Cameron C. Artigue #011376
Grady Gammage, Jr. #004552
Christopher L. Hering #028169
GAMMAGE & BURNHAM, P.L.C.
ATTORNEYS AT LAW
TWO NORTH CENTRAL AVENUE
15TH FLOOR
PHOENIX, AZ 85004
TELEPHONE (602) 256-0566
FAX (602) 256-4475
EMAIL: CARTIGUE@GBLAW.COM

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

Michael Pierce;

Plaintiff,

v.

Douglas A. Ducey, in his capacity as Governor of the State of Arizona, and the State of Arizona,

Defendants

Case No. CV-16-01538-PHX-NVW

AMICUS BRIEF OF THE ARIZONA EDUCATION ASSOCIATION, ARIZONA SCHOOL BOARDS ASSOCIATION, AND ARIZONA ASSOCIATION OF SCHOOL BUSINESS OFFICIALS

The Arizona Education Association ("AEA"), Arizona School Boards Association ("ASBA"), and Arizona Association of School Business Officials ("AASBO," and collectively, "Amici") submit their amicus brief in connection with the Court's consideration of Plaintiff's application for preliminary injunction. (Docs. 45 and 77).

I. INTEREST OF AMICI CURIAE AND INTRODUCTION

Amici represent Arizona's teachers, educational professionals, school administrators, and public school districts. AEA is the largest professional organization in Arizona with a membership of 20,000 educational professionals, including teachers, community college professors, counselors, and bus drivers. ASBA is a nonprofit,

nonpartisan organization of governing boards for Arizona public school districts. AASBO is an organization of school business officials and managers, including superintendents, business managers, and facilities directors. Together, Amici are on the frontlines of education in Arizona—the teachers, educational professionals, and school districts represented by Amici will suffer profound harm if the Court declares Proposition 123 unconstitutional and enjoins the funding provided by that initiative.

At the preliminary hearing on February 7, 2017, the Court observed that this case is "over" if the amounts being distributed under Proposition 123 do not exceed the amounts authorized for distribution under the formula approved by Congress in the 1999 amendments to the Arizona-New Mexico Enabling Act of 1910 (the "Enabling Act").

In 2012, Arizona's voters approved Proposition 118, which temporarily replaced that formula with a fixed payout of "[2.5%] of the average monthly market values of the fund for the immediately preceding five calendar years" through 2021. Ariz. Const. art. X, § 7 (Dec. 13, 2012). Plaintiff does not (and could not) challenge the validity of Proposition 118. But in any event, as shown below, the amounts currently distributed under Proposition 123 are less than the distributions that are unambiguously authorized by the Enabling Act. This fact fatally undercuts Plaintiff's case, in terms of both the merits and the potential remedies. Proposition 123 does not conflict with the Enabling Act, and without such a conflict, the Court cannot strike Proposition 123 as a violation of the Enabling Act. And even if the Court did reach out and declare Proposition 123 invalid, there is no basis for any remedy at this time.

This amicus brief is filed with leave of the Court and consent of the parties. (Doc. 81). No persons or entities other than Amici have provided financial resources for the brief's preparation.

II. THE CURRENT DISTRIBUTIONS UNDER PROPOSITION 123 ARE, IN FACT, LOWER THAN THOSE AUTHORIZED BY CONGRESS.

A. In 1999, Congress approved variable annual distributions from the permanent fund under a formula set forth in Article X, § 7 of the Arizona Constitution.

The Enabling Act originally contained language mandating the creation and maintenance of separate accounts to contain the proceeds from dispositions of state trust land. In 1957, Congress repealed the seventh paragraph of § 28 of the Arizona-New Mexico Enabling Act. Public Law No. 85-180, 71 Stat. 457 (1957). As a result, from 1957 until 1999, the Enabling Act said *nothing* about distributions from the permanent fund created by Article X, § 7 of the Arizona Constitution. In 1997, Governor Jane Hull created a commission that proposed tying distributions from the permanent fund to the fund's market value and rate of return.

Arizona's voters approved an amendment to Article X, § 7 to this effect in 1998. As amended, annual distributions from the permanent fund were to be calculated by "multiplying the following factors":

> 1. The average of the annual total rate of return for the immediately preceding five complete fiscal years less the average of the annual percentage change in the GDP price deflator, or a successor index, for the immediately preceding five complete fiscal years.
>
> ***
>
> 2. The average of the monthly market values of the fund for the immediately preceding five complete fiscal years.

Ariz. Const. art. X, § 7(G) (1998). Expressed as a formula, the distributions followed this simple arithmetic:

Rate of return (in percent) x Amount (in dollars) = Annual distribution (in dollars)

The ***rate of return*** is the average annual total rate of return earned by the permanent fund in the last five fiscal years, minus inflation as measured by the GDP price deflator. The ***amount*** is the average of the monthly market values of the permanent fund during the last five fiscal years.

In 1999, Congress amended the Enabling Act to acknowledge the distribution formula specified in Article X, § 7. *See* Public Law No. 106-133, 113 Stat. 1682 (1999). Thus, Congress has already authorized distributions up to certain levels based upon (1) the balance of the permanent fund and (2) the rate of return earned by the permanent fund (net of inflation).

B. Proposition 123's distributions are lower than the amounts that would be distributed under the formula that Congress authorized.

Amici join Governor Ducey's argument that the 1999 amendment to the Enabling Act allows Arizona's voters to modify distributions by amending the Arizona Constitution, and that Arizona voters validly did so in 2016 (and in 2012 before that). (Doc. 77 at 6-10). But even if the Court rejects this argument and concludes that the State and Governor Ducey must somehow revert to the distribution formula approved by Congress in 1999, Plaintiff would not automatically prevail. Instead, even if Plaintiff's theory of Congressional intent were correct, Plaintiff could prevail only if he proved that distributions made by Proposition 123 exceed the distributions authorized in the formula approved by Congress in 1999. At the February 7 status conference, the Court observed that this is a simple question of arithmetic:

> [I]t does look pretty simple that there is the 1999 amendment to the Enabling Act, and does this exceed it or not? If it exceeds it, it seems to be you have got to go to Congress and fix the problem. If it doesn't exceed it, it's over. It does seem to me it would be helpful to have some background here, but still it looks very cut and dry. Run the numbers. Was the state, before this proposition taking—distributing less money than they could have under the terms of the 1999 constitutional amendment?"

(Doc. 53 at 14:18-15:1).

Before 2012, the Treasurer made this calculation annually in setting distributions from the permanent fund. In 2012, however, Arizona's voters approved Proposition 118, which temporarily replaced the variable payout formula with a fixed payout of "[2.5%] of the average monthly market values of the fund for the immediately preceding five calendar years" through 2021. Ariz. Const. art. X, § 7 (Dec. 13, 2012). Since then, the Treasurer has not performed the calculation discussed by the Court.

Amici have thus tried to calculate the amount of the distribution that would be allowed by the 1998 formula. As noted above, the ***amount*** from this formula is the average fund balance over the preceding five completed fiscal years (here, FY 11-12 through FY 15-16). Amici have determined this amount using 11 semiannual reports issued by the Treasurer between June 30, 2011 and June 30, 2016, which covers the last five completed fiscal years.[1] Over that time period, the average fund balance was $4.352 billion. (The current permanent fund balance is over $5.3 billion, reflecting healthy equity market returns since June 2016). Supporting data and calculations are attached as Exhibit B.[2]

The ***rate of return*** is calculated by subtracting inflation from the investment returns realized by the permanent fund. In July 2016, the Treasurer reported that the average annual rate of return for the immediately preceding five calendar years (equivalent to the five immediately-preceding fiscal years) was 8.39%. *See* Exhibit C.

---

[1] The 1998 formula averages the permanent fund's balance over the preceding 60 months. Amici's calculations closely approximate this figure by averaging the fund's balances on June 30 and December 31 of each fiscal year (in other words, by using 11 data points instead of 60). Of course, Plaintiff, not Amici, ultimately bears the burden of proof as to whether Proposition 123's distributions exceed the distributions authorized under the 1998 formula.

[2] Exhibit A is a declaration of Christopher L. Hering that explains the calculations performed by Amici.

The GDP Price Deflator is published the Federal Reserve Bank of St. Louis. From the third quarter of 2011 through the second quarter of 2016, inflation totaled 7.88%—an average of 1.57% annually. Over that period, the GDP price deflator rose from 103.768 to 111.648. *See* supporting data attached as Exhibit D. Accordingly, the ***rate of return*** is 8.39% – 1.57% = 6.82%.

The distribution under the 1998 formula is determined by multiplying the amount by the rate of return, *i.e.* the product of $4.352 billion and 6.82%. This calculation yields an annual distribution of up to **$296,806,400**, or **$24,733,867** per month, for FY 16-17.

For FY 16-17, the total distribution from the permanent fund—including distributions under Proposition 123—is **$24,161,266** per month, *below* the distribution authorized by the 1998 formula. *See* Exhibit E.

Superficially, it might appear that the monthly distributions could threaten to exceed the maximum permitted under the formula. But since July 2016 (the end of the last complete fiscal year), the trailing five-year rate of return on the permanent fund has increased significantly—as of December 2016, this figure was 9.84% instead of 8.39%. *See* Exhibit F. Unless the financial markets make a sudden and dramatic U-turn in the next 90 days, the distribution permitted under the 1998 formula will increase significantly upon the completion of FY 16-17. Thus, there is no realistic chance that the Proposition 123 distribution will exceed the 1998 formula's permitted distribution in either this fiscal year or the next fiscal year (FY 17-18).

