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**It's Spending that Matters:
From Robust Control Theory to Practical Heuristics**

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by

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Abstract

The problems caused by state and local revenue volatility are inherently challenging. Oregon has an especially volatile revenue structure, which can cause all sorts of problems as the state moves through the business cycle. Nevertheless, we have concluded that these problems are caused less by revenue volatility *per se* than by adjusting spending up and down to match current revenue flows, from growing spending at unsustainable rates during booms and cutting back precipitously during busts. The mild recession of 2001-2 had a particularly severe aftermath in Oregon. This event shocked the state's policy makers into addressing the revenue volatility issue, making sense of it, and taking steps that greatly mitigated the adverse effects of the 'Great Recession.' This essay describes three things: the public-policy processes that produced this moderately happy outcome, my own voyage of discovery as I observed/ participated in these processes, and a set of practical mechanisms states can use to stabilize spending.

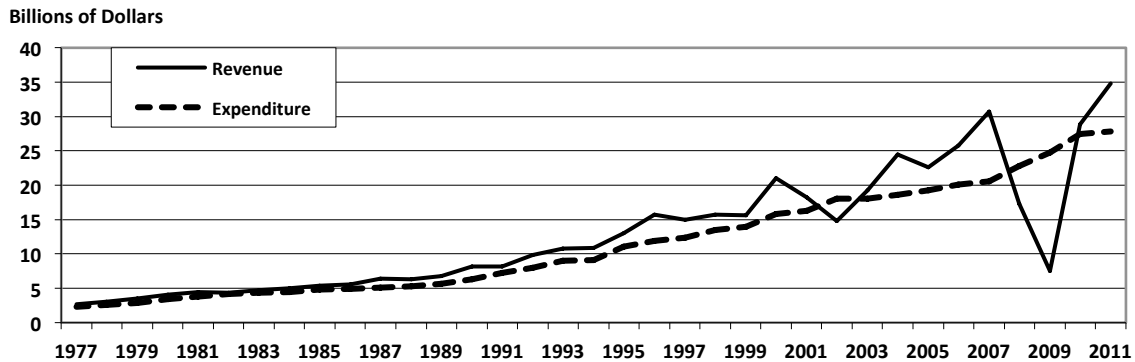
It's Spending that Matters:

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Most states took a big hit from the Great Recession. One might think that Oregon, with what the *Economist* magazine described as “America’s most volatile tax system,” would have been road kill.

Figure 1 comes from research done with my colleagues Kawika Pierson and Mike Hand. It shows the state of Oregon’s total income and outlays, in billions of nominal dollars as reported in the US Census from 1977-2011 (Pierson, Hand, and Thompson, 2014). Usually, analysts focus on general revenue/expenditures, rather than totals, or the even narrower category, ‘own source’ revenue, which excludes intergovernmental receipts, and general fund outlays. Moreover, we usually scale these measures by the CPI or state product to present a somewhat more realistic view of relative burdens and government activities over time. But, from a financial or treasury management standpoint, gross cash flows are of considerable interest.

FIGURE 1: Oregon’s Total Revenue and Total Expenditure



The most striking features of this graph are the dramatic effect of the Great Recession on total revenue, confirming the *Economist’s* claim, and its modest effects on outlays, our focus in this paper. Indeed, by many measures the Great Recession’s consequences were less severe than were those brought about the much smaller recession at the start of the century.

One might argue that Figure 1 is misleading because the revenue line is distorted by fluctuations in the value of the state’s investment portfolio: most of the difference in gross

revenues between 2007 and 2008 and virtually all of the difference between the 2008 and 2009 were due to losses to the states investment funds, approximately \$12 billion dollars in in 2008-9. Nevertheless, the smaller losses to the portfolio in 2001-3 triggered a bigger crisis than in 2007-9.

