed over time in Hamilton (1994), Sobel and Holcome (1996), Bearse, Bozdogan, Schlottmann (1997), Sobel and Wagner (2003) and Bruce, Fox, Tuttle (2006).

The basic tax elasticity model was first introduced by Groves and Kahn (1952). It took the natural log of revenue regressed against the natural log of income to determine the income elasticity of tax revenue.

$$\ln (R_t) = \alpha + \beta \ln (Y_t) + \varepsilon_t \qquad (1)$$

While they used their model to look at actual revenue versus income, Sobel and Holcombe (1996) modify the model, replacing revenue $(R_t)$ with base $(B_t)$. Consider the following accounting identity.

$$\text{Tax Rate x Base} = \text{Tax Revenue} \qquad (2)$$

In this equation, Base refers to the content being taxes. For example, if we are evaluating sales tax, the base is taxable sales. Every tax rate has a base to which it is applied. Using the base allows us to measure the potential without having to deal with changes in tax rates over time. Additionally, growth and variability of the base will translate into the same for tax revenue if tax rates remain constant. Sobel and Holcombe (1996) make this adjustment in model (3) where **B** is the tax base and **Y** remains income.

$$\ln (B_t) = \alpha + \beta \ln (Y_t) + \varepsilon_t \qquad (3)$$

Additionally, more advanced time-series econometric techniques have been developed that add to the Groves and Kahn (1952) model. A well-accepted monograph in this area is that of Hamilton (1994). Sobel and Holcombe (1996) apply several techniques to improve the Groves and Kahn (1952) model. First, the non-stationary properties of most tax base and income data are such that the same model cannot be used for both long and short run. In the long run, non-stationary data is appropriate because we are measuring growth potential so we will use equation (3). This model shows that a 1% increase in income ($\mathbf{Y_t}$) is associated with a $\beta$% increase in the tax base ($\mathbf{B_t}$). In essence we are measuring the comparative growth potential of the tax base given a certain growth in income.

Concerns over a spurious regression result require us to evaluate the variables to ascertain their unit root behavior. Provided both variables behave like a unit-root, and the estimated error term of the regression does not behave like a unit root, we will have no trouble related to spurious regression results. While this procedure does allow us to co-integrate the variables into equation (3), there still may be some concerns over the level of exogeneity required to make strong inferences. Under the assumption of strict exogeneity, the covariance between $\mathbf{Y_t}$ and $\varepsilon_t$ is zero. That is income in this time period is uncorrelated with the error term in all periods.

Unfortunately, in the currently specified model, such an assumption may be too strong since we know that both variables have a similar trend. At best, we can assume that the covariance between $\mathbf{Y_t}$ and $\varepsilon_t$ is zero. Sobel and Holcombe (1996) fix this problem by using a Dynamic OLS process commonly referred to a leads and lags estimation. Estimating the error term using leads, lags and contemporaneous values of the change in income will pull out the correlations across time, allowing for a stronger strict exogeneity assumption for $\beta$. Conceptually, the error estimation model is

$$\varepsilon_t = \lambda + \delta_1 \Delta \ln (Y_{t+2}) + \delta_2 \Delta \ln (Y_{t+1}) + \delta_3 \Delta \ln (Y_t) + \delta_4 \Delta \ln (Y_{t-1}) + \delta_5 \Delta \ln (Y_{t-2}) + e_t \qquad (4)$$

Substituting the new error estimation into equation 3 produces a new long-run model, equation 5, that we can comfortably assume is strictly exogenous where the elasticity coefficient, $\beta$, unbiased and consistent.

$$\ln (B_t) = \alpha + \beta \ln (Y_t) + \delta_1 \Delta\ln (Y_{t+2}) + \delta_2 \Delta\ln (Y_{t+1}) + \delta_3 \Delta\ln (Y_t) + \delta_4 \Delta\ln (Y_{t-1}) + \delta_5 \Delta\ln (Y_{t-2}) + e_t \quad (5)$$

The exact number of leads and lags may vary based on the results of each regression. Methods related to this issue are outlined in Hamilton (1994) and Bruce et. al. (2006). If the lead and lag coefficients are statistically insignificant, then they will be dropped, leaving only the contemporaneous change in log of income variable, $\ln (Y_t)$. There may still be concerns that the error terms demonstrate some serial correlation, but that will be corrected with Newey-West standard error estimation.

In the short run, however, we are assessing the cyclical variation and the upward trends in our non-stationary data may bias our results as the bias with the cyclical variation measure. To solve this problem, Sobel and Holcombe (1996) run the Augmented Dickey-Fuller Test on each of our variables in the $\ln$ to make certain we are stationary for the short run. In that form, the new short-run model will be

$$\Delta\ln (B_t) = \alpha + \beta \Delta\ln (Y_t) + \varepsilon_t \quad (6)$$

Like the long-run model, this model shows that a 1% increase in income ($Y_t$) is associated with in a ($\beta$)% increase in the tax base ($B_t$). Because the variables are in first difference form, however, we are capturing the cyclical elasticity since the trend of both variables has been eradicated. Additionally, since the tax base and income variables have a long-run relationship with each other, they should tend to converge if they move too far apart. This convergence, a result of the long-run relationship, may bias the elasticity coefficient, $\beta$. The solution to this problem is the addition of an error correction term based on Engle and Granger (1987). They show that the addition of a lagged error term from the long-run model will show how far apart the variables were in the prior period, and the coefficient of the error correction term will show the propensity to convergence when the variables drift apart.

$$\Delta \ln (B_t) = \alpha + \beta \, \Delta \ln (Y_t) + \delta_1 \varepsilon_{t-1} + \mu_t \qquad (7)$$

Once the convergence problem is accounted for, the $\hat{a}$ will represent the true cyclical variation of the tax base around the business cycle. Recently, Bruce, Fox and Tuttle (2006) incorporate the above suggestions into a dynamic model of state personal taxes. Our estimation procedure is similar.

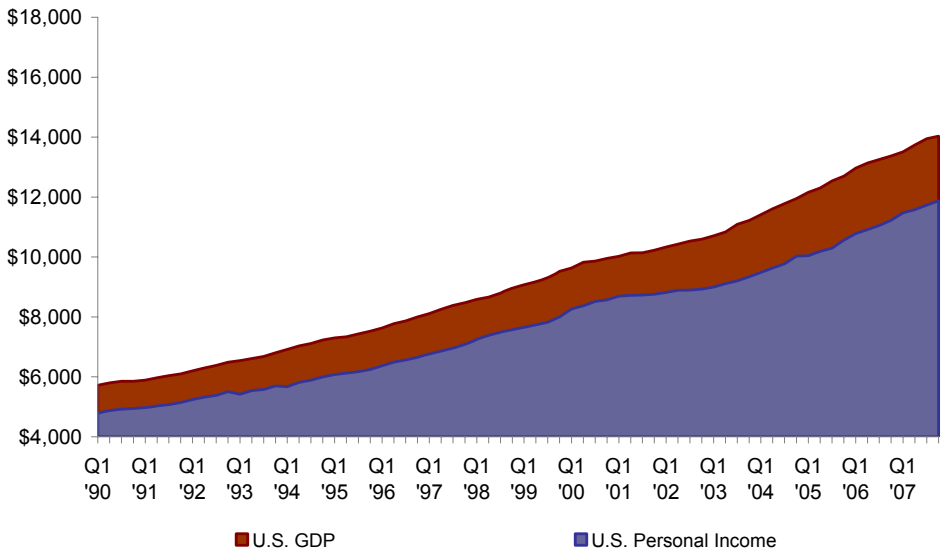
# *REFERENCE FIGURES*

## National and Local Business Cycle

The following charts present the national and local business cycles.

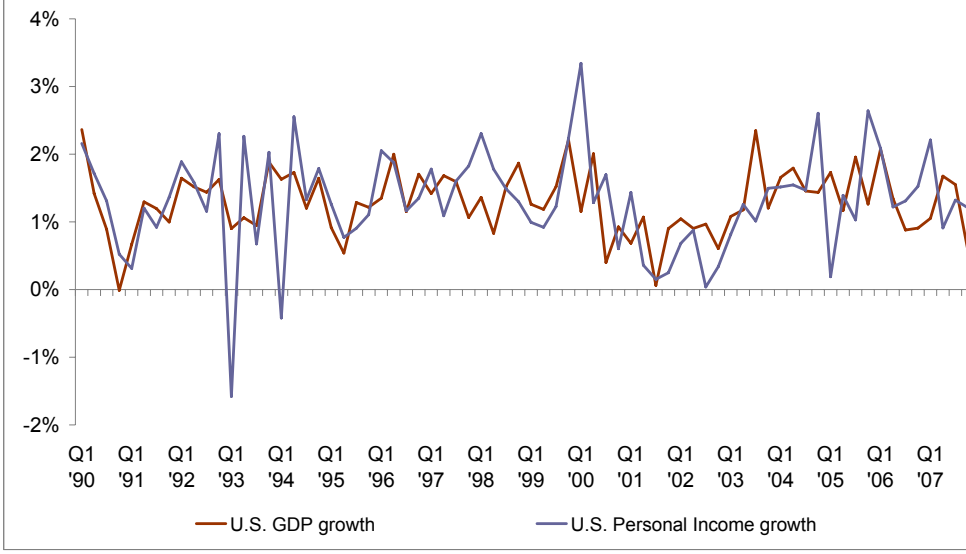
**U.S. GDP and U.S. Personal Income ($ billions): Q1 1990 - Q4 2007**

Personal income is the largest component of GDP and in the long run, they trend together.



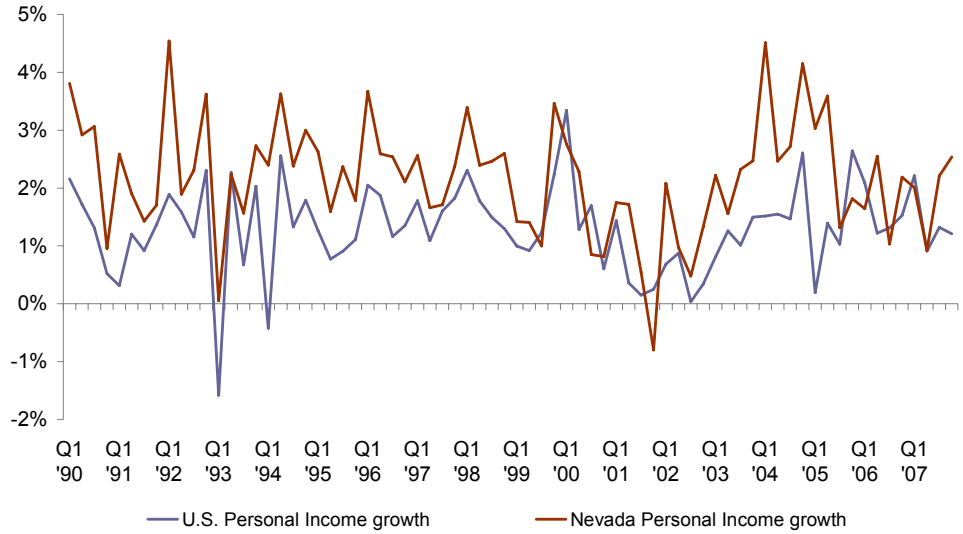

**Growth in U.S. GDP and U.S. Personal Income: Q1 1990 - Q4 2007**

In the short run, gross domestic product and personal income generally move together, making personal income a valid measurement of the business cycle.



**Growth in U.S. Personal Income and Nevada Personal Income: Q1 '90 - Q4 '07**

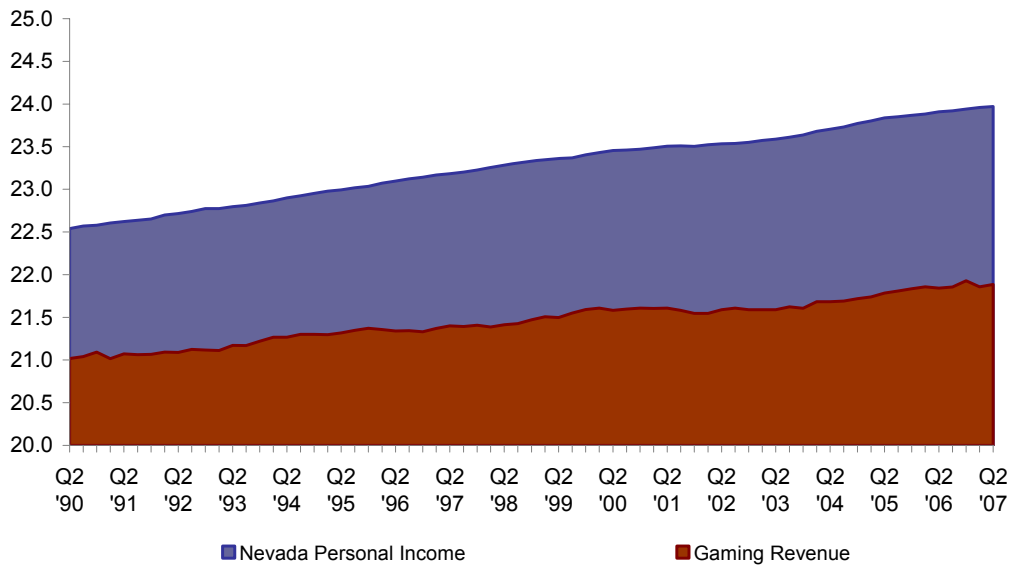
Nevada's personal income generally follows the national business cycle only at higher rates of growth.



