

SHOULD THE PERMANENT FUND SIT ON ITS ASSETS?

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EXECUTIVE SUMMARY

ARIZONA'S PERMANENT ENDOWMENT TRUST FUND operates like any endowment and can be analyzed through the lens of financial economics to answer questions about performance, payout ratios, and best practice. By applying financial theory to Arizona's Permanent Fund, insights can be gleaned on contemporary policy debates, both in Arizona and across America's western states. Endowment policies across the different states are uneven, unpredictable, and not consistent with the stable, formulaic payout approaches recommended by literatures in portfolio theory and finance.

Among western states, Arizona's quite conservative approach to land holdings and also its large, \$5.2 billion portfolio of assets is not unique. Other states are similarly well endowed on the one hand and cautious with their holdings on the other. But their extreme conservatism has come at a price for current beneficiaries and from the standpoint of "intergenerational equity": if a guiding principle of a trust is to assure all generations of beneficiaries equal and fair treatment, extreme endowment conservatism could, in fact, be harming current generations for the sake of future beneficiaries. We seldom see the opposite of "intergenerational theft"—something we might call intergenerational thrift—in the policy world, but there is

evidence of significant asset hoarding and a bias against current beneficiaries in some of the approaches being taken by permanent funds, including Arizona's.

The following report examines Arizona's Permanent Endowment Fund management and assesses the endowment's trajectory under multiple scenarios and also tries to make sense of current payouts when certain economic and ethical considerations are made. Overall, the report reaches the following conclusions:

1. Thanks to land sales and investment returns, the Arizona Permanent Fund has been growing rapidly in market value and significant evidence of asset hoarding (i.e., sale proceeds and returns minus payouts) is present.
2. While Arizona's 2.5 percent payout rule, which became law in 2012 thanks to Proposition 118, was an improvement in payout rates compared to previous periods, it is not nearly as aggressive as other states and falls well short of the 4 to 5 percent of endowment rates used by most university and private endowments.
3. There is room for a more aggressive endowment payout strategy, and under conservative rate of return assumptions, Governor Doug Ducey's 10 percent/5 percent recommendation would, in 2026, leave the Permanent Endowment Fund (in real terms) with the same market value as today but pay out nearly \$3 billion more to beneficiaries.
4. When future economic growth and productivity assumptions are made, intergenerational equity considerations imply that endowment policies should be more aggressive in the present. Moreover, since payouts over the past 10 years have lagged the 2.5 percent rule by nearly half, an ethical argument can be made that fairness implies even more aggressive payouts should occur now to correct for a recent injustice.

“Don't save too much.”

— Quote attributed to Milton Friedman¹

INTRODUCTION

State land trusts in the west are familiar to policymakers, yet their purpose is seldom questioned and the average citizen has no clue what role trusts play in their states. In fact, many residents believe the role of land trusts is to conserve lands for environmental and recreational purposes. But, in fact, conservation should play no direct role in the allocation decisions of state land trusts—the Arizona State Land Trust included—because the lands conceptually and, in fact, belong to and are intended for the maximum benefit of the various beneficiary groups outlined on the documents governing state land trusts.

As described in the Enabling Acts and constitutional provisions, the Arizona State Land Trust exists for the sole purpose of maximizing value for 13 beneficiary groups, which can collectively be thought of as educational stakeholders (K-12 and higher education). The trust status and the focus on the beneficiaries means land trust holdings cannot be sold below market value and/or swapped for preservationist purposes. Also, when the language of maximizing benefit to beneficiaries is kept in mind, holding the land for any purpose that deviates from maximum benefit to trust beneficiaries—conservationism, for example—is in violation of the trust's constitutional mandate, which is to maximize benefits to trust beneficiaries.

Throughout the West, state land trusts maintain large permanent funds and spin off some percentage of the permanent fund assets to designated beneficiaries, often public schools. In Nevada, for example, the state land trust once controlled 2.7 million acres but has divested its land holdings down to just 3,000 acres.² The sale proceeds have gone into a Permanent School Fund, which has a market value of \$316 million and distributed \$2 million to public schools in Fiscal Year 2012.³ California also has divested most of its 5.5 million acres of land and

holds just 468,600 surface acres in trust. But a large fraction of the revenues from California's State Land Trust have been loaned to the California General Fund.

The Arizona State Land Trust holds 9.2 million acres in its portfolio (from an original total of 10.9 million acres). The sales of land are, by law, transferred to a Permanent Fund, which contains more than \$5 billion of stocks, bonds, and other assets. The Permanent Fund functions as an endowment paying out a stream of annual payments to a group of 13 named land trust beneficiaries.⁴ In Fiscal Year 2014, the total endowment distribution was \$73 million.⁵

The distinctive character of land trusts emerges when we contrast their balance sheet with other government entities and businesses. The typical government agency is financed through a combination of annual state appropriations and borrowing to support capital needs. Total state and local debt in Arizona totals more than \$40 billion, which is about 13 percent of our annual state gross domestic product of \$284 billion.⁶

The Arizona State Land Trust, in contrast, operates on a large capital surplus. The trust's personnel services are paid for by a separate annual appropriation;⁷ it has more than \$5 billion in the Permanent Fund; and it holds another 9.2 million acres of land, which generates some cash flow to beneficiaries from leasing activity but holds a potential untapped value of \$70 billion or more.⁸ Compared to any household or other government entity, there is a reasonable question to ask of our state land trust: why sit on such a large stock of assets and why aim for a steady accumulation of funds?

This paper focuses on the financial behavior of land trusts, where the practice of operating with a substantial pool of resources is familiar and well established across different western states. Furthermore, while the analysis focuses on the case of Arizona, the main arguments being made have broader implications for policies affecting state pensions, natural resource funds, and other forms of pooled public assets.

Issues related to the state's Permanent Fund management, endowment policy, and optimal land holdings have attracted recent media coverage,⁹ and the debate forces us to dig deep into our theories of finance and endowment policy to evaluate optimal state policy. And, once one starts digging into the management of state land trusts across the west, many more questions emerge. For example, why are state land trusts sitting on 9 million acres of land in Arizona, while Nevada has divested nearly all of its state land holdings?¹⁰

Endowment distribution formulas also vary across land trusts. In North Dakota, for example, distributions have ranged from 3.5 percent to almost 8 percent over the past eight years.¹¹ In New Mexico, beneficiaries receive a standard 5 percent return on Permanent Fund assets each year, which amounts to approximately \$550 million on their \$10 billion-plus endowment.¹² In Oregon, where nearly 80 percent of original state lands have been divested, about 3.5 percent (\$50.8 million) of the Common School Fund's \$1.45 billion in assets were returned to K-12 Public Education in calendar year 2014.¹³ But in Utah¹⁴ and Arizona, distributions

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have ranged between 1.4 and 2.5 percent of Permanent Fund assets over the past 10 years. Which policies are correct—North Dakota's or Arizona's—and what are the consequences for beneficiaries of one approach versus another?