How, then, did Oregon manage to negotiate the Great Recession with so little pain? The broad answer is that Oregon was both relatively smart and relatively lucky. First, the smart part: Oregon had prepared for recession, if not necessarily the Great Recession. An earlier downturn in 2001-3 served as a wake up call for the state's leaders, leading them to focus their efforts on anticipating and mitigating the fiscal problems that business cycles cause, understanding how booms and busts affect the state's cash flows, recognizing the strengths and weaknesses of the state's fiscal levers at the state's disposal, and fitting these things together to put the state on a more stable fiscal footing. As a result of these efforts, the state's leaders redefined the problem they needed to solve, from one that focused on fixing revenue volatility, to one that focused on budget stabilization, primarily by aligning spending growth with the state's long-term revenue growth trend, but also by using savings and debt to smooth spending.¹ As for the lucky part, Oregon was endowed with an idiosyncratic state and local tax system, featuring dependence upon progressive, highly income-elastic, state personal-income taxes and growth-capped local property tax assessments. This system automatically insured adequate long-run state revenue growth (Alm and Sjoquist, 2014) and both constrained local spending growth and stabilized it over time (Thompson and Walker, 2014); it also forestalled state officials from shifting financial obligations to local jurisdictions during economic downturns. Of course, state officials (and voters) deserve some credit for recognizing that these are, in fact, features, and not bugs, and for reinforcing the system, when under stress, rather than fundamentally altering it.

¹ Oregon has an advantage with respect to expenditure smoothing relative to many states. The budget enacted into law must be balanced (in the sense that it may not exceed the revenue forecast), but if a cash shortfall subsequently occurs, the state may legally borrow to make up the difference.

A Narrative of Events

As Tim Nesbitt, Governor Ted Kulongoski's deputy chief of staff, explained with respect to the 2002 recession: "We learned a lot from the downturn. Revenue is much more volatile than we expected. You need to prepare for the swings. The question is how?" During that emergency, the Governor (2003-10) had established a special unit within the Department of Administrative Services' Budget Office to produce a medium-term financial program, which was issued along with the budget, aimed at identifying fiscal misalignments in advance and introducing corrective measures. This unit was charged with working closely with the Treasury Department and Secretary of State's Office (both constitutionally independent of the executive), as well as the Governor's cabinet, especially the Departments of Revenue and Transportation, to coordinate financial coverage operations (debt and investment management), utilize cash holdings more efficiently, and generally manage financial assets and liabilities better. This unit also served as the main interface between Gov. Kulongoski's staff and the Joint Legislative Task Force on Comprehensive Revenue Restructuring (OR House Bill 2530, June 30, 2007), about which I will say more in a bit.

In carrying out its assigned tasks, the financial planning unit relied heavily on three resources: *Growth and Variability in State Tax Revenue* by Randall Holcombe and Russell Sobel (1997), *Volatile States* by Mark Crain (2003), and "Spending Stabilization Rules: A Solution to Recurring State Budget Crises?" by Donald Schunk and Douglas Woodward (2005), and consequently so too did the Joint Task Force and my academic collaborators and I. The lessons the fiscal planning unit took from Holcombe and Sobel (1997) are that "most of the blame for state fiscal crises must be placed on the budgeting practices of state governments" (1997: 1) – rapidly increasing spending during booms, cutting during busts; that the need for cuts is induced by cyclical volatility in revenue streams; that adding a consumption-based tax to the state's tax system would not necessarily reduce cyclical revenue volatility but would probably reduce long-

term revenue growth;² that revenue volatility can't be entirely suppressed, and that the state should "accommodate the inevitable cyclical variability in revenues by smoothing expenditures over the business cycle" (1997: xvi). Crain (2003) contributed three basic ideas: that, while the basic *ex post facto* multiplicative decomposition of revenue change/growth divides it into three components –trend, cyclical, and irregular variation, *ex ante* we have only the trend and volatility, defined in terms of the *mean* and *variance* of the growth rate; at the state level, faster growth in the underlying economy tends to be associated with greater variance; and evidence that most of the costs of revenue volatility result from the unstable public spending that it can, but need not, induce. Schunk and Woodward (2005) showed that this problem could be fixed by increasing "spending no faster than the rate of inflation plus the long-term real growth rate of the underlying economy," regardless of actual revenue growth in any given year, with the remainder put aside for a rainy day.

Consequently, the key element of the financial plan was a cast-iron multi-year spending target, initially comprehending the following two biennia and, in 2009, extended to comprehend the next ten years. The initial spending target was more or less arbitrary: planned spending growth was set equal to the average rate of revenue growth over the previous business cycle less 1.5 percent, which turned out to be significantly less than realized revenue growth over the first planning cycle. After 2006, the medium-term forecast was based upon exponential smoothing of past revenue growth less one percent.