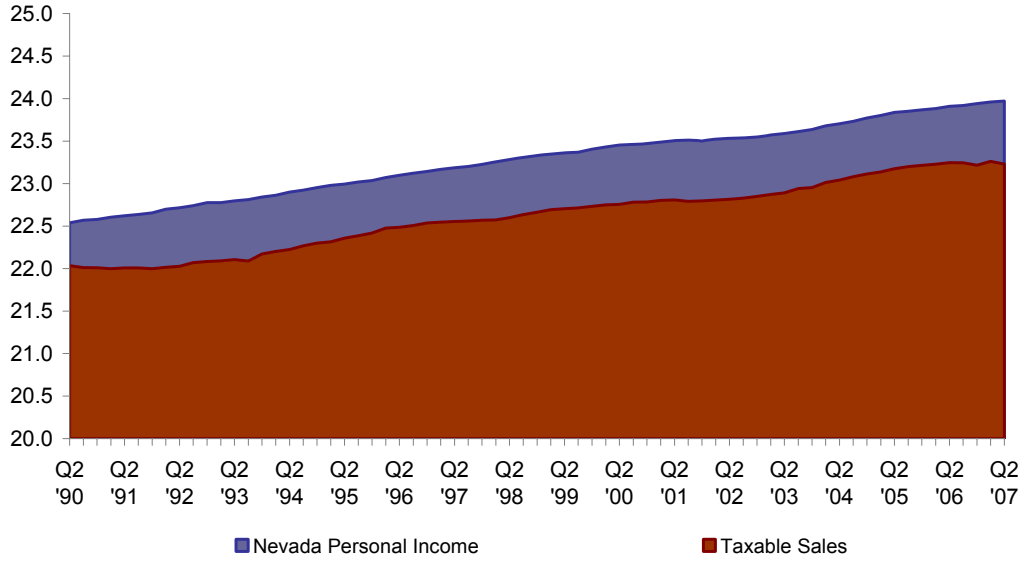
## Base Source

The following charts present long-run growth and short-run volatility for tax bases.

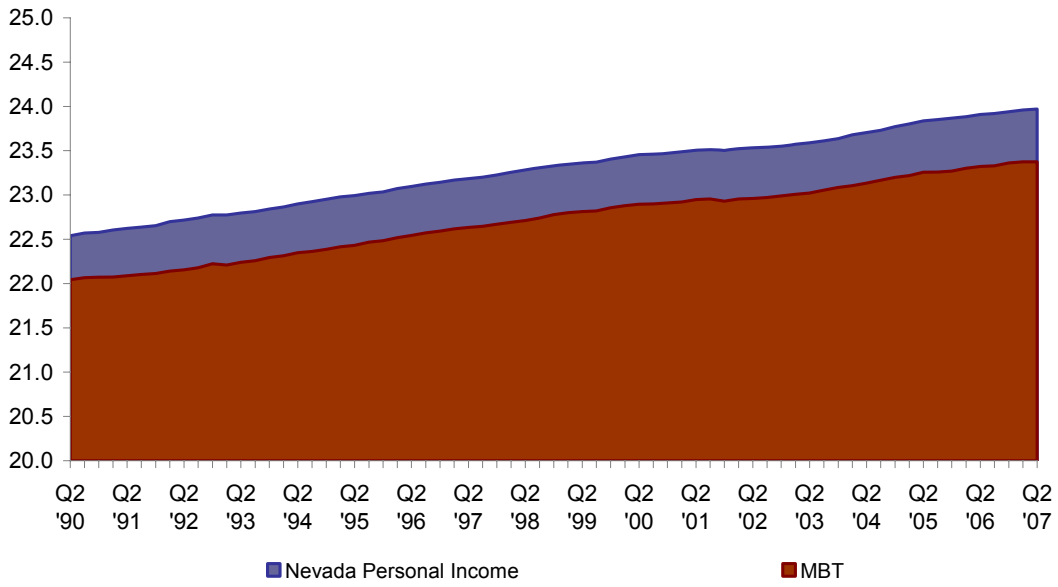
**Long-Run Growth in Gaming Base:**
**Q2 1990 - Q2 2007**
Over the long run, gaming revenue appears to grow at a slower rate than Nevada personal income.



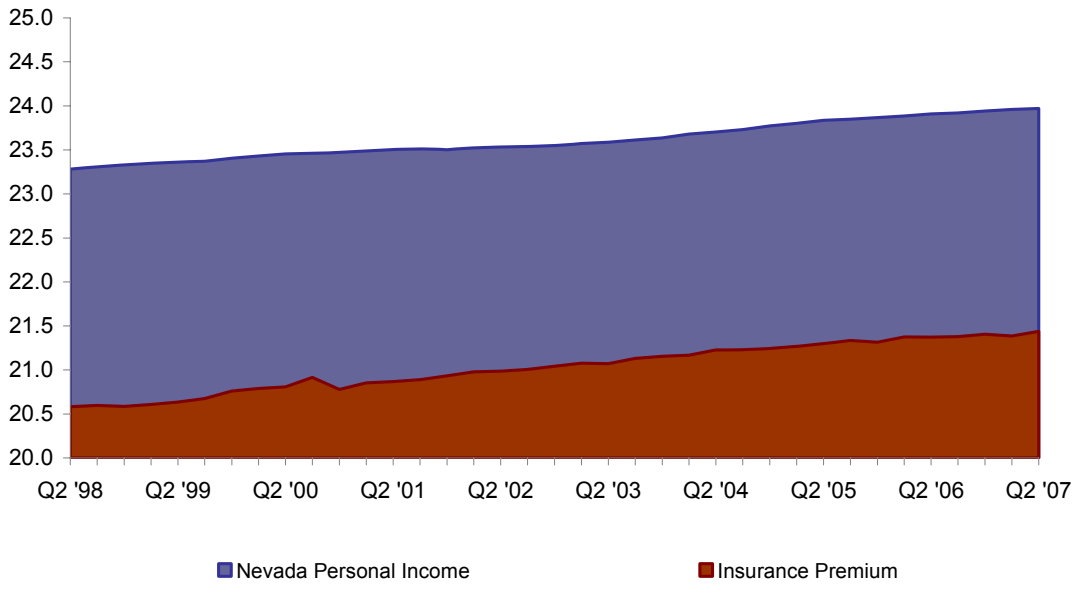

**Long-Run Growth in Taxable Sales Base:**
**Q2 1990 - Q2 2007**



**Long-Run Growth in Modified Business Tax Base:**
**Q2 1990 - Q2 2007**

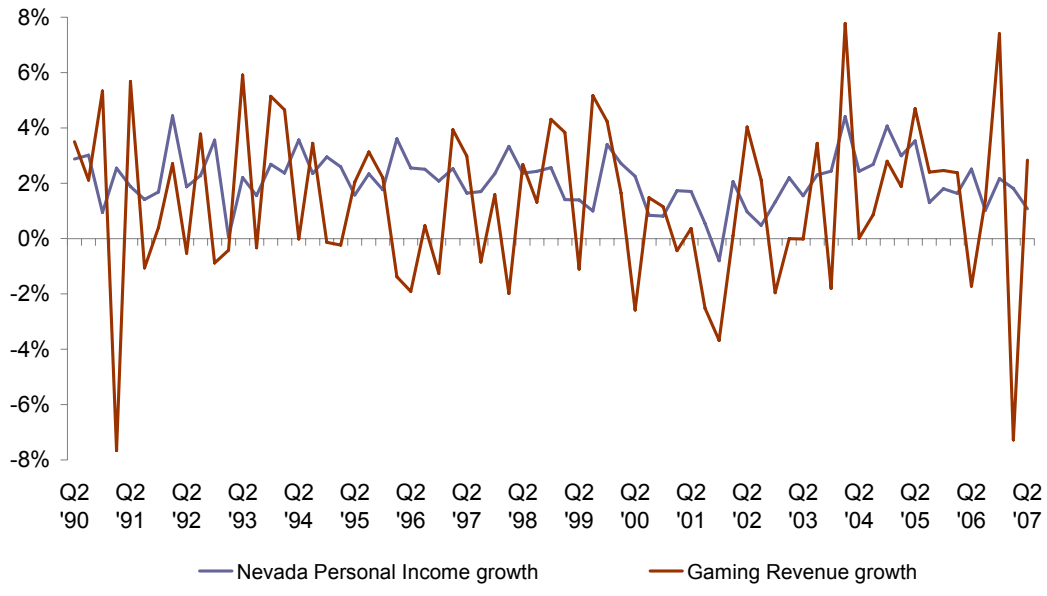



**Long-Run Growth in Insurance Premium Base:**
**Q2 1998 - Q2 2007**



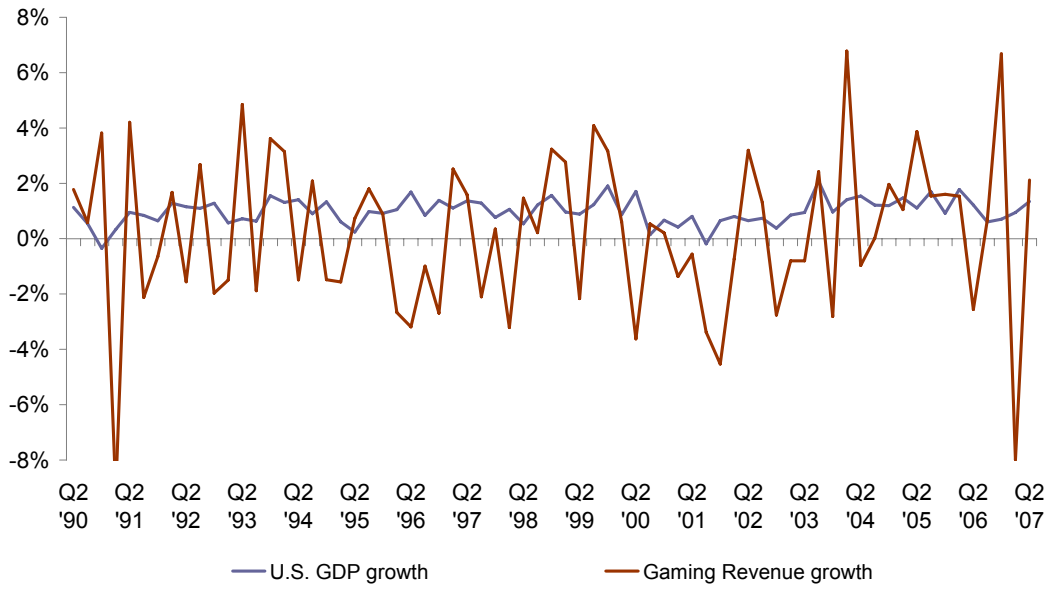
**Gaming Base Volatility: Q2 1990 - Q2 2007**

In the short run, gaming revenue appears to follow the Nevada business cycle but generally at lower rates of growth.

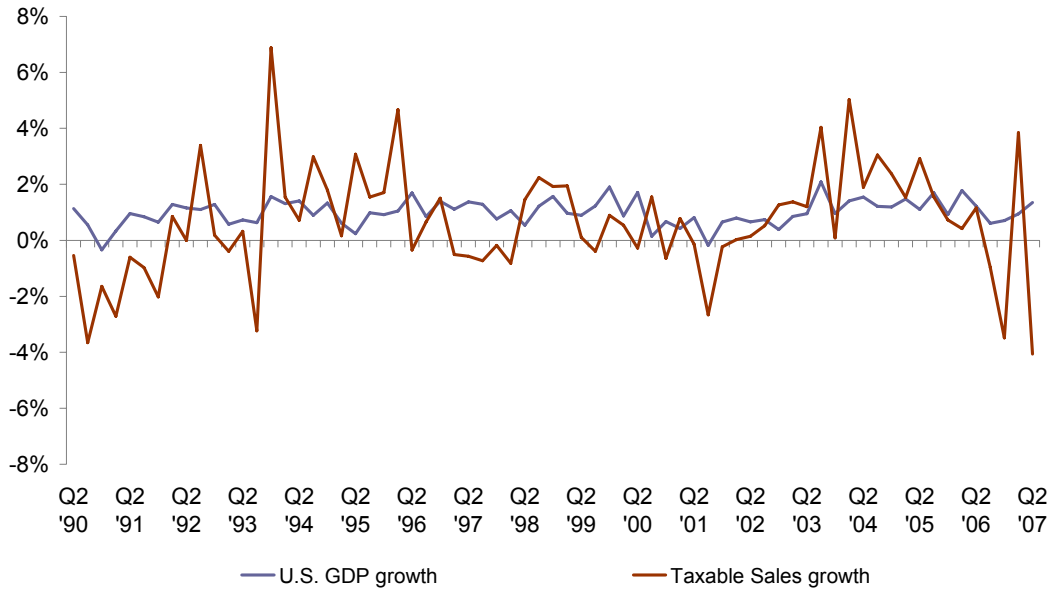



**Gaming Base Volatility: Q2 1990 - Q2 2007**

In the short run, gaming revenue appears to follow the national business cycle but at lower rates of growth.