At present, the rules being followed across different state land trusts are case by case, somewhat opaque and haphazard, and there are no unifying rules restricting growth in the permanent fund or demanding slower or

more rapid distributions. Such questions cannot begin to be addressed without more research, and a closer analysis of state land trust endowment policies and land sales policies can help us understand best practices across the states as we aim to improve public policy.

II. THE VARYING ENDOWMENT POLICIES OF STATE LAND TRUSTS

Arizonans are directly and indirectly holders of some of the most and least valuable land in the United States. The state's residents are (partial) indirect holders of gems like the Grand Canyon and Sedona, and they benefit from millions of acres of national forest land in areas like Tonto National Forest and wildlife refuges like Buenos Aires National Wildlife Refuge. Arizonans are also direct, private owners of 18.2 percent of all lands in the state. All told, 59.7 million acres of Arizona's 73 million acres of land are owned by local, state, or federal governments.¹⁵ Most of the private land is located in the cities of Phoenix and Tucson, with large patches of private land also located in the southeast corner of the state and in the city of Yuma.¹⁶

Like other western states, Arizona is a "federal state": the Bureau of Land Management (12.2 million acres), US Forest Service (11.3 million acres), Department of Defense (3 million acres), the National Park Service (2.6 million acres), and the Fish and Wildlife Service (1.7 million acres) control 42.1 percent of all land in Arizona. Indian reservations comprise another large fraction of Arizona's total, and the Arizona State Land Trust takes another 12.7 percent of land out of private hands.¹⁷

While the federal land holdings are, in many respects, beyond the control of state lawmakers, the Arizona State Land Trust's 9.2 million acres of holdings are under the purview of state lawmakers and, furthermore, bound by Enabling Acts within the constitution, which designate the lands be used for the maximum benefit of the 13 designated beneficiary groups (largely educational).¹⁸

Through the sale of lands and revenue from leasing of surface and subsurface acres, the Arizona State Land Trust has grown its Permanent Fund to a portfolio of more than \$5 billion in assets today. The rising market value of the Permanent Fund has come, in part, thanks to legislation allowing 60 percent of fund assets to be invested in equities. Like other land trusts, the Arizona State Land Department has a tremendous amount of flexibility over leasing rights, divestments, and portfolio accumulation. Revenues from leasing are typically paid out directly to beneficiaries as cash flow; meanwhile, proceeds from sales, which have averaged about \$200 million per year over the past 10 years are designated for the Permanent Fund.

But what is the appropriate balance between saving the full amount, paying out 2 percent, paying 4 percent, or spending a lot more in the present? We have little in the way of academic research related to state land trusts to guide us.

By functioning as a form of public saving, and by shifting dollars to future use instead of using them in the present, taxes to fund current beneficiary needs—sales taxes, property taxes, and income taxes—are higher than they would be if funds added to the Permanent Fund from

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land sales were directly paid out. The basic accounting realities are as follows: a dollar not used on K-12 education today is a dollar less for current beneficiaries. In theory, the dollar saved will provide more benefits in the future and provide some tax relief to future Arizonans. But why backload the benefits—to beneficiaries and taxpayers—of the trust? And what assumptions should we apply when attempting to evaluate the optimal distribution rate through

time? Was the 1.4 percent average rate of the previous 10 years optimal? Or is the 2.5 percent rate now governing payouts the right one? Or is the 4 to 5 percent rate, which is standard for university endowments, the best option? Perhaps it is some other rate like North Dakota's.

A large literature on public pension policy exists, and literatures on endowment policy and "life cycle consumption"¹⁹ are also useful in thinking through optimal Permanent Fund policies. But even in the above academic literature, much research is focused on narrow questions related to the appropriate discounting of pension liabilities, optimal portfolio allocations, the effect of taxes on decisions, and social welfare theory.²⁰ Another related literature focuses on the appropriate assumptions public pensions make when it comes to investment returns and forecasting future expenses. But on questions of the appropriate spending rule on pooled assets—whether they be endowments, land trusts, or public pensions—there is little guidance beyond simple rules encouraging trustees to spend less than the real rate of return on investments.

III. HOW MUCH DOES EACH GENERATION MATTER?

While citizens are, in most cases, unaware of the market value of their state land trust endowment, state treasury offices and many lawmakers are aware of the endowment value and also know how much the land trusts—thanks to land sales and compounding returns—have accumulated in value over time. Questions about whether or not the Permanent Fund is performing as well as possible in advancing the interests of its beneficiaries are seldom asked, and the default response to any suggestion of change seems to fall back on arguments about fiduciary responsibility and original constitutional intent.

A. INTERGENERATIONAL EQUITY²¹

"Intergenerational equity" is often used as an argument against change to many different policies at the state and national level. The argument goes as follows:

to guarantee all future generations no advantage or disadvantage over current beneficiaries, an entitlement program's purchasing power must remain constant over time. Thus, programs like Social Security at the national level have fallen prey to "intergenerational theft" because the current generation is reaping disproportionate benefits to future generations.

In theory, a dollar saved for the Permanent Fund will provide more benefits in the future and provide some tax relief to future Arizonans. But why backload the benefits of the trust?

In the case of Arizona's Permanent Endowment Fund, intergenerational equity proponents would, as a first cut, recommend an endowment's purchasing power remain constant over time. The typical approach to maintaining intergenerational equity is to follow a percentage-based spending policy rule (e.g., 2.5 percent spending into perpetuity). The rule assures a certain percentage of the endowment is paid to beneficiaries at each moment in time and has the appearance of equal payments across generations. A rule-based policy—so long as it is below the real rate of return—assures preservation of principle and, under normal circumstances, allows for a slow, steady increase in the endowment and also in the overall (nominal) size of payouts for each generation.

The equal percentage spending policy across all generations rests on shaky empirical and ethical foundations, however. Under any positive economic growth scenario, future generations are going to live far better than the current generation. According to the US Census Bureau, the median household income for the typical Arizona family (2009-2013) is about \$50,000. On the conservative assumption US real per capita income manages to grow at just 1.5 percent per year in the future, in about

600 years the average Arizona family will have an income of more than \$2 million per day!²² If the US economy, meanwhile, achieves the 4 percent real economic growth we enjoyed during some of the 1990s, the average US household would have incomes of \$1.6 million in less than 100 years. In other words, future generations of Arizonans—under any positive growth scenario—stand to live much better than today’s Arizonans. Scores of economic data and concrete evidence support a basic economic point: Americans today are living better than Americans 50 or 100 or 200 years ago, and our best guess for Americans of the future is more progress.