Next, under the rubric of improving financial coverage operations, the state clawed back most of the unsustainable option it had granted members of Oregon's Public Employee Retirement System (PERS) on the so-called individual contribution portion of their retirement accounts (Hansen, Dothan, and Thompson, 2007) and funded PERS's remaining liabilities by issuing long-term, tax-exempt bonds. In this instance, Treasury recommended and the medium-

² To which we added from Holcombe and Sobel that these relations depend greatly upon the designs of the taxes in question (Holcombe and Sobel, 1997), primarily their progressivity (see Thompson, Beatty, and Thompson, 2013).

term financial planning unit endorsed the issuance of variable-rate bonds. This was the case for two reasons. First, variable-rate bonds tend to reduce interest payments on average. Second, variable-rate interest payments (outflows) are highly correlated with the state's revenue inflows, both treasury receipts and tax revenues. The debate over this debt issue had the by-product of familiarizing budget personnel with the logic of hedging asset and liability positions and encouraged them to think explicitly about all-inclusive cash flows and to look at them in present-value terms, perspectives with which they were familiar but had seldom practiced. The proceeds from the issuance were invested in the stock market, which suffered large losses between 2007 and 2009, but has subsequently recovered.

Later, under Gov. Kulongoski's 2009 reset initiative, top-end personal and most business income taxes were increased and, as noted earlier, the state's medium-term fiscal horizon extended to ten years. The one vital element of the reset initiative not enacted was an increase in transportation taxes and fees; these revenues have continued to stagnate, putting the state highway-trust fund and local transportation in considerable jeopardy.

Nesbitt's comments about the implications of the 2002 recession were addressed to the members of the Joint Legislative Task Force on Comprehensive Revenue Restructuring (OR House Bill 2530, June 30, 2007). The task force was Chaired by Lane Shetterly, a former Republican state legislator and head of House Revenue Committee, and instructed by the legislature to thoroughly examine "Oregon's tax structure from top to bottom" and assess several options for change – replacing personal income and/or property taxes with a sales tax or a gross receipts tax, imposing a tax on business assets and/or a value-added tax in place of the business income tax, creating an adequate 'rainy-day fund' – and to recommend comprehensive statutory changes that would put Oregon's state and local finances on sound fiscal footing and stabilize the ups and downs of the state's economy.

The task force was broadly representative of the state's great and good, made up as it was of former and sitting legislators from both parties, retired business and government executives,

tax lawyers, and think-tank analysts. When the task force initially convened, most of its members presumed that they would end up recommending the adoption of a broad-based consumption tax of some sort to replace a proportion of the state income tax. All of its members were aware that Oregon was one of handful of states without a comprehensive sales tax and generally shared the belief, which is widespread among Oregon's political class, that the lack of a state sales tax is a fatal fiscal flaw. They were also amply cognizant of the fact that Oregon's voters had rejected the adoption of a sales tax in statewide referenda nine times over the past 80 years.

Nevertheless, it quickly became apparent to the task force that, even if they set aside questions of political feasibility, most of the tax options they had been charged with assessing had serious drawbacks, sales taxes included, and that none would fix the state's revenue volatility problem. Property-tax growth was already fairly stable and, with minor adjustments, could be made even more so. The state's progressive-income tax remained a source of revenue volatility, but very few members of the task force, after a thorough reexamination of the alternatives, were willing to sacrifice its progressivity and growth potential for what appeared to be at best marginal improvements in stability. As Tony Van Vliet, task force member, Republican member of the Oregon House of Representatives from 1975 to 1995, and long-time sales-tax champion, observed "these alternatives involve making the revenue system less fair and less capable of providing sufficient support for essential public systems and services – outcomes that are both far worse than any that are likely to result from budgeting for the ups and downs of economic cycles." Moreover, none of the task force members were enthusiastic about investing in the administrative apparatus needed to install a new tax type, let alone exposing Oregon's taxpayers to increased federal tax liabilities.³

Ultimately, the task force concluded that the Governor's medium-term financial planning unit had it about right: what needs fixing is not unstable revenue growth but unstable spending.

³ Taxpayers may deduct state and local income tax or sales tax payments from AGI on their national personal income tax returns, but not both.

Most of its members were also persuaded the state's existing revenue structure was adequate to meet future state and local needs, that there had to be a way to smooth out spending over time, and that a fix was to be found in putting revenue windfalls aside for a rainy day and making up for unexpected shortfalls with savings (or borrowing). At that point two questions surfaced: how much money should the state put aside and could Oregon put enough in reserve to make it through a serious downturn unscathed? Which is where I came in.