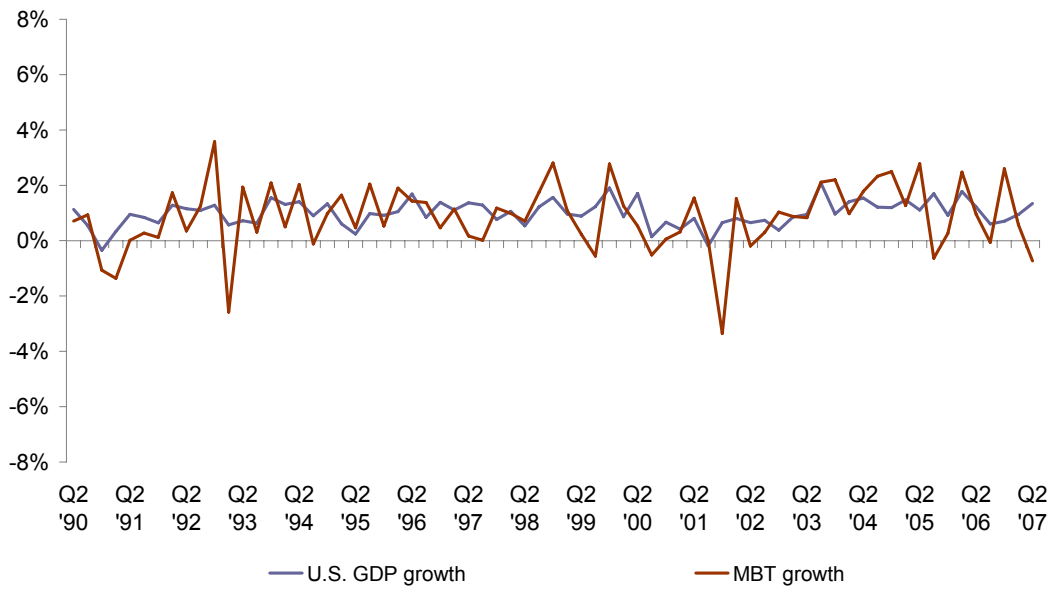


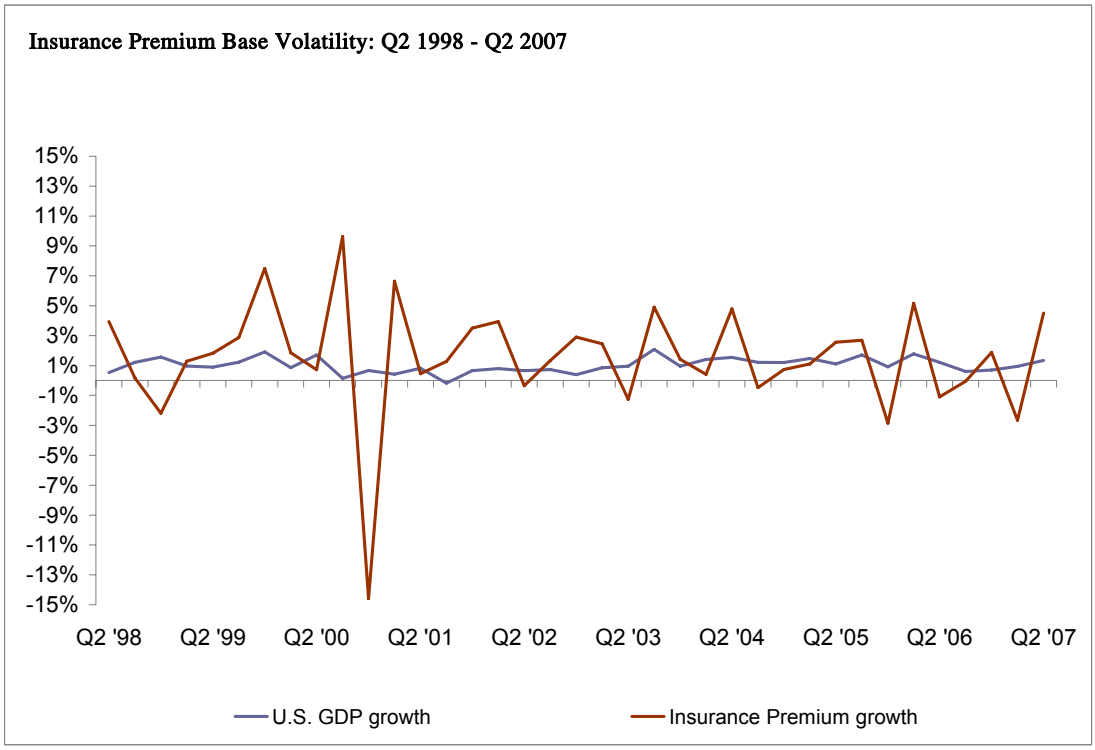
**Taxable Sales Base Volatility: Q2 1990 - Q2 2007**




**Modified Business Tax Base Volatility: Q2 1990 - Q2 2007**

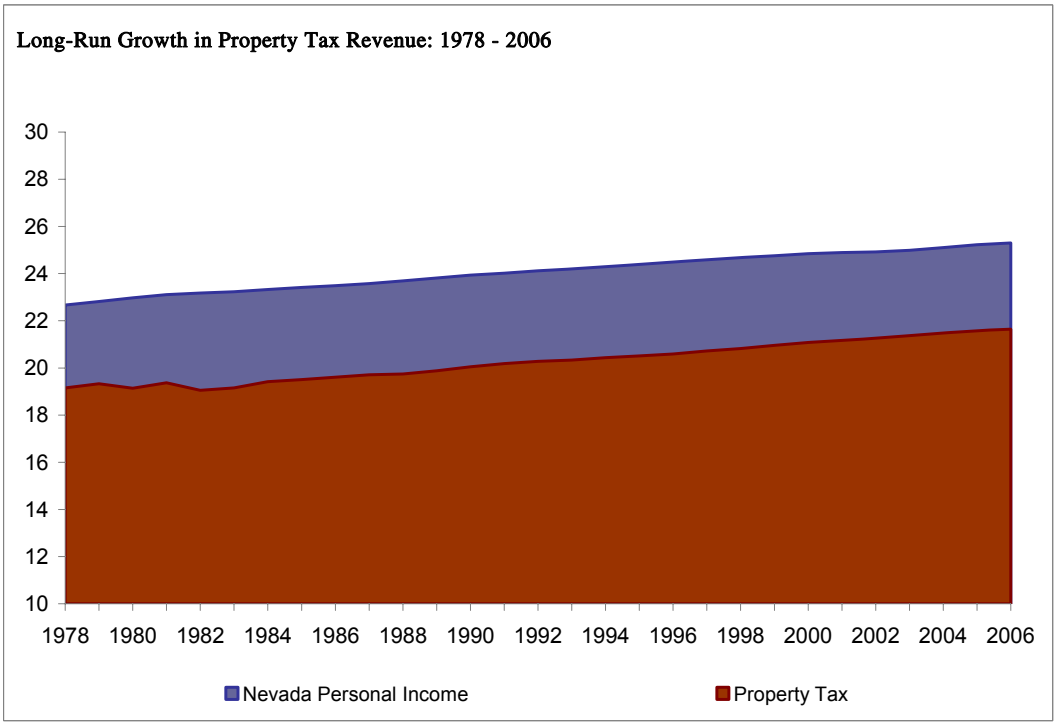
Generally, the MBT base appears to follow the national cycle with slightly higher growth rates in the short run.

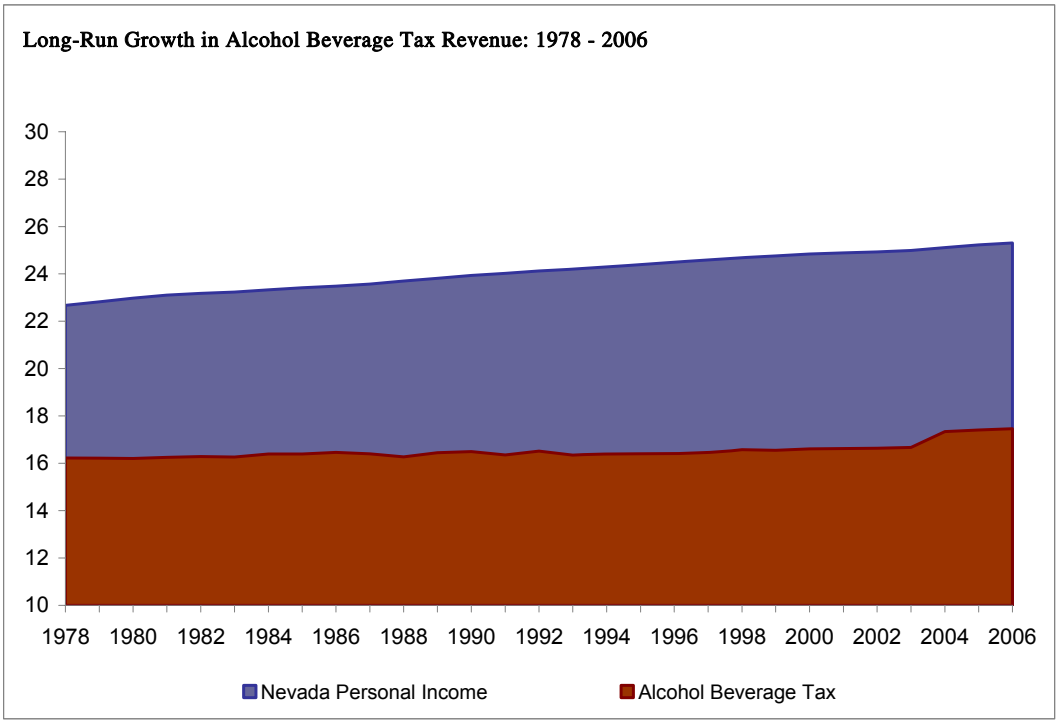


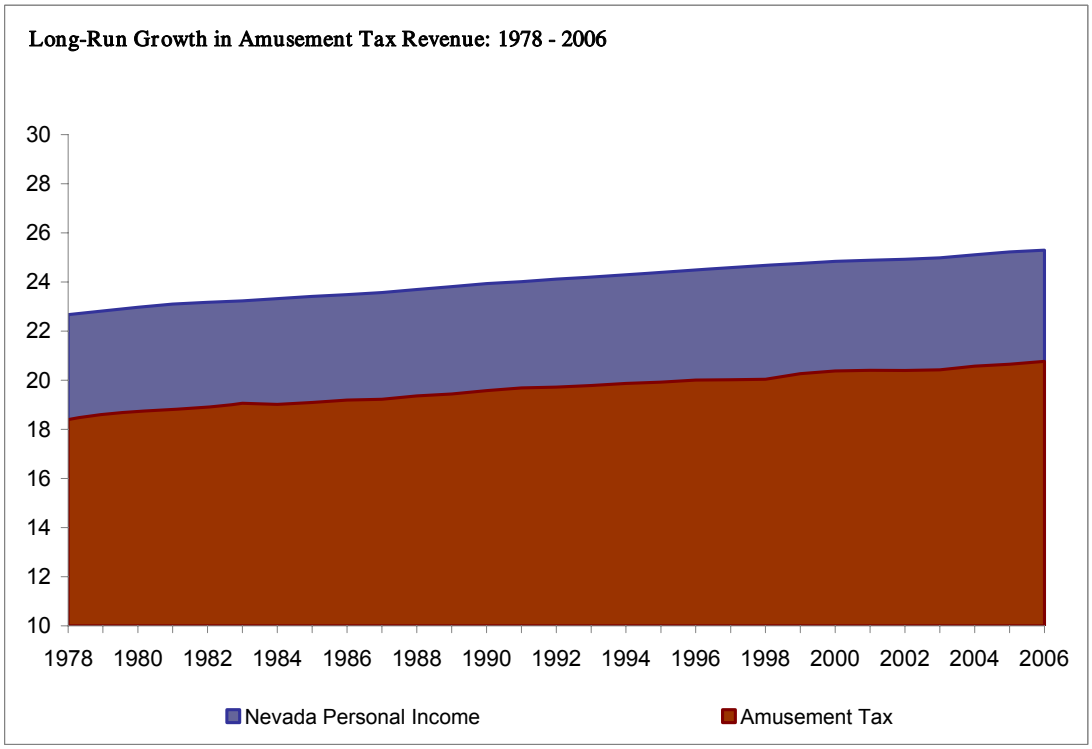

Insurance Premium Base Volatility: Q2 1998 - Q2 2007
15%
13%
11%
9%
7%
5%
3%
1%
-1%
-3%
-5%
-7%
-9%
-11%
-13%
-15%
Q2 '98
Q2 '99
Q2 '00
Q2 '01
Q2 '02
Q2 '03
Q2 '04
Q2 '05
Q2 '06
Q2 '07
U.S. GDP growth
Insurance Premium growth

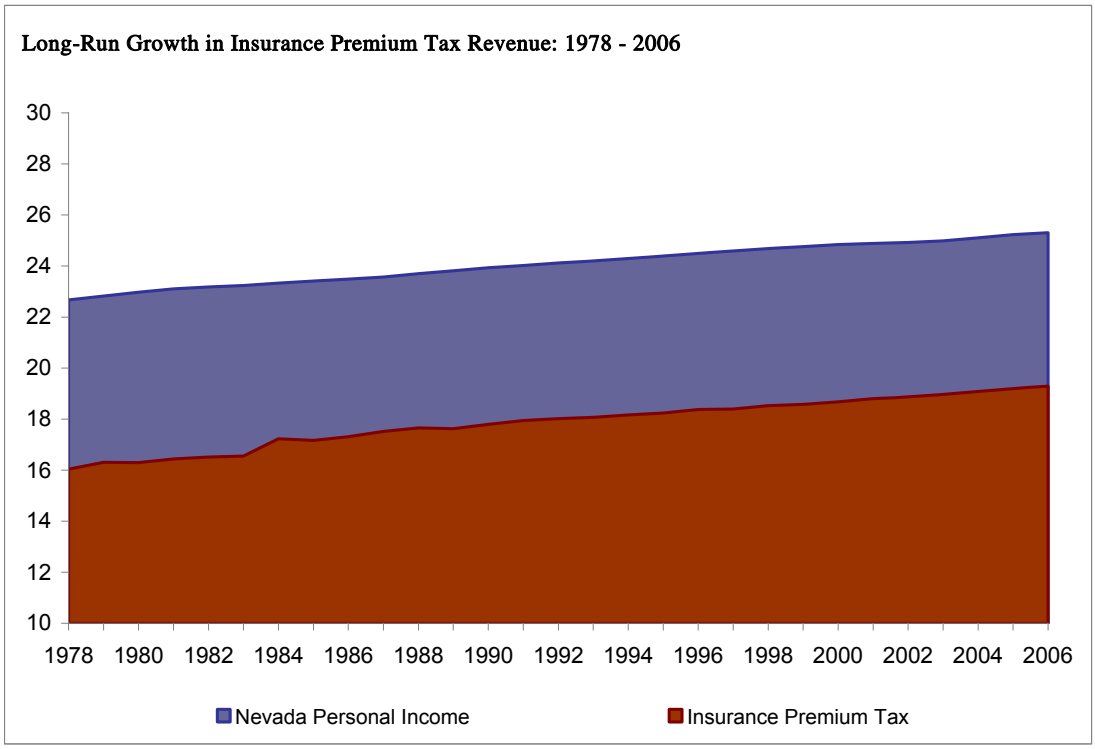
## Historical Revenue

The following charts present long-run growth and short-run volatility for tax revenues.