With any positive economic growth, then, the 13 beneficiary groups protected by the Permanent Fund will be more prosperous than today and also better off than generations prior to today. And any time the Permanent Fund administrators defer payments to future beneficiaries over current ones, they are taking from a relatively poor generation (i.e., Arizonans living in the present) and rewarding our relatively rich descendants (i.e., future Arizonans). Thus, arguments about assuring everyone their fair share across generations by basing trust payouts on set percentage rules confront a fundamental flaw: the payments, if anything, should be biased towards more benefits now and lower payouts later, but, in fact, just the opposite seems to be occurring. While the future is uncertain, and while there is a case to be made for approaching future economic growth rates with some caution, almost every economic forecast predicts better living standards and higher incomes in the future, which means more dollars should be allocated to the (relatively) poorest generations (i.e., the most current generations).

In addition to thinking about future economic growth prospects and the possibility of future generations of

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Arizonans living much better than current ones, there’s a reparations argument to consider when we look back at the past 10 years of Permanent Fund payouts: the most recent generation of beneficiaries has suffered massive intergenerational inequities at the hands of the United States’ Great Recession and also thanks to sporadic, unpredictable payouts that resulted from complicated, overly conservative formulas, which will be discussed further in Section IV.

B. UNCERTAINTIES ABOUT FUTURE LAND VALUES AND FUTURE TECHNOLOGIES

In current discussions about Arizona’s state land trust and the Permanent Fund, the prospect of future land sales, which totaled just 5,774 acres in the 2014 Annual Report, are set aside because the proceeds are not to be touched and must be guaranteed to the Permanent Fund. While the required return of land sales to the Permanent Fund is outlined under the state constitution, it nevertheless makes sense to (1) account for lands being held by the trust because they are a potential future asset; and (2) consider land trust endowment policy across generations. If future land sales are foreseeable, they should be included in any long-term endowment policy plan designed to treat each generation with fairness. Ignoring the potential sales is equivalent to ignoring investment return information, and the larger the expected value of future sales—in the ballpark of \$70 billion at the moment—the more aggressive we should be with our endowment payouts in the present.

In addition, there are other risks associated with accumulating funds in the Permanent Fund for spending in the future. Suppose the productivity of our beneficiaries—take K-12 education as an example—increases in the future. Higher productivity would mean each dollar distributed from the Permanent Fund has higher impact in the future than in the present. But K-12 productivity is not guaranteed to rise and could, in fact, decrease in the future. In the future, demand for education may shift more to private schools and home

schooling, for example. Or changes in educational technology may make other forms of education—forms not covered in the original state land trust—more effective and attractive. Such risks, which are unknowable but not unimaginable, provide added reason to spend more out of the Permanent Fund now rather than in the future.

C. RISING COSTS

Educational costs have been rising over time, which means each Permanent Fund dollar distributed is having less impact than it had during periods of more inexpensive educational production. Forecasts of future educational costs—for K-12 and higher education—predict more increases in cost, since productivity increases are slow to occur and the industry is often slow to adapt to disruptive innovations. As the costs of education rise, and if the Permanent Fund's current market value of \$5.2 billion were held constant, the income being spun off would finance an ever-decreasing fraction of educational expenses. As such, some argue that the real value of the Permanent Fund must be increased over time (by spending less now) to assure the amount of real income being spent at least covers a constant fraction of educational costs.

But such thinking contradicts basic economic and financial prudence: if education in future generations will be more costly, then why not consume more of it today when it is cheaper and, perhaps, drive up our consumption of a (relatively) cheap product at a time when it is (relatively) cheap? To do so is to act as a prudent investor. Some believe education costs will fall thanks to major innovations and technological disruptions, but if the recent past is any predictor, rising costs point to spending more now to avoid less money per dollar in the future.

D. STATE COMPETENCE AND FUTURE PREDATION

An implicit and sometimes articulated argument for protecting the Permanent Fund from any changes to its endowment policy is the relatively low current level of educational spending occurring in Arizona. Spending

per K-12 pupil in Arizona is often at or near the bottom of national rankings, and without the Permanent Fund's payouts, spending would be even lower. Thus, the Permanent Fund cannot be raided for education today because in the near future educational spending would be even lower.

If education in future generations will be more costly, then why not consume more of it today when it is cheaper?

The logic, in other words, suggests the Permanent Fund plays the partial role of a fail-safe for educational funding. Such thinking, of course, is problematic because it shifts the state land trust into the realm of politics and policy, which is quite different from a narrow focus on maximizing the benefits to its beneficiaries. While state lawmakers can employ a number of different reforms to support and advance the interests of the 13 beneficiary groups covered by the Permanent Fund (e.g., expand school choice, increase educational appropriations, etc.), basing Permanent Fund policies and distributions off of anything occurring in the many other channels of state government is quite problematic.

E. INVESTMENT RETURNS VS. HUMAN CAPITAL RETURNS

One final point is deserving of attention. The Arizona State Land Trust's distributions are driven by land sales, leasing, investment returns, and complicated formulas. As such, their mandate of helping beneficiaries is sometimes opaque and limited: under current law, they cannot sell lands and then make an immediate distribution of all proceeds to beneficiaries. Instead, the cash from sales must go to the Permanent Fund and some percentage—2.5 percent at present—is paid out. Implicit in the current 2.5 percent rule are incorrect assumptions about current and future Arizonans and current and

future investment returns. With their policies and low payout rules, lawmakers and administrators are saying investments in the Permanent Fund, which are a combination of stocks, bonds, and other holdings, have greater value to Arizona than investments in people. And, as I have highlighted in the sections above, to hold and accumulate assets with no regard for the cost of accumulation, while perhaps defensible by the state constitution, is still an unsound investment strategy.

