Will Hawaii's Tax Structure Prove Adequate in the Future?

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I. Introduction

This paper addresses the question "Will Hawaii's taxes provide enough revenue to fund required government services in the future?" The first task is to determine how much government services will be required. However, even the best economist would find the task impossible, because there is simply no such thing as a required amount of government services. Instead, people balance the amount of government services they want to buy against the cost, just as they do for any other goods or services. In fact, one can say that whatever amount of government services were actually provided must have been adequate, given the choices that people faced.

Instead of trying to determine how much government services are required, the authors of the study done for the 2005-2007 Tax Review Commission deemed the tax structure to be adequate if tax revenues tended to grow automatically at least as fast as

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* The report was compiled in February of 2012, but data on tax collections were updated to fiscal year 2012 in August of 2012. The views expressed are those of the authors and do not reflect the official views of the Hawaii Department of Taxation

total personal income. If the tax structure met this standard, it would allow government spending to grow at the same rate as spending on other goods and services. The approach is arbitrary (why should government grow at the same rate as the rest of the economy?), but it makes the question tractable and we believe it provides useful information. We like the approach, but in light of recent experience, we modified it in three ways.

First of all, we provide projections that allow important parts of the overall State budget, namely spending on pension and health care benefits for retired State workers, and on Medicaid, to grow faster than total personal income. The future costs of pensions for retired State workers are set largely by promises that have already been made. They depend on a number of things that are hard to predict, including future changes in the laws governing employee benefits and contributions, as well as the future returns to pension assets. The State's pension plan now has a large accrued unfunded liability, but the State's contributions to the plan are set to rise in the future to make up for the shortfall.[1] Health benefits for retired State workers are funded on a pay-as-you-go basis. This is deemed unsatisfactory according to standard accounting practices, which would require that the accrued liabilities be amortized over thirty years. The future costs of the Medicaid program are largely determined by federal legislation, health care costs, and changes in the eligible population. Historically, these costs have grown faster than total personal income.

[1] The contribution rates as a fraction of total payroll costs are set to rise through 2016 under Act 163, SLH 2011. However, the rates will prove insufficient if the future returns on pension assets materialize at the rate suggested by the new guidelines set by the Government Accounting Standards Board (GASB).

Secondly, total income in the economy can go down as well as up. When the economy declines, the demand for government services typically rises, because more people need social support. It is not possible to design a sensible tax structure that would provide greater revenue when the economy declines; the best that can be done is to make taxes as insensitive as possible to cyclical fluctuations in income. Therefore, in addition to examining how tax revenues tend to grow with the economy, we also examine the stability of tax revenues in periods of declining income, both for the tax structure as a whole and for the individual taxes.

Finally, there has been concern about how the growth of the Internet affects General Excise Tax (GET) collections. The GET is the largest of Hawaii's taxes, accounting for about 58% of the total tax collections dedicated to the General Fund in fiscal year 2011. Electronic commerce may reduce the GET collections by allowing customers in Hawaii to order goods over the Internet and have them delivered by mail from sellers who are not under the State's taxing jurisdiction. The Internet also allows customers to buy things in electronic form that previously were available only in physical form, such as music and games, and it allows them to more easily avail themselves of services that are performed outside of the State and imported over the Internet, such as accounting services. Such purchases will often escape the GET. Therefore, we look to see if we can discern the effects of the growth of electronic commerce on the GET collections.

We begin our investigation of tax adequacy by looking to see how government spending has grown relative to the economy in the recent past. Then, we examine how tax revenues tend to grow automatically as the economy grows, where growth in the economy is measured as the growth in total personal income. Finally, we look to see if growth in tax revenues, as they would be without any changes in the tax laws, can be expected to keep pace with growth in demand for government spending, including spending on current government services, on Medicaid and on benefits for retired State workers. We focus on the General Fund to judge if the tax system is adequate. The General Fund comprises only part of the State's total budget, but it receives the bulk of the State's tax collections and is used to pay for most government functions. The next section describes the State's budget and the role of the General Fund.

II. Hawaii's Budget – a Brief Overview

The State's total budget is divided into three types of funds, called Proprietary Funds, Fiduciary Funds and Governmental Funds. Proprietary Funds contain the accounts for activities of the State that resemble commercial enterprises. They include the Unemployment Compensation Fund and funds to account for operations of highways, airports, harbors, and other business-like activities. They have their own dedicated sources of revenue and are budgeted independently from other government spending, and they are virtually all self-supporting. The Fiduciary Funds are used to account for resources held for the benefit of parties outside the State. The Fiduciary Funds are not

included in the government-wide financial statements, because their funds cannot be used to support the State's own programs. Governmental Funds contain the accounts for most of the State's activities and are supported mainly by taxes and by intergovernmental transfers. The General Fund is the biggest of the Governmental Funds. In fiscal year 2011, State tax collections totaled $5.3 billion, of which $4.4 billion went into the General Fund. From 1999 through 2011, on average 86% of the State's tax revenue went into the General Fund and 89% of the General Fund revenue came from taxes.

Table 1 provides data on the General Fund revenues and expenditures, on total revenues and expenditures for all the government funds, and on total personal income (TPI) for fiscal years 1970 through 2010. Figure 1 plots the revenues and expenditures in Table 1 as ratios to TPI. The ratios can be interpreted as the shares of total income dedicated to government services. Total spending from all the government's funds varied more widely relative to TPI than did spending from the General Fund, reaching highs of 18% to 22% between fiscal years 1970 and 1979, before declining to a low of about 11% in fiscal year 1989. The lows occurred in fiscal years 1984 through 1990, which was a period of strong economic growth and low unemployment payments.

The General Fund revenues and expenditures have been relatively stable at about 10% of TPI. Expenditures from the General Fund are subject to a constitutionally mandated ceiling, which was set at $919 million in fiscal year 1979 and grows every year by the average increase in TPI over the previous three years. The ceiling may have

helped control government spending throughout the 1980's, but it has not been binding since 1991.

Table 2 shows the total collections for each of the State's taxes and the percentage of the tax that was dedicated to the General Fund in each fiscal year from 1972 through 2011. Revenue is grouped into the following taxes: the General Excise Tax (GET), the Individual Income Tax (Ind), the Corporation Income Tax (Corp), the Public Service Company Tax (PSC), the Tax on Insurance Premiums (Ins), the Tax on Liquor (Liq), the Taxes on Cigarettes and Tobacco (Tob), the Tax on Banks and Other Financial Corporations (Bank), the Transient Accommodations Tax (TAT), the Conveyance Tax (Con), the Estate and Transfer Tax (Est), the Taxes on Liquid Fuels (Fuel), the Taxes on Motor Vehicles (MV) and the Employment Security Contributions (Emp). A miscellaneous category (Misc) is used to summarize all other State tax revenues that go into the General Fund, and includes charges for fuel retail dealer permits, fuel tax penalty and interest payments, general excise license fees, and transient accommodations license fees.

During most of the period covered in Table 2, the Fuel, MV and Emp taxes were dedicated entirely to Proprietary Funds. However, in fiscal year 2011, part of the Fuel taxes went into the General Fund. The Ind, Corp, Est, Liq, and PSC taxes were dedicated entirely to the General Fund throughout the period covered in the table. Distributions to the General Fund from the remaining taxes have varied over time. Most of the revenue

from each of these taxes now goes into the General Fund, except for the TAT and Con, which go primarily to special funds.

III. Measuring Tax Adequacy

We judge the adequacy of the current tax structure by comparing the expected General Fund revenues with the demands for these revenues over the period from fiscal years 2013 through 2022. Our predictions for growth in TPI and other economic variables are based very roughly on the forecasts made by individual members of the Council on Revenues. The members' economic forecasts are translated into General Fund tax collections using the Department of Taxation's econometric model.[2] The model accounts for the future changes in tax laws enacted as of the end of the 2012 legislative session.

Modeling the Demand for Government Spending From the General Fund

We assume that the present level of spending for current government services (government spending other than payments for Medicaid and benefits for retired State workers) is appropriate and that it will grow at the same rate as the overall economy, as measured by the growth of nominal TPI. The costs of Medicaid and of the benefits for retired State workers are expected to grow at their own rates, as explained in more detail below. The model is described more formally as follows.

[2] The Council's forecasts extend only to 2018. We assume the growth rates for the remaining years (2019 through 2022) are equal to the growth rate forecast for 2018.

Let

GFR = General Fund revenue.

GFP = total demand for government payments from the General Fund.

GS = demand for current government services paid from the General Fund.

TPI = total personal income.

PB = the payment from the General Fund required to fund pension benefits of retired State workers.

HB = the payment from the General Fund required to fund health benefits for retired State workers.

M = Medicaid payments from the General Fund.

Then, the demand for total payments from the General Fund is described by the equation

$$GFP = GS + PB + HB + M. \quad (1)$$

We assume desired spending on current government services is proportional to TPI ($GS = \alpha TPI$ where α is a constant $0 \angle \alpha \angle 1$), so GS and TPI grow at the same rate. Thus, we have the following expression for the total demand for payments from the General Fund:

$$GFP = \alpha TPI + PB + HB + M. \quad (2)$$

Since General Fund revenues must be at least as great as the demand for this revenue, we

must have

$$GFR \geq \alpha TPI + PB + HB + M. \quad (3)$$

We will test to see if inequality (3) can be expected to hold in the future.

Hawaii's State Employees Retirement Fund

The Hawaii State Employees Retirement System (ERS) is underfunded according to standard accounting practice. Assuming investment returns of 7.75% (the rate of return chosen by the Legislature),[3] it is estimated that the current assets leave an unfunded balance of $7.7 billion to be covered by employee and employer contributions.[4] According to standard accounting practice, the contributions to the pension system each year (including both employee and employer contributions) should be sufficient to cover the normal cost of the pension plan incurred during the year plus payment sufficient to amortize the unfunded accrued liability over a period of thirty years.[5] However, at the

[3] The expected annual rate of return for investments in the pension fund is set by the State Legislature. Prior to 1985 the expected investment return was set at 7%. In 1985 it was raised to 8%. However, due to disappointing returns in the past decade, in 2010 the Legislature lowered the expected investment return to 7.75%. In our view, this may prove to be too optimistic. The new GASB guidelines suggest using a rate of 4.5%.

[4] See Gabriel Roeder Smith & Company "Employee's Retirement System of the State of Hawaii: Report to Board of Trustees on the 85th Annual Actuarial Valuation for the Year Beginning June 30, 2010," December 20, 2010.