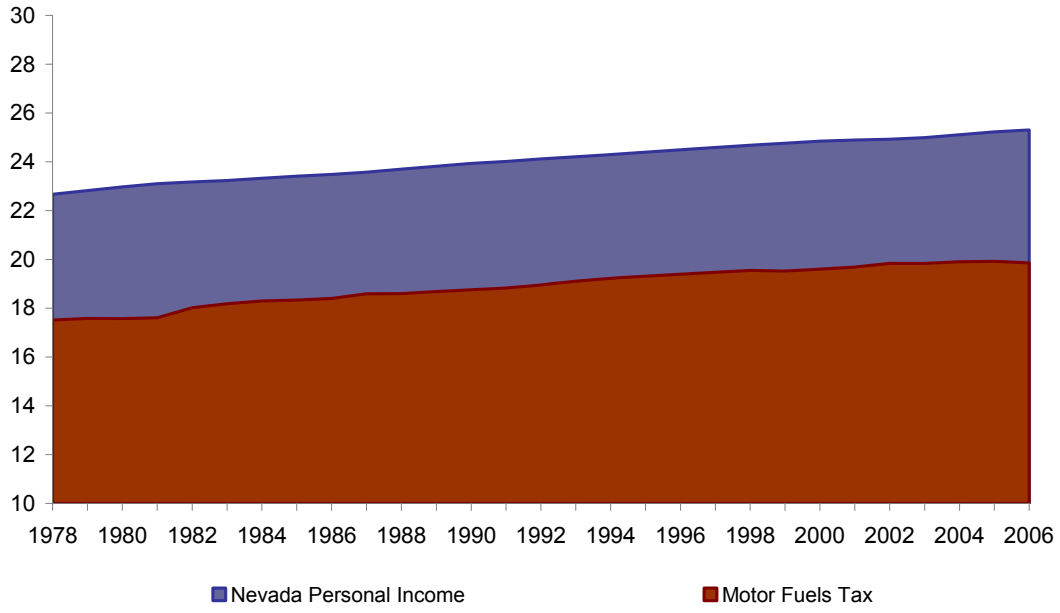


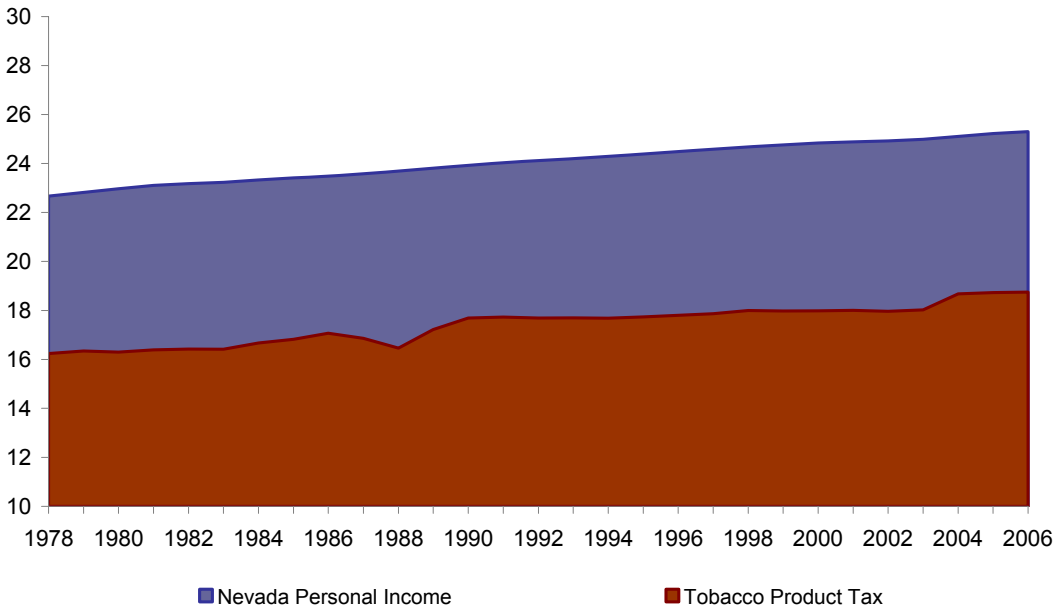

Long-Run Growth in Amusement Tax Revenue: 1978 - 2006
30
28
26
24
22
20
18
16
14
12
10
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
Nevada Personal Income
Amusement Tax

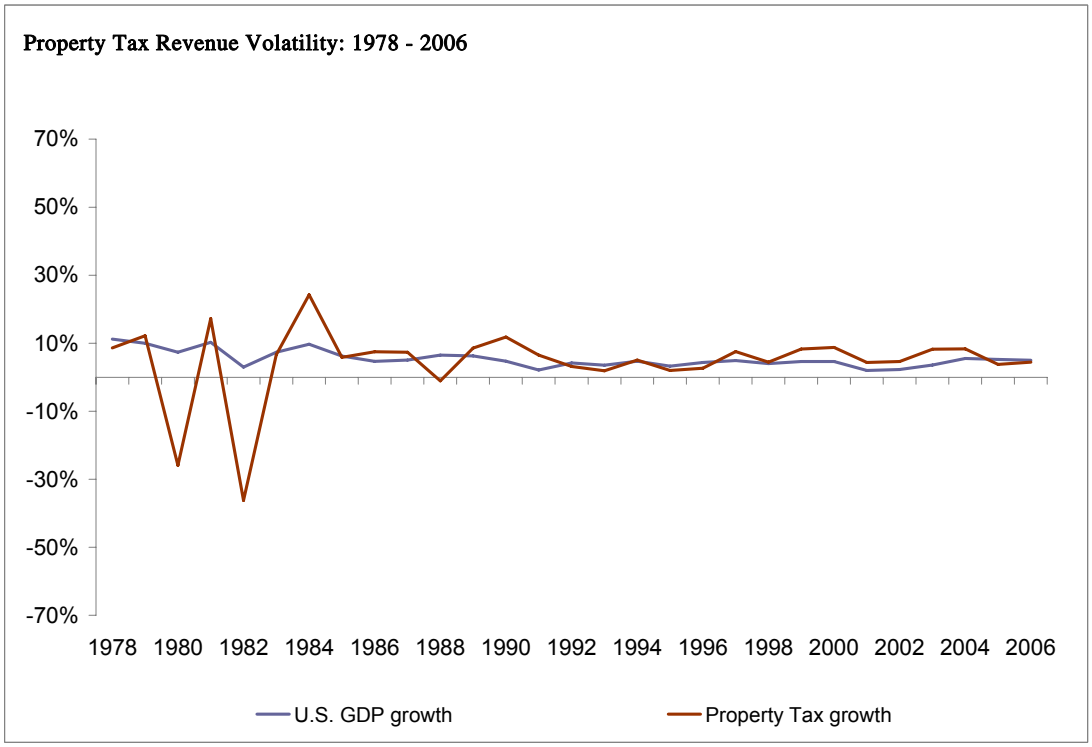

Long-Run Growth in Insurance Premium Tax Revenue: 1978 - 2006
30
28
26
24
22
20
18
16
14
12
10
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
Nevada Personal Income
Insurance Premium Tax

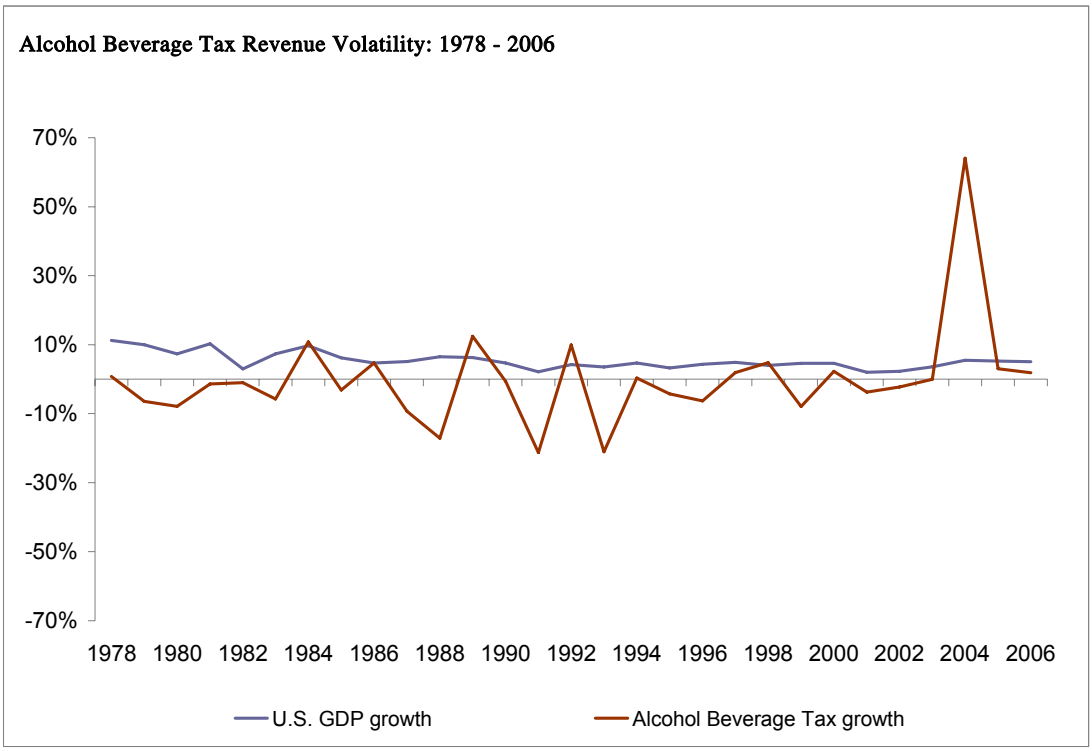
**Long-Run Growth in Motor Fuels Tax Revenue: 1978 - 2006**



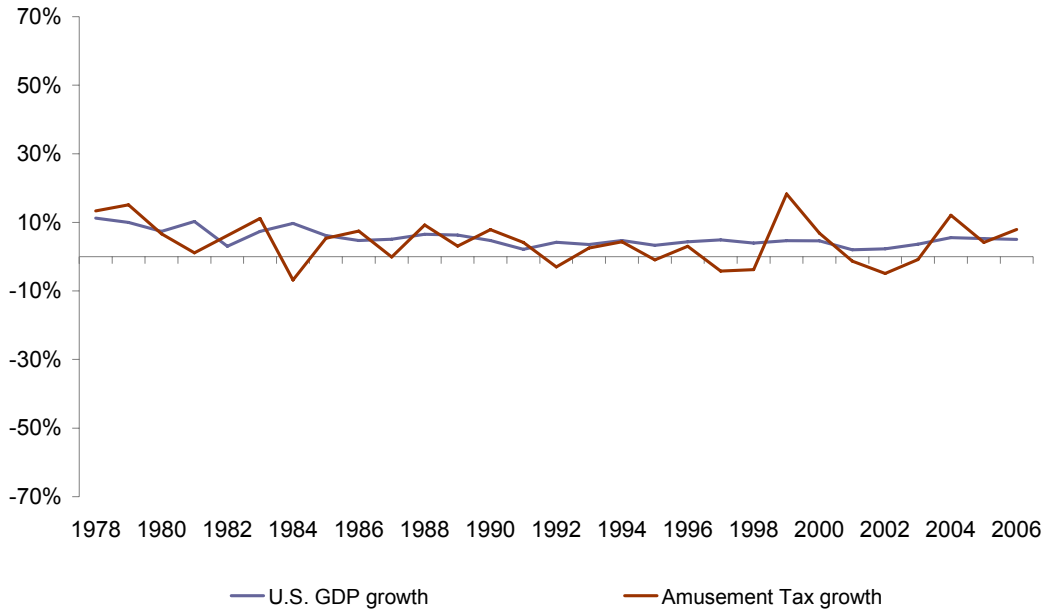

**Long-Run Growth in Tobacco Product Tax Revenue: 1978 - 2006**



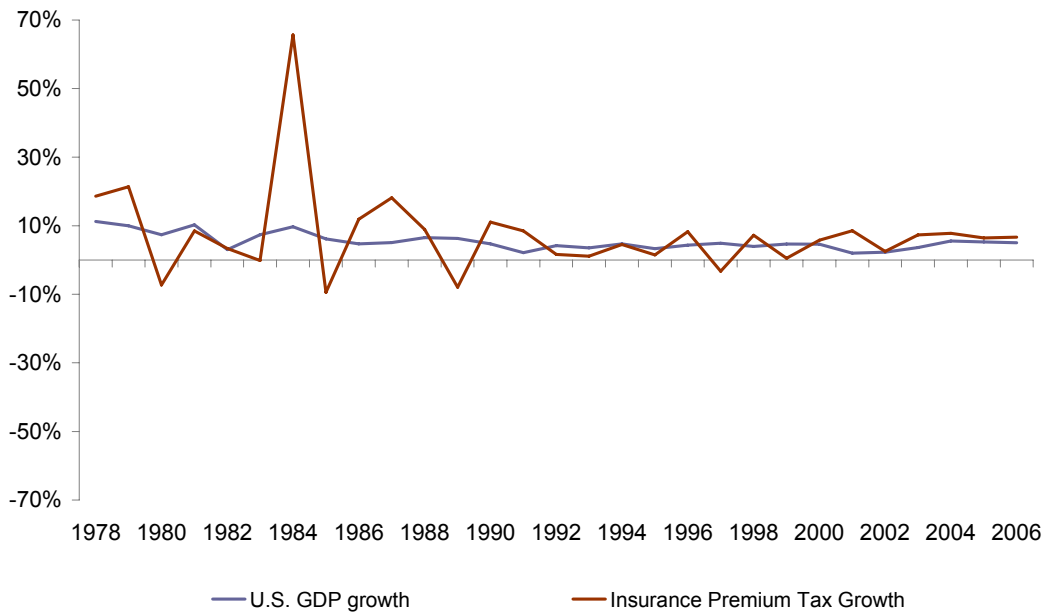

Property Tax Revenue Volatility: 1978 - 2006
70%
50%
30%
10%
-10%
-30%
-50%
-70%
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
U.S. GDP growth
Property Tax growth