C. The permanent fund contains an additional $520 million "cushion" that built up from 2012 to 2015.

Plaintiff would have to overcome yet a further problem in order to succeed on the merits. From 2012 through 2015, distributions from the permanent fund were lower than the amounts authorized by the 1998 formula. The permanent fund thus contains a cushion of $520 million in earnings authorized for distribution. Even if current

distributions exceeded the amounts authorized by the 1998 formula, there would be no violation of the Enabling Act unless and until this entire cushion were exhausted.

Recall that 2012's Proposition 118 fixed distributions from the permanent fund at "[2.5%] of the average monthly market values of the fund for the immediately preceding five calendar years." Ariz. Const. art. X, § 7 (Dec. 13, 2012). As a result, from 2012 to 2015, a fixed 2.5% was paid out annually from the permanent fund, even though the permanent fund's actual rate of return was much higher.

For three fiscal years (FY 12-13 through FY 14-15), this fixed payout resulted in the permanent fund retaining over $520 million in earnings. *See* supporting data and calculations attached as Exhibit G. But for Proposition 118, these earnings would have been authorized for distribution to the schools under the 1998 formula.[3]

Plaintiff's whole case rests upon the claim that there must be a consistent application of the congressionally-approved formula. If the permanent fund "banks" earnings from one year and distributes those earnings later, the payout of a "banked" dollar cannot violate the Enabling Act—the retained earnings would have been subject to distribution under the formula in any case.

To the extent that Proposition 123's distributions in a given year exceed the distribution authorized for that year by the 1998 formula, Proposition 123 may draw upon those "banked" earnings to cover any excess. Unless and until the distributions under Proposition 123 exceed the distributions authorized under the 1998 formula by more than $520 million, there is no violation of the Enabling Act.

---

[3] *See* Scott Beaulier, Center for the Study of Economic Liberty, Ariz. State Univ., *Should the Permanent Fund Sit on Its Assets?* (Oct. 8, 2015) (arguing that Proposition 118 resulted in "asset hoarding" by the permanent fund); Grady Gammage Jr. et al., Morrison Institute for Public Policy, Ariz. State Univ., *State Trust Lands and Education Funding* (Nov. 2015) (discussing the "excess funds" retained by the permanent fund as a result of Proposition 118). These reports are attached as Exhibits H and I, respectively.

D. Any perception that Proposition 123 has caused an "increased" payout is erroneous.

At the February 7 hearing, the Court twice expressed a perception that the amounts currently being distributed were "80% more" than the amounts prescribed under the 1998 amendment. (Doc. 53 at 9:2-6 and 15:22 – 16:3). The source of this impression is not clear. Amici can only conceive of two possible reasons for this misperception—both are irrelevant.

First, Proposition 123 provided for a one-time, lump sum payout in June 2016. Plaintiff has not challenged the one-time distribution and is not seeking a remedy for it. Any such attempt would raise concerns under the 11th Amendment and otherwise. There will be no such payouts in the future.

Second, the Court might have been comparing the 6.9% distribution authorized by Proposition 123 with the 2.5% payout mandated from 2012 through 2016 under Proposition 118. To be sure, Proposition 123 repealed the 2.5% payout, replacing this distribution with a fixed distribution of 6.9% through fiscal year 2024-2025. But Plaintiff does not allege that the Enabling Act preempts this repeal, nor could Plaintiff make any such allegation. And Plaintiff never challenges the validity of Proposition 118.

III. IN THE ABSENCE OF ACTUAL CONFLICT, THE ENABLING ACT CANNOT PREEMPT PROPOSITION 123.

The Enabling Act is "the fundamental and paramount law" of Arizona. *Murphy v. State*, 65 Ariz. 338, 345, 181 P.2d 336, 340 (1947). It is superior to the Arizona Constitution, and thus the "Arizona Constitution cannot be inconsistent with the Enabling Act." *Id.*; *Princess Plaza Partners v. State*, 187 Ariz. 214, 219, 928 P.2d 638, 643 (App. 1995). A claim that the Arizona Constitution violates the Enabling Act is, at its core, a preemption claim of the "conflict" variety. *Boice v. Campbell*, 30 Ariz. 424, 428, 248 P. 34, 35 (1926) ("[A]ny statute or amendment to the state Constitution in conflict [with the

Enabling Act] is null and void."); *see Chicanos Por La Causa, Inc. v. Napolitano*, 558 F.3d 856, 863 (9th Cir. 2008) (explaining the varieties of preemption).

Before this Court could take the drastic measure of declaring a provision of the Arizona Constitution invalid, it would have to find an actual conflict between that provision and the Enabling Act. Such a "conflict must be an actual conflict, not merely a hypothetical or potential conflict." *Chicanos Por La Causa, Inc.*, 558 F.3d at 863 (citing *English v. Gen. Elec. Co.*, 496 U.S. 72, 79 (1990)). The Court recognized the need for Plaintiff to show an actual conflict when it advised Plaintiff's counsel that "you do have to get in there with what the numbers would be under the old formula." (Doc. 53 at 29:15-16).

Even if measured against the 1998 formula, Proposition 123's distributions do not exceed the distributions already authorized by Congress. Thus, Proposition 123 does not conflict with the Enabling Act, and without such a conflict, the Court cannot find preemption.

Nor can Plaintiff hypothesize that Proposition 123's distributions might someday exceed the distributions authorized under the 1998 formula (after burning through the $520 million cushion described above). In essence, the problem is one of ripeness—as of today, no conflict exists, and the only basis for finding such a conflict would be speculation that the Proposition 123 distribution could possibly violate the Enabling Act at some indeterminate point in the future. This is far short of the "actual conflict" necessary to invalidate a provision of the Arizona Constitution.

Counsel for Plaintiff seemed to recognize that fact at the status conference, indicating that he "would be satisfied if they said they were abiding by the 1999 way of calculating it for this current fiscal year." (Doc. 53 at 23:4-6). As shown above, Proposition 123 does, indeed, distribute money from the permanent fund in amounts that

are consistent with the 1998 formula approved by Congress. Thus, there is no conflict between Proposition 123 and the Enabling Act.

IV. EVEN IF THE COURT FINDS THAT PROPOSITION 123 MIGHT SOMEDAY VIOLATE THE ENABLING ACT, THERE IS CURRENTLY NO BASIS FOR GRANTING EQUITABLE RELIEF.

"The scope of injunctive relief is dictated by the extent of the violation established." *Armstrong v. Schwarzenegger*, 622 F.3d 1058, 1072 (9th Cir. 2010) (quoting *Lewis v. Casey*, 518 U.S. 343, 360 (1996)). Without a violation, there cannot be an injunction. An "overly broad" injunction is an abuse of discretion. *U.S. v. AMC Entertainment*, 549 F.3d 760, 768 (9th Cir. 2008).

Here, there is simply nothing to enjoin. Again, the Court has noted that "the measure of relief granted" would necessarily rest upon comparing current distributions with "what the withdrawal would be under the old formula." As shown above, Proposition 123's distributions are entirely consistent with the 1998 formula authorized by Congress. And even if the Proposition 123 distribution exceeds that of the 1998 formula, the Enabling Act cannot be violated until the $520 million in banked earnings is exhausted. No injunction should issue against Proposition 123.

Moreover, even if the Court concludes that Proposition 123's distributions exceed that authorized by Congress, the correct remedy would *not* be an order enjoining Proposition 123 *in toto*, as Plaintiff seeks. Such an order would result in the distribution dropping back to the 2.5% payout under Proposition 118, which would inflict profound harm on Arizona's schools and students. (*See* Doc. 77-1 at Ex. B-G). Rather, the correct remedy would be to enjoin Proposition 123's distribution only to the extent that it exceeds the payout permitted by the 1998 formula approved by Congress. *See Dalton v. Little Rock Family Planning Servs.*, 516 U.S. 474, 476 (1996) (in any conflict preemption case, state law is "displaced only to the extent that it actually conflicts with federal law" (quotation omitted)).

V. CONCLUSION

Amici join the able arguments of the defendants on the issues of standing, whether Plaintiff has stated a cause of action, and the merits (should the Court reach the issue). The arithmetic called for by the Court, however, demonstrates that Proposition 123 does not distribute funds in violation of the Enabling Act. The Court should therefore deny the requested preliminary injunction and dismiss Plaintiff's claims.

RESPECTFULLY SUBMITTED this 15th day of March 2017.

GAMMAGE & BURNHAM, P.L.C.