The “opportunity cost” of keeping Permanent Fund dollars locked up is fewer dollars invested in schools, children, and teachers today. The role of the trust is not to squirrel money away, but rather to maximize benefits to its beneficiaries. But even if we were to examine the returns of assets locked away in the state land trust’s endowment, it’s unclear that a 60/40 equity-bond allocation is the best, most prudent, and highest returning way to invest land trust assets. A large literature in labor economics has found significant private and social benefits from additional educational investments: for each additional year of schooling, a person enjoys an average increase in hourly earnings of between 8 and 13 percent. Women enjoy higher returns per year of schooling than men. Higher educational (i.e., college and university) investments yield higher returns per year than K-12. The evidence of high returns on investments in education is vast and, perhaps, one of the most researched areas in all of economics, and the consensus places point estimate education returns at about 10 percent per added year of schooling.²³

Accumulating more funds in the Permanent Fund, while driven in part by constitutional requirements, is only worthwhile from an opportunity-cost standpoint then, if the return to investments exceeds the return from the highest valued alternative use of resources. Since the historical return on a diverse portfolio of investments is, perhaps, as high as 8 percent, a strong case can be made for an investment-based approach to the Permanent Fund sinking far more dollars in children

and other beneficiary groups, rather than stocks and bonds.

Again, the implicit assumption of state land trust policies today is the following: investment dollars in stocks and bonds yielding 8 percent average returns are better investments than dollars spent educating an undergraduate student for another year or investing in a library addition, which according to many studies yield returns in the 8 to 13 percent range. When evaluating returns on investment—from the standpoint of beneficiaries—it’s quite unclear that dollars in a trust are reaping higher returns than dollars invested in human capital.

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IV. CURRENT DISTRIBUTION RATES

Most state land trusts use an official distribution rule. The rules vary across states and also across university and private endowments. Some base payouts on a percentage of three year average returns; others only pay out dividends and reinvest capitals; and many rely on a fixed percentage of endowment value rule. The payment rates for public land trusts overall tend to be lower than the payout rates governing university endowments, which often set 4 to 5 percent of endowment rules as their standard payout rate. Arizona’s mandated distribution under Proposition 118 (2012) is 2.5 percent of the Endowment’s average market value over the past five years, which means the Arizona State Land Trust was obligated to distribute from the Permanent Fund assets of \$4.9 billion in Fiscal Year 2014 approximately \$73 million to current beneficiaries. If the average Permanent Fund assets over a five year period decline to \$1 billion, then the 2.5 percent spending rule limits distributions to \$25 million instead. Over the last 10 years, the Arizona State Land Trust has grown from \$1.3 billion in the

Permanent Fund to \$5.2 billion; forecasts are for continued growth through asset appreciation, land sales, and leasing revenues.

In Table 1, we see the Arizona State Land Trust's Permanent Fund distributions for years 2004-2014 (in constant 2010 dollars). In column 2, the value of the Permanent Fund (in constant 2010 "real" dollars) is provided; column 3 shows the amount of new receipts added to the Permanent Fund through land sales and other proceeds; column 4 shows the amounts expended from the Permanent Fund via the State Treasurer's Formula (the distributions can be thought of and are described as payouts from investments); and columns 5 and 6, dollar and percentage values, respectively (the *net* expenditure from the Permanent Fund), are computed as the amounts withdrawn less new amounts added to the fund. Negative figures indicate more was added to the fund than was withdrawn from it during the year in question. As shown in column 6, the level of net expenditures has fluctuated, though in every year the Permanent Fund has been below the zero bar for payouts and far, far below the standard 4.5 percent

"burn" rate recommended for endowments, which is a common annual payout rate for university and private endowments. Such rates preserve principal while giving beneficiaries maximum cash flow.

The year 2010 is deserving of further discussion to illustrate Arizona's old payout rule, which based distributions on the average total rate of return of assets minus inflation, versus the 2.5 percent rule. Under the old rule, zero distributions were made in 2010. Had the State Treasurer and other Permanent Fund administrators already been operating under Proposition 118, which established a 2.5 percent of the fund's average market five-year value, more than \$50 million would have instead been paid out. A still safe rate of 4 percent would have meant an \$85 million distribution instead of the zero distribution that actually occurred. And rates like North Dakota's occasional rate of 7 or 8 percent would, of course, have meant more than \$150 million in 2010 payouts.

Figure 1 and Table 2 below illustrate the Permanent Fund's actual distributions from 2005-2014 compared to the (nominal) payouts the Fund would have made had a 2.5 percent payout or 4 percent payout rule been

TABLE 1

Arizona Permanent Educational Fund, 2004-2014 (Figures in Millions of 2010 Dollars)

Year (1)	Permanent Fund Value (2)	Receipts Added (3)	Distributions from Permanent Fund (4)	Distributions Minus Receipts [Col 4 minus 3] (5)	Col 5 as % of Col 2 (6)
2004	1,379	171.6	23.1	-148.5	-10.8%
2005	1,793	306	29.7	-276.3	-15.4%
2006	2,041	305.4	36.9	-268.5	-13.2%
2007	2,510	203.8	37.2	-166.6	-6.6%
2008	2,590	255	75.6	-179.4	-6.9%
2009	2,223	144.9	60	-84.9	-3.8%
2010	2,700	94.5	0	-94.5	-3.5%
2011	3,187	117.5	16.9	-100.6	-3.2%
2012	3,325	153.8	79.7	-74.1	-2.2%
2013	3,828	223	62.9	-160.1	-4.2%
2014	4,483	94.6	66.8	-27.8	-6%

Source: Arizona State Treasurer Annual Reports

observed.²⁴ While imprecise for several technical reasons (e.g., a higher payout rule would have meant a few less million dollars in the Permanent Fund in the early years and less compounded returns in the present)²⁵, the table serves as a good approximation of what the Fund's market value and payouts would have looked like had still safe distribution rules of 2.5 percent or 4 percent been followed instead.

FIGURE 1
Permanent Fund Payouts (Actual vs. 2.5 % and 4% Rule), 2004-2014

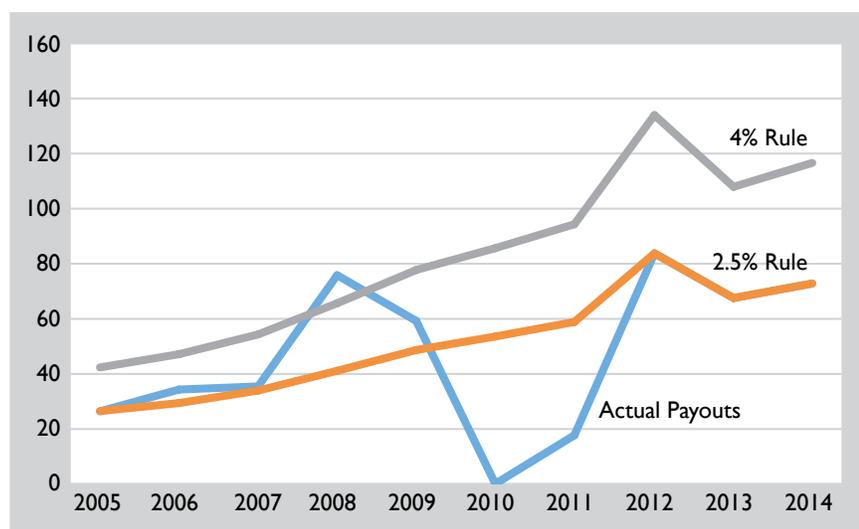


TABLE 2
Actual Permanent Educational Fund Payouts vs. Alternatives (Figures in Millions)