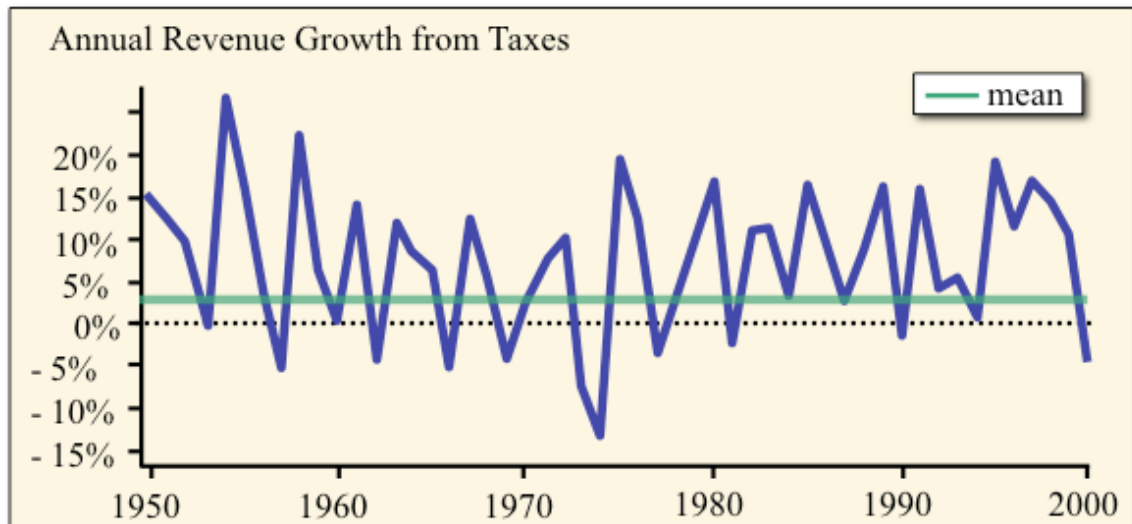
Participating in and Reflecting on the Process

At the behest of Oregon's Department of Administrative Services, my colleagues and I had been doing background research on these issues (Gates, et al., 2005; Thompson and Gates, 2007). We started with two questions: how big does a rainy-day fund need to be to keep from running out of money (Wagner and Elder, 2004); what rules should govern contributions and withdrawals from the fund? We were ultimately defeated by the first question and, because answering something like the first question is requisite to answering the rules question, the second as well. We concluded that a rainy-day fund, which would be completely safe, as defined by The Task Force, would be very large and almost certainly unaffordable: "any state that could afford a rainy-day fund probably didn't need one; any state that needed a rainy-day fund probably couldn't afford one" (Gates, et al., 2005). This conclusion turned out to be incomplete, if not entirely wrong, in part because we had misspecified the problem that needed to be solved. It took a while for us to figure out why and how.⁴

⁴Our initial formulation of the problem and its solution was taken from Ken Kriz (2002), who noted that the level of savings needed to insure against revenue shortfalls depends upon average revenue growth, revenue volatility, average return on investments, volatility of investment returns, and the desired rate of spending growth. To compute this value, Kriz assumed that revenues and investment returns could be modeled by a Markov process called geometric Brownian motion, which is a type of stochastic process in which the distribution of future values of a financial variable, conditional on current and past values, is identical to the distribution of future values, conditional on the current value alone, growth increments are independent of one another, and the variance of the change in the process grows linearly with its time horizon. This process is also called a random walk. Kriz used a Monte Carlo simulation to replicate this process and, thereby, to find the level of savings needed to sustain a given rate of expenditure growth. He found that if the typical jurisdiction wished "to sustain a three percent expenditure growth rate with a 75 percent confidence level, it would need savings equal to 91 percent of total [annual] revenues" (Kriz, 2002: 5). Note that this formulation implies a growth rate of 3 percent in year t+1 regardless of the increase in

We also looked at the effects of revenue restructuring, primarily focusing on substituting various consumption tax designs for some or all of Oregon’s personal income tax, on revenue volatility. Figure 2, illustrates the situation with which we were working. It shows Oregon’s annual growth in personal income tax revenues, 1950-1 to 2000-1. In this period, nominal increases averaged about 10 percent per year, with inflation accounting for more than half of the increase. The mean real rate growth was approximately 3.5 percent. The most salient fact about income tax revenue during this period is its volatility: nominal increases were equal to or greater than ten percent during 32 of the 50 years; growth was negative during eleven.

FIGURE 2: Oregon Personal Income Tax Growth



Of course, reliance on multiple tax types will reduce revenue volatility only to the extent that their cash flows do not covary.