By s/ Christopher L. Hering

Cameron C. Artigue
Grady Gammage, Jr.
Christopher L. Hering
Two North Central Avenue, 15th Floor
Phoenix, Arizona 85004
Attorneys for Amici Curiae Arizona Education Association, Arizona School Boards Association, and Arizona Association of School Business Officials

CERTIFICATE OF SERVICE

I hereby certify that on March 15, 2017, I electronically transmitted the attached document to the Clerk's Office using the ECF System for filing and the transmittal of a Notice of Electronic Filing was sent to the following ECF registrants:

Andrew S. Jacob
Leon B. Silver
GORDON & REES LLP
111 W Monroe St., Ste. 1600
Phoenix, Arizona 85003-1736
ajacob@gordonrees.com
Attorneys for Plaintiff

Michael T. Liburdi
Kathryn Hackett King
OFFICE OF THE GOVERNOR
1700 W. Washington St.
Phoenix, Arizona 85007
mliburdi@az.gov
kking@az.gov
Attorneys for Defendant Governor Douglas A. Ducey

Theodore B. Olson
Matthew D. McGill
GIBSON, DUNN & CRUTCHER, LLP
1050 Connecticut Avenue, N.W.
Washington, DC 20036-5306
tolson@gibsondunn.com
mmcgill@gibsondunn.com
Attorneys for Defendant Governor Douglas A. Ducey

Timothy J. Berg
Theresa Dwyer
Kevin M. Green
FENNEMORE CRAIG, PC
2394 East Camelback, Suite 600
Phoenix, Arizona 85016
kgreen@fclaw.com
tdwyer@fclaw.com
tberg@fclaw.com
Attorneys for Defendant Governor Douglas A. Ducey

Dominic E. Draye
Keith J. Miller
Joseph E. La Rue
ARIZONA ATTORNEY GENERAL
1275 W. Washington St.
Phoenix, Arizona 85007-2997
Dominic.Draye@azag.gov
Keith.Miller@azag.gov
Joseph.LaRue@azag.gov
SolicitorGeneral@azag.gov
Attorneys for Defendant State of Arizona

Peter Alex Silverman
Taylor C. Young
Robert A. Mandel
MANDEL YOUNG PLC
2390 E. Camelback Rd., Ste. 318
Phoenix, Arizona 85016
peter@mandelyoung.com
taylor@mandelyoung.com
rob@mandelyoung.com
Attorneys for Amici Curiae John S. McCain, III, Jeff Flake and Matthew J. Salmon

Joel W. Nomkin
Clinten N. Garrett
PERKINS COIE, LLP
P.O. Box 400
Phoenix, Arizona 85001-0400
CNGarrett@perkinscoie.com
JNomkin@perkinscoie.com
Attorneys for Amicus Curiae State of New Mexico

s/ Dawn M. McCombs

EXHIBIT A

Cameron C. Artigue #011376
Grady Gammage, Jr. #004552
Christopher L. Hering #028169
GAMMAGE & BURNHAM, P.L.C.
ATTORNEYS AT LAW
TWO NORTH CENTRAL AVENUE
15TH FLOOR
PHOENIX, AZ 85004
TELEPHONE (602) 256-0566
FAX (602) 256-4475
EMAIL: CARTIGUE@GBLAW.COM

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA

Michael Pierce;

Plaintiff,

v.

Douglas A. Ducey, in his capacity as Governor of the State of Arizona, and the State of Arizona,

Defendants

Case No. CV-16-01538-PHX-NVW

DECLARATION OF CHRISTOPHER L. HERING

I, Christopher L. Hering, declare and state as follows:

1. I am an attorney at Gammage & Burnham, P.L.C. I have been licensed to practice law in Arizona since 2010.

2. I performed the calculations necessary to estimate the distribution that would be allowed for FY 16-17 under the formula set forth in the 1998 amendment to Article X, Section 7 of the Arizona Constitution. I performed this calculation in three steps.

3. First, I averaged the permanent fund balance over the preceding five complete fiscal years, using 11 reports issued by the State Treasurer to the Arizona Board of Investment. These reports cover the period of June 30, 2011 to June 30, 2016. This

calculation yielded a figure of $4.352 billion. Excerpts from the Treasurer's reports and supporting calculations are attached as Exhibit B to the brief.

4. Second, I calculated the rate of return on the permanent fund, net of inflation. I obtained the five-year trailing rate of return on the permanent fund as of June 30, 2016, which was 8.39%. I then calculated the average annual inflation rate between 2011 and 2016, as required by the 1998 formula, using GDP Price Deflator data published by the Federal Reserve Bank of St. Louis, which yielded 1.57%. Supporting data are attached as Exhibit D to the brief. Accordingly, the rate of return is 6.82% (8.39% - 1.57%).

5. Finally, I multiplied the average permanent fund balance ($4.352 billion) by the fund's rate of return (6.82%) to obtain the distribution allowed under the 1998 formula, or $296,806,400.

6. I also performed the calculations necessary to estimate the "cushion" of earnings authorized for distribution that were retained in the permanent fund for fiscal years 2012-2013, 2013-2014, and 2014-2015. To arrive at this number, I calculated the distributions authorized by the 1998 formula for each fiscal year, and then subtracted the amount actually distributed (as reported by the State Treasurer), the difference representing earnings retained in the permanent fund. This calculation proceeded as follows.

7. I obtained the trailing five-year rate of return earned by the permanent fund, as reported by the State Treasurer, for each fiscal year. I then estimated the permanent fund's average monthly balance by dividing the amount distributed by 2.5%, the distribution made at that time under Proposition 118.[1] Using the average rate of return

[1] Proposition 118 called for a flat annual distribution of 2.5% of the average monthly balance of the permanent fund over the preceding five calendar years. The 1998

and average monthly balance, I calculated the distribution authorized by the 1998 formula for each fiscal year and then subtracted the amount actually distributed. My calculations (including a formula sheet generated by Microsoft Excel) and supporting data are attached as Exhibit G to the brief.

8. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

DATED this 15th day of March, 2017.

Christopher L. Hering

formula's base is somewhat different in that the average monthly balance is calculated over the last five complete fiscal years.

EXHIBIT B

	A	B	C
1	**Calculation of Average Permanent Fund Balance, 2011-2016**		
2	**Report Date**	**Date of Fund Balance**	**Fund Balance**
3	07/21/11	06/30/11	$ 3,286,677,025.16
4	01/24/12	12/31/11	$ 3,236,287,161.94
5	07/24/12	06/30/12	$ 3,524,636,632.72
6	01/22/13	12/31/12	$ 3,753,669,846.98
7	07/23/13	06/30/13	$ 4,149,353,783.20
8	01/27/14	12/31/13	$ 4,590,580,998.57
9	07/29/14	06/30/14	$ 4,868,539,602.00
10	01/27/15	12/31/14	$ 5,057,604,914.00
11	07/23/15	06/30/15	$ 5,169,839,062.00
12	01/26/16	12/31/15	$ 5,070,937,007.00
13	07/28/16	06/30/16	$ 5,166,747,084.00
14			
15	Sum		$ 47,874,873,117.57
16	Average Balance		$ 4,352,261,192.51

	A	B	C
1	**Calculation of Average Permanent Fund Balance, 2011-2016**		
2	**Report Date**	**Date of Fund Balance**	**Fund Balance**
3	40745	40724	3286677025.16
4	40932	40908	3236287161.94
5	41114	41090	3524636632.72
6	41296	41274	3753669846.98
7	41478	41455	4149353783.2
8	41666	41639	4590580998.57
9	41849	41820	4868539602
10	42031	42004	5057604914
11	42208	42185	5169839062
12	42395	42369	5070937007
13	42579	42551	5166747084
14			
15	Sum		=SUM(C3:C13)
16	Average Balance		=C15/11

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2011

Presented To:

Arizona State Board of Investment

JULY 21, 2011

J.P.Morgan

Performance Worksheet

Arizona State Treasury (05509)

As Of June 2011

Gross of Fee

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,146,370,348.87	1,129,277,170.95	2,003,253	(1.67)	0.08	6.01	30.66	30.66	3.43	2.85	0.76	07/01/1999
10327900	S&P 400 Pool	539,338,579.50	523,512,294.25	-4,905,332	(2.02)	(0.74)	8.59	39.39	39.39	5.59	6.27	8.12	08/01/2001
10328000	Pool 205	1,532,146,292.77	1,499,095,301.05	-29,036,463	(0.26)	1.67	1.29	2.67	2.67	5.74	6.07	6.00	07/01/1999
11558100	S&P 600 Pool	110,067,569.45	134,792,258.91	26,750,159	(1.84)	(0.22)						2.69	03/01/2011
00550902	**Total Endowment Fund Composite**	**3,327,922,790.59**	**3,286,677,025.16**	**-5,188,384**	**(1.09)**	**0.65**	**3.98**	**16.17**	**16.17**	**5.07**	**5.07**	**5.16**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

DECEMBER 2011

Presented To:

Arizona State Board of Investment

JANUARY 24, 2012

J.P.Morgan

Performance Worksheet

Arizona State Treasury (05509)

As of December 2011

Gross of Fee

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,103,126,047.81	1,113,591,856.01	-666,123	1.01	11.77	2.06	(3.72)	2.06	14.13	(0.18)	0.43	07/01/1999
10327900	S&P 400 Pool	478,953,831.00	476,943,289.04	-285,481	(0.36)	13.02	(1.62)	(9.40)	(1.62)	17.84	3.13	6.70	08/01/2001
10328000	Pool 205	1,391,156,343.68	1,400,383,916.65	-761,283	0.72	0.88	5.25	3.91	5.25	5.69	5.95	6.08	07/01/1999
11558100	S&P 600 Pool	242,540,418.72	245,368,100.24	-190,322	1.24	17.13		(6.06)				(3.54)	03/01/2011
00550902	**Total Endowment Fund Composite**	**3,215,776,641.21**	**3,236,287,161.94**	**-1,903,210**	**0.70**	**7.18**	**2.91**	**(1.02)**	**2.91**	**9.87**	**3.43**	**4.87**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2012

Presented To:

Arizona State Board of Investment

JULY 24, 2012

J.P.Morgan

Performance Worksheet

Arizona State Treasury (05509)