[5] The normal cost is the increase in the present value of all future pension costs incurred during the year.

present rate of contributions, it is estimated that the unfunded liability is being amortized over a period of 41.3 years.[6]

Before 2004, the State's annual required contributions as a percent of payroll were set each year according to actuarial studies from three year before. In 2011, Act 163 specified further increases in the contributions to be put in place through 2016. Table 3 shows the actual employee and employer contributions to the ERS, the total State payrolls, and the required employer contributions to the ERS from 1997 through 2009. The data are plotted in Figure 2. Table 4 shows the total assets, the unfunded accrued liability and the investment yields for the ERS from 1985 through 2009. The unfunded liabilities have increased sharply since 2000, primarily as a result of lower than expected returns to pension assets. The dramatic rise in the unfunded liabilities since 2000 is plotted in Figure 3.[7]

Hawaii's State Employee Health Plan

The health care plans for retired State workers are the Employer-Union Health Benefits Trust Fund (EUTF) and the Voluntary Employees' Beneficiaries Association (VEBA) Trust for the Hawaii State Teachers Association. These plans provide health care benefits to retired state and county employees who are in the ERS pension system,

[6] Gabriel Roeder Smith & Company, Op. cit.

[7] The Governmental Accounting Standards Board (GASB) of the Financial Accounting Foundation has issued Statements No. 67 "Financial Reporting for Pension Plans" and No. 68, "Accounting and financial Reporting for Pensions," which will require state and local governmental employers to account for pension benefits as they are accrued. Statement No. 67 takes effect for fiscal years beginning after June 15, 2013, and Statement No. 68 takes effect for fiscal years starting after June 15, 2014.

and to their dependents. Both plans are currently structured on a pay-as-you-go basis. Using a rate of 5% to discount expected future liabilities, the present value of the unfunded liability already accrued in the plans was $11.8 billion at the end of fiscal year 2009. If a discount rate of 4% is used, the unfunded liability rises to $14.0 billion.[8]

Because the plans are not prefunded, amortizing payments for the expected future liabilities are not made. Nevertheless, we will provide a scenario in which the liabilities are amortized over a period of thirty years, as suggested by standard accounting practice. As we shall see, this change would have a profound adverse effect on the State's budget. Table 5 shows anticipated payments for health benefits for retired State workers under the current pay-as-you-go plan for fiscal years 2010 through 2024, before reimbursements from the counties and from other State special funds.[9]

Medicaid

The federal government funds about half of the total cost of the Medicaid program in Hawaii, the remainder being paid from the General Fund. The cost of the program has been rising faster than TPI. Increasing Medicaid costs can be traced to rising medical costs per patient. Also, the recent recession has increased the number of people eligible for the program. Part of the increase in the cost of Medicaid in Hawaii is caused by

[8] See the reports by AON Hewitt, "State of Hawaii Voluntary Employees' Beneficiary Association (VEBA) Trust for the Hawaii State Teachers Association (HSTA): Postemployment Benefits Other Than Pensions Actuarial Valuation Study," March 16, 2011, and "State of Hawaii Postemployment Benefits Other Than Pensions Actuarial Valuation Study," March 16, 2011.

[9] GASB Statement No. 43 and 45 require state and local governmental employers to account for health care benefits to retirees on an accrual basis, but they do not mandate how the employers fund the plans.

immigration from other islands in the Pacific, which has caused Hawaii to petition for more national support for its Medicaid program. Medicaid payments made up 11.2% of the total General Fund expenditures in fiscal year 2010 and this percentage is expected to increase in the coming years. Table 6 shows the Medicare costs for Hawaii's General Fund from 1968 through 2011, and the Governor's requests for fiscal years 2012 and 2013.

Estimating the Total Demand for Government Payments from the General Fund

The future costs of the pension plan for retired State workers that form a liability for the General Fund are estimated by assuming that the employer's annual required contribution rate is a constant fraction of total payroll and that payroll costs will grow by 3.5% annually.[10] The estimate for the annual required contribution as a percent of total payroll in fiscal year 2010 is 16.9%, taken from the report by Gabriel Roeder Smith & Company.[11] The report also calculated that the annual required contribution for fiscal year 2010 was $547.6 million. It is assumed that the counties and other State special funds reimburse the General Fund for 23% of the total cost of the pension payments.

The costs of the employee health benefit plans to be paid from the General Fund are estimated based on the projected benefit payments in the reports by AON Hewitt,[12] assuming 23% will be paid by the counties and other State special funds. In addition to

[10] The assumption of 3.5% annual payroll growth was used in the reports by Gabriel Roeder Smith & Company and by AON Hewitt, Op. cit.

[11] Gabriel Roeder Smith & Company, Op cit.

[12] AON Hewitt, Op. cit.

these projections, we also calculate the required employer contributions from the State's General Fund if the accrued liabilities in the health plan must be amortized over thirty years. In this case, the annual required contributions are calculated using the figure of $1,054 million (taken from the reports by AON Hewitt) [13] for fiscal year 2009, less 23% contributed by the counties and other State special funds, and assuming the contributions grow by 3.5% annually.

The forecasts of future General Fund payments required for the Medicaid program for fiscal year 2013 is based on the Governor's request.[14] For later years, simple trends in the payments for the program are used. In one scenario, future payments are assumed to grow at an average compound rate of 5.9%, which is the average annual growth rate over the last five years (from 2006 through 2011). In a second scenario, the future payments are assumed to grow at 9.4%, which is their average annual rate of growth from 1968 through 2011.

Forecasting growth in TPI and in General Fund Tax Collections

Annual growth forecasts for TPI are subjective averages based on the historic experience and on the forecasts that the individual members of the Council on Revenues supplied to the Office of Tax Research and Planning for purposes of making the General Fund revenue forecasts. For the high growth scenario, 6.5% is used for the annual

[13] The figure of $900 million is the combined annual required contribution for the VEBA and EUTF plans for fiscal year 2010, as estimated by AON Hewitt in the reports cited above, using a discount rate of 4%.

[14] See Department of Budget and Finance, "FY 2013 Executive Supplemental Budget: Budget in Brief," December 2011.

average growth in TPI for fiscal years 2013 through 2018. For the low growth scenario, 3.2% is used for the annual growth in TPI.

In addition to forecasting TPI, the Council members also provide forecasts for other economic variables, including construction spending, visitor arrivals, visitor expenditures, inflation, and total wages. Again, high and low growth scenarios for each of these variables are constructed based very roughly on historic averages and averages of forecasts submitted by the individual members of the Council on Revenues. The high and low average annual growth rates used for each variable were as follows: Construction completed, 12% (high) and 4% (low); Honolulu CPI, 3% and 2%; Visitor arrivals (by air), 5% and 2%; Total wages, 5% and 2%; Visitor expenditures, 10% and 3%; and U.S. GDP, 5% and 3%. The growth rates are used as inputs to the Department of Taxation's econometric model to create high and low scenarios for future tax collections. For the middle scenario, we use the Council's actual forecasts. In each case, we use the growth rate for fiscal year 2018 for fiscal years 2019 through 2022.[15]

Testing for Tax Adequacy

We begin our analysis of tax adequacy by calculating the expenditures on current government services in fiscal year 2011. We define these services as the total expenditures from the General Fund, less the net cost to the General Fund of the employer contributions to the ERS, less the net cost to the General Fund for health

[15] Although based roughly on averages of forecasts provided by individual members of the Council on Revenues, the results of the high growth and low growth scenarios do not correspond to the estimates of any individual Council member and should not be attributed to the Council in any way.

benefits to retired State workers under the EUTF and VEBA plans, and less the cost of Medicaid paid from the General Fund. The total expenditure from the General Fund in fiscal year 2011 was $4,943.3 million.[16] The expenditure on pension benefits for retired State workers in the ERS system is estimated to be $436.9 million,[17] the expenditures for health care benefits for retired State workers covered by the EUTF and VEBA plans is estimated to be $238.4 million,[18] and payments for Medicaid from the General Fund were $606.7 million.[19] Thus, the cost of current government services for fiscal year 2011 is estimated to be $3,687.2 million. The desired level of these services for future years was then assumed to grow at the same rate as TPI.

The forecasts for General Fund tax revenue collections and for TPI were described in the previous subsection. Projections of non-tax revenues to the General Fund for fiscal years 2012 through 2017 were taken from the General Fund budget plan submitted by the Department of Budget and Finance.[20] Projections for later years were calculated

[16] From the General Fund Financial Plan 2010-2015 prepared by the Department of Budget and Finance, October 2011.

[17] The pension costs were calculated using the figure for pension benefits of employees covered by the ERS for fiscal year 2010 (from the report by Gabriel Roeder & Smith P. cit., $547,613 million), multiplying by 77% to account for reimbursements to the General Fund from the counties and from other State special funds, and assuming growth of 3.5% from fiscal year 2010 to 2011.

[18] The health care benefits for the EUTF and VEBA plans were calculated using the projected costs of the current pay-as-you-go plan in the reports by AON Hewitt, Op. cit. ($281.9 million and $27.7 million, respectively), and multiplying by 77% to account for reimbursements to the General Fund from counties and other State special funds.

[19] Department of Budget and Finance, Op. cit.

[20] Ibid, page 3.

assuming an annual growth rate of 3%.[21]

Only one scenario was used for the cost of future employer contributions to the ERS pension plan from the General Fund. The future payments are estimated assuming employer contributions will be those estimated in the report to the ERS Trustees of December 20, 2010.[22] Two scenarios (mid-range and high) are used for the future costs of the Medicaid plan and of health benefits for retired State works. In the mid-range scenario, the costs of Medicaid are projected to grow at the average rate for the period from 2006 through 2011 (5.9% per year) and the costs of the health benefits for retired State workers under the EUTF and VEBA plans are taken from the reports by AON Hewitt.[23] In the "high" scenario, the cost of Medicaid is projected to grow at 9.4% (its long run average annual growth from 1968 to 2011) and the cost of the health benefits for retired State workers includes payments to fully fund the actuarially accrued costs of the plans (EUTF and VEBA) over a period of 30 years, as required by standard accounting practice.[24]

Table 7 shows our estimates of TPI, of expected General Fund revenues, and of the demand for total government payments to be made from the General Fund under

[21] These projections may be optimistic. The Department of Budget and Finance projected no increase in these revenues from fiscal year 2012 (when the revenues were forecast to be $561.5 million) through 2015 (when they were forecast to be $560.6 million).

[22] Gabriel Roeder & Smith, Op. cit.

[23] AON Hewitt, Op. cit.

[24] The annual required payments for this scenario are based on the estimated required payments in 2009 in the reports by AON Hewitt, Op. cit., assuming annual increases of 3.5%.

various scenarios for fiscal years 2013 through 2022. The estimates show surpluses in fiscal year 2013 under two of the three growth scenarios if we use the mid-point forecasts for growth in the cost of health benefits for retired State workers (that is, we continue under the current pay-as-you-go plan) and for Medicaid beneficiaries (that is, we assume growth of 5.9% after 2013). If the accrued liabilities in the health benefit plan for retired State workers must be amortized over thirty years, and if Medicaid costs continue to grow at their long-run historic average rate (9.4%), then large deficits are predicted for the mid-range and low growth scenarios for all the years after fiscal year 2015 covered in our forecasts. Unless we experience economic growth at the high end of the current forecasts, the deficits may reach levels of well over $1 billion annually by 2022.