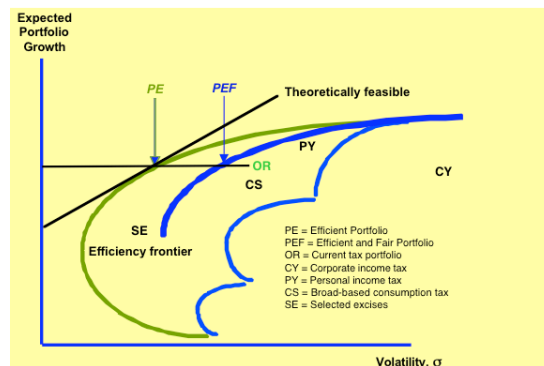
For example, Washington State’s tax system is the mirror image of Oregon’s: it has no income tax, but instead relies almost entirely upon sales and transaction taxes. Consequently, if Oregon’s annual revenue growth (in percent) is regressed on Washington’s, one obtains an R^2 of

year t , i.e., it is designed to insure against revenue shortfalls, taking windfalls as given. Following Kriz, we focused exclusively on the state’s general fund and tried minimum growth rates of 3, 2, 1, and 0 percent; even the last, would have required Oregon to earmark 15-20 percent of its budget for the rainy-day fund each year, nevertheless produced occasional spending shortfalls, and reduced year on year spending volatility by little more than half.

about .65 (i.e., they are imperfectly covariant) and a regression coefficient greater than 1.3. This tells us two things: Oregon’s revenue flows are more volatile than Washington’s (the coefficient is greater than 1) and that, if the two states pooled their revenue, total volatility would be reduced by about a third, with the volatility of Oregon’s share reduced by half (Washington’s economy is approximately twice the size of Oregon’s). The interesting question is ‘why?’ The underlying tax bases, personal income and consumption, are themselves highly covariant, so why aren’t the consequent revenue flows equally covariant? The basic answer is simple, Oregon’s income tax design is relatively progressive; Washington’s sales tax is quite regressive (overall, by most reckonings, Washington has the nation’s most regressive state and local tax system, while Oregon’s is among the most progressive). Generally speaking, revenue volatility varies directly with the long-term income elasticity of the tax system, which is simply another way of saying ‘its progressivity.’⁵

Figure 3 shows the results of an analysis of the mean real growth rates and variances associated with alternative tax portfolios based on 1950-2001 Washington/Oregon revenue data.

FIGURE 3: Efficient Tax Portfolios



This analysis (see Thompson and Gates, 2007) was designed to assess the inferences drawn by Oregon’s fiscal planners based primarily on their understanding of Holcombe and Sobel (1997) and was made available to the Legislative Task Force on Revenue Restructuring. In Figure 3,

⁵ Over the past 20 years, state and local tax systems have become more volatile. This is the case for two reasons: the underlying economy has apparently become more volatile and states are relying increasingly upon income taxes, i.e., have made their tax systems less regressive (Seegert, 2012).

mean growth in tax revenues is shown on the vertical axis and revenue volatility on the horizontal axis; OR locates Oregon's actual tax revenue in this space, PY personal income tax revenue,⁶ CY business tax revenue, and SE all other state tax revenues; CS does the same thing for Washington's actual sales tax revenue. The green line shows combinations of Oregon's actual tax revenue and Washington's revenue from sales taxes; the point labeled PE reflects weights of 1/3 personal income tax and 2/3 sales taxes. The blue line shows combinations of Oregon's actual tax revenue with Washington's sales-tax revenue adjusted (using per-capita rebates) to be as progressive as Oregon's personal income tax system; the point labeled PEF reflects sales and income tax weights of approximately 1/2 and 1/2. The implication of this analysis is that the adoption of a sales tax that was as progressive as Oregon's personal income tax would have a trivial effect on volatility; adopting one like Washington's could reduce revenue volatility by nearly half, but would also reduce Oregon's state and local progressivity rank from the top 10 percent in the nation to the bottom third.