As of June 2012

Gross of Fee

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,187,573,434.00	1,241,134,008.79	4,513,385	4.13	(2.73)	9.51	5.43	5.43	16.41	0.30	1.12	07/01/1999
10327900	S&P 400 Pool	507,871,484.28	519,423,990.40	1,934,308	1.89	(4.86)	8.02	(2.13)	(2.13)	18.68	2.32	7.14	08/01/2001
10328000	Pool 205	1,454,310,254.44	1,460,800,258.74	5,158,155	0.09	1.79	2.09	6.08	6.08	5.42	6.08	6.01	07/01/1999
11558100	S&P 600 Pool	289,892,929.49	303,278,374.79	1,289,539	4.17	(3.55)	8.03	1.48	1.48			3.14	03/01/2011
00550902	**Total Endowment Fund Composite**	**3,439,648,102.21**	**3,524,636,632.72**	**12,895,387**	**2.10**	(1.31)	**5.97**	**4.89**	**4.89**	**10.77**	**3.54**	**5.14**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

DECEMBER 2012

Presented To:

Arizona State Board of Investment

JANUARY 22, 2013

J.P.Morgan

Performance Worksheet

Arizona State Treasury (05509)

As of December 2012

Primary - US Dollar

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,314,935,128.01	1,335,494,718.84	8,432,637	0.91	(0.38)	15.98	5.92	15.98	10.88	1.75	1.51	07/01/1999
10327900	S&P 400 Pool	560,697,281.35	576,618,945.50	3,613,987	2.18	3.62	18.02	9.25	18.02	13.39	4.38	7.65	08/01/2001
10328000	Pool 205	1,500,866,761.38	1,508,617,326.58	9,637,299	(0.13)	0.22	3.88	1.75	3.88	5.00	5.40	5.91	07/01/1999
11558100	S&P 600 Pool	319,971,818.93	332,938,856.06	2,409,325	3.29	2.24	16.44	7.79	16.44			6.54	03/01/2011
00550902	**Total Endowment Fund Composite**	**3,696,470,989.67**	**3,753,669,846.98**	**24,093,248**	**0.89**	**0.70**	**11.11**	**4.85**	**11.11**	**8.51**	**4.21**	**5.32**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2013

Presented To:

Arizona State Board of Investment

JULY 23, 2013

J.P.Morgan

Performance Worksheet
Arizona State Treasury (05509)
As of June 2013

Primary - US Dollar

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,579,371,251.30	1,558,074,451.86	-19,555	(1.35)	2.89	13.79	20.52	20.52	18.41	7.05	2.39	07/01/1999
10327900	S&P 400 Pool	689,946,622.11	676,928,504.77	-8,381	(1.89)	1.00	14.57	25.17	25.17	19.54	7.60	8.55	08/01/2001
10328000	Pool 205	1,538,150,881.07	1,516,142,764.56	89,394	(1.44)	(2.20)	(2.17)	(0.46)	(0.46)	2.74	4.54	5.53	07/01/1999
11558100	S&P 600 Pool	398,761,821.66	398,208,062.01	-5,587	(0.14)	3.92	16.26	25.32	25.32			12.12	03/01/2011
00550902	**Total Endowment Fund Composite**	**4,206,230,576.14**	**4,149,353,783.20**	**55,871**	**(1.35)**	**0.76**	**7.71**	**12.94**	**12.94**	**11.24**	**6.57**	**5.68**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

DECEMBER 2013

Presented To:

Arizona State Board of Investment

JANUARY 27, 2014

J.P.Morgan

Performance Worksheet

Arizona State Treasury (05509)
As of December 2013
Primary - US Dollar

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,605,564,171.57	1,645,577,741.51	-878,997	2.55	10.52	32.37	16.33	32.37	16.15	17.95	3.38	07/01/1999
10327900	S&P 400 Pool	678,539,755.29	699,182,078.81	-376,713	3.10	8.34	33.53	16.55	33.53	15.75	20.87	9.54	08/01/2001
10328000	Pool 205	1,784,925,907.06	1,775,102,171.33	-1,004,569	(0.49)	0.06	(1.67)	0.51	(1.67)	2.45	3.82	5.37	07/01/1999
11558100	S&P 600 Pool	464,392,140.41	470,719,006.92	-251,142	1.41	9.79	41.34	21.57	41.34			17.72	03/01/2011
00550902	**Total Endowment Fund Composite**	**4,533,421,974.33**	**4,590,580,998.57**	**-2,511,421**	**1.32**	**6.07**	**19.28**	**10.74**	**19.28**	**10.91**	**11.95**	**6.23**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2014

Presented To:

Arizona State Board of Investment

JULY 29, 2014

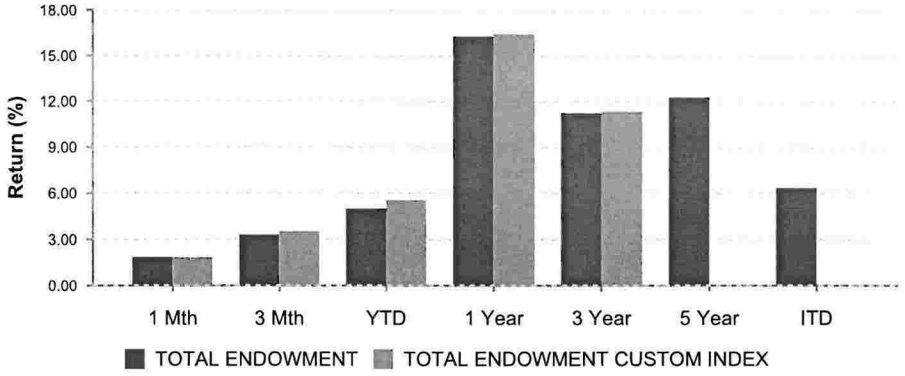
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2014

Total Endowment Summary

STATE STREET.

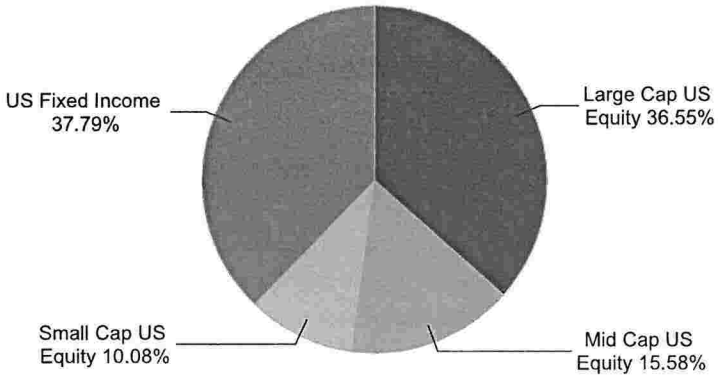
Performance



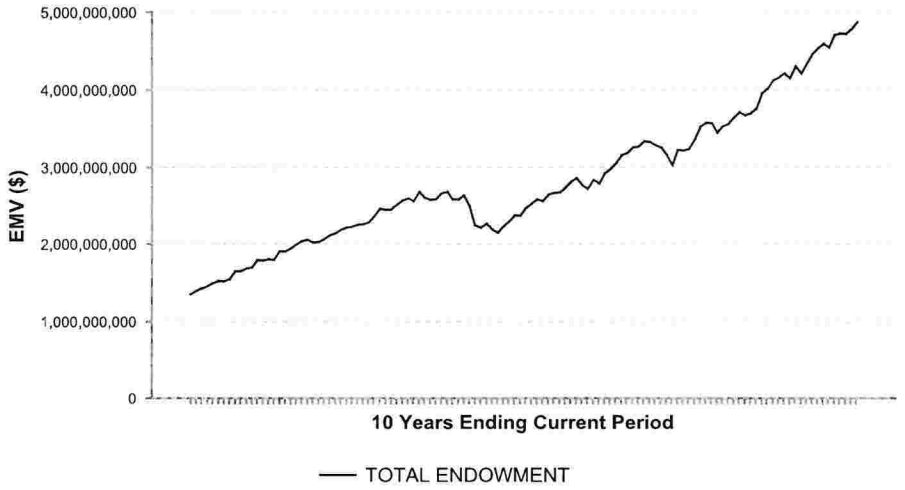
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	1.86	3.31	5.02	16.30	11.27	12.29	6.36	07/99
TOTAL ENDOWMENT CUSTOM INDEX	1.84	3.52	5.57	16.44	11.38			07/99
Excess	0.02	-0.20	-0.55	-0.14	-0.11			

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	4,868,539,602

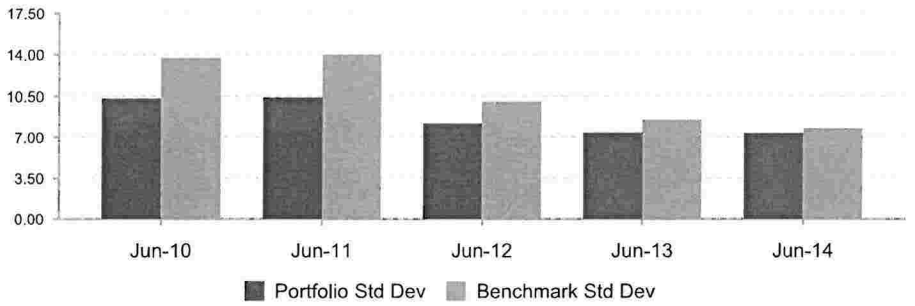


Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	11.27	7.39	7.80	1.51	0.94	0.74	-0.15



OFFICE OF THE
ARIZONA STATE TREASURER

JEFF DEWIT
TREASURER

DECEMBER 2014

Presented To:

Arizona State Board of Investment

JANUARY 27, 2015

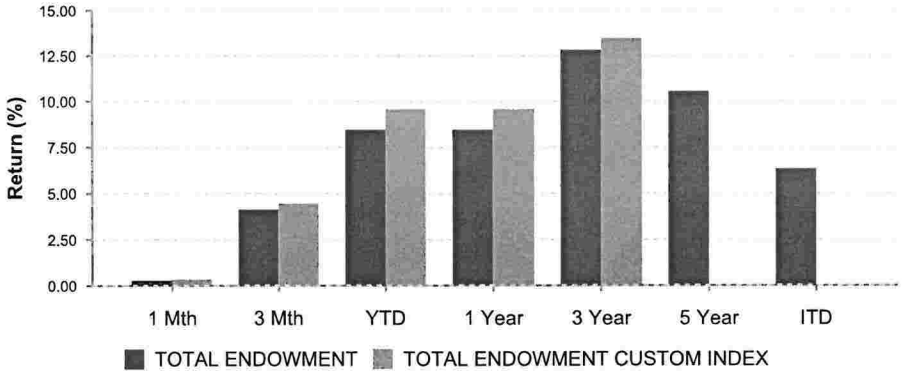
OFFICE OF THE ARIZONA STATE TREASURER

December 31, 2014

Total Endowment Summary

STATE STREET.