Of course, by law the State cannot run an operating deficit.[25] Instead, the deficits we measure are the amount that government services would have to shrink relative to the size of the economy if the tax structure is not altered. Most of the reductions would probably occur in current operations, since pension and health benefits for retired workers are, for the most part, liabilities that have already been incurred, and Medicaid benefits are set by federal law. That is, the cost of current operations would need to shrink to a smaller share of the State's economy. Because the bulk of the cost of current operations consists of employee compensation of State workers, this means that pay of the State's workers would have to decline relative to total personal income in the State in

[25] For example, in the General Fund Financial Plan for fiscal year 2010 through 2015 produced by the Department of Budget and Finance (B&F) in October of 2011, the same General Fund revenues are used as those in the "mid"

the more pessimistic scenarios.

The results of our tax adequacy tests depend importantly on whether Hawaii continues to fund costs of the health care benefits for retired State workers on a pay-as-you-go plan or amortizes the accrued liabilities over a thirty year period, so it is worth considering whether it is really necessary to prefund the health plans as suggested by standard accounting practice, especially since doing so would have a profound effect on the State's budget. The question is whether prefunding the health care costs (and making the attendant changes to the State's tax and spending plans) is necessary for prudent fiscal planning. One reason for moving to a prefunded health care plan would be to make more transparent the cost of the State's employee benefits. This argument is less compelling the further into the future that the State's budget is projected. However, our projections indicate that the problem will become severe if it is simply ignored until the burden of unfunded or underfunded liabilities begin to appear in the current payments.

IV. Assessing the Stability of General Fund Tax Revenues

Measuring the Constant Law Tax Collections

To measure the stability of General Fund tax revenues, we begin by measuring the constant law tax collections dedicated to the General Fund. The constant law collections are annual tax collections adjusted to reflect the revenues that would have been produced

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scenario in Table 7, but B&F shows estimated revenue shortfalls of $81.1 million in fiscal year 2012, and surpluses of $35.5 million for fiscal year 2013, $0.9 million for fiscal year 2014 and $40.0 million for fiscal year 2015.

by the structure of taxes if the tax rate, the definition of the tax base, and the percent of collections dedicated to the General Fund had been the same for each tax as they were in the base year. We use fiscal year 2010 as the base, because the major changes made by the 2011 Legislature are temporary measures set to expire, most of them by fiscal year 2015. The constant-law collections dedicated to the General Fund are shown in Table 8. The adjustments made to actual collections to arrive at the constant-law collections are described in Appendix A.

Stability of a tax (or of a system of taxes) can be defined in one of two ways. One way is absolute stability, which is simply the extent that revenue from the tax has varied over time. A tax system that provides a very stable, fixed amount of revenue would eventually become inadequate to meet the needs of a growing economy. Therefore, in a secular analysis, it usually is better to define stability of tax revenues in terms of the stability of its growth rate. In addition to examining the absolute and relative stability of taxes, we also look to see how the major taxes have performed during periods of very slow economic growth and during the severe recessionary period of 2008-2010. The results are presented in Tables 9 through 12.

Absolute Stability of the Tax System

Table 9 shows the results from comparing *absolute* stability of the constant law collections for the major tax types, which accounted for over 98% of the total constant law General Fund collections in fiscal year 2011. The largest tax types, the GET plus PSC Tax, and the Individual Income Tax, accounted for 93% of the total General Fund

tax collections in fiscal year 2011. The table shows the mean average of the constant law collections for fiscal years 1972 through 2011, the standard deviation of collections for each of the major tax types (a measure of how widely the collections vary from year to year) and the ratio of the standard deviation to the mean average (a measure of how widely the collections of the tax vary from year to year relative to the average). The GET plus PSC Tax has the lowest year-to-year variation in collections of the major taxes relative to their average, but the variation in the total General Fund collections is smaller, indicating that some of the variations in collections from the different taxes offset each other.

Relative Stability of the Tax System

Table 10 compares the *relative* stability (the stability of the growth rates) for each of the major tax types. The percent variation in growth rates is smallest for the GET plus PSC Tax, which is the same as that for the total General Fund collections. Furthermore, the secular annual average growth rate of the GET plus PSC Tax (6.4%) and the Individual Income Tax (6.5%) are virtually the same as that for total General Fund collections (6.3%) and for growth in TPI (6.4%). Thus, the revenue provided by the tax system as a whole has tended to grow automatically at about the same rate as income over the longer run. The variation in growth rates is smallest for the GET plus PSC Tax and second smallest for the Individual Income Tax.

Tax Revenues in Periods of Slow Economic Growth

Tables 11 and 12 compare the stability of the growth rate of collections among the major taxes in years of slow growth and during the recent severe recession. The results are mixed. Years of slow growth were selected as those during which real growth in TPI (growth after removing the effect of price inflation) was less than 1%. The years in this group were 1975, 1981, 1982, 1993, 1994, 1995, 1996, 1997, 1999, 2001, 2008, 2009, and 2010. The comparisons in Table 11 indicate that the Corporation Income Tax suffered the smallest declines during the slow years relative to its secular growth rate, and the GET plus PSC Tax suffered the second smallest declines in the slow years. The average performance in the slow-growth years, however, does not predict the effects of the recent severe recession. The comparisons in Table 12 indicate that the individual income tax suffered slightly smaller declines in growth from the secular trend during the severe recession of 2008 – 2010 than did the GET plus PSC Tax, while the Corporation Income Tax suffered the largest declines.

The performance of the biggest tax types during the recent severe recession are summarized in Figure 4, which shows the constant law collections for the GET plus PSC Tax, for the Individual Income Tax and for the total of all General Fund collections from 1972 through 2011. All three types of collections declined in tandem during the recession of 2008 – 2010, implying that a different structure of taxes that relied more heavily on one or the other of these taxes would not have done much to alleviate the effect of the recession on the State's budget.

The Effects of E-Commerce on GET Collections

The growth of the Internet and electronic commerce has raised concerns that states may be losing tax revenues as consumers buy from out-of-state retailers and avoid the local sales tax. A recent study has estimated that Hawaii may lose as much $145 million in Use Tax (the GET on imports from a business that is not under Hawaii's taxing jurisdiction) to remote sales in 2012.[26] The Department of Taxation testified in 2009 that Hawaii would gain $25 million annually in additional GET revenue if Congress passed legislation to overturn the *Quill* Supreme Court decision so that companies could be compelled to collect Use Tax even if they had no physical nexus with the State.[27] Both estimates are small relative to the size of total GET collections, which were $2,698 million in fiscal year 2012.

In an effort to verify the revenue loss estimates empirically, we have applied a regression analysis to GET collections. The regression equation we use is derived from the model that the Department of Taxation uses to predict the effects of changes in the economy on tax collections. The model was developed to help the Council on Revenues forecast General Fund tax collections. Despite the relatively small size of the estimates for the effects of electronic commerce on GET collections, we had reasonable hopes of identifying these effects, because the regression equation for predicting GET collections explains a very high portion (99.8%) of the total variation in the collections.

[26] See William F. Fox "Selected Issues With the Hawaii General Excise Tax," University of Tennessee, July 22, 2012.

[27] See the testimony of Kurt Kawafuchi, Director of Taxation, before the Senate Committee on Economic Development & Technology, regarding SB 1678, Relating to Taxation, February 6, 2009.

The equation we developed to explain the GET collections uses Hawaii TPI, variables for construction spending (CONSTR), visitor expenditures (VISEXP), electronic commerce purchases as a fraction of total retail purchases (ECOMM), and an autoregressive term (AR) to correct for first-order auto correlation. The regression results, along with the data used in the regression, are shown in Appendix B.

The coefficient of ECOMM is the parameter of interest. Contrary to expectations, it is positive, indicating that the growth of electronic commerce is positively correlated with increased GET collections. The positive correlation could arise, because the variable ECOMM is serving as a proxy for other things that might influence GET collections. In particular, it might be coincident with the electronic modernization of the Department of Taxation's collections and enforcement. That is, growth in the use of computers by shoppers may have happened at the same time that computerized processing changes in the Department of Taxation allowed more efficient monitoring and enforcement of collections.[28]

To investigate the possibility that the coefficient of ECOMM is actually reflecting the effects of computer modernization in the Department of Taxation, we included a variable for delinquent collections (DELCOLL), on grounds that processing of these collections is one of the places where computer modernization was most effective. The

[28] We have observations for the variable ECOMM only from 1999 to 2011. A value of zero was used for the earlier years. However, the results are substantively the same if the regression is limited to the years 1999 through 2011.

regression results (reported in Appendix B) show that including DELCOLL makes the coefficient of ECOMM insignificant, in both the statistical and common meaning of the word. This result is consistent with the notion that the coefficient of the variable for electronic commerce in the original regression was capturing improvements in collection enforcement. The findings do not disprove the notion that electronic shopping by customers in Hawaii has adversely affected GET collections. However, they support the notion that this effect is not large, since the unexplained variation in GET collections is less than 0.2%.

Appendix A

Calculating the Constant-Law Tax Collections for the General Fund

This appendix describes the adjustments that were made to actual tax collections to account for legislative changes to the State's taxes from 1972 to 2011. Collections for each tax were adjusted to the tax law in effect for fiscal year 2010. In addition to changes in the tax law, the tax collections were adjusted to account for the fact that they may not match tax liabilities for the year, because the collection date may fall in a different year. When calculating the aggregate General Fund revenues, it was also necessary to adjust for changes in the proportion of the tax that is dedicated to the General Fund.

Individual Income Tax

Individual Income Tax rates were reduced by Hawaii's tax reform in 1986. Beginning in 1987, the top rate was reduced from 11 percent to 10 percent, the tax

brackets were expanded and the standard deduction was increased. Beginning in 1998, the Individual Income Tax was reduced over a four-year period, during which time the top rate fell from 10 percent to 8.25 percent and the tax brackets were again expanded. To adjust for changes in credits that may be claimed against Individual Income Tax and for tax rebates, all such credits and rebates were added back to the series of actual income tax collections. The constant-law series was then calculated by assuming that, absent any legislative changes, tax credits would have been the same proportion of the Individual Income Tax in each year.

Beginning in 2007, the standard deduction was increased and expansions were made to the tax brackets. In 2009, new 9%, 10%, 11% tax brackets were created. In 2011, the deduction for State income taxes was eliminated and itemized deductions were capped for certain high-income taxpayers.

General Excise and Use Taxes and the Public Service Company Tax

Collection from the General Excise and Use Taxes for various years were adjusted to account for the fact that frequently tax liabilities incurred in one fiscal year were actually collected and reported in another fiscal year. Also, $20 million was added to collections in fiscal year 2002 to account for the increase in filing thresholds that were established by Act 8 in 2001.