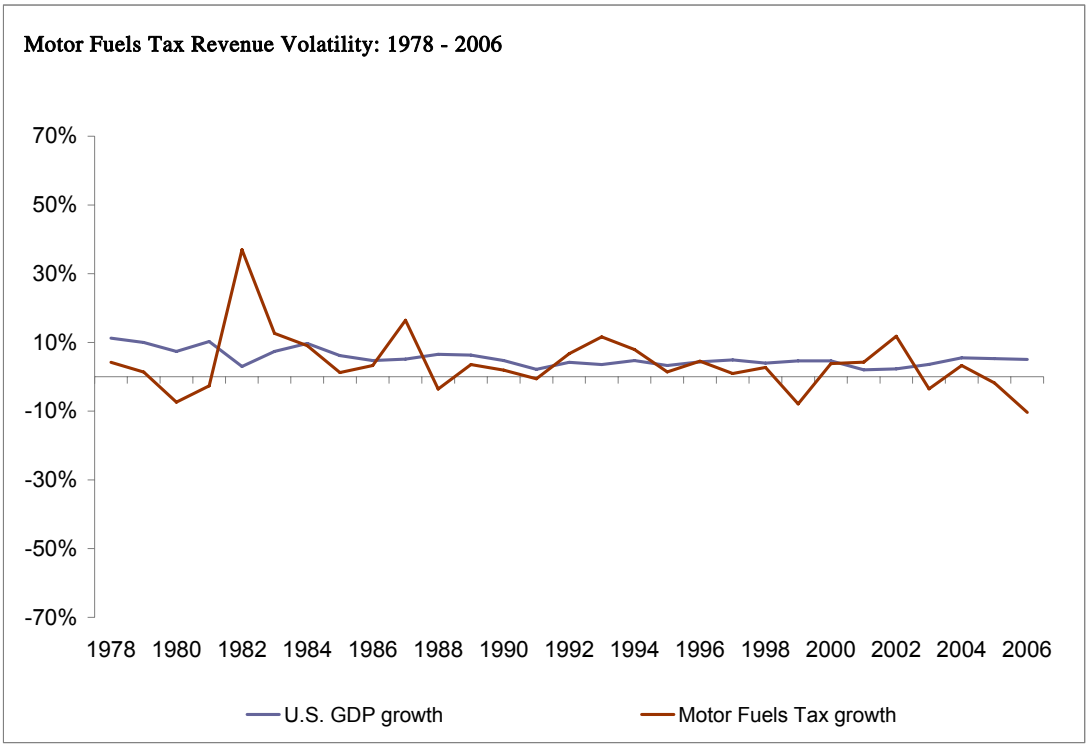

Alcohol Beverage Tax Revenue Volatility: 1978 - 2006
70%
50%
30%
10%
-10%
-30%
-50%
-70%
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
U.S. GDP growth
Alcohol Beverage Tax growth

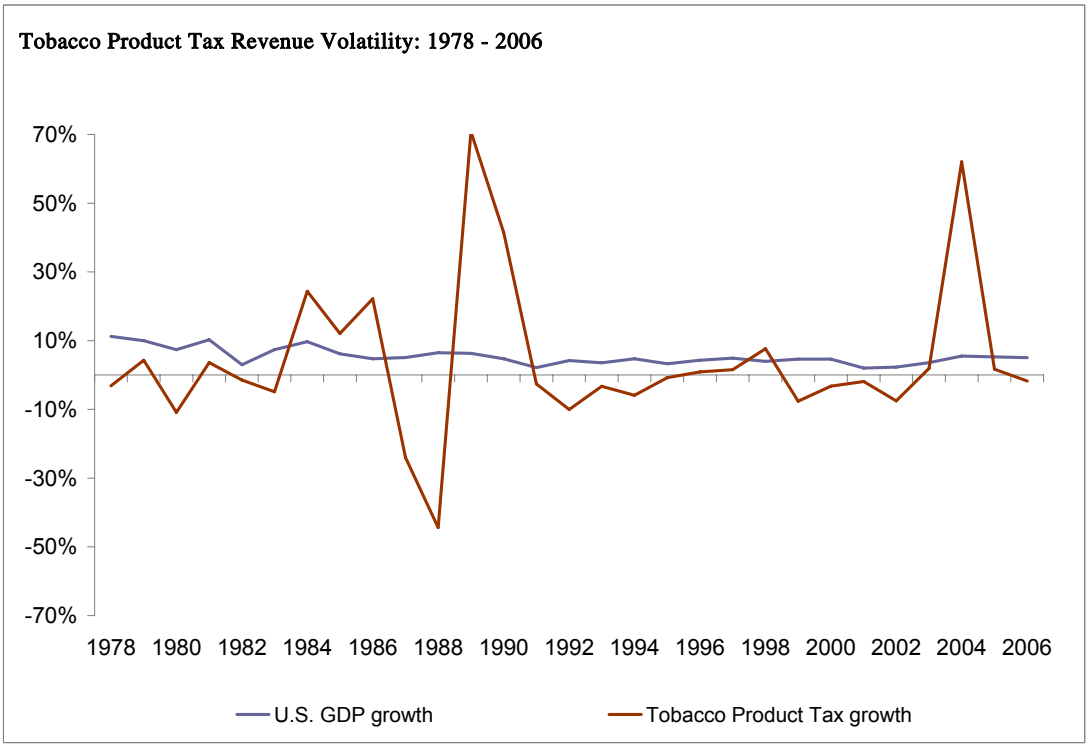
**Amusement Tax Revenue Volatility: 1978 - 2006**




**Insurance Premium Tax Revenue Volatility: 1978 - 2006**




Motor Fuels Tax Revenue Volatility: 1978 - 2006
70%
50%
30%
10%
-10%
-30%
-50%
-70%
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
U.S. GDP growth
Motor Fuels Tax growth


Tobacco Product Tax Revenue Volatility: 1978 - 2006
70%
50%
30%
10%
-10%
-30%
-50%
-70%
1978 1980 1982 1984 1986 1988 1990 1992 1994 1996 1998 2000 2002 2004 2006
U.S. GDP growth
Tobacco Product Tax growth

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# IV. State Non-Tax Revenue in Nevada

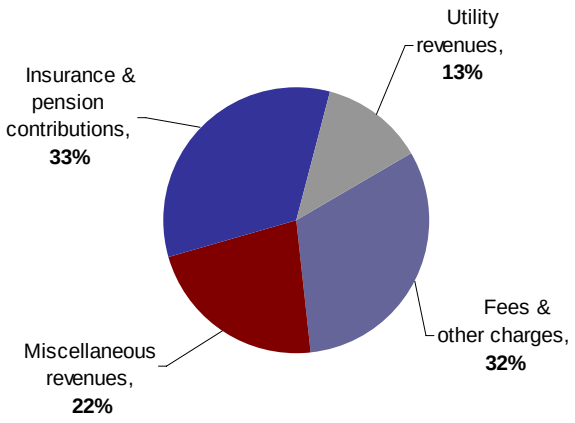
The analysis provided in the previous sections focused primarily on major Nevada taxes as a source of revenue. However, there has been increasing public discourse on the role of fees as revenue mechanisms in Nevada. This section reviews the major types of fees and other non-tax revenues and their magnitude.

Revenues collected from various non-tax sources fund approximately 40 percent of state and local budgets in Nevada. In Fiscal Year 2006, for example, payments other than taxes accounted for $8.21 billion of the $20.36 billion that the State of Nevada and its local jurisdictions collected in total revenues.[1] However, as shown in the detailed tables presented below, these non-tax revenues represent a very diverse range of sources.

Non-tax revenues appear in a variety of forms and serve a variety of purposes. Although many of these sources of revenue defy easy classification, most of them can be grouped into four categories, as shown in Figure IV-1.

[1] U.S. Census Bureau*: State and Local Government Finances by Level of Government and by State: 2005-06.*

**FIGURE IV-1**
**Distribution of Non-Tax Revenue Collected within State of Nevada, Fiscal Year 2006**




Source: U.S. Census Bureau.

The largest category consists of insurance and pension contributions, detailed in Table IV-1. Included in this group are unemployment contributions paid by employers and retirement contributions which are paid by either state and local government employees or are paid by the governments themselves. Earnings on retirement fund investments are also included. This category accounted for 33 percent of Nevada's non-tax revenue in 2006.

The next largest category incorporates fees and other charges levied to support services such as airport maintenance and expansion; school lunch programs; college and university tuition; public hospitals; highways; parks and recreation; sewerage and solid waste management, and business filing fees. Approximately 32 percent of Nevada's non-tax revenue was obtained from programs in this category in 2006, as shown in Table IV-2.

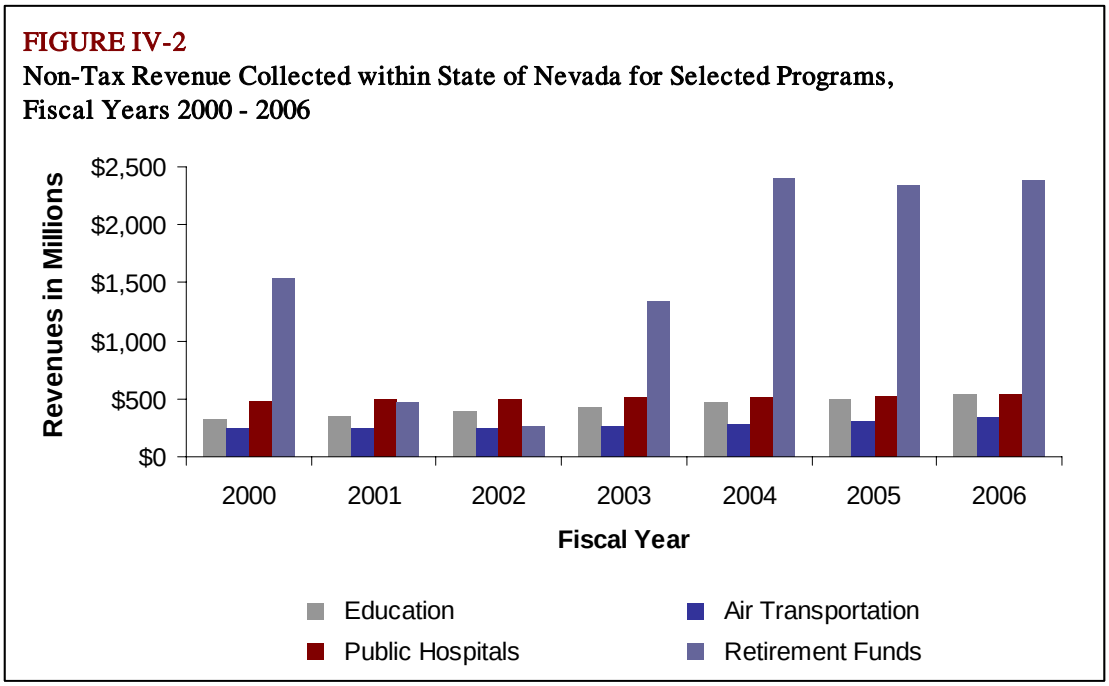
Public and private utilities accounted for 13 percent of Nevada's non-tax revenues in 2006, including water, electric power, and mass transit systems. These amounts are shown in Table IV-3.

The remaining 22 percent of Nevada's non-tax revenue, detailed in Table IV-4, consists of miscellaneous state income not assigned to other categories. This income includes special assessments, interest earnings, and proceeds from property sales.

Figures IV-2 and IV-3, below, show multi-year trends in revenues collected by the State of Nevada from fee and other non-tax categories. Figure IV-2 shows a seven-year overview of programs helping to fund education, air transportation, public hospitals, and government employee retirement. Figure IV-3 is a ten-year view of total amounts collected in the four major categories of non-tax revenue, as detailed in Tables IV-1 through IV-4.

Both these charts show wide year-over-year swings in income for employee retirement programs (Figure IV-2), which make up a large part of the insurance / pension category (Figure IV-3). These swings are due primarily to variations in income from retirement fund investments, which showed outsized gains during the 1997-2000 tech bubble, steep losses in the 2001-2002 recession, and a sharp recovery in the 2003-2004 period.

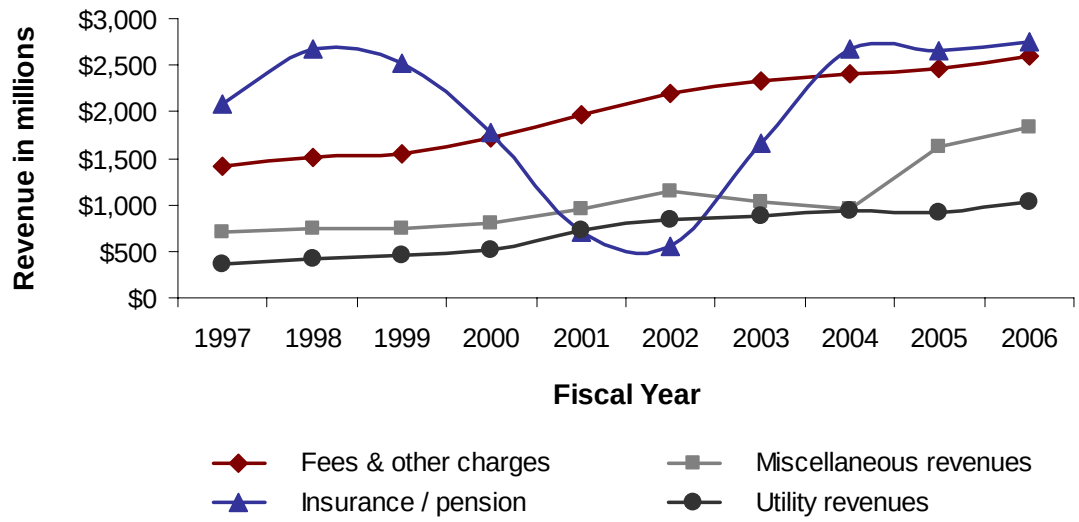
**FIGURE IV-2**
**Non-Tax Revenue Collected within State of Nevada for Selected Programs, Fiscal Years 2000 - 2006**




Source: U.S. Census Bureau.

FIGURE IV-3

**Non-Tax Revenue Collected within State of Nevada, Fiscal Years 1997-2006**




Source: U.S. Census Bureau.