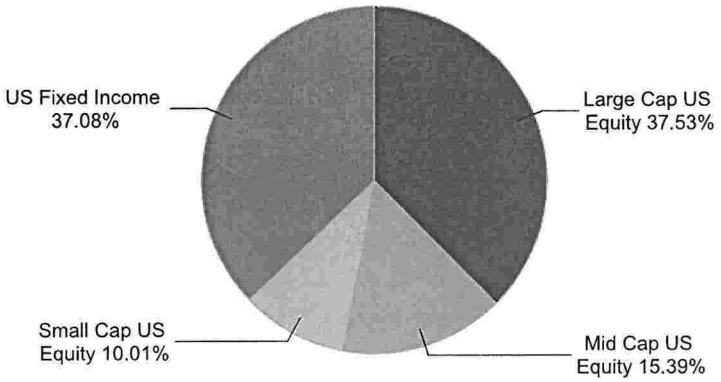
Performance



	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	0.28	4.14	8.47	8.47	12.86	10.57	6.37	07/99
TOTAL ENDOWMENT CUSTOM INDEX	0.34	4.46	9.60	9.60	13.51			07/99
Excess	-0.06	-0.32	-1.12	-1.12	-0.65			

Asset Allocation

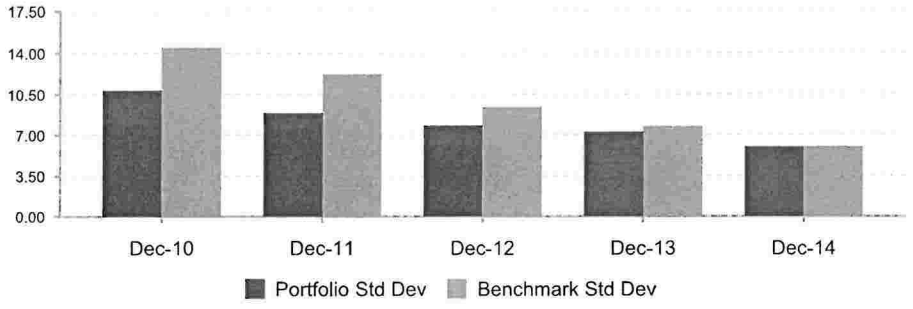
	Ending Market Value
TOTAL ENDOWMENT	5,057,604,914



Ending Market Value

3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	12.86	6.02	6.06	2.13	0.99	0.28	-2.29



OFFICE OF THE
ARIZONA STATE TREASURER

JEFF DEWIT
TREASURER

JUNE 2015

Presented To:

Arizona State Board of Investment

July 23, 2015

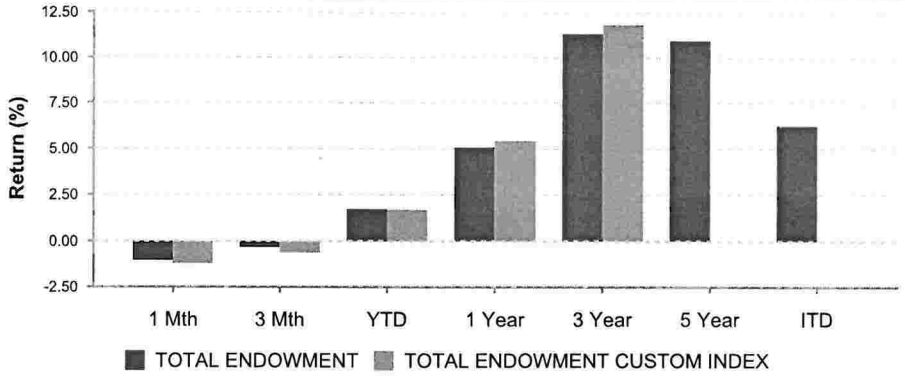
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2015

Total Endowment Summary

STATE STREET.

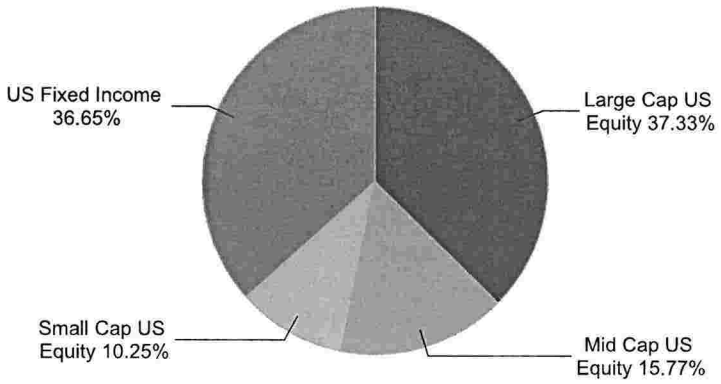
Performance



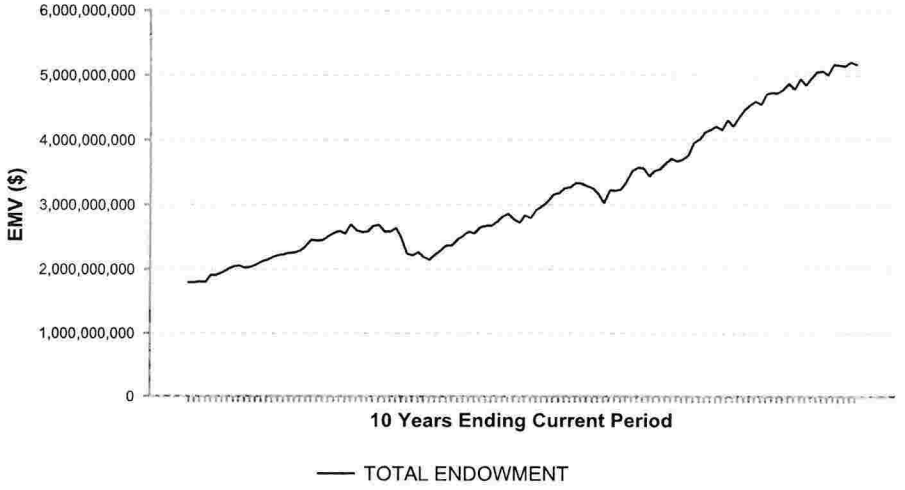
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	-1.05	-0.32	1.74	5.09	11.34	10.96	6.28	07/99
TOTAL ENDOWMENT CUSTOM INDEX	-1.22	-0.63	1.70	5.45	11.83			07/99
Excess	0.17	0.31	0.04	-0.36	-0.48			

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,169,839,062

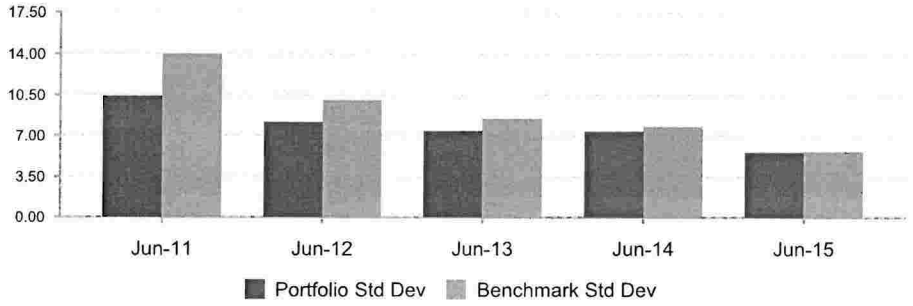


Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	11.34	5.63	5.72	2.00	0.98	0.32	-1.53



OFFICE OF THE
ARIZONA STATE TREASURER

JEFF DEWIT
TREASURER

DECEMBER 2015

Presented To:

Arizona State Board of Investment

January 26, 2016

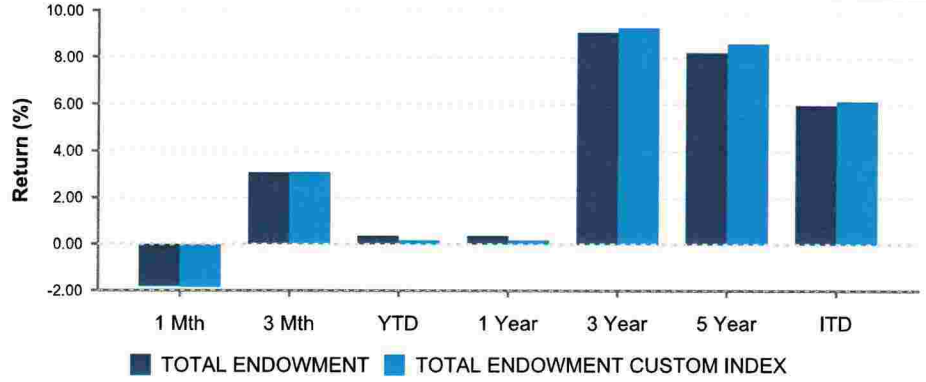
OFFICE OF THE ARIZONA STATE TREASURER

December 31, 2015

Total Endowment Summary

STATE STREET.