Act 9, also enacted in 2001, moved gross income from transportation services out from under the Public Service Company Tax and placed it under the General Excise Tax. To account for the move, we calculate the constant-law collections for both taxes

combined. In addition to shifting the tax collections from one tax to the other, the collections from both taxes combined were reduced by an estimated $4.5 million in fiscal year 2002. Thus, $4.5 million was added to the amount collected from both taxes that year.

Act 209, SLH 2007, exempts alcohol fuel, which reduced GET by $20 million in fiscal year 2007 and by $40 million in fiscal year 2008, so the amounts were added back for those years. Act 155, SLH 2010 denied GET exemptions and deductions if such returns were filed, but the effect of the legislation is probably quite small.

Estate and Transfer Tax

As a result of Hawaii's conformance with the federal Tax Relief Act of 2001, it is estimated that collections of the State's Estate and Transfer Tax were reduced by 25 percent in fiscal year 2003, by 50 percent in fiscal year 2004 and by 75 percent in fiscal year 2005. The State's tax was eliminated for decedents dying after December 31, 2004. The federal act expired at the end of 2010. From Jan 1, 2011 estate taxes were reset with the 2000 tax law in effect by Act 74, SLH 2010. The Act also established a tax for estates in Hawaii held by non-US citizens.

Tax on Liquor

Four large liquor distributors challenged the liquor tax law in 1980. The distributors paid the tax, but the amount was placed in an escrow account pending the resolution of their case. When they lost the case, the monies were paid into the General

Fund.

Taxes on Cigarettes and Tobacco

The rate of tax per cigarette was established at 3 cents in 1993. Prior to that (and since 1939) the tobacco tax had been at 40 percent of the wholesale price. It was raised from 3 cents to 4 cents in 1997, from 4 cents to 5 cents in 1998, to 6 cents in 2002, to 6.5 cents in 2003, to 7 cents in 2004, to 8 cents in 2006, to 9 cents in 2007, to 10 cents in 2008, and to 13 cents in 2009.

Act 58, SLH 2009, caused "little cigars" to be taxed as cigarettes. A 50% tax was also imposed on the wholesale price of cigars and the tax rate for all other tobacco products besides cigarettes, little cigars and cigars was raised from 40% of the wholesale price to 70%.

Tax on Banks and other Financial Corporations

Banks and other financial corporations litigated against claims for tax liabilities, resulting in $16.5 million in taxes being reported in fiscal year 2003 that properly belonged to fiscal year 2004. In addition, collections were adjusted by adding back tax credits claimed by these corporations in each year prior to 2005. The constant-law collections for the earlier years were then imputed by assuming that, absent legislative changes, the credits would have been the same proportion of the tax in each year.

Transient Accommodations Tax

The Transient Accommodations Tax was imposed in 1987 at 5 percent of gross rental income. The rate was increased to 6 percent in 1994 and to 7.25 percent in 1999. In

that same year, the tax was also expanded to apply to time-share units. Since 1990 the bulk of the tax has been allocated to the counties and to special funds, with only a small share of the total collections going into the General Fund.

In 2006 the allocations to the Convention Center were increased by $2 million to $33 million, which reduced the allocation to the General Fund by the same amount. The TAT trust fund was repealed and the allocation to the Tourism Special Fund was increased from 32.6 percent to 34.2 percent in 2007. The net effect was an increase in the allocation to the General Fund of about 2.5 percent. The TAT rate was increased to 8.25 percent in 2009, and to 9.25% for fiscal years 2010 through 2015, with the increase dedicated to the General Fund, except for a small part (12.5%) in fiscal year 2011 which went to the Tourism Special Fund.

Tax on Insurance Premiums and the Corporation Income Tax

The collections of the Tax on Insurance Premiums and the Corporation Income Tax were adjusted to account for changes in tax credits by first adding back tax credits claimed in each year prior to 2005 and then adjusting the collections by assuming that, absent legislative changes, the credits would have been the same in proportion to the taxes as they were in fiscal year 2005. In 2011 filing and payment for insurance premium taxes was changed from quarterly to monthly and the due date was changed from the last day of the month to the twentieth. This moved up the payment due on June 30, 2011 from fiscal year 2012 to fiscal year 2011, resulting in a one-time increase in revenues in 2011.

Conveyance Tax

The rate of the Conveyance Tax rate was changed from 5 cents per hundred dollars of value to 10 cents per hundred dollars of value in 1993. In 2005, the tax rates were increased again based on a sliding scale.

Miscellaneous

Act 74. SLH 2010, increased the environmental response tax from $0.05 to $1.05 per barrel for fiscal years 2011 through 2015 and deposited the increase in the General Fund. The Act resulted in $13.2 million in additional revenue in fiscal year 2011. Act 22, SLH 2010 moved the due date for miscellaneous tax types from the last day of the month to the twentieth day of the month. This moved up the payment due on June 30, 2011 from fiscal year 2012 to fiscal year 2011, resulting in a one-time increase in revenues in fiscal year 2011.

Table 1
Governmental Fund Revenues and Expenditures and Total Personal Income

(Dollar amounts are in millions)

Fiscal Year	General Fund Revenue	General Fund Expenditure	Governmental Revenue	Governmental Expenditure	Total Personal Income*
1970	464	463	596	710	3,873
1971	511	526	665	838	4,210
1972	547	576	723	888	4,640
1973	608	598	814	936	5,159
1974	708	686	940	1,045	5,931
1975	626	557	1,115	1,312	6,472
1976	685	726	1,310	1,491	7,032
1977	737	744	1,388	1,591	7,636
1978	816	849	1,505	1,613	8,462
1979	943	878	1,624	1,683	9,594
1980	1,085	973	1,728	1,775	11,026
1981	1,199	1,146	1,801	1,918	11,968
1982	1,186	1,208	1,669	1,648	12,701
1983	1,253	1,333	1,754	1,923	14,059
1984	1,355	1,379	1,772	1,702	15,325
1985	1,476	1,451	1,880	1,914	16,210
1986	1,605	1,598	2,050	1,901	17,131
1987	1,890	1,688	2,353	2,012	18,281
1988	2,076	1,944	2,590	2,197	19,972
1989	2,341	1,953	2,905	2,349	22,204
1990	2,452	2,624	3,182	2,832	24,294
1991	2,690	2,799	3,510	3,153	25,876
1992	2,708	2,681	3,671	3,686	27,823
1993	2,953	3,063	3,902	4,028	28,812
1994	3,086	3,059	4,163	4,245	29,507
1995	2,969	3,169	4,166	4,364	30,112
1996	3,194	3,124	4,550	4,505	30,399
1997	3,161	3,186	4,567	4,722	31,372
1998	3,232	3,214	4,590	4,485	32,259
1999	3,286	3,251	4,651	4,641	33,244
2000	3,284	3,201	4,840	4,573	35,222
2001	3,442	3,365	5,150	4,703	35,936
2002	3,441	3,656	5,100	5,685	37,475
2003	3,789	3,806	5,370	5,972	39,032
2004	3,908	3,840	5,790	5,972	42,285
2005	4,486	4,185	6,475	6,400	45,332
2006	4,905	4,599	7,030	7,063	49,124
2007	5,104	5,051	7,270	7,888	52,556
2008	5,205	5,438	7,397	8,221	54,701
2009	4,824	5,345	7,193	8,737	54,595
2010	4,812	4,879	7,623	8,430	55,759

Notes:

* Total personal income is for the calendar year.

"na" denotes "not available."

Source: Department of Taxation and Department of Budget and Finance.

Table 2
Tax Revenues and the Percent of Each Tax Dedicated to the General Fund
(Dollar amounts are in millions)