## TABLE IV-1
### Insurance & Pension Contributions Collected within State of Nevada (in thousands of dollars), Fiscal Years 1997-2006

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Employee Retirement Contributions | 38,199 | 44,938 | 45,125 | 48,450 | 49,482 | 53,958 | 55,477 | 61,114 | 66,930 | 118,219 |
| Retirement Cont. From Other Governments | 357,038 | 409,225 | 418,158 | 467,712 | 498,599 | 516,743 | 604,525 | 670,926 | 726,674 | 612,382 |
| Retirement Funds Investment Earnings | 794,454 | 1,513,850 | 1,268,634 | 1,020,136 | -84,132 | -301,577 | 683,879 | 1,658,937 | 1,545,948 | 1,655,435 |
| Unemployment Compensation Revenue | 302,639 | 53,034 | 239,215 | 243,460 | 252,576 | 288,358 | 313,079 | 283,847 | 319,545 | 370,777 |
| Workers Compensation Contributions | 460,852 | 421,480 | 334,944 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Workers Comp Investment Earnings | 128,396 | 236,000 | 224,837 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **TOTAL** | **2,081,578** | **2,678,527** | **2,530,913** | **1,779,758** | **716,525** | **557,482** | **1,656,960** | **2,674,824** | **2,659,097** | **2,756,813** |

Source: U.S. Census Bureau.

## TABLE IV-2
### Fees & Other Charges Collected within State of Nevada (in thousands of dollars), Fiscal Years 1997-2006

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Air Transportation (Airports) | 200,221 | 205,721 | 215,542 | 242,090 | 247,259 | 252,428 | 266,063 | 279,697 | 303,537 | 329,034 |
| Miscellaneous Commercial Activities | 427 | 443 | 456 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| School Lunch | 21,004 | 22,488 | 24,717 | 27,339 | 29,930 | 32,521 | 34,717 | 36,912 | 35,492 | 37,996 |
| Higher Education | 187,379 | 205,019 | 216,442 | 236,935 | 265,159 | 293,368 | 325,352 | 354,699 | 385,058 | 423,457 |
| Other Education Charges | 43,279 | 46,481 | 53,152 | 55,879 | 61,116 | 66,062 | 69,064 | 72,181 | 75,168 | 85,726 |
| Public Hospitals | 407,133 | 440,221 | 428,704 | 485,341 | 491,477 | 495,735 | 504,754 | 508,587 | 519,296 | 547,493 |
| Regular Highways | 45,671 | 49,464 | 27,182 | 61,158 | 67,532 | 85,652 | 96,524 | 78,892 | 39,556 | 20,422 |
| Housing & Community Development Charges | 10,743 | 10,521 | 14,060 | 15,178 | 17,045 | 15,593 | 16,112 | 17,133 | 16,878 | 18,214 |
| Natural Resources | 5,165 | 6,894 | 7,753 | 17,918 | 11,820 | 6,559 | 5,237 | 5,623 | 5,154 | 7,146 |
| Parking Facilities | 2,380 | 2,565 | 1,891 | 2,119 | 2,119 | 2,119 | 2,693 | 3,266 | 3,620 | 4,539 |
| Parks & Recreation | 64,446 | 65,126 | 59,200 | 60,657 | 64,943 | 69,140 | 88,823 | 109,083 | 137,668 | 145,346 |
| Sewerage | 177,482 | 189,000 | 201,420 | 208,550 | 221,860 | 235,170 | 290,058 | 344,946 | 334,719 | 367,578 |
| Solid Waste Management | 8,686 | 10,949 | 10,106 | 8,329 | 10,989 | 12,893 | 13,191 | 13,730 | 17,165 | 18,495 |
| All Other General Current Charges | 247,092 | 257,034 | 281,504 | 303,494 | 480,099 | 629,171 | 621,373 | 591,017 | 593,751 | 588,740 |
| **TOTAL** | **1,421,108** | **1,511,926** | **1,542,129** | **1,724,987** | **1,971,347** | **2,196,411** | **2,333,958** | **2,415,766** | **2,467,062** | **2,594,186** |

Source: U.S. Census Bureau.

## TABLE IV-3

### Utility Revenue Collected by State within Nevada (in thousands of dollars), Fiscal Years 1997-2006

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Water Supply (A91) | 286,032 | 341,663 | 377,970 | 419,874 | 491,979 | 565,634 | 625,678 | 685,418 | 730,048 | 831,040 |
| Electric Power (A92) | 52,580 | 47,564 | 49,976 | 53,397 | 180,817 | 200,011 | 181,925 | 178,918 | 140,658 | 166,799 |
| Public Mass Transit Systems (A94) | 26,390 | 30,411 | 33,725 | 40,271 | 54,665 | 69,059 | 75,176 | 81,293 | 48,695 | 31,198 |
| **TOTAL** | **365,002** | **419,638** | **461,671** | **513,542** | **727,461** | **834,704** | **882,779** | **945,629** | **919,401** | **1,029,037** |

Source: U.S. Census Bureau.

## TABLE IV-4

### Miscellaneous Revenues Collected within State of Nevada (in thousands of dollars), Fiscal Years 1997-2006

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | FY 2003 | FY 2004 | FY 2005 | FY 2006 |
|---|---|---|---|---|---|---|---|---|---|---|
| Special Assessments | 71,251 | 35,083 | 35,480 | 40,199 | 31,995 | 46,558 | 75,333 | 115,556 | 115,646 | 138,980 |
| Sale of Property | 13,103 | 35,731 | 7,917 | 3,518 | 4,739 | 6,109 | 6,525 | 7,786 | 79,682 | 117,085 |
| Interest Earnings | 422,572 | 448,314 | 484,515 | 470,868 | 535,803 | 585,537 | 415,665 | 285,337 | 535,132 | 590,451 |
| Other Miscellaneous General Revenue | 197,168 | 232,997 | 218,403 | 294,756 | 390,302 | 517,559 | 535,020 | 551,502 | 893,032 | 980,635 |
| **TOTAL** | **704,094** | **752,125** | **746,315** | **809,341** | **962,839** | **1,155,763** | **1,032,542** | **960,181** | **1,623,492** | **1,827,151** |

Source: U.S. Census Bureau.

## *Local Fees in Nevada*

Nevada's local jurisdictions also derive a portion of their revenue from fees as included in the tables above. Fees are distinct from taxes in that fees are generally tied to the voluntary use of specific government services and are generally used to fund those services. Some fee-based programs are fully supported by fee revenue, while others receive government subsidies in addition to fees. Certain revenue sources may exhibit characteristics of both taxes and fees.

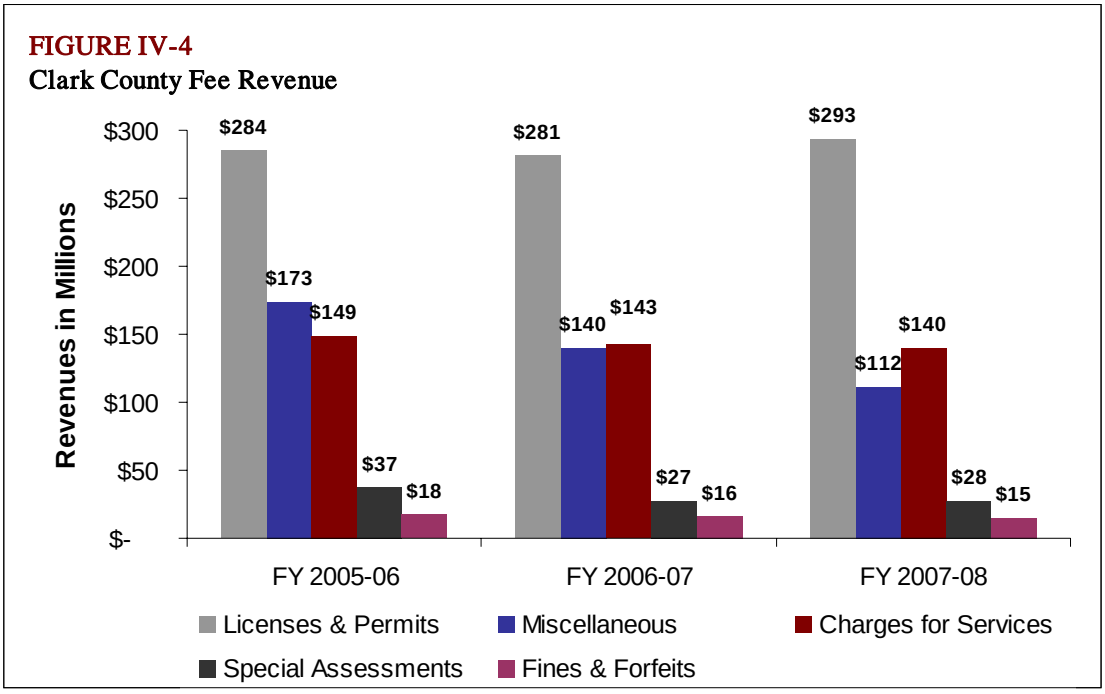
Local jurisdictions in Nevada face significant constraints in the methods they may use to raise revenue.[2] All fiscal and regulatory power at the local level is derived from state legislative enactments which impose numerous restrictions on the conduct of Nevada's cities, counties and other jurisdictions. These restrictions fall into five categories: tax rate, tax base, total tax revenue by tax base, revenue usage, and revenue distribution.

To overcome these revenue limitations, local jurisdictions often turn to revenue sources other than taxes to fund various programs. This non-tax revenue can take the form of fees, fines and forfeits, special assessments, licenses, and permits. These revenue sources are important to local jurisdictions in order to provide a wide range of services to residents within their communities which are not only local services but also both extend and complement State services.

The following charts show three years of fee revenues generated for Clark County and its three largest municipalities by major fee category. Amounts for FY 2005-06 are actual, amounts for FY 2006-07 are budgeted, and amounts for FY 2007-08 are projected budget. These amounts do not include non-monetary exactions, such as land dedications by real estate developers. Variations in fee categories reflect different reporting standards for each jurisdiction. Thus, direct comparisons should, in general, not be made without additional detail. For a specific jurisdiction, anomalies in a specific year can occur due to special projects or circumstances such as the large spike classified as developer contributions for the City of Henderson in FY 2005-2006.

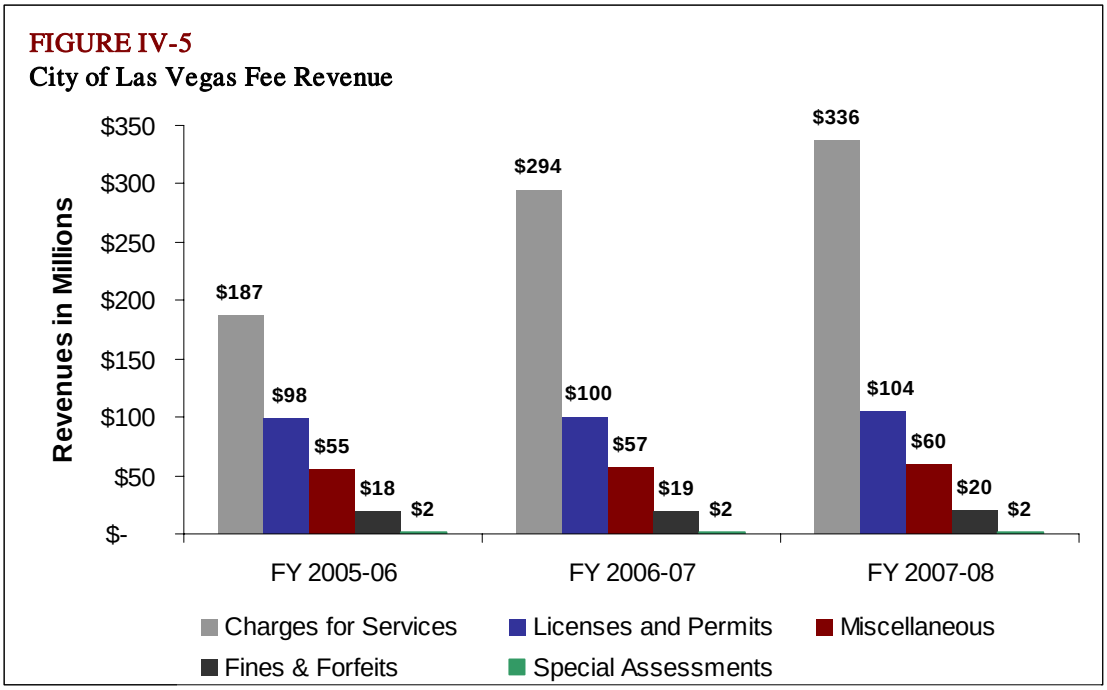
[2] Robert Ebel, ed. A Fiscal Agenda for Nevada: Revenue Options for State and Local Governments in the 1990s. Reno, NV: University of Nevada Press 1990. For further discussion, see Section II of this report.

**FIGURE IV-4**
**Clark County Fee Revenue**



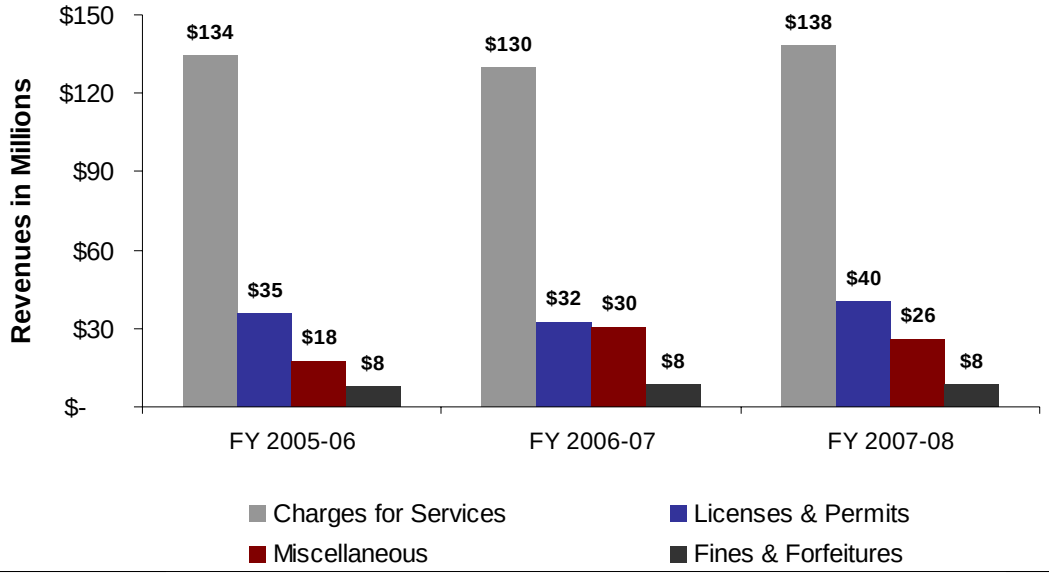

Source: Clark County 2007-08 adopted budget documents.