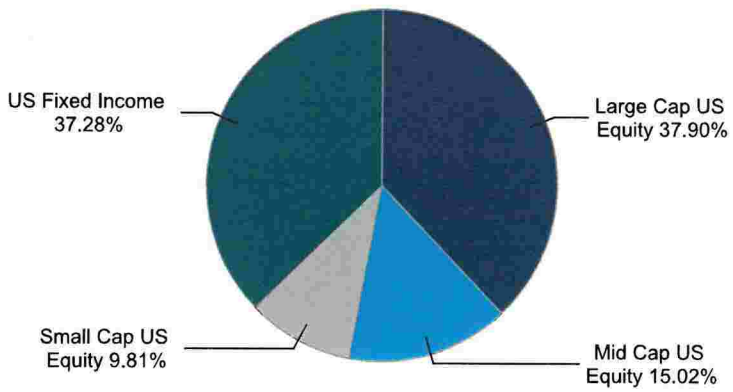
Performance



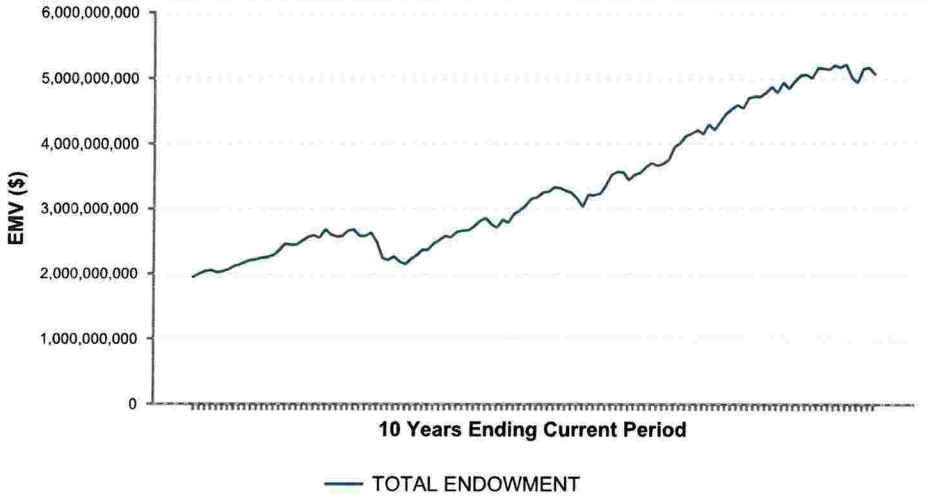
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	-1.82	3.09	0.37	0.37	9.10	8.24	5.99	07/99
TOTAL ENDOWMENT CUSTOM INDEX	-1.84	3.12	0.19	0.19	9.31	8.63	6.17	07/99
Excess	0.02	-0.03	0.18	0.18	-0.21	-0.40	-0.18	

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,070,937,007

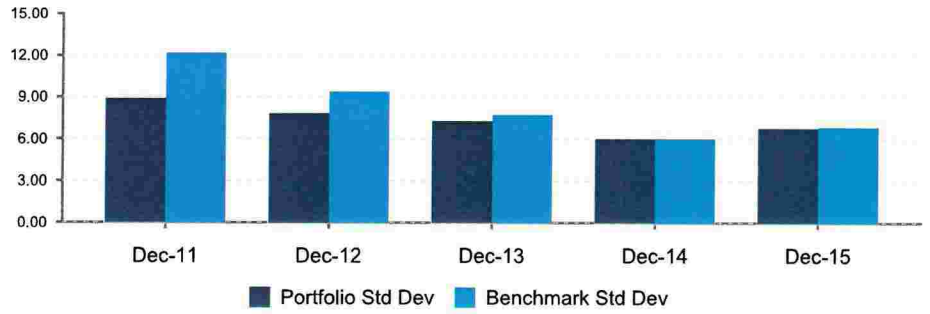


Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	9.10	6.79	6.88	1.33	0.99	0.30	-0.68



OFFICE OF THE
ARIZONA STATE TREASURER

JEFF DEWIT
TREASURER

JUNE 2016

Presented To:

Arizona State Board of Investment

July 28, 2016

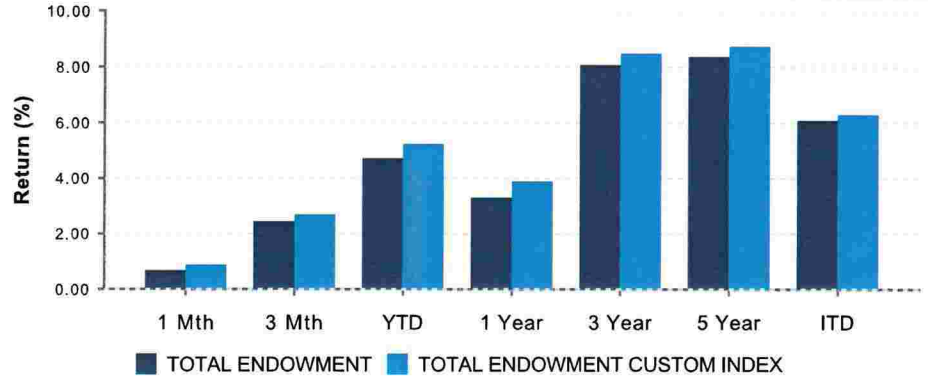
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2016

Total Endowment Summary

STATE STREET.

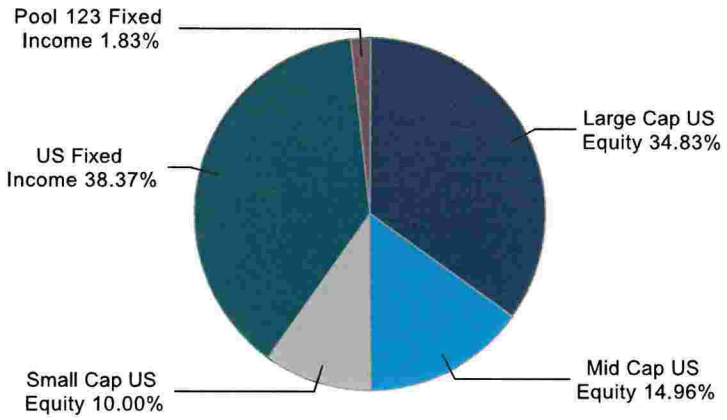
Performance



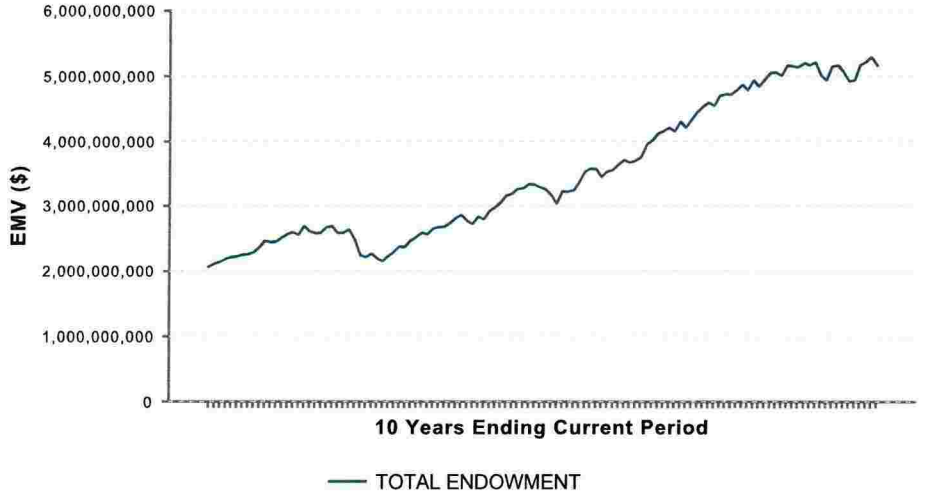
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	0.69	2.46	4.73	3.32	8.09	8.39	6.10	07/99
TOTAL ENDOWMENT CUSTOM INDEX	0.89	2.72	5.26	3.90	8.51	8.76	6.31	07/99
Excess	-0.20	-0.25	-0.53	-0.57	-0.43	-0.37	-0.20	

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,166,747,084



Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	8.09	7.17	7.28	1.12	0.98	0.31	-1.35