Performing this analysis also helped us to see that the question – how big must a rainy-day fund be to avoid cuts when the economy goes bust? –, which my colleagues and I had asked earlier (Gates, et al., 2005), was the wrong question. Instead, we realized that spending volatility cannot be fixed if it is grown at an unsustainable rate during booms. Consequently, the right question is: *how fast can we safely grow spending, given existing revenue structures and savings?* This formulation presupposes two things:

- State governments face a hard budget constraint. As Willam Buiter explains (1990: 62-67), this means that the present value of a jurisdiction's planned expenditures (spending target)

⁶ Implicitly we have treated statutory rate changes as endogenous to the tax structure. In point of fact, Oregon's personal income tax rates remained stable during the 1950-2001 period, with only minor changes (i.e., indexing for inflation in 1989 and increased limits to various deductions and inclusions). In contrast, the business tax was dramatically modified after 2002 and rates increased substantially in 2010. In Washington, sales tax rates underwent frequent upward revisions during the same period; otherwise its growth rate would have been substantially lower, although owing to the timing of increases (generally pro-cyclical), perhaps, not its volatility.

must be equal to or less than the sum of its net assets (assets – debts), plus the present value of its expected net revenues (taxes – transfers).

- Spending targets should be designed to avoid/minimize cuts due to cash shortfalls, which has at least two possible interpretations: targets should be set to maximize the rate of spending growth, given current-state variable values, including mean revenue growth and its variance (as in Kriz, 2002), and an endogenous liquidity constraint, *or* targets should be set so as to minimize the likelihood of a spending cut from the level of the preceding period, again given current-state variable values.

Once Bruce Gates and I thought we had identified the right question, we tried to answer it using brute force: Monte-Carlo simulation and probability distributions (triangular, in this case, rather than normal) that were pessimistic enough to protect against horribly wrong inferences (Thompson and Gates, 2007).

Prior to performing this analysis, we were sure that the first interpretation implied somewhat lower spending targets than the second. In point of fact, it appears that that is the case only where the acceptable probability of a spending cut is more than 12-13 percent, which seems altogether unsatisfactory. Even if state spending were perfectly myopic, which it has never been, Oregon would experience nominal shortfalls only about 20 percent and real shortfalls about 25 percent of the time. Given that fact, an acceptable probability of a budget shortfall ought to be no more than 4 or 5 percent, which appears to imply markedly lower spending targets under the second interpretation. Moreover, because net assets, together with the mean and variance of revenue growth, are recalculated each iteration of the simulation, the resulting spending increases are both more likely and considerably smoother under the second interpretation than the first.

When I presented this problem and our brute-force solutions to my academic colleagues, Michael Dothan immediately saw that it was a robust optimal-control problem,⁷ where our first formulation corresponded to a traditional Merton-style model (Merton, 1971), in which spending rates are proportional to net assets *plus* the present value of expected net revenues and revenue and savings growth are continuous-time, continuous-state stochastic processes, and the second to a version of that model, modified to reflect significantly higher relative risk aversion for budget shortfalls (defined as spending below the highest previously realized level) than for windfalls (spending above the highest previously realized level). Moreover, he proceeded to develop discrete, closed-form mathematical solutions for both a straightforward extrapolation from the Merton model to government spending (Dothan and Thompson, 2009a) and then for a more general version of that extrapolation permitting asymmetric relative risk aversion (Dothan and Thompson, 2009b). Both versions identify sustainable rates of spending growth and, implicitly, minimum net-contributions to savings, given current-state variable values – current cumulative savings, average revenue growth, revenue volatility, average return on investments, and volatility of investment returns. But, under the second, which accommodates asymmetric risk aversion, spending volatility decreases monotonically when relative risk aversion is increased.

These optimal-control theoretic, closed-form mathematical formulations aren't, in fact, particularly relevant to everyday budget making,⁸ but they do have two practical uses: they provide a standard for assessing the algorithms that budget analysts use to try to make spending sustainable and a counterfactual for evaluating past spending (i.e., we can say what governments should do to stabilize spending growth in the face of revenue volatility, which allows us to ask “is this what they do and, perhaps, if not, why not?”).

⁷ Robust optimal control is an abstract, mathematical approach for dealing with risky choices, developed by engineers, applied to finance, and aimed at producing a pretty good result, even when things go bad, as they all too often do.

⁸ At least, not at the state level. Jeffrey Frankel (2011) reports that things are otherwise in Chile.

Using our closed-form mathematical solution as a normative standard, it is fairly easy to show that *any* spending algorithm that attends primarily to the revenue-growth trend outperforms forecasts that track revenue growth from one year to the next. As Aaron Wildavsky (1975) observed, budgeters can put spending on a sustainable path simply by basing the permissible rate of expenditure growth on the long-run rate of revenue growth. If cash outflows nevertheless outstrip cash inflows, they can knock a percentage or two off the planned rate of expenditure growth until spending is back on a sustainable path. Indeed, using the geometric mean of the growth rate (as opposed to the arithmetic mean) in carrying out this simple fiscal rule approximates our mathematical solution.