Year	Permanent Fund Payouts (Nominal)	2.5 Percent Rule	4 Percent Rule
2005	26.5	26.45	42.32
2006	34.3	29.5	47.2
2007	35.6	34	54.4
2008	75.9	41	65.6
2009	59.4	48.5	77.6
2010	0	53.5	85.6
2011	17.5	59	94.4
2012	83.9	83.9	134.24
2013	67.4	67.4	107.84
2014	73	73	116.8
TOTAL	473.5	516.3	826

Source: Arizona State Land Trust Annual Reports and author's calculations

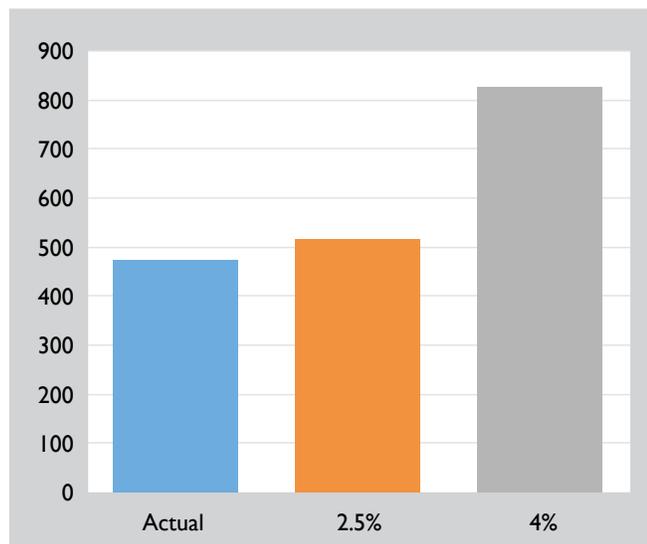
One notable year in the Permanent Fund's recent history is 2010, when no distributions occurred: such treatment of the fund is inconsistent with best practice in trust policy, and it had the "double whammy" effect of beneficiaries being hit hard by the financial crisis of 2008 and 2010 and then having the added effect of being short-changed of approximately \$50 million dollars. The excessive conservatism carried into 2011 before a return to normal distribution practice.

While touching the proceeds of land sales appears to be forbidden under the Arizona State Land Trust's Enabling Acts, the conservative distribution policy on investment returns—paying a 1.6 percent yield when Land Endowment values are averaged over the past 10 years and pouring capital gains and sale receipts back into the Permanent Fund—is evidence of asset hoarding.²⁶ As shown in Figure 2 below, the cumulative effect of payouts over the past 10 years has resulted in just \$473.5 million of (nominal) distributions. Simple 2.5 percent or 4 percent rules would have resulted in total payouts of \$516.3 million (orange bar) and \$826 million (gray bar) respectively.

In Figure 3 and Table 3, a few different possibilities for the next 10 years of Permanent Fund management are presented. Readers must keep in mind that the Permanent Fund grows through two different channels: (1) sale receipts from land, and (2) investment returns poured back into the fund. Land sales assumptions are also made and are

FIGURE 2

Total Actual Permanent Fund Payouts vs. 2.5% and 4% Rules, 2004-2014 (Figures in Millions)



assumed to add to the Permanent Fund base at \$150 million per year. Finally, a 6 percent nominal return on Permanent Fund assets is assumed, which places the real rate of return at 3.5 percent. Due to a lack of data, I assume as my starting point a Permanent Fund value of 5.05 billion for Fiscal Year 2015 and \$5.2 billion for Fiscal Year 2016, of which \$150 million in land sales is added to Fiscal Year 2016 but \$104.3 million in payouts made.

Under conservative assumptions about nominal returns,²⁷ the Permanent Fund of 2026 will have a market value close to \$10 billion dollars (in 2026 dollars). Over the 2015-2026 period, (nominal) payouts under the 2.5 percent rule will have exceeded \$1.75 billion. No diminution in the Permanent Fund's underlying value will have occurred and far more resources—in real terms—will be allocated to beneficiaries than the previous 10 years thanks to endowment growth and a more aggressive 2.5 percent rule.

Figure 3 and Table 4 consider Governor Ducey's proposal to temporarily increase the Permanent Fund payout ratio to 10 percent through 2021 and then 5 percent through 2026 before resetting to 2.5 percent thereafter. Based on all of the same assumptions as the previous

TABLE 3

Projected Permanent Educational Fund Payouts, 2015-2026 (Figures in Millions)

Year	2.5% Payout Rule (Nominal)	Permanent Fund Value (Nominal)
2015	92.5	5,050
2016	104.3	5,246
2017	114	5,596
2018	124.5	5,958
2019	133.8	6,331
2020	140.9	6,720
2021	149.3	7,124
2022	158.6	7,543
2023	168.4	7,977
2024	178.5	8,427
2025	189	8,894
2026	199.8	9,378
TOTAL	1,753.6	516.3

Source: Arizona State Treasurer's Annual Report and author's calculations

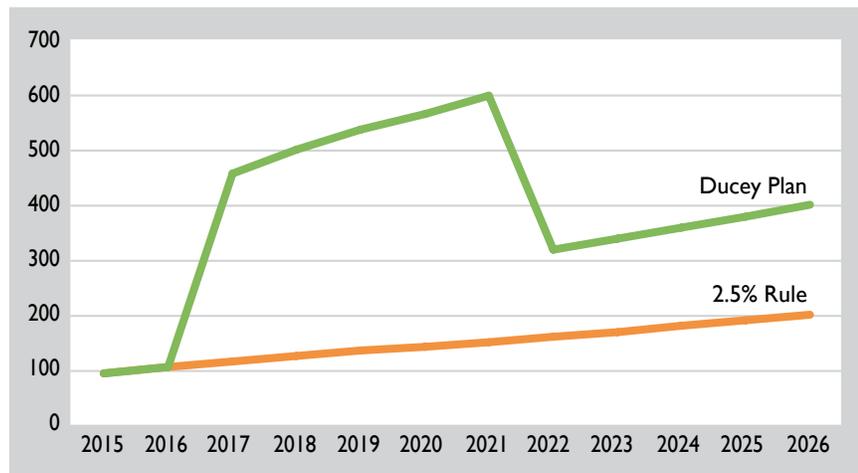
examples, the Ducey proposal promises billions more to current beneficiaries and comes close to keeping the Permanent Fund value at its current market value. If conservative assumptions about investment returns (6 percent) and land sales are on target, Governor Ducey's proposal delivers billions more to beneficiaries while keeping the Permanent Fund no worse and no better—\$5.4 billion in 2026 assets—than today.