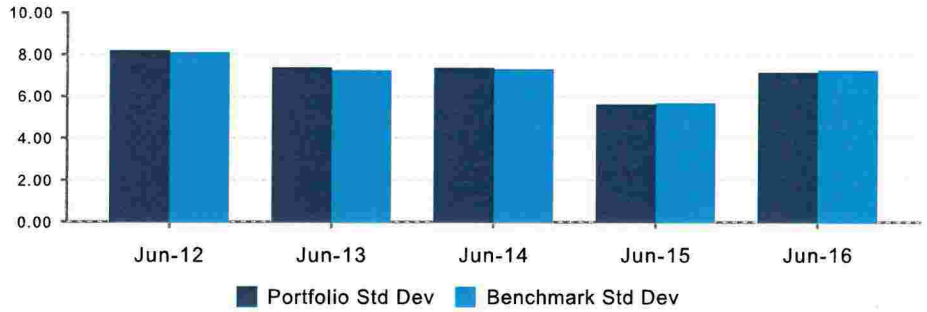


EXHIBIT C

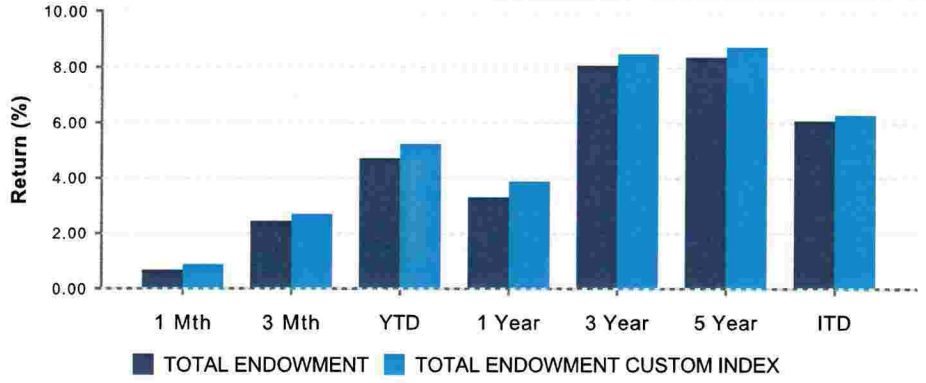
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2016

Total Endowment Summary

STATE STREET.

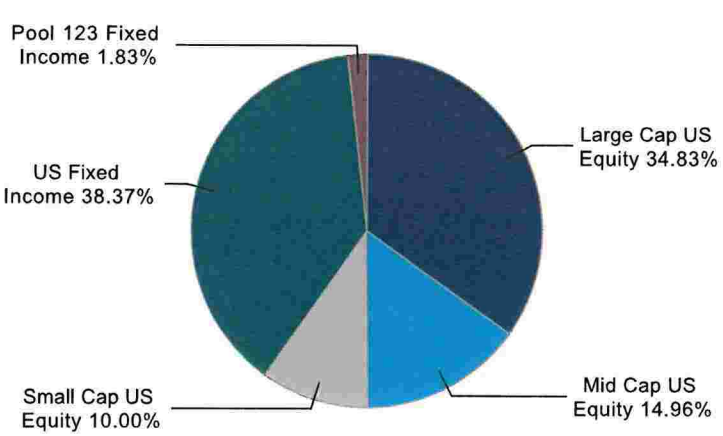
Performance



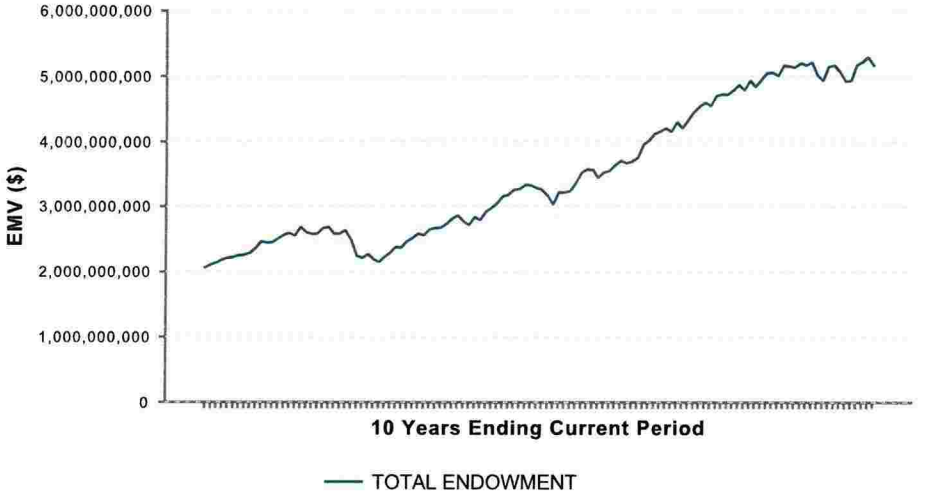
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	0.69	2.46	4.73	3.32	8.09	8.39	6.10	07/99
TOTAL ENDOWMENT CUSTOM INDEX	0.89	2.72	5.26	3.90	8.51	8.76	6.31	07/99
Excess	-0.20	-0.25	-0.53	-0.57	-0.43	-0.37	-0.20	

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,166,747,084



Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	8.09	7.17	7.28	1.12	0.98	0.31	-1.35

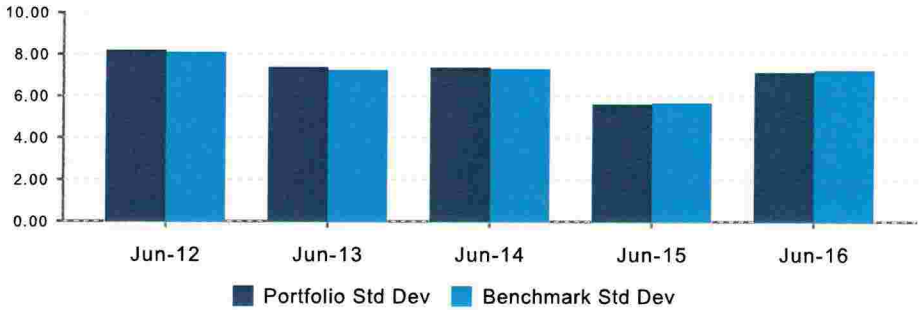


EXHIBIT D

	A	B	C
1	FRED Graph Observations		
2	Federal Reserve Economic Data		
3	Link: https://fred.stlouisfed.org		
4	Help: https://fred.stlouisfed.org/help-faq		
5	Economic Research Division		
6	Federal Reserve Bank of St. Louis		
7			
8	GDPDEF	Gross Domestic Product: Implicit Price Deflator,	
9		Index 2009=100, Quarterly, Seasonally Adjusted	
10			
11	Frequency: Quarterly		
12	observation_date	GDPDEF	
13	2011-07-01	103.768	
14	2011-10-01	103.917	
15	2012-01-01	104.466	
16	2012-04-01	104.943	
17	2012-07-01	105.508	
18	2012-10-01	105.935	
19	2013-01-01	106.349	
20	2013-04-01	106.570	
21	2013-07-01	107.084	
22	2013-10-01	107.636	
23	2014-01-01	108.117	
24	2014-04-01	108.709	
25	2014-07-01	109.165	
26	2014-10-01	109.300	
27	2015-01-01	109.310	
28	2015-04-01	109.919	
29	2015-07-01	110.253	
30	2015-10-01	110.504	
31	2016-01-01	110.630	
32	2016-04-01	111.258	
33	2016-07-01	111.648	

EXHIBIT E

EARNINGS DISTRIBUTED
ENDOWMENT FUNDS
DECEMBER 2016

Recipient		Distributed in Current Month DECEMBER 2016	Fiscal YTD 16/17	Fiscal YTD 15/16
101	A & M Colleges	$62,695	$376,170	$125,946
102	State Hospital	39,692	238,152	78,092
103	Leg., Exec., & Jud.	51,413	308,478	102,697
104	Military Institute	3,456	20,736	6,994
105	Miners Hospital	126,965	761,790	235,863
107	Normal School ASU/NAU	23,855	143,130	46,493
108	Penitentiaries	85,542	513,252	164,193
109	Permanent Common School	22,463,210	134,779,261	43,592,607
110	School for Deaf & Blind	33,142	198,854	65,572
111	School of Mines	70,914	425,484	142,384
112	State Charitable-Pioneers Home	346,473	2,078,837	690,966
112	State Charitable-Corrections	173,236	1,039,419	345,483
112	State Charitable-Youth Treatment	173,236	1,039,419	345,483
113	University Fund	122,961	737,764	241,841
114	U of A Land - 1881	384,475	2,306,852	700,768
	Total	**$24,161,266**	**$144,967,597**	**$46,885,381**

EXHIBIT F

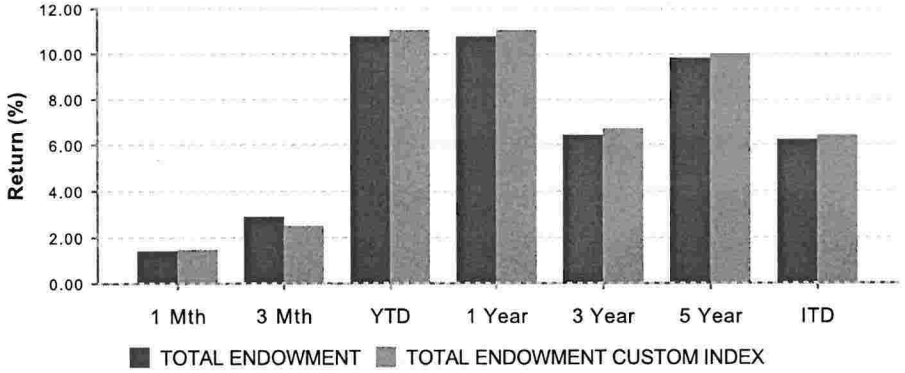
OFFICE OF THE ARIZONA STATE TREASURER

December 31, 2016

Total Endowment Summary

STATE STREET.