Moreover, the so-called the gold standard in budget forecasting, exponential smoothing, where revenue growth determines spending growth (Downs and Roche, 1983, 1984), even more closely replicates our closed-form mathematical solution.⁹ This is the case because exponential smoothing does algorithmically what our formulation does mathematically. In both cases, the data-generating process is a latent random-walk signal buried in white-noise measurement error (e.g., regime switching, with the time of the switch is unknown). Exponential smoothing is a mean-squared-error-optimal filter, where the smoothing parameter depends only on the random-walk error variance relative to the measurement error variance, the signal to noise ratio is time varying and so too is the optimal smoothing parameter.

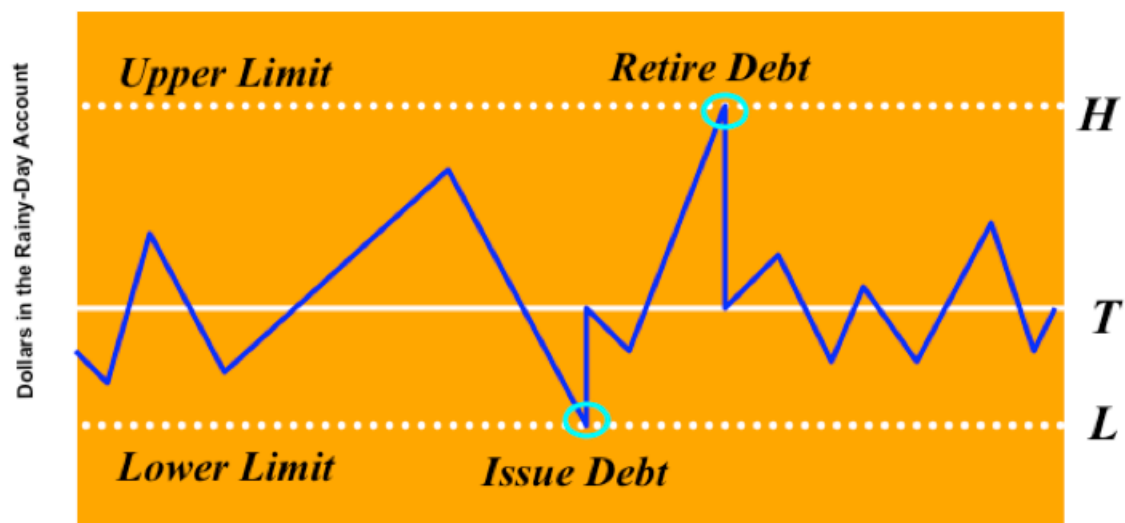
Since it appears that budget makers can render spending sustainable with the tools available to them, is that what they do? Clearly, prior to 2003-4, that's not Oregon's budget makers did. Looking at a far larger population of jurisdictions (all U.S. municipalities from 1986-2008), however, it appears that spending and savings behavior were more or less consistent with the prescriptions of the closed-form models (Thompson, et al., 2014). Nevertheless, spending was more volatile than it should have been. On average, municipalities increased spending (including

⁹ This is the approach taken by the medium-term planning unit in proposing spending targets for the reset cabinet.

tax cuts) too much during booms and cut spending (including tax increases) too much during busts. They also increased spending prematurely in response to tax increases and they did not reduce it sufficiently in response to tax cuts). In other words, spending behavior tended to be excessively myopic.

My academic colleagues and I made one final contribution to the task force: a set of operating rules for rainy-day funds designed to keep state spending out of trouble (avoid illiquidity, assuming a predetermined spending target). We proposed a rainy-day fund with a target cash balance (T), an upper bound to cash balances (H), and a lower bound (L) as shown in Figure 4. When cash balances exceeded the upper bound, the rules governing its operation should require fund managers to retire enough long-term debt to return the fund to the target level (T); if balances dip under the lower bound, fund managers should be required to borrow long-term to bring the balance back up to the target. The logic underlying this structure is entirely straightforward. The rainy-day fund must hold enough cash to cover shortfalls when they occur, but excessive balances are both wasteful and, perhaps, unnecessarily tempting to public officials.

FIGURE 4: How a Rainy-Day Fund Should Work



Basically, this is an inventory model; setting the fund-balance target (T) and the upper (H) and lower (L) bounds should be a straightforward function of the volatility of cash flows, the mean square root of the spending target, transaction-costs, and interest rates.