Fiscal Year	GET	%	Ind*	Bank	%	Tob	%	TAT	%	Con	%	Misc	%	Corp*	Est*	Ins*	Liq*	PSC*	Fuel**	MV**	Emp**	Total	%
1972	186	100	120	3.1	100	6.5	100			0.6	100	0.2	100	11.8	3.6	8.3	9.4	15.7	28.3		18.3	412	89
1973	211	100	135	3.7	100	7.1	100			0.9	100	0.2	100	12.9	2.1	9.2	10.2	18.3	29.8		24	464	89
1974	244	100	152	3.6	100	8.3	100			1.0	100	0.3	100	18.2	2.7	9.5	11.4	21.2	29.6		25.2	527	90
1976	310	100	185	2.5	100	9.6	100			0.8	100	0.3	100	32.9	3.3	16.1	15	28.6	41.5		49	695	87
1977	341	100	203	4.9	100	10.3	100			0.9	100	0.3	100	22.7	4.1	13.3	16.2	31.2	44.2		61.4	754	86
1978	367	100	227	5.2	100	11.0	100			1.3	100	0.3	100	23.8	4	15.7	18	33.4	46.1	6.9	73.7	833	85
1979	431	100	265	7.6	100	11.9	100			1.9	100	0.4	100	32.3	4.1	18.5	20.4	33.9	48.3	8	75.5	959	87
1980	498	100	312	7.8	100	12.8	100			2.3	100	0.4	100	42.4	4.3	22.2	13	32.5	51.1	8.4	67.5	1075	89
1981	549	100	335	5.8	100	13.8	100			2.0	100	0.4	100	47	4.6	24	7	50.2	53.1	8.4	58.8	1159	90
1982	577	97	283	3.9	100	14.0	100			4.5	100	0.4	100	39.3	5.1	27.8	7.7	57	52.6	8.5	58.3	1139	88
1983	601	97	347	-2.4	100	17.6	100			4.5	100	0.4	100	24.5	6.4	26.4	9.3	66.4	53.6	8.9	67.6	1231	89
1984	639	98	403	0.6	100	20.0	100			1.8	100	0.4	100	36.4	6.7	26.6	-0.2	59.6	54.9	9.3	76.3	1334	89
1985	684	98	429	3.9	100	19.7	100			1.9	100	0.4	100	44.8	12.3	28.7	20.6	62.3	58.5	9.6	68.7	1444	90
1986	747	98	467	4.9	100	19.7	100			2.0	100	0.4	100	39.6	6	34.6	29.9	70.3	67.5	15.3	67	1571	90
1987	818	99	543	15.3	100	19.1	100	67.7	100	3.6	100	0.4	100	61.5	5.2	36	34.6	61.8	73.3	17.8	76.1	1832	90
1988	920	98	626	12.0	100	21.3	100	67.3	100	4.2	100	0.5	100	66	7.3	38	38.2	63.6	85.2	18.7	77.4	2045	90
1989	1025	99	768	15.8	100	24.4	100	76.0	100	5.2	100	0.5	100	72.3	6.7	33.4	38.6	64.9	91.1	19.4	53.1	2294	92
1990	1177	91	695	19.9	100	23.5	100	82.4	100	8.1	100	3.4	100	74.9	16.3	36.9	40.3	69.6	107.2	20.3	79	2454	87
1991	1279	91	873	20.4	100	26.3	100	79.2	21	5.7	100	0.9	94	95.9	11.9	45.1	40.8	74.9	108.5	21.2	84	2766	86
1992	1295	93	907	24.0	100	27.4	100	80.0	5	4.0	100	0.7	100	43.8	16.4	60.4	41.5	82.3	128.3	40.7	44.7	2796	86
1993	1303	100	923	23.8	100	32.2	100	80.3	5	3.8	100	0.7	100	29.3	11.8	66.9	39.3	86.2	130.5	59.5	65.6	2856	88
1994	1332	100	963	29.4	100	32.7	100	76.5	5	7.7	50	0.7	100	39	28.1	63.7	39	92.3	137.4	57.8	88.6	2988	88
1995	1363	100	926	17.0	100	35.4	100	98.0	4	7.0	50	0.7	100	30.2	16.4	62.3	38.4	100.5	136	61.5	122.8	3015	86
1996	1432	100	1000	17.1	100	39.6	100	115.7	4	5.7	50	0.7	100	48.4	17.5	59.2	37.8	104.1	139.9	61.5	183.5	3263	85
1997	1457	100	976	9.7	100	36.4	100	125.5	4	6.0	50	0.6	100	57.8	22.2	55.8	38.3	114.4	138.6	62.6	170	3272	85
1998	1425	100	1084	15.5	100	36.1	100	127.1	4	6.7	50	0.5	100	46.2	19.6	59.4	38.9	120.3	136	63.6	155.1	3334	86
1999	1447	100	1069	9.8	100	42.3	100	136.5	21	7.7	64	0.6	50	42.6	28.7	52.5	38.5	121.1	136	65.3	149	3347	85
2000	1536	100	1065	7.1	65	42.3	100	168.6	0	9.5	63	0.8	93	68.2	22.8	68.7	39	119.5	136.4	78.1	150	3512	85
2001	1640	100	1105	-0.3	na	55.1	100	177.2	17	10.5	63	0.7	100	60.8	17.5	72.1	37.8	134.6	143	83.4	141.2	3678	86
2002	1612	100	1072	7.2	73	65.5	98	157.6	17	9.8	50	0.6	100	45.5	16.6	67.9	39.1	93.4	144.7	80.6	112	3525	87
2003	1793	100	1038	22.3	91	72.3	99	170.9	1	11.1	50	0.7	100	8.3	15.5	73.2	41.2	114.1	148.7	88.4	136	3734	85
2004	1900	100	1169	1.5	na	79.4	99	181.8	3	15.8	50	0.7	100	56.7	9.8	78.1	41.3	99.5	160.1	92	158.3	4044	85
2005	2137	100	1381	38.5	95	85.2	99	198.8	6	24.6	50	0.8	100	85.6	12.7	83.1	43.7	108.7	162.9	100.3	134.5	4597	87
2006	2355	100	1551	16.3	88	86.8	99	217.0	8	20.7	35	0.5	100	130	4	88.1	46	120.7	166.1	107.5	149.4	5101	87
2007	2556	100	1560	16.6	88	84.2	91	224.9	8	7.0	15	0.5	100	81.8	0.6	92.2	46	124	169.7	112.4	134.6	5317	86
2008	2619	100	1545	18.2	89	83.4	79	229.4	7	6.5	15	0.8	100	85.1	0.2	95.7	45.6	127.5	169.9	112.4	92.3	5478	85
2009	2418	100	1339	26.1	92	77.0	72	210.6	6	8.3	35	0.5	100	53.5	0.3	93.7	47.2	126.1	165.7	102.0	49.1	4944	85
2010	2316	100	1528	18.7	89	85.5	69	224.2	14	18.2	35	0.8	100	57.9	0	104.7	44.1	157.7	155.7	102.3	82	5135	85
2011	2496	100	1247	33.7	94	143.3	74	296.8	20	47.9	45	0.9	100	35.9	6.9	142.8	48.1	117.9	195.3	106.2	190.5	5297	82
Elasticity	**1.02**		**0.97**	**0.98**		**1.08**		**1.18**		**1.15**		**0.75**		**0.60**	**0.37**	**1.05**	**0.79**	**0.90**	**0.88**	**1.18**	**0.97**	**1.01**	

Notes:

"GET" = General Excise and Use Taxes; "Ind" = Individual Income Tax; " "Bank" = Tax on Banks and Other Financial Corporations; "Tob" = Tax on Tobacco and Tobacco Products; "TAT" = Transient Accommodations Tax; "Con" = Conveyance Tax; "Misc" = Miscellaneous Taxes and includes charges for fuel retail dealer permits, fuel tax penaly and interest payments, general excise tax license fees, and transient accommodations license fees; "Corp" = Corporation Income Tax; "Est" = Estate and Inheritance Tax; "Fuel" = Taxes on Liquid Fuels; "MV" = Taxes on Motor Vehicles; "Emp" = Employment Security Contributions.

* 100% of the tax is dedicated to the General Fund throughout the period.

** 100% of the tax is dedicated to Special Funds throughout the period, except in fiscal year 2011, $18.9 million of the Fuel Taxes went into the General Fund.

Source: Department of Taxation.

Table 3

Employer and Employee Contributions to the Hawaii State Employees' Retirement System

(Dollar amounts are in thousands)

Fiscal Year	Annual Required Contribution	Actual Contribution	% of Required Contributed	police & Fire-Fighters Payroll	All Others Payroll	Total Payroll	Police and Firefighters	All Other Employees	Total Employee Contributions
1997	323,188	322,121	99.67	209,958	1,809,310	2,019,268			54,364
1998	307,680	310,627	100.96	210,088	1,925,857	2,135,945			56,168
1999	185,387	154,470	83.32	216,476	1,970,023	2,186,499			55,703
2000	172,255	22,392	13.00	220,697	2,054,600	2,275,298			57,358
2001	164,397	8,132	4.95	239,357	2,110,842	2,350,199			54,490
2002	167,459	167,459	100.00	250,884	2,317,823	2,568,707			55,451
2003	190,586	190,586	100.00	257,496	2,460,939	2,718,436			57,214
2004	235,686	235,686	100.00	277,266	2,478,279	2,755,545	15.75	13.75	55,116
2005	328,717	328,717	100.00	290,173	2,634,375	2,924,548	15.75	13.75	57,055
2006	423,446	423,446	100.00	306,941	2,806,776	3,113,737	15.75	13.75	56,258
2007	476,754	454,494	95.33	325,708	3,014,780	3,340,488	15.75	13.75	144,658
2008	510,727	488,770	95.70	353,377	3,248,345	3,601,772	15.75	13.75	163,376
2009	526,538	578,635	109.89	383,990	3,454,010	3,838,000	19.70	15.00	184,500

Source: Comprehensive Annual Financial Reports from the Employees' Retirement System.

Table 4
State Pension Fund Assets and Accrued Liabilities

(Dollar amounts are in thousands)

Fiscal Year	Total Current Assets	Unfunded Accrued liability	Investment Yield rate (in %)
1985	2,314,334	496,998	10.38
1986	2,690,810	470,119	13.93
1987	3,121,283	469,414	16.02
1988	3,417,241	465,481	9.34
1989	3,677,715	460,597	11.36
1990	3,835,743	455,325	9.29
1991	4,080,784	449,630	8.65
1992	4,241,882	443,480	12.17
1993	4,680,697	436,838	10.02
1994	5,146,827	429,664	7.76
1995	5,615,930	421,917	6.19
1996	6,084,849	413,549	9.99
1997	6,855,389	1,062,122	13.72
1998	7,835,853	593,564	11.68
1999	8,590,807	510,814	12.33
2000	9,204,707	465,580	12.58
2001	9,515,956	990,956	-6.90
2002	9,415,160	1,795,065	-5.85
2003	9,073,960	2,878,097	1.89
2004	8,797,100	3,474,200	16.47
2005	8,914,839	4,071,149	11
2006	9,529,371	5,132,027	11
2007	10,589,800	5,106,800	16.9
2008	11,381,000	5,168,100	-4.14
2009	11,400,116	6,236,317	-18.04

Source: Employees' Retirement System Fiscal Year Reports.

Table 5
Projected Benefit Payments
(In thousands of dollars)

Fiscal Year	VEBA			All Other		
	Medical, Dental, Vision, Life	Medicare Part B	Total	Medical, Dental, Vision, Life	Medicare Part B	Total
2010	20,368	1,992	22,360	215,716	38,654	254,370
2011	25,135	2,585	27,720	241,188	40,670	281,858
2012	30,191	3,497	33,688	268,075	45,054	313,129
2013	35,174	4,650	39,824	294,978	49,785	344,763
2014	40,515	5,837	46,352	323,035	54,329	377,364
2015	46,245	7,193	53,438	351,176	59,168	410,344
2016	52,233	8,613	60,846	378,156	64,313	442,469
2017	58,313	10,159	68,472	403,440	69,772	473,212
2018	64,274	11,852	76,126	427,855	75,432	503,287
2019	70,130	13,624	83,754	451,022	81,331	532,353
2020	76,017	15,302	91,319	472,718	87,426	560,144
2021	82,415	17,060	99,475	494,231	93,649	587,880
2022	89,268	18,867	108,135	515,976	99,954	615,930
2023	96,460	20,741	117,201	538,588	106,399	644,987
2024	104,082	22,722	126,804	561,547	111,883	673,430

Source: AONHewitt, "State of Hawaii: Postemployment Benefits Other Than Pensions, Actuarial Valuation Study," March 16, 2011, and "State of Hawaii: Voluntary Employees' Beneficiary Association (VEBA) Trust for the Hawaii State Teachers Association (HSTA), Postemployment Benefits Other Than Pensions, Actuarial Valuation Study," March 16, 2011.