**FIGURE IV-5**
**City of Las Vegas Fee Revenue**



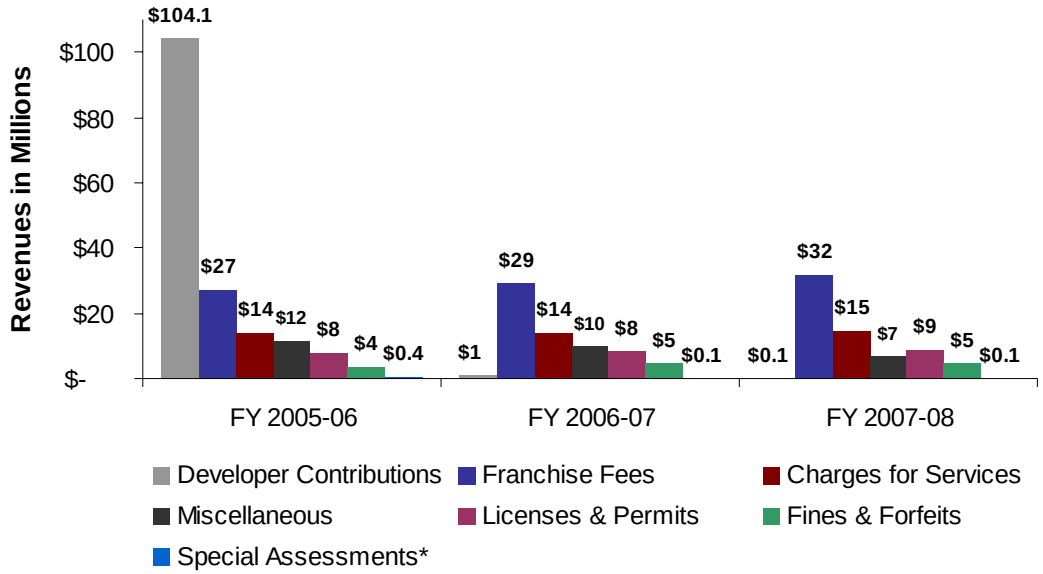

Source: City of Las Vegas 2007-08 adopted budget documents.

**FIGURE IV-6**
**North Las Vegas Fee Revenue**




Source: City of North Las Vegas 2007-08 adopted budget documents.

**FIGURE IV-7**
**City of Henderson Fee Revenue**




*Special Assessments fees accounted for less than 0.2% of Henderson's total fee revenues for these years.
Source: City of Henderson 2007-08 adopted budget documents.

## *Special Local Issues: A Note on Extractions and Impact Fees*

Real estate development fees and fee equivalents in the data above are important sources of fee revenue for local governments. Many localities have made development activities contingent on payments of fees and dedication of land for public use.

*Exactions* are mandatory dedications of land and/or money by developers for infrastructure, including streets, water lines, and sewer lines, and sometimes for educational and recreational purposes. Closely related are *in lieu exactions*, which are fees paid individually by several developers, then combined to pay for off-site facilities such as schools and parks.

A *development impact fee* is also a type of exaction, used to pay for large-scale public facilities and services that a new development requires. When assessed, development impact fees must be paid in order for a developer to obtain a building permit, occupancy permit or land use plan approval. State policy requires that revenue obtained from impact fees be reasonably related to the cost of the public facilities needed by the new development.[3]

Impact fees vary depending on the estimated cost of infrastructure needed to serve a particular development, and can range from several hundred to several thousand dollars per house or other structure. Facilities funded by impact fees include police and fire stations, parks, water and sewer infrastructure, stormwater drainage, street improvements, and traffic signals.

As an alternative to exactions, in lieu exactions, and impact fees, a *development agreement* is a contract entered into voluntarily by a developer and a local government entity. It covers how the development will be regulated, and who will pay for public services and infrastructure.

As an example of how fees and fee equivalents can financially impact a development project, Table VI-5 shows examples of fees that would have been paid by developers in 2007 for construction of three typical office and industrial properties.

[3] Bryan Blaesser and Christine Kentopp, Impact fees: The Second Generation, 38 Wash. U.J. Urban & Contemporary Law 55, 64 1990.

TABLE IV-5

**Typical National Association of Industrial and Office Properties Developer Tax Equivalents and Fees in 2007 in Southern Nevada[1]**

| Connection & Impact Fees | Flex Office 45,000 RSF | 2-Story Office 90,000 RSF | Warehouse 150,000 RSF |
|---|---|---|---|
| Water | $36,400 | $71,100 | $50,250 |
| Sewer | $32,100 | $32,100 | $15,500 |
| Transportation | $37,200 | $61,200 | $76,120 |
| Signalization | $17,700 | $31,500 | $17,400 |
| Other[2] | $22,800 | $44,600 | $35,800 |
| Dedications[3] | $174,960 | $339,390 | $219,780 |
| Sales and Use Taxes[4] | $168,462 | $398,444 | $215,233 |
| Property Tax[5] | $71,018 | $161,670 | $90,398 |
| **Total** | **$560,640** | **$1,140,004** | **$720,480** |

[1] All fees are approximate and reflect 2007 established government fee schedules and/or experience.
[2] Other fees include Tortoise ($550 acre), other environmental charges, and real property transfer tax.
[3] 12% of land costs, based on average actual experience in Clark County for these size properties; actual amount will vary considerably depending on development parcel size, type, location and other relevant charisteristics.
[4] Sales taxes are those paid for construction costs only. They do not include sales and use taxes paid by tenants.
[5] Property taxes are paid annually. The others in this table are one-time taxes, tax equivalents or fees.
Source: National Association of Industrial and Office Properties.

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# V. Local Jurisdictions in Southern Nevada: A Budget Summary

The focus of the report in the previous sections has been primarily upon the State of Nevada. As has been noted, there is a synergy and interrelationship between major State tax instruments and local jurisdictions in the State. Thus, for completeness of presentation, presented below is a simple summary of the major revenue sources and expenditure categories for local jurisdictions within Southern Nevada.[1]

As shown below, local jurisdictions provide a wide range of services to residents within their communities. Thus, local governments not only provide local services to residents but also both extend and complement State services.

It needs to be recognized that any overview of local jurisdictions in Southern Nevada must be considered in light of the population dynamics of the State. Specifically, it should be noted that approximately 72% of the State population lives in Clark County.[2]

[1] The citations to the sources of the material presented here provide extensive details of expenditures by program and other financial issues in great detail. The material presented in this section is solely to serve as a frame of reference on annually reoccurring categories of revenues and expenditures. Each local jurisdiction also has an extensive accounting of changes in specific fund balances. We refer the reader to these accounts since they are not dealt with here.

[2] Data are for 2007. Historical statistics on Southern Nevada's economy are available at the web site of Center for Business and Economic Research, UNLV.

As has been documented in this report, local jurisdictions in Nevada face significant constraints in the methods they may use to raise revenue in order to provide services to residents within their communities. Nevada is classified as a "Dillon Rule" state where local taxing authority is not independent of legislative action. As discussed previously, these revenue sources for local governments are set in statute through the legislative process or local governments can ask voters for approval (or the legislature) for the authority to impose a source of revenue or rate.

When examining the tax structure of the State of Nevada relative to Clark County and its component jurisdictions, it is of course important to examine the revenue sources and expenditures of Clark County and the cities of Las Vegas, Henderson and North Las Vegas. The two most prominent financial documents that each entity uses to report their revenues and expenditures are Annual Budgets and Comprehensive Annual Financial Reports (CAFRs). Each set of documents have their place in terms of understanding the financial structure of the local entities. However, the CAFRs appear to have a much higher degree of uniformity in reporting across jurisdictions than do the Annual Budgets. Thus, the CAFRs were, in general, our major source for the summaries presented in this study.[3] Primarily for this reason, our discussion in this section will focus on the most recent CAFRs available for each of the local entities, those for Fiscal Year July 1, 2006 through June 30, 2007. While the CAFRs represent a more uniform reporting of revenues and expenditures, it is important to note that there are still minor differences in accounting methods that make direct comparisons between the entities difficult.[4]

Among the key revenue sources that are reported by each of the entities in FY 06-07 CAFRs, Property Taxes and the Annual Consolidated Tax Distribution from the State of Nevada are two of the most important with the relative importance varying by entity (see individual details below). This is, of course, as expected given the nature of these revenue mechanisms, the programs they support, and the administrative structure for their allocation. These issues have been discussed in other sections above, particularly the limitations and constraints facing local jurisdictions in Nevada with respect to raising revenue.

---

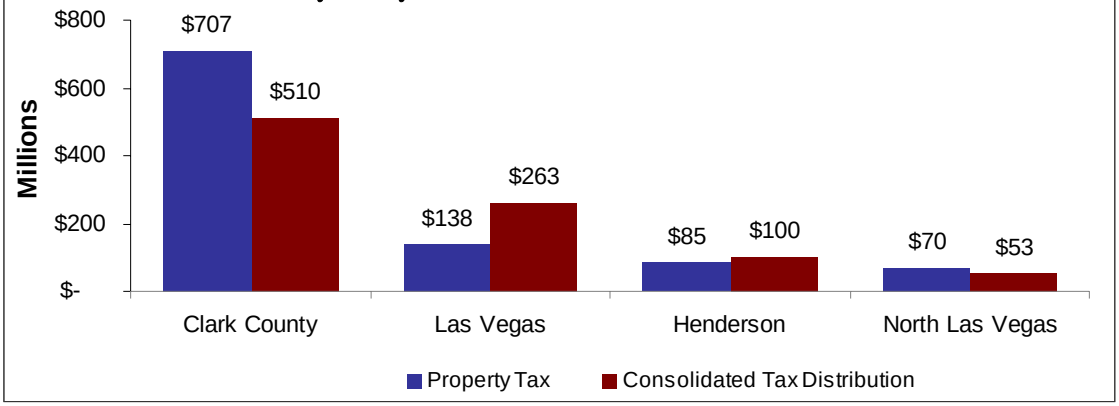
[3] Another set of interesting and detailed accounts are outlined in the individual jurisdictions' Capital Improvement Plan. For example, as an illustration, the 2009-2013 CIP for the City of North Las Vegas is illustrative in detailing a wide range of projects by category and their place in the North Las Vegas Vision 2025. These specific capital program guides are available on-line.

[4] Given stylistic differences in presentation across jurisdictions and the fact that we present two simple charts of "percentage distributions" rather than totals, the primary source utilized here is the summary of revenues, expenditures and changes in fund balances (even though, as noted, we do not replicate the detailed changes in fund balances). In addition, given accounting rules, government-wide financial statements are stated in full accrual basis while fund financial statements are stated in modified accrual basis.

The revenue reported in the simple overviews below for the local jurisdictions includes governmental funds. These funds include the general fund, special revenue funds, capital project funds, etc. as well as proprietary funds such as enterprise funds and internal service funds.

As illustration of the aforementioned point on the differences between the entities Clark County and North Las Vegas report larger revenues from property taxes, while Las Vegas and Henderson reported more revenues from the consolidated tax distribution (see Figure V-1). For this reason, we will focus the remainder of our discussion of the revenues and expenditures of the Clark County entities on the separate entities.[5]

**FIGURE V-1**
**Selected Tax Revenues by Entity**

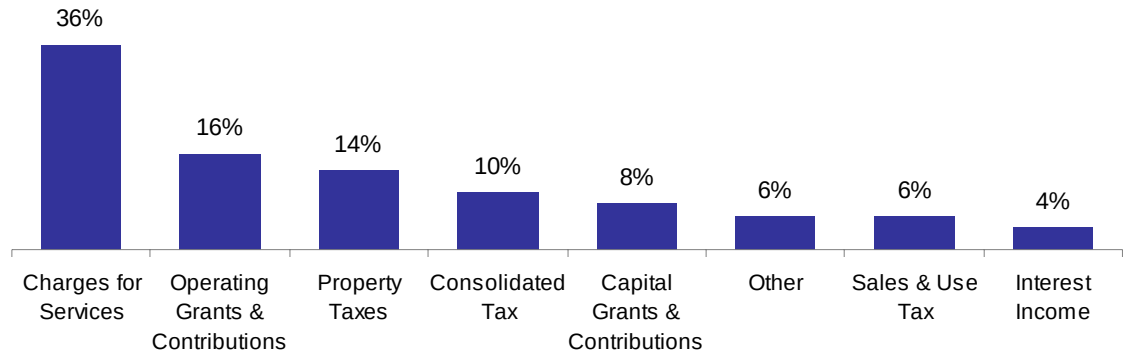



Source: FY 2006-07 CAFRS, individual citations below.

[5] Percentages are generally rounded to the nearest percent for exposition. Thus, totals (in percentages) may not add up perfectly to budget documents given that the purpose here is to provide a basic overview.