Epilogue

Oregon's revenue task force ultimately concluded that the Governor's fiscal planning unit had it about right: fixing the boom and bust budget cycle means balancing the budget against a forecast based upon long-term rate of revenue growth and putting a workable rainy-day fund in place. Consequently, they proposed that each biennium, economists in the Department of Administrative Services should re-estimate Oregon's long-term rate of revenue growth and the executive and legislative branches should use that figure as the basis for budgeting. If revenues come in above the long-term trend, they should be kicked into a rainy-day fund, which should be used only to make up revenue shortfalls or pay down the state's debt. As noted earlier, the Governor's Cabinet more or less adopted this process in 2005, and despite the Legislature's failure to enact it into law as proposed by the task force, used it internally through 2013. So far, results have been pretty good, although the Gov. Kulongoski's Cabinet and the task force would have preferred it had the proposal been written into law.¹⁰

That preference reflects two considerations. First, it would have meant that the long-term revenue growth trend would be used as the state's *official* revenue estimate. That is not now the case. Rather, Oregon's so-called 'kicker' law requires the state to return tax payments in excess of *official* revenue estimates to taxpayers, rather than diverting the excess to a rainy day fund. Currently, the only way to insure that excess revenues go to the rainy day fund is to highball the official estimate. Second, high official revenue estimates make it hard for stakeholders to stick to

¹⁰ While this point is somewhat tangential to the main argument made here, I am impressed by the similarities between this process and the governance arrangements described by Tang, Callahan, and Pisano (2014). They show how open communications and an appropriate time horizon shape collective action dynamics and build the trust and reciprocity among stakeholders needed to encourage them to look beyond immediate self-interests and to make decisions promoting long-term fiscal sustainability. This is a matter that clearly deserves greater attention.

long-term spending targets. That has been increasingly the case under the current administration, which has dismantled the medium-term fiscal planning unit, and a legislature that was not part of the consensus created by the revenue task force. Governance arrangements characterized by high levels of personnel turnover need stabilizing mechanisms to keep them oriented. Organizational routines and standard operating procedures help them stay on course, but the inertial weight of routines and procedures weakens when stakeholders aren't privy to their original justification. Laws are not so easily diminished.

Why wasn't the task force's proposal written into law? At the start of the emergency session of the legislature in February 2010, Gov. Kulongoski announced that he would keep Oregon's lawmakers in Salem until they acted upon the proposal (OR Senate Joint Resolution 45, Feb. 8, 2010), which would:

Amend the Constitution to establish a mandatory savings plan for state government, as recommended by the 2007-08 Task Force on Revenue Restructuring. This involves directing a portion of excess revenue "kickers" in future years to an Emergency Reserve Fund, whose uses shall be limited to times of fiscal emergencies. The purpose of this proposal is to stabilize the state budget and avoid crisis-driven cuts to services and revenue-raising measures in times of severe recessions.¹¹

Two days later (February 10), Peter Courtney, President of the Oregon Senate, marched into the Governor's office and announced that he wouldn't bring the proposal to floor vote even if the legislature were 'kept in Salem until Hell freezes over.' He adamantly refused to fight the upcoming legislative election with JCR 45 on the ballot. He also assured Gov. Kulongoski that the legislature would take up the matter in the next legislative session. The following day, the Governor publicly recanted his threat. Perhaps owing to the Democrat's loss of control of the legislature or the election of a new Governor, who had nothing invested in this proposal, it didn't come up during the 2011 session or subsequently.

¹¹ The Governor's deputy chief of staff had arranged for the Portland *Oregonian* to publish editorials written by Shetterly and Van Vliet supporting this measure in its Sunday Opinion section on February 7th and by me on the 14th. For obvious reasons, mine never ran. Frankly, I thought the measure as written was excessively clunky, with lot of unnecessary and arbitrary cut points. Both saving and stabilizing could have easily been made seamless, but not evidently by Oregon's legislative draftsmen. Nevertheless, JCR 45 seemed both workable and practicable.

Interestingly, California, Oregon's neighbor to the South, recently voted Proposition 2 into law. Proposition 2 amends the California Constitution to require that the Governor make mid-term spending and revenue targets part of the state budget process, requires the state to set aside revenues each year – for 15 years – to pay down specified state liabilities, and substantially revises the rules governing the state's rainy day fund. In other words, California's legislature did pretty much what Oregon's refused to do. They referred a measure aimed at making state and local spending sustainable to the citizenry. On November 4, 2014, 70 percent voted in its favor. We'll see how it works out.

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