Table 6
Medicaid Costs

Fiscal Year	Federal Assistance (in %)	Cost to the State	Growth in Cost (%)
1968	50	10,573,770	
1969	50	12,900,000	22%
1970	50.75	16,421,236	27%
1971	50.75	23,652,038	44%
1972	50.83	34,071,802	44%
1973	50.83	35,262,384	3%
1974	50	38,800,000	10%
1975	50	40,900,000	5%
1976	50	60,300,000	47%
1977	50	71,765,181	19%
1978	50	93,339,487	30%
1979	50	104,693,951	12%
1980	50	112,023,669	7%
1981	50	135,541,107	21%
1982	50	143,068,000	6%
1983	50	158,000,000	10%
1984	50	154,587,200	-2%
1985	50	161,416,323	4%
1986	51	179,803,868	11%
1987	51.29	172,965,958	-4%
1988	53.71	192,000,000	11%
1989	53.99	183,600,000	-4%
1990	54.5	213,906,301	17%
1991	54.14	239,169,850	12%
1992	52.57	304,620,513	27%
1993	50	331,292,127	9%
1994	50	346,897,383	5%
1995	50	400,672,952	16%
1996	50	352,659,446	-12%
1997	50	318,172,596	-10%
1998	50	311,412,958	-2%
1999	50	309,603,880	-1%
2000	51.01	311,846,554	1%
2001	53.85	289,166,212	-7%
2002	56.34	315,412,249	9%
2003	58.77	317,019,800	1%
2004	58.9	345,800,000	9%
2005	58.47	377,000,000	9%
2006	58.81	409,000,000	8%
2007	57.55	451,700,000	10%
2008	56.5	479,100,000	6%
2009	55.11	498,200,000	4%
2010	54.24	545,300,000	9%
2011	51.79	606,700,000	11%
2012	na	797,500,000	31%
2013	na	795,600,000	0%

Source: Federal assistance rates are from the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services. Data for the cost to the State are from Fiscal Reports of the Department of Human Services (1968 through 2003) and from the Department of Budget and Finance Historical Information appendix in the Budget. The figures for the cost to the State for fiscal years 2012 ansd 2013 are the Executive requests, as reported in Department of Budget and Finance, "The FY 2013 Executive Supplemental Budget: Budget in Brief," December 2011.

Table 7
Estimates of the Demand for Government Payments from the General Fund and for General Fund Revenues

(Dollar amounts are in millions)

Column	Variable (and scenario)	Fiscal Year									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
1	GS (Low)	3,938.4	4,064.4	4,194.5	4,328.7	4,467.2	4,610.2	4,757.7	4,909.9	5,067.0	5,229.2
2	GS (Mid)	4,065.1	4,268.4	4,481.8	4,705.9	4,941.2	5,188.3	5,447.7	5,720.1	6,006.1	6,306.4
3	GS (High)	4,182.1	4,454.0	4,743.5	5,051.8	5,380.2	5,729.9	6,102.3	6,499.0	6,921.4	7,371.3
4	P (Mid)	535.8	554.5	574.0	594.0	614.8	636.3	658.6	681.7	705.5	730.2
5	HB (Mid)	296.1	326.3	357.1	387.6	417.1	446.1	474.4	501.6	529.3	557.5
6	HB (High)	931.4	964.0	997.8	1,032.7	1,068.8	1,106.2	1,144.9	1,185.0	1,226.5	1,269.4
7	M (Mid)	795.6	842.5	892.3	944.9	1,000.6	1,059.7	1,122.2	1,188.4	1,258.5	1,332.8
8	M (High)	795.6	870.4	952.2	1,041.7	1,139.6	1,246.8	1,364.0	1,492.2	1,632.4	1,785.9
9	GFR (Low)	5,692.1	5,790.1	6,011.2	6,108.1	6,279.0	6,464.3	6,645.2	6,841.2	7,032.7	7,240.2
10	GFR (Mid)	5,796.4	6,004.3	6,347.9	6,568.4	6,876.0	7,208.6	7,546.2	7,911.2	8,281.7	8,682.3
11	GFR (High)	5,883.3	6,185.8	6,637.9	6,971.5	7,407.4	7,882.2	8,375.1	8,911.9	9,469.2	10,076.1
Budget Surplus or Deficit											
9 - (1 + 4 + 5 + 7)		126.2	2.3	-6.5	-147.2	-220.7	-288.1	-367.7	-440.4	-527.7	-609.6
9 - (1 + 4 + 6 + 8)		-509.1	-663.3	-707.1	-889.0	-1,011.4	-1,135.2	-1,280.0	-1,427.6	-1,598.8	-1,774.6
10 - (2 + 4 + 5 + 7)		103.7	12.6	42.8	-64.1	-97.8	-121.8	-156.7	-180.6	-217.7	-244.6
10 - (2 + 4 + 6 + 8)		-531.5	-653.0	-657.8	-805.9	-888.5	-969.0	-1,069.0	-1,167.7	-1,288.8	-1,409.6
11 - (3 + 4 + 5 + 7)		73.7	8.5	71.1	-6.9	-5.3	10.1	17.6	41.2	54.5	84.3
11 - (3 + 4 + 6 + 8)		-561.6	-657.1	-629.5	-748.8	-796.0	-837.0	-894.7	-945.9	-1,016.7	-1,080.7

Source: Authors' calculations.

"GS" (expenditures on current government services out of the General Fund) are calculated as total expenditures from the General Fund less the net costs of pension and health care benefits for retired State paid out of the General Fund and less Medicaid payments from the General Fund.

"GFR" (General Fund total revenue) is calculated using forecasts for non-tax General Fund revenues provided by the Department of Budget and Finance for fiscal years 2013 through 2017. For later years, the non-tax revenues are assumed to grow by 3% annuually.

The "Low," "Mid" and "High" scenarios for GFR and GS are calculated assuming constant annual growth of TPI equal to 3.2%, 5.0% and 6.5%. Projections for fiscal years 2019 through 2022 are made by assuming the growth in total General Fund revenues is the same as it was for fiscal year 2018.

"M" (Medicaid payments) are calculated by using the Executive requests for fiscal years 2012 and 2013, then assuming growth of 5.4% for the "Mid" scenario (the average rate of growth over the five-year period from 2006 to 2011) and growth of 9.2% for the "High" scenario (the average rate of growth from 1968 through 2011).

"P" (pension benefits for retired State workers) are calculated using the annual required contribution (ARC) determined in the report to the ERS trustees by Gabriel Roeder Smith & Company, assuming payroll growth of 3.5% per year. To get the cost to the General Fund, it was assumed that 23% of the total ARC would be reimbursed by the counties and other State special funds.

"HB" is health care benefits for retired workers under the Employer-Union Health Benefits Trsut Fund (EUTF) and the Voluntary Employees Beneficiary Associations (VEBAs), as calculated based on projections in the reports by AON Hewitt. The "Mid" scenario is their projected annual payments under the current pay-as-you-go plan provisions, reduced by 23% to account for reimbursements from the counties and from other State special funds. The "High" scenario is calculated using their estimate for the annual contributions that would be required to make the plans fully funded, where the future accrued liabilities are discounted at 4% and it is assumed that the General Fund is reimbursed for 23% of the annual contributions.

Table 8
Constant Law Tax Collections Dedicated to the General Fund
(In millions of dollars)

Fiscal Year	GET+PSC	Ind	Corp	TAT	Ins	Liq	Tob	Bank	Con	Misc	Total
1972	201.7	109.1	8.7	5.0	6.7	9.4	6.0	2.8	7.9	0.8	363.8
1973	229.3	122.7	9.6	5.4	7.4	10.2	6.6	3.3	9.4	0.2	408.3
1974	265.2	138.1	13.5	5.5	7.7	11.4	7.7	3.2	9.2	0.3	468.3
1975	311.7	153.6	23.4	5.9	8.0	12.8	8.1	2.9	8.4	0.3	544.2
1976	338.6	168.1	24.4	6.2	13.0	15.0	8.9	2.2	6.4	0.3	595.5
1977	372.2	184.5	16.9	6.6	10.8	16.2	9.6	4.4	12.5	0.3	642.4
1978	400.4	206.3	17.8	6.9	12.7	18.0	10.2	4.6	13.2	0.3	700.6
1979	464.9	240.8	24.1	7.6	15.0	20.4	11.0	6.8	19.3	0.4	818.4
1980	530.5	283.6	31.7	8.1	18.0	23.4	11.9	6.9	19.9	0.4	946.5
1981	599.2	304.5	35.1	8.3	19.4	25.7	12.8	5.2	14.8	0.4	1,044.4
1982	634.0	257.2	29.5	8.7	22.5	27.4	13.0	3.5	9.9	0.4	1,028.2
1983	667.4	315.4	18.4	9.0	21.3	29.1	16.3	-2.1	-6.1	0.4	1,113.5
1984	698.6	366.3	27.2	9.5	21.5	31.4	18.6	0.5	1.5	0.4	1,214.5
1985	746.3	389.9	33.5	10.6	23.2	28.5	18.3	3.5	9.9	0.4	1,302.7
1986	817.3	424.4	29.8	10.7	28.0	33.5	18.3	4.4	12.5	0.4	1,412.7
1987	879.8	493.5	45.8	10.7	29.1	36.8	17.7	13.6	38.9	0.4	1,580.0
1988	983.6	568.9	49.2	10.7	30.8	38.2	19.8	10.7	30.5	0.5	1,774.7
1989	1,089.9	698.0	54.2	12.0	27.0	38.6	22.6	14.1	40.2	0.5	2,031.7
1990	1,246.6	631.6	56.8	13.1	29.9	40.3	21.8	17.7	50.6	3.4	2,141.9
1991	1,353.9	793.4	72.6	12.6	36.5	40.8	24.4	18.2	51.9	0.8	2,442.7
1992	1,377.3	824.3	33.9	12.7	48.9	41.5	25.4	21.4	61.1	0.7	2,481.2
1993	1,389.2	838.8	23.3	12.7	54.1	39.3	29.9	21.2	60.6	0.7	2,499.9
1994	1,424.3	875.2	30.4	12.1	51.6	39.0	30.3	26.2	74.8	0.7	2,604.3
1995	1,463.5	841.6	23.9	15.5	50.4	38.4	32.8	15.1	43.3	0.7	2,579.7
1996	1,536.1	908.8	37.1	18.3	47.9	37.8	36.7	15.2	43.5	0.7	2,741.7
1997	1,571.4	887.0	44.5	19.9	45.2	38.3	33.8	8.6	24.7	0.6	2,755.7
1998	1,545.3	985.2	51.5	20.2	48.1	38.9	33.5	13.8	39.4	0.5	2,851.2
1999	1,568.1	971.5	50.6	21.6	42.5	38.5	39.2	8.7	24.9	0.6	2,862.9
2000	1,655.5	967.9	66.4	26.7	55.7	39.0	39.2	6.3	18.1	0.7	2,973.9
2001	1,774.6	1,004.2	77.1	28.1	58.8	37.8	51.1	-0.3	-0.8	0.7	3,144.8
2002	1,705.4	974.3	60.3	25.0	60.1	39.1	60.8	6.4	18.3	0.6	3,037.8
2003	1,907.1	943.4	28.8	27.1	70.2	41.2	67.1	19.8	56.8	0.7	3,211.7
2004	1,999.5	1,062.4	65.3	28.8	77.0	41.3	73.7	1.3	3.8	0.7	3,470.2
2005	2,245.7	1,255.1	85.6	31.5	83.1	43.7	79.1	34.3	98.0	0.8	4,036.5
2006	2,475.7	1,409.2	130.0	34.4	88.1	46.0	80.5	14.5	41.5	0.5	4,350.7
2007	2,653.2	1,423.9	81.8	35.7	91.3	45.5	77.3	14.8	42.2	0.5	4,498.7
2008	2,761.9	1,471.7	85.1	36.4	94.7	45.1	77.4	16.2	46.3	0.8	4,669.4
2009	2,584.2	1,254.8	53.5	33.4	93.7	47.2	71.4	23.2	66.4	0.5	4,262.1
2010	2,473.7	1,341.5	57.9	31.7	104.7	44.1	59.2	16.6	18.2	0.8	4,182.8
2011	2,613.7	1,432.8	35.9	32.5	140.5	48.1	73.5	28.2	21.5	0.9	4,427.6

Source: Authors' calculations.