Some would, no doubt, say a deal promising \$2.8 billion (nominal) more to education and other beneficiaries between now and 2026, while preserving the principal of a fund, is a deal worth taking, but this is ultimately a normative question that must be determined, in part, by data but also by the arguments about intergenerational equity, returns on investment, and the future of education outlined above in Section III.

In Figure 4, year-by-year forecasts of the Permanent Fund's real value in 2026 under our current 2.5 percent payout rule and also under Governor Ducey's 10/5 distribution proposal are shown. Assuming a 6 percent

FIGURE 3

2.5% Rule vs. Ducey Proposal, 2015-2026 (Figures in Millions of 2010 Dollars)

**TABLE 4**

Projected Permanent Educational Fund Payouts, 2015-2026 (Figures in Millions)

Year	Ducey 10/5 Payout Rule (Nominal)	Permanent Fund Value (Nominal)
2015	92.5	5050
2016	104.3	5245.7
2017	456	5254.442
2018	498	5221.70852
2019	535.2	5149.811031
2020	563.6	5045.199693
2021	597.2	4900.711675
2022	317.2	5027.554375
2023	336.8	5142.407638
2024	357	5243.952096
2025	378	5330.589222
2026	399.6	5400.824575
TOTAL	4635.4	

Source: Author's calculations

nominal rate of return, the Permanent Fund's real value is, of course, lower than the 2.5 percent rule, but the overall endowment value in 2026 is in the ballpark of the endowment's current (real) value today in 2015. The red line below, which is labeled "2.5% Hypothetical" asks readers to consider an alternative endowment policy: Suppose the endowment had been hit with an automatic, annual 2.5

percent rule back to 2004 on current market assets rather than using the investment returns payout method. What would things look like today? Were we to go back and apply the 2.5 percent rule on distributions from 2004 all the way to the present, and if we were to assume 6 percent annual returns (with no financial crisis, etc.) and also assume \$150 million in annual sales, Governor Ducey's payout proposal now would leave the Permanent Fund in an almost identical place to where it would have been under a 2.5 percent rule over 20

years. And, of course, the prior 10 years would have resulted in far more dollars to beneficiaries than the haphazard payouts outlined in Figure 1 above.

In Figure 5, the difference in dollars paid out to beneficiaries over the 2015-2026 period is presented. The Permanent Fund's current endowment of \$5.2 billion would not be as high had a 2.5 percent rule been applied sooner, and the difference in endowment values under a 2.5 percent rule over 20 years versus Governor Ducey's proposal is just \$50 million less than if we had been applying a more aggressive rule—2.5 percent of current market value—sooner. In other words, had a simple and safe endowment rule of 2.5 percent been applied a decade sooner, the most recent generation of beneficiaries would not have been withheld funds and, as a result, the current size of the Permanent Fund would not be as large. The artificially low payouts prior to the 2.5 percent rule was enacted in 2012 had the effect of growing the size of the Permanent Fund to more than \$5.2 billion, but it has meant hundreds of millions less to beneficiaries as a result.

Of course, any adjustment to the return assumptions in the above helps to further grow the Permanent Endowment Fund, and Governor Ducey's total dollars paid out would be amplified over the 6 percent assumption made throughout the above analysis.

FIGURE 4
Future (Real) Permanent Fund Value, 2015-2026 (Figures in Millions)

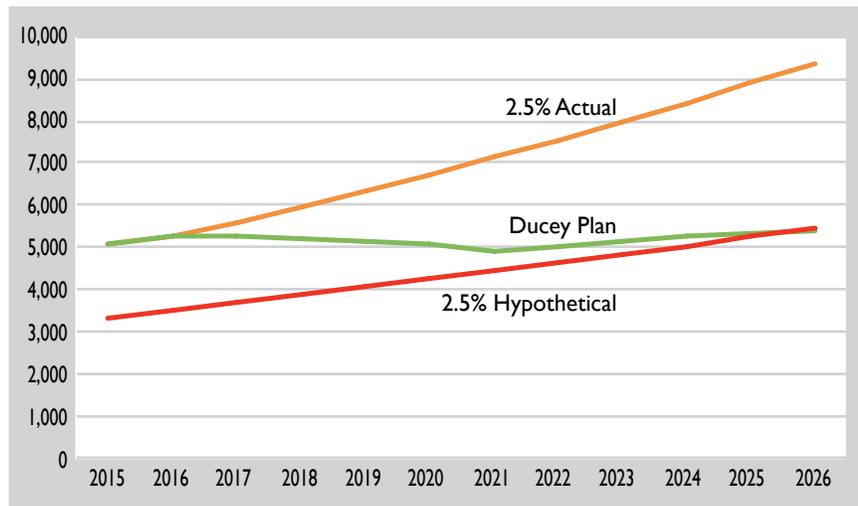
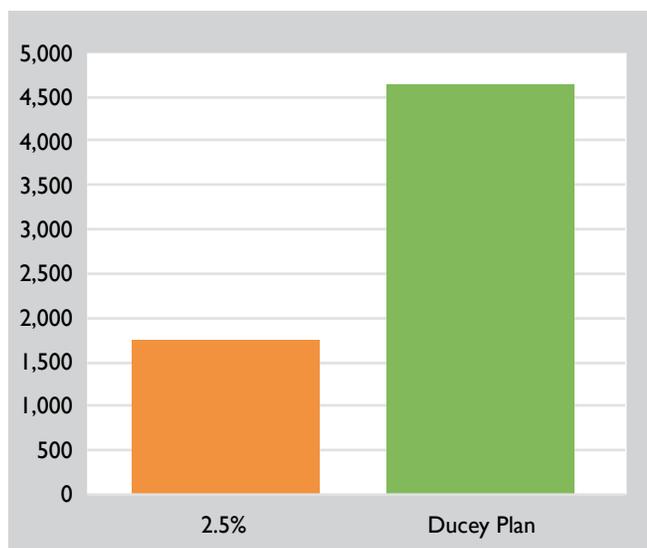


FIGURE 5
Projected Permanent Fund Distributions, 2015-2026 (Figures in Millions)



V. DIVERSE REVENUE STREAMS AND FINANCIAL SECURITY

The Arizona State Land Trust’s endowment policy—prior to the introduction of the 2.5 percent distribution rule—was haphazard, unpredictable, and too conservative. As stated in Section IV above, there is significant evidence of asset hoarding, and even with a 2.5 percent rule, there are many good reasons to be concerned about an endowment policy out of line with best practice and

biased towards future generations of beneficiaries over the present generation.