Clark County is the largest government entity in Clark County, with the Unicorporated County representing an estimated 42% of the population of the county as of July 1, 2007. Clark County revenues were in excess of 5 billion dollars for FY ended June 30, 2007 ($5,124,698,039).[6] As shown below in Figure V-2, charges for services accounted for 36% of total revenues for the fiscal year, with 7 reported revenue sources (excluding "other") accounting for at least $100 million in revenues and these accounted for 94% of total reported revenues for the fiscal year. Charges for services was far and away the largest revenue category, accounting for 36% of revenues for the fiscal year. As the gateway to the Las Vegas "Strip" and a major provider of medical services in the community, Clark County operations include such major enterprise funds as the Department of Aviation Fund and the University Medical Center Fund.[7]

**FIGURE V-2**
**Key Clark County Revenue Sources**



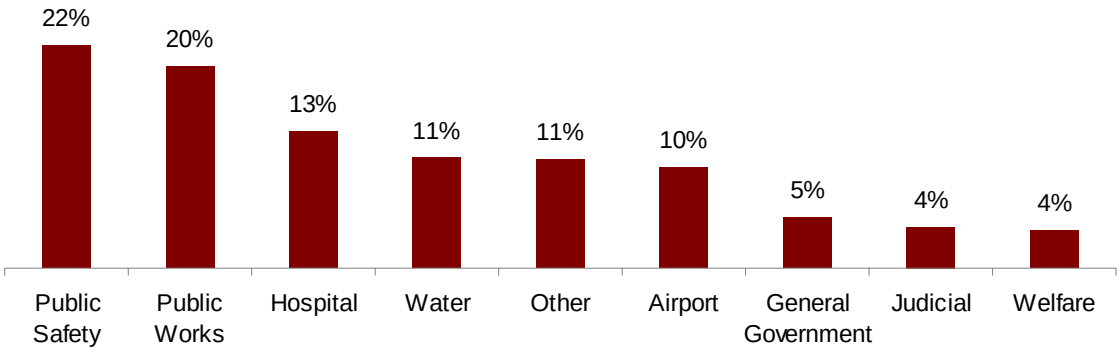

Source: http://www.accessclarkcounty.com/depts/Comptroller/Documents/Fin-section_statements.pdf.

[6] It is important to note that revenues in any specific year may exceed annual expenditures due to revenue sources associated with, for example, long-term capital improvement projects. Thus, annual differences between revenues and expenditures generally reflect differences in fund balances specific to each jurisdiction. As noted, each jurisdiction has an available document on the capital improvement program. In the diagrams below, note the category titled Capital grants and contributions.

[7] Extensive information on the enterprise funds is contained in the CAFR.

Clark County reported a total expense on service provision of just over four billion dollars for the Fiscal Year ended June 30, 2007 ($4,187,496,632). Figure V-3 displays the largest expenditure categories by function. The two largest categories are Public Works and Public Safety, accounting for 22% and 20% of total expenditures, respectively. In the case of Clark County, the existence of major enterprise operations must, of course, be recognized.

**FIGURE V-3**
**Key Clark County Expenses**

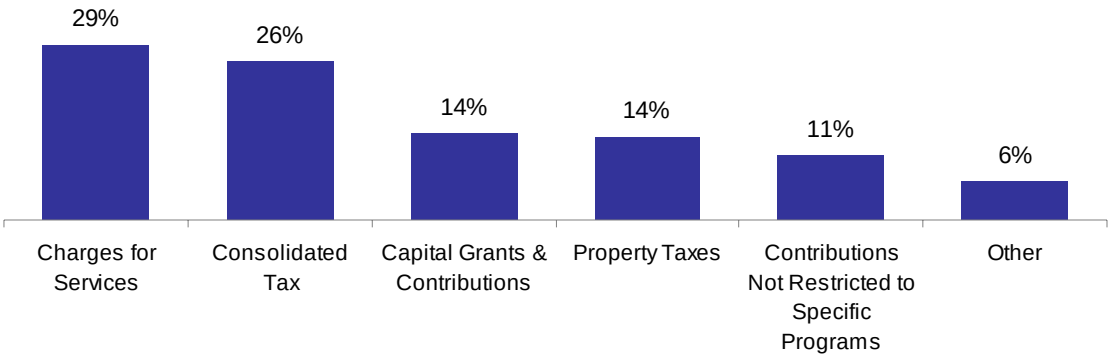



Source: http://www.accessclarkcounty.com/depts/Comptroller/Documents/Fin-section_statements.pdf.

The City of Las Vegas is the largest incorporated city in Clark County, accounting for 30% of the total County population as of July 1, 2007. Total Revenues reported in the CAFR for the Fiscal Year from July 1, 2006 to June 30, 2007 totaled just over 1 billion dollars ($1,008,626,823). Among all categories, charges for services contributed the most to revenues for the fiscal year for Las Vegas, totaling 29% of the total revenue for the year. In all, five categories accounted for at least $100 million in revenues for the fiscal year.

These five categories (not including "other") are shown in Figure V-4 and accounted for approximately 94% of the total revenues for the year.

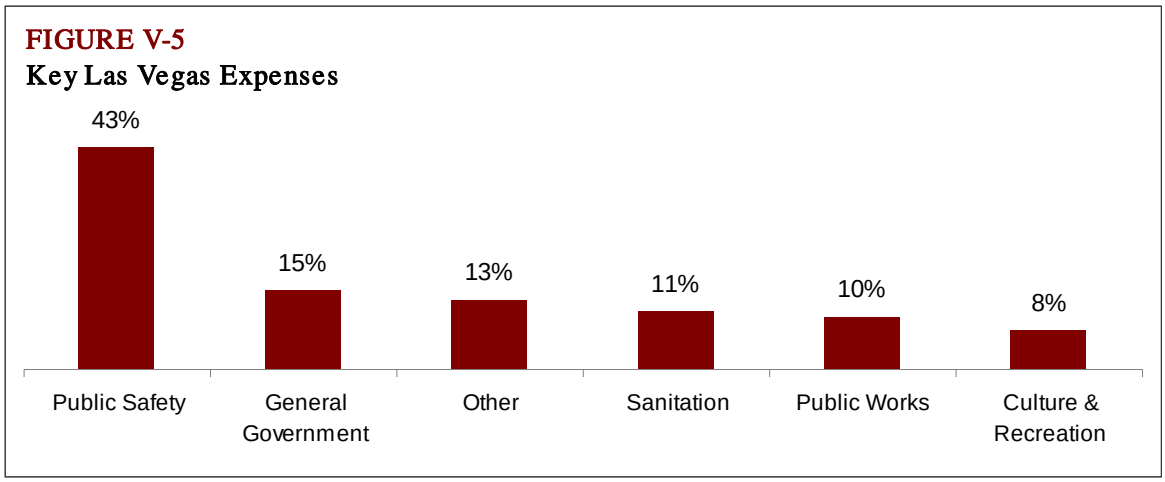
**FIGURE V-4**
**Key Las Vegas Revenue Sources**




Source: http://www.lasvegasnevada.gov/files/CLV_CAFR_2007.pdf.

The City of Las Vegas had $737,714,291 in total expenses for the fiscal year ended June 30, 2007. Nearly half of all expenses by function (43%) were reported as Public Safety expenses. A total of five categories (not including "other") were reported to have over fifty million dollars in total expenses, accounting for 87% of all expenses, as shown in Figure V-5.

**FIGURE V-5**
**Key Las Vegas Expenses**

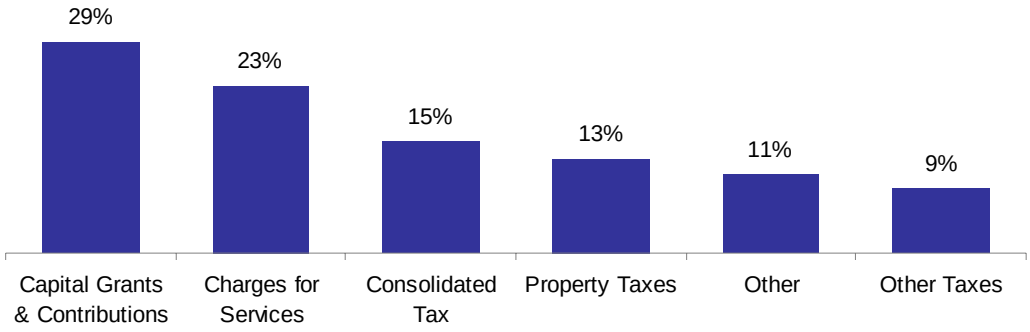



Source: http://www.lasvegasnevada.gov/files/CLV_CAFR_2007.pdf.

The second largest city in Clark County (and Nevada), the city of Henderson, accounted for 13% of the County population as of July 1, 2007. According to the CAFR for fiscal year ended June 30,

2007, total revenues for Henderson totalled $649,682,388. Capital grants and contributions ranked as the largest revenue category, accounting for 29% of the total. In all, five categories (not including "other") had at least fifty million dollars in revenues, with these five representing approximately 89% of all revenues as shown in Figure V-6.

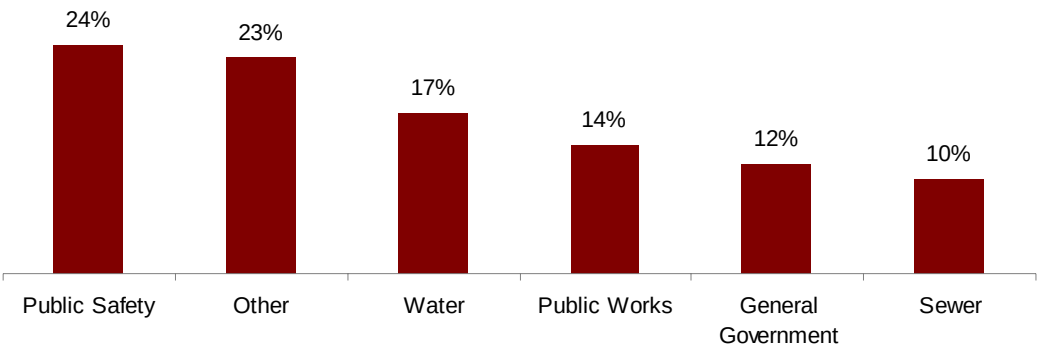
**FIGURE V-6**
**Key Henderson Revenue Sources**




Source: http://www.cityofhenderson.com/finance/docs/2007CAFR/Financial_FY07.pdf.

Total reported expenses for the city of Henderson in fiscal year July 1, 2006 through June 30, 2007 totaled $428,266,731. As with the city of Las Vegas, Public Safety (24%) represented the largest category in terms of expenses by function, though no single category accounted for a quarter of expenses for the fiscal year. The five largest categories (not including "other") accounted for 77% of all expenses, as shown in Figure V-7.

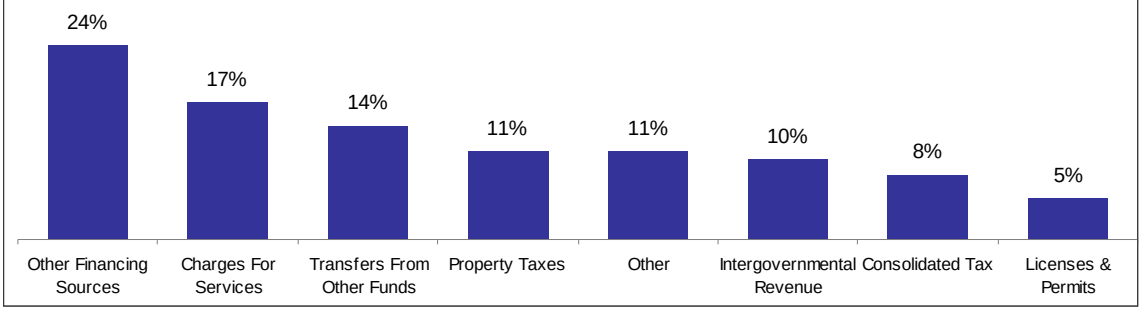
**FIGURE V-7**
**Key Henderson Expenses**




Source: http://www.cityofhenderson.com/finance/docs/2007CAFR/Financial_FY07.pdf

North Las Vegas is the third largest city in Clark County, with the July 1, 2007 Clark County population estimate showing 11% of the County population in the city of North Las Vegas. The most recent budget has readily accessible data which provides an overview of the City's finances.[8] Total Revenues for fiscal year ended June 30, 2007 are $646,111,452, with major categories of revenue sources similar to other jurisdictions (see Figure V-8).[9] The percentage figure for "other financing services" is an anomaly for the year due to bond proceeds of $140 million for the construction of a new water reclamation facility.[10]

**FIGURE V-8**
**Key North Las Vegas Revenue Sources**




Source: http://www.cityofnorthlasvegas.com/Departments/Finance/PDFs/AllFundSummary.pdf.

The total reported expenses for the city of North Las Vegas for the fiscal year ended June 30, 2007 was $473,361,624 Public Safety represented the largest expense for the year, and coupled with Transfers to Other Funds, the two account for over half of Total Expenses for the year (see Figure V-9).[11]

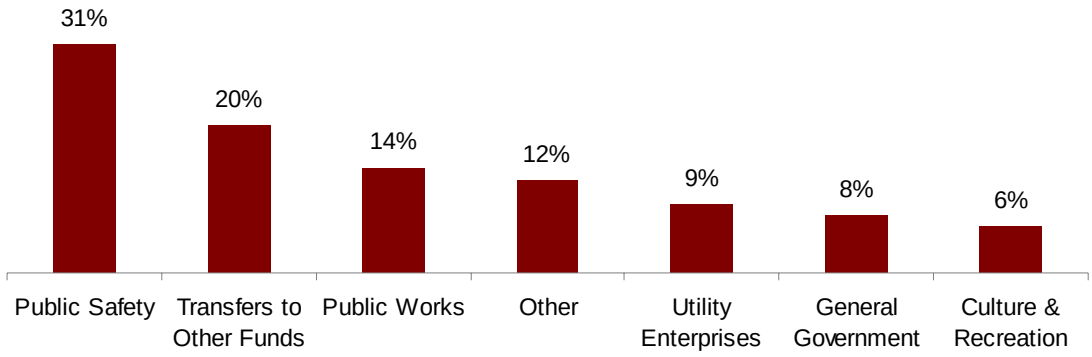
[8] We appreciate the assistance of Tom Baker, Budget Manager, City of North Las Vegas for clarification of budget information.

[9] Other Financing Sources includes $140 million of one time bond proceeds designated for the construction of a water reclamation facility. Without these proceeds Other Financing Sources would be 2% of total revenues.

[10] See footnote 9 above. As noted (see footnote 2 above), the detailed fund balances by jurisdiction reflect changes in revenues related to such items as capital improvement projects.

[11] See the footnotes above on the anomaly for the specific year related to the bond proceeds.

**FIGURE V-9**
**Key North Las Vegas Expenses**




Source: http://www.cityofnorthlasvegas.com/Departments/Finance/PDFs/AllFundSummary.pdf.

As shown, local jurisdictions provide a wide range and depth of services to their residents. Thus, any public policy discussion of Nevada taxes as they relate to the delivery of services to Nevada communities has both financial implications for local jurisdictions and implications for the delivery of services.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