Table 9

Absolute Stability of Constant Law Tax Collections

(Dollar amounts are in millions)

Tax	Actual Collections in FY 2011	Mean Average of Collections FY's 1972-2011	Standard Deviation of Collections FY's 1972-2011	Ratio of the Standard Deviation to the Mean (in %)
GET + PSC	$2,613.7	$1,288.9	$754.7	58.6%
Individual Income Tax	$1,433.2	$713.1	$456.1	64.0%
Corporation Income Tax	$35.9	$43.6	$25.7	59.0%
Tax on Banks and Other Financial Corporations	$28.2	$10.9	$8.3	76.4%
Tax on Insurance Premiums	$140.5	$44.9	$28.5	63.4%
Total General Fund	$4,329.3	$2,255.4	$1,304.7	57.8%

Notes: Mean averages and standard deviations are calculated from the constant law tax collections.
Source: Authors' calculations.

Table 10

Relative Stability of Constant Law Tax Collections

(Dollar amounts are in millions)

Tax	Actual Collections in FY 2011	Average Annual Growth Rate of Collections FY's 1972-2011 (in %)	Standard Deviation of Annual Growth Rates FY's 1972-2011	Ratio of the Standard Deviation to the Mean
GET + PSC	$2,613.7	6.4%	0.06	93.8%
Individual Income Tax	$1,433.2	6.4%	0.10	156.3%
Corporation Income Tax	$35.9	4.9%	0.37	755.1%
Tax on Banks and Other Financial Corporations	$28.2	4.6%	1.13	2456.5%
Tax on Insurance Premiums	$140.5	7.0%	0.14	200.0%
Total General Fund	$4,329.3	6.3%	0.06	95.2%

Notes: Mean averages and standard deviations are calculated from the constant law tax collections.
Source: Authors' calculations.

Table 11

Stability of Constant Law Tax Collections During Slow Growth or Declining Income

(Dollar amounts are in millions)

Tax	Actual Collections in FY 2011	Average Annual Growth Rate of Collections (in %)	Average Growth in Collections, 1972-2011 (in %)	Difference: Average Growth minus Average Growth in the Recession (in %)
GET + PSC	$2,613.7	3.9%	6.4%	2.5%
Individual Income Tax	$1,433.2	0.5%	6.4%	5.9%
Corporation Income Tax	$35.9	8.5%	4.9%	-3.6%
Tax on Banks and Other Financial Corporations	$28.2	-18.9%	4.6%	23.5%
Tax on Insurance Premiums	$140.5	2.2%	7.0%	4.8%
Total General Fund	$4,329.3	2.8%	6.3%	3.5%

Notes: The averages and ratios are calculated from the constant law tax collections. Years of slow or declining growth were the thirteen years between 1972 and 2011 in which real (inflation adjusted) TPI grew by less than 1%.
Source: Authors' calculations.

Table 12

Stability of Constant Law Tax Collections in the Recession of 2008-2010

(Dollar amounts are in millions)

Tax	Collections in FY 2011	Average Annual Growth in Collections During the Recession (in %)	Average Growth in Collections, 1972-2011 (in %)	Difference: Average Growth minus Average Growth in the Recession (in %)
GET + PSC	$2,613.7	-2.6%	6.4%	9.0%
Individual Income Tax	$1,433.2	-2.4%	6.4%	8.8%
Corporation Income Tax	$35.9	-4.5%	4.9%	9.4%
Tax on Banks and Other Financial Corporations	$28.2	8,2%	4.6%	5.0%
Tax on Insurance Premiums	$140.5	4.5%	7.0%	2.5%
Total General Fund	$4,329.3	-2.5%	6.3%	8.8%

Notes: The average growth rates are calculated from the constant law tax collections.
Source: Authors' calculations.

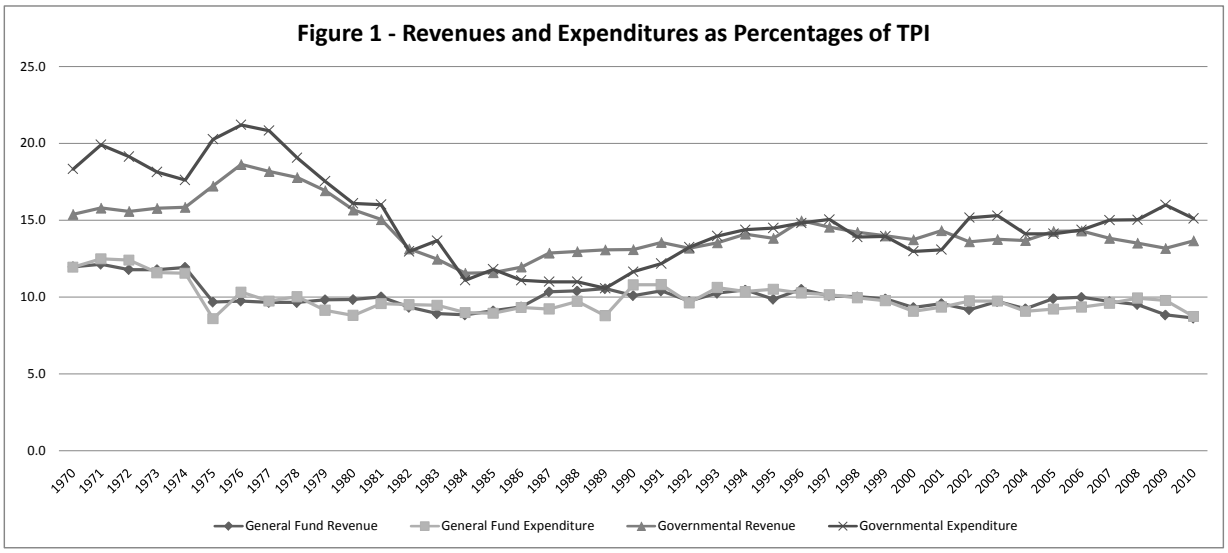
Figure 1 - Revenues and Expenditures as Percentages of TPI
25.0
20.0
15.0
10.0
5.0
0.0
1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010
General Fund Revenue
General Fund Expenditure
Governmental Revenue
Governmental Expenditure

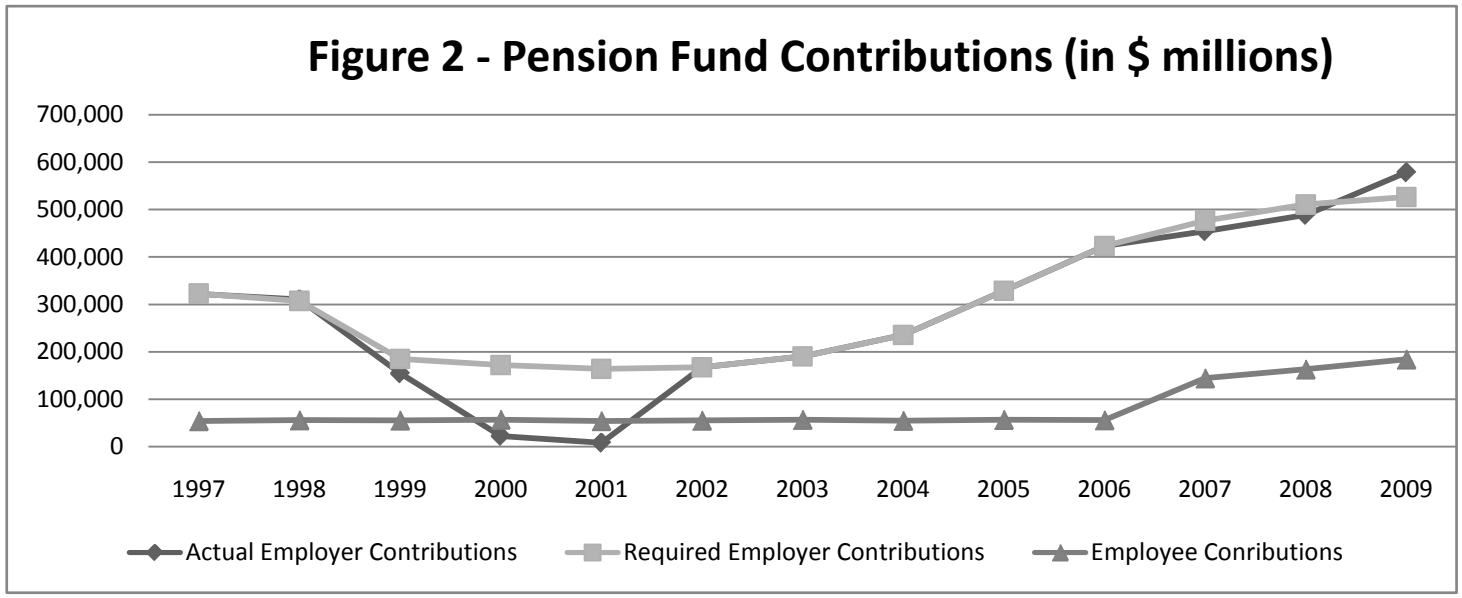
Figure 2 - Pension Fund Contributions (in $ millions)
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Actual Employer Contributions
Required Employer Contributions
Employee Conributions