The Permanent Fund’s consistent bias in the direction of accumulation and asset hoarding is somewhat typical for endowments. In a study focused on university endowment policies from 1986 through 2009, Brown, et al. (2013) found universities were often slow to adjust their payout rates higher but often cut their payouts after a poor performing period. In other words, the behavior

of the Permanent Fund following the 2008 financial crisis, while flawed from a fairness and “best practice” standpoint is somewhat common when viewed through the lens of how other endowments manage their spending rules.

Here’s another possible reason for maintaining a large Permanent Fund and growing it over time: fiscal stability and greater financial security. As we saw in the 2008-2010 period, incomes may fall, unemployment may rise, and state finances may weaken. With a large Permanent Fund, financial shocks can be stabilized somewhat through steady Permanent Fund distributions.²⁸

At a current market value of \$5.2 billion, the Permanent Fund’s market value is about 60 percent of Arizona’s total state budget and large enough to serve as a significant financial buffer to state budget shocks. With a 2.5 percent distribution rate averaged over five years, the Permanent Fund should distribute about \$105 million to beneficiaries, which comes close to the controversial non-classroom K-12 spending cut of \$123 million in Arizona’s last budget.²⁹

There are, however, good reasons to be skeptical of the Permanent Fund’s serving as a state entity aiming at smoothing educational appropriations or assuring

cash flow during tough budget periods. For one thing, the evidence in Arizona’s case is just the opposite: the Permanent Fund’s distribution policies have been pro-cyclical rather than counter-cyclical with respect to state budgets; they have, in other words, cut distributions in tough budget years and expanded distributions as state finances and the economy have improved. Thus, rather than helping to diversify and stabilize state revenues, the Permanent Fund acts as an accelerant in spending during strong economic times and a near-absent partner during recessions and severe crises.

Moreover, the spending rule of 2.5 percent, which was an improvement over prior rules, inhibits any possibility of the Permanent Fund serving as a financial buffer. Such a rule places the Permanent Fund on auto-pilot (as it should be) and forces lawmakers to absorb budget shocks through other channels.

The Permanent Fund’s policies have been pro-cyclical rather than counter-cyclical. They have cut distributions in tough budget years and expanded distributions as state finances and the economy have improved.

Arizona’s recent experience with the Permanent Land Trust is a case study in mistaken endowment policy and pretty compelling evidence against the “Permanent Fund as stabilizer” thesis. The state’s financial difficulties of 2008 and thereafter crushed budgets, and Arizona is still working to recover from the hard hits to housing and finance. After a long period of state spending and revenue growth, Arizona lawmakers were faced with cutting budgets thanks to less revenue. Under a model where the Permanent Fund payouts operated like an automatic stabilizer, the budgetary shock would have been somewhat buffered by predictable Permanent Fund distributions.

Instead, as we have discussed already, Permanent Fund distributions dropped and even were skipped during the deepest part of the crisis.

VI. CONCLUSION

The arguments about the Permanent Fund’s endowment policy have been brought front and center in Arizona by Governor Doug Ducey’s 10/5 payout proposal, which forces us to think about substantive questions about what’s best for all Arizonans—children, parents, and taxpayers today, and an infinite number of future generations. This study has examined Arizona’s state land trust policies for the past 10 years and also looked ahead at what the Permanent Fund may look like in the future under the status quo and also under Governor Ducey’s 10/5 proposal.

Distribution policies governing the Permanent Fund over the past 10 years—even after the 2.5 percent rule was enacted—have been biased in the direction of excessive conservatism, and there is evidence of significant asset hoarding present within the Permanent Fund. Were we to consider a counterfactual world of 2.5 percent payouts from 2004 through 2014, \$40 million more dollars would have been distributed from the Permanent Fund. The dollars were instead invested back into the fund at the expense of current beneficiaries. If even more aggressive payout rules of university and private endowment policy were applied—for example, 4 percent, which is a pretty standard rate for university endowments (and some set payouts as high as 5.5 percent)³⁰—\$350 million more dollars would have been paid out over the last 10 years. The real victims of asset hoarding are the current Arizona beneficiaries (i.e., children and people working in the affected beneficiary groups). Current Arizona taxpayers, of course, are also harmed because less payouts now mean educational dollars must be covered by taxes higher than they otherwise would have to be under a system of higher payouts.

From a 20-year perspective, which includes our 10 most recent years and the 10 years after Governor Ducey's payout proposal change, the governor's proposal can be examined through a normative (i.e., value-laden) lens as a correction for past wrongs. Conservative investment return and inflation assumptions show his proposal would distribute about \$2.8 billion more dollars to beneficiaries over the next 10 years than the 2.5 rule. And the Ducey distribution rate would, with standard market returns, leave the Permanent Fund's base where it is today. While \$2.8 billion more dollars pulled from the system is one of the sources of current controversy, the millions of dollars not distributed from 2004-2014 because of conservative endowment policies is worth keeping in mind: the compounded effect of forgone distributions and bad policies from 2004-2014 is approximately equal to the \$2.8 billion distribution being recommended by Ducey.

Besides working through the math of Ducey's proposal, the study highlights some economic arguments for why Permanent Fund payouts should, other things constant, be higher and more aggressive. Current distribution policies—even after the 2.5 percent rule was adopted—are still unfair to the current generation of beneficiaries, and the state land trust has a fiduciary responsibility to its 13 member groups to assure fair payments across time. Fair payments are not equal monetary or percentage payments in each time period, but rather payments conditional on the quality of lives being lived in each period. In other words, fair payments account for inflation, productivity changes, and dynamic technological and economic growth effects, and there's every reason to think we should expect a lot of income and technological growth in our future. As stewards of beneficiaries—current and future—the state land trust itself

There are sound economic reasons to question whether holding monetized land values in an endowment is in the best interest of the beneficiary groups.

should be one of the groups most in favor of assuring the endowment payout rate is fair from an intergenerational equity standpoint.

Given the constitutional limitations prohibiting any distribution of “base” dollars from land trust sales, it is impossible to determine whether or not the Permanent Fund's endowment of \$5.2 billion is too big, too small, or just right. A large base will, in fact, always exist thanks to the constitution. But there are sound economic and moral reasons for not accumulating the endowment beyond base values. And at an even broader long-term level, there are sound economic reasons to question whether or not holding monetized land values in an endowment is in the best interest of the beneficiary groups, but such questions escalate to constitutional and, perhaps, federal law questions.

Our current endowment policy appears to have emerged somewhat by accident and by a general lack of understanding. Few people have taken the time to think about whether or not accumulating a large government endowment makes any sense and, in particular, if such accumulation is serving the best interests of the people protected by fiduciary duties. Several academic literatures in economics, finance, and ethics shed light on good reasons for more aggressiveness when it comes to endowment policy, and more research on how to further encourage efficiencies and best practices in endowment policy and land allocations is needed.

ENDNOTES

1 <http://freakonomics.com/2008/07/01/when-it-comes-to-saving-who-would-you-listen-to-my-wife-or-milton-friedman/>

2 Figures are current, as of August 5, 2015 and obtained from: http://statetrustlands.org/index.php?option=com_content&view=article&id=27:nevada.

3 Ibid.

4 The 13 Trust Beneficiaries are Common Schools; Normal Schools; Agriculture and Mechanical Colleges; Military Institutes; School of Mines; University Land Code; University of Arizona; School for the Deaf and Blind; Legislative, Executive, and Judicial Buildings; State Hospitals; Miners' Hospital; State Charitable, Penal, and Reformatory; and Penitentiaries.

5 <https://land.az.gov/sites/default/files/documents/files/2014%20Annual%20Report.pdf>

6 State debt figures come from the Arizona State Treasurer's Office: <http://www.aztreasury.gov/about/statedebt/> and total Arizona municipal debt can be found at the Arizona Department of Revenue website: <https://www.azdor.gov/ReportsResearch/ReportofBondedIndebtedness/SearchCityBonds.aspx>. Gross state product data was obtained from the Federal Reserve Bank of St. Louis: <https://research.stlouisfed.org/fred2/series/AZNGSP>.

7 The Arizona State Land Trust's operation could, of course, be financed through land sales and endowment returns, which would be consistent with best practice in private and university endowments. But the idea has been met with legal challenge and faces an uncertain future in state elections.

8 The \$70 billion is a reported value being cited in the media and by Governor Ducey in public comments. Here is one of many stories using the \$70 billion estimate: <http://www.bizjournals.com/phoenix/news/2015/06/04/gov-ducey-unveils-plan-to-bolster-education.html/>.

Of course, any valuation or estimate of unsold lands should be treated with caution. Arizona State Land Trust land assets range from landholdings near urban areas to desert land with no obvious use or high market value. Appraisals, therefore, tend to occur only when an Arizona State Land Department holding is being prepared for auction.

9 See, for example, the following: <http://www.azcentral.com/story/news/arizona/politics/2015/07/14/arizona-treasurer-blasts-doug-ducey-education-plan/30171513/>

10 Scott Beaulier, "Why Are State Land Trusts Sitting on Land Assets?" (2015).

11 <https://land.nd.gov/docs/biennialreports/report.pdf>

12 [http://www.nmstatelands.org/uploads/files/2012-2013%20Annual%20Report\(1\).pdf](http://www.nmstatelands.org/uploads/files/2012-2013%20Annual%20Report(1).pdf)

13 http://www.oregon.gov/dsl/DO/docs/csf_fact_sheet.pdf

14 <http://trustlands.utah.gov/download/financial/FY2014/SITLA%202014%20Annual%20Report.pdf>

15 The exact private/public mix varies somewhat by how we count. See the following for the numbers I report above: <http://www.azcentral.com/story/news/politics/fact-check/2015/04/13/fact-check-gosar-correct-private-land-arizona/25740527/>. But, here's the Arizona State Treasury claiming just 14 percent of Arizona lands are private and 86 percent public: <http://www.aztreasury.gov/investments/endowment-fund/>.

16 <http://statetrustlands.org/state-by-state/arizona.html>

17 <http://www.azcentral.com/story/news/politics/fact-check/2015/04/13/fact-check-gosar-correct-private-land-arizona/25740527/>

18 See Article 10 of the Arizona Constitution for specific language and provisions governing sales, leasing, and exchange of land: <http://www.azleg.gov/Constitution.asp?Article=10>.

19 See Modigliani and Brumberg (1954), Friedman (1957), and Modigliani and Brumberg (1990) for the two main original contributions to "life cycle" theory.

20 One important paper related to university endowments is Hansmann (1990).

21 The way economists think about future income growth and "intergenerational equity" owes much to Tobin (1967). Tobin's claim was a microeconomic claim, but it has more general implications: if people expect their incomes to grow throughout their life, then the life-cycle hypothesis implies they should consume more than their income in early life, save in middle years when income is highest and consume the remainder (dissave)—use up the money saved from middle-aged—before the end of life.

22 Steven Landsburg, Fair Play, pp. 116-17.

23 Card (1999) provides one of the best overviews of the literature.

24 The 2.5 percent and 4 percent payouts are approximations based on year-end reported asset values of the Arizona Permanent Endowment Fund. In other words, they are simply 2.5 percent of the averaged 5-year value of the endowment, rather than a percentage of a true flow.

25 The imprecision is also a result of incomplete data on exact dates of land sales invested into the Permanent Fund, which add layers of complexity to return assumptions but add up to small overall effects.

26 In 2012, then-State Treasurer Ducey helped to pass sensible endowment policy reforms, which allowed the payout rate to be increased to 2.5 percent and serves as a baseline going forward.

27 The 6 percent nominal rate of return on portfolios is a conservative assumption, and assumptions of 7 or 8 percent would be acceptable baselines. The higher we make our assumptions about nominal rates of investment return, of course, the better the numbers look for Ducey's proposal, and the higher the payout rate for beneficiaries.

28 Myers and Majluf (1984) find evidence firms hoarding cash are somewhat more insulated from financial risks than more aggressive firms. In an environment with sufficient uncertainty about future income and also earnings, Merton (1971) finds individuals will deviate from optimal consumption theory by avoiding borrowing.

29 http://tucson.com/news/local/govt-and-politics/education-cuts-stalling-arizona-budget-approval/article_94bb95b7-ed5c-5a92-932e-1af7a2a9cb89.html

30 According to Cejnek, et al. (2014), average university endowment spending was 4.2 percent of the value of the endowment for the 2012 budget year. Universities with \$25 million or more in endowment averaged a 4.7 percent payout and smaller endowments (under \$25 million) averaged 3.7 percent.

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