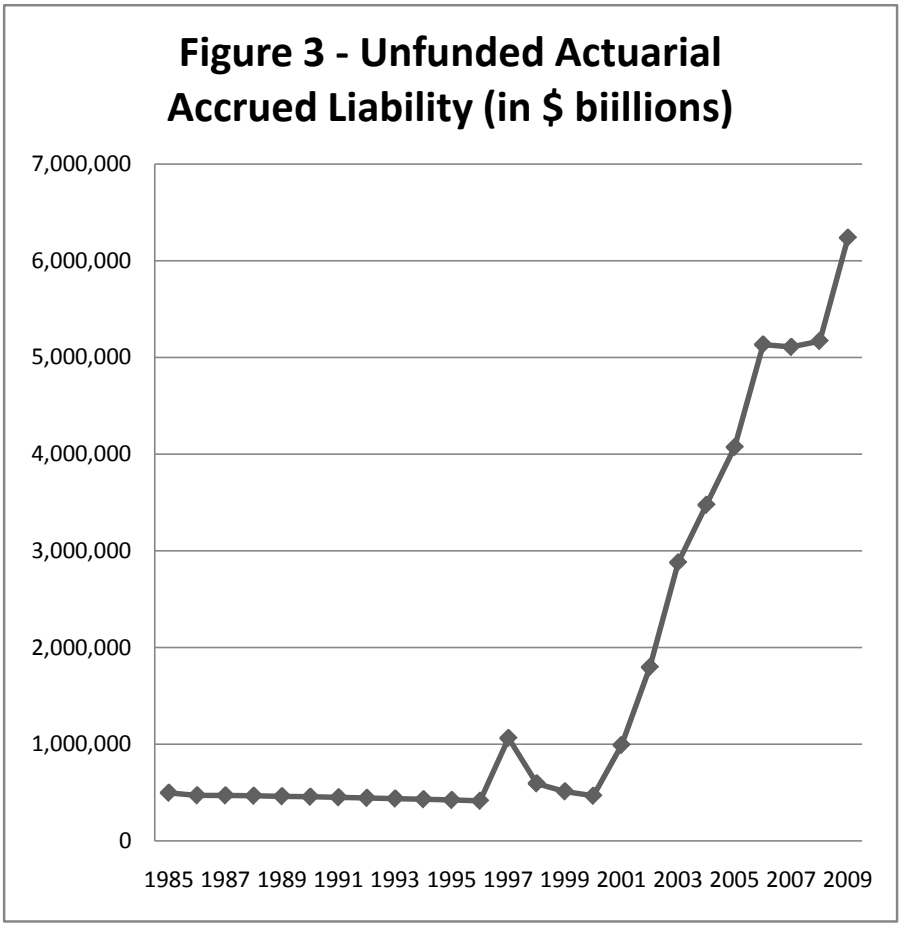
Figure 3 - Unfunded Actuarial Accrued Liability (in $ biillions)
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007 2009

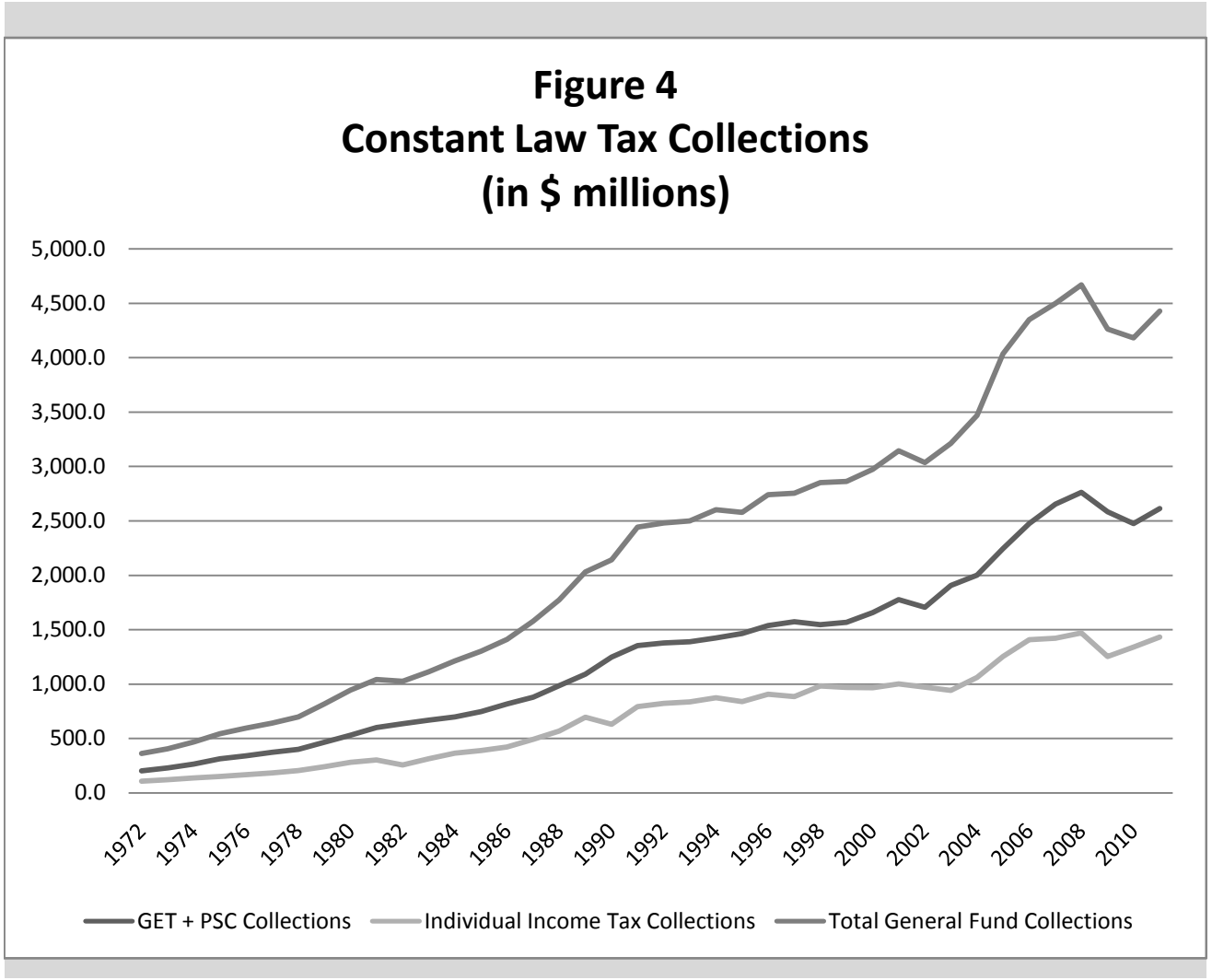
Figure 4
Constant Law Tax Collections
(in $ millions)
5,000.0
4,500.0
4,000.0
3,500.0
3,000.0
2,500.0
2,000.0
1,500.0
1,000.0
500.0
0.0
1972
1974
1976
1978
1980
1982
1984
1986
1988
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
GET + PSC Collections
Individual Income Tax Collections
Total General Fund Collections

Appendix B

Results for Regression Equations Explaining the Effect of Electronic Commerce on GET Collections

Data						
FY	**GET**	**TPI***	**CONSTR**	**VISEXP**	**ECOMM**	**DELCOLL**
1970	163	3,641	749	528		
1971	178	4,053	734	677		
1972	186	4,386	676	779		11.2
1973	211	4,924	820	930		12.2
1974	244	5,482	952	1,137		14.8
1975	287	6,242	1,143	1,286		15.1
1976	310	6,751	1,068	1,488		20.8
1977	341	7,330	924	1,753		19.4
1978	367	7,987	948	1,970		23.6
1979	431	9,035	1,204	2,349		22.9
1980	498	10,301	1,492	2,713		31.7
1981	549	11,660	1,595	3,028		36.6
1982	577	12,194	1,463	3,444		28.6
1983	601	13,387	1,308	3,746		37.3
1984	650	14,673	1,333	4,180		37.7
1985	686	15,836	1,141	4,752		38.9
1986	733	16,605	1,700	5,523		30.1
1987	818	17,647	1,829	6,192		38.5
1988	920	19,091	2,216	7,451		44.6
1989	1,025	21,068	2,835	8,696		46.1
1990	1,177	23,195	3,618	8,977		57.2
1991	1,283	25,192	4,382	9,224		60
1992	1,290	26,844	4,184	9,799		64.2
1993	1,303	28,461	3,848	8,904		65.7
1994	1,332	29,082	3,482	9,278		86.6
1995	1,363	29,950	3,188	10,607		86.1
1996	1,448	30,183	3,246	10,818		94.6
1997	1,441	30,862	3,096	10,251		91
1998	1,425	31,836	2,969	10,474		83
1999	1,447	32,662	2,974	9,785	0.6	99.8
2000	1,536	34,206	3,341	10,088	0.9	66.9
2001	1,660	35,702	3,701	9,797	1.1	103.5
2002	1,647	36,605	4,006	9,595	1.5	113.1
2003	1,763	38,202	4,550	10,024	1.8	161.9
2004	1,900	40,370	4,514	10,290	2.1	156.4
2005	2,137	44,008	5,602	11,025	2.5	234.3
2006	2,355	47,087	6,766	12,077	3.0	263.1
2007	2,596	50,871	7,984	12,453	3.5	202.9
2008	2,579	54,312	7,833	12,305	3.6	186.9
2009	2,418	55,092	7,496	10,220	4.0	178.4
2010	2,316	55,492	5,766	9,992	4.3	218.6
2011	2,496	58,163	5,708	11,902	4.5	239

* Data on TPI are for the calendar year.

Source: Hawaii Department of Taxation and U.S. Department of Commerce.

Electronic commerce sales are sales of goods and services where an order is placed by the buyer or price and terms of sale are negotiated over an Internet, extranet, Electronic Data Interchange (EDI) network, electronic mail, or other online system. Payment may or may not be made online. Data on the variable were collected only in 1999 and later. The data on ECOMM are from the U.S. Department of Commerce, Bureau of the Census (at http://www.census/retail).

Dependent Variable: GET Collections

Method: Least Squares
Date: 12/28/11 Time: 15:05
Sample (adjusted): 1971 2011
Included observations: 41 after adjustments
Convergence achieved after 14 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TPI	0.020658	0.003412	6.055094	0
CONSTR	0.07664	0.012219	6.27211	0
VISEXP	0.051115	0.009738	5.248931	0
ECOMM	62.69994	21.71051	2.887999	0.0065
AR(1)	0.660385	0.137512	4.802388	0

R-squared	0.998378	Mean dep. Var.	1183.53
Adjusted R-squared	0.998198	S.D. dep. Var.	748.4649
S.E. of regression	31.77614	Akaike info crit.	9.869158
Sum squared resid	36350.03	Schwarz criterion	10.07813
Log likelihood	-197.3177	Hannan-Quinn crit.	9.945254
Durbin-Watson stat	1.943648		
Inverted AR Roots	0.66		

Dependent Variable: GET Collections

Method: Least Squares
Date: 01/09/12 Time: 15:31
Sample (adjusted): 1974 2011
Included observations: 38 after adjustments
Convergence achieved after 32 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TPI	0.023428	0.003134	7.476115	0
CONSTR	0.072188	0.010699	6.747258	0
VISEXP	0.034366	0.010173	3.378051	0.002
ECOMMERCE	7.544078	24.45721	0.30846	0.7598
DELCOLL	0.633041	0.274675	2.304691	0.028
DELCOLL(-1)	0.728948	0.327123	2.228357	0.0332
AR(1)	0.420142	0.173202	2.425733	0.0213

R-squared	0.998471	Mean dependent var	1261.838
Adjusted R-squared	0.998174	S.D. dependent var	720.7877
S.E. of regression	30.79643	Akaike info criterion	9.857497
Sum squared resid	29401.03	Schwarz criterion	10.15916
Log likelihood	-180.2924	Hannan-Quinn criter.	9.964826
Durbin-Watson stat	1.979896		
Inverted AR Roots	0.42		