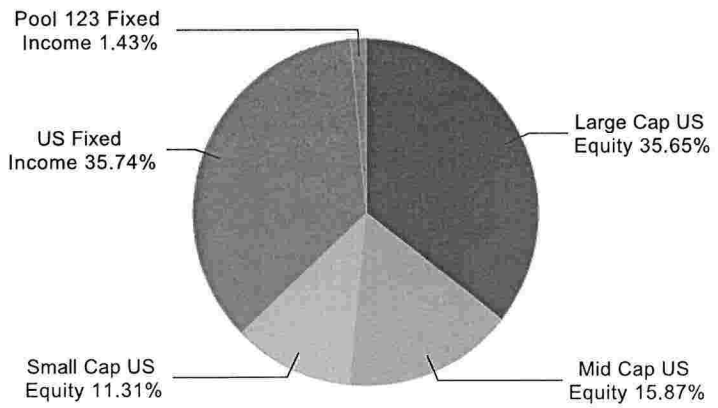
Performance



	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	1.43	2.91	10.78	10.78	6.45	9.84	6.26	07/99
TOTAL ENDOWMENT CUSTOM INDEX	1.48	2.52	11.07	11.07	6.74	10.04	6.45	07/99
Excess	-0.05	0.39	-0.30	-0.30	-0.30	-0.21	-0.18	

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,365,500,099



Ending Market Value

3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	6.45	6.86	6.98	0.92	0.98	0.38	-0.78

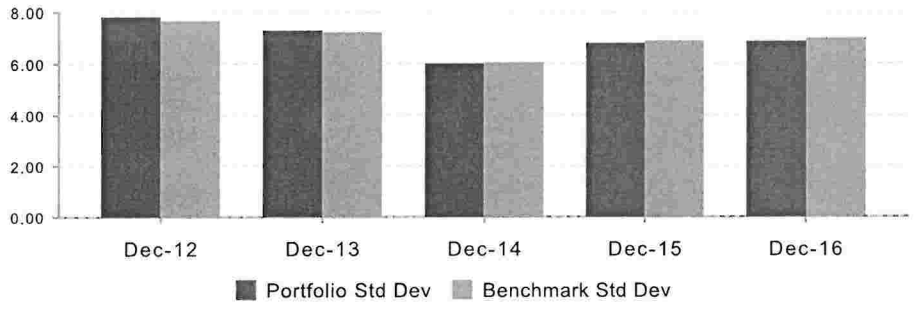


EXHIBIT G

	A	B	C	D	E
1	**Permitted Distribution Rate Under The 1998 Formula**				
2	Fiscal Year	5 Year Average Rate of Return	Average Yearly Inflation Rate	Permitted Distribution Rate Under 1998 Formula	Rate of Return, Undistributed
3	2012-2013	6.57%	1.48%	5.09%	2.59%
4	2013-2014	12.29%	1.86%	10.43%	7.93%
5	2014-2015	10.96%	1.76%	9.20%	6.70%
6					
7					
8					
9	**Total Earnings Retained in the Permanent Fund**				
10	Fiscal Year	Actual Distribution From Permanent Fund	5 Year Average Monthly Balance	Estimated Distribution Under the 1998 Formula	Earnings Retained In the Permanent Fund
11	2012-2013	$ 67,373,885.00	$ 2,694,955,400.00	$ 137,113,940.84	$ 69,740,055.84
12	2013-2014	$ 73,032,624.00	$ 2,921,304,960.00	$ 304,738,848.21	$ 231,706,224.21
13	2014-2015	$ 81,729,431.00	$ 3,269,177,240.00	$ 300,607,385.57	$ 218,877,954.57
14					
15	**Total**				**$ 520,324,234.62**

	A	B	C	D	E
1	**Permitted Distribution Rate Under The 1998 Formula**				
2	Fiscal Year	5 Year Average Rate of Return	Average Yearly Inflation Rate	Permitted Distribution Rate Under 1998 Formula	Rate of Return, Undistributed
3	2012-2013	0.0657	=((107.084-99.673)/5)/100	=B3-C3	=D3-0.025
4	2013-2014	0.1229	=((109.165-99.873)/5)/100	=B4-C4	=D4-0.025
5	2014-2015	0.1096	=((110.253-101.429)/5)/100	=B5-C5	=D5-0.025
6					
7					
8					
9	**Total Earnings Retained in the Permanent Fund**				
10	Fiscal Year	Actual Distribution From Permanent Fund	5 Year Average Monthly Balance	Estimated Distribution Under the 1998 Formula	Earnings Retained In the Permanent Fund
11	2012-2013	67373885	=B11/0.025	=C11*D3	=D11-B11
12	2013-2014	73032624	=B12/0.025	=C12*D4	=D12-B12
13	2014-2015	81729431	=B13/0.025	=C13*D5	=D13-B13
14					
15	**Total**				**=SUM(E11:E13)**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2013

Presented To:

Arizona State Board of Investment

JULY 23, 2013

EARNINGS DISTRIBUTED
ENDOWMENT FUNDS
JUNE 2013

Recipient		Distributed in Current Month JUNE 2013	Fiscal YTD 12/13	Fiscal YTD 11/12
101	A & M Colleges	$20,921	$209,066	$264,320
102	State Hospital	$11,675	$118,691	$146,483
103	Leg., Exec., & Jud.	$16,128	$167,816	$216,960
104	Military Institute	$1,102	$11,771	$15,388
105	Miners Hospital	$26,407	$282,856	$350,474
107	Normal School ASU/NAU	$6,714	$70,689	$90,281
108	Penitentiaries	$14,477	$224,062	$347,261
109	Permanent Common School	$5,946,675	$62,417,775	$77,832,917
110	School for Deaf & Blind	$9,557	$101,606	$129,625
111	School of Mines	$23,029	$235,446	$299,966
112	State Charitable-Pioneers Home	$117,452	$1,135,902	$1,362,866
112	State Charitable-Corrections	$58,726	$567,951	$681,433
112	State Charitable-Youth Treatment	$58,726	$567,951	$681,433
113	University Fund	$36,995	$380,613	$479,020
114	U of A Land - 1881	$88,895	$881,688	$1,023,757
	Total	**$6,437,479**	**$67,373,885**	**$83,922,184**

Posted in USAS in current month

J.P.Morgan

Performance Worksheet
Arizona State Treasury (05509)
As of June 2013

Primary - US Dollar

Total Endowment Fund Composite (00550902)

ID	Name	Beginning Market Value	Ending Market Value	Cashflow	Current Month	Trailing Three Months	Year to Date	Fiscal Year To Date	Trailing One Year	Trailing Three Years	Trailing Five Years	Since Inception	Inception Date
10327800	S&P 500 Pool	1,579,371,251.30	1,558,074,451.86	-19,555	(1.35)	2.89	13.79	20.52	20.52	18.41	7.05	2.39	07/01/1999
10327900	S&P 400 Pool	689,946,622.11	676,928,504.77	-8,381	(1.89)	1.00	14.57	25.17	25.17	19.54	7.60	8.55	08/01/2001
10328000	Pool 205	1,538,150,881.07	1,516,142,764.56	89,394	(1.44)	(2.20)	(2.17)	(0.46)	(0.46)	2.74	4.54	5.53	07/01/1999
11558100	S&P 600 Pool	398,761,821.66	398,208,062.01	-5,587	(0.14)	3.92	16.26	25.32	25.32			12.12	03/01/2011
00550902	**Total Endowment Fund Composite**	**4,206,230,576.14**	**4,149,353,783.20**	**55,871**	(1.35)	**0.76**	**7.71**	**12.94**	**12.94**	**11.24**	**6.57**	**5.68**	**07/01/1999**

OFFICE OF THE
ARIZONA STATE TREASURER

Doug Ducey
TREASURER

JUNE 2014

Presented To:

Arizona State Board of Investment

JULY 29, 2014

EARNINGS DISTRIBUTED
ENDOWMENT FUNDS
JUNE 2014

Recipient		Distributed in Current Month JUNE 2014	Fiscal YTD 13/14	Fiscal YTD 12/13
101	A & M Colleges	$17,813	$213,753	$209,066
102	State Hospital	$10,553	$126,639	$118,691
103	Leg., Exec., & Jud.	$14,367	$172,401	$167,816
104	Military Institute	$1,003	$12,041	$11,771
105	Miners Hospital	$27,751	$333,014	$282,856
107	Normal School ASU/NAU	$6,218	$74,618	$70,689
108	Penitentiaries	$20,501	$246,012	$224,062
109	Permanent Common School	$5,648,484	$67,781,808	$62,417,775
110	School for Deaf & Blind	$8,889	$106,667	$101,606
111	School of Mines	$20,138	$241,653	$235,446
112	State Charitable-Pioneers Home	$98,076	$1,176,917	$1,135,902
112	State Charitable-Corrections	$49,038	$588,459	$567,951
112	State Charitable-Youth Treatment	$49,038	$588,459	$567,951
113	University Fund	$33,169	$398,034	$380,613
114	U of A Land - 1881	$81,012	$972,149	$881,688
	Total	**$6,086,052**	**$73,032,624**	**$67,373,885**

Posted in USAS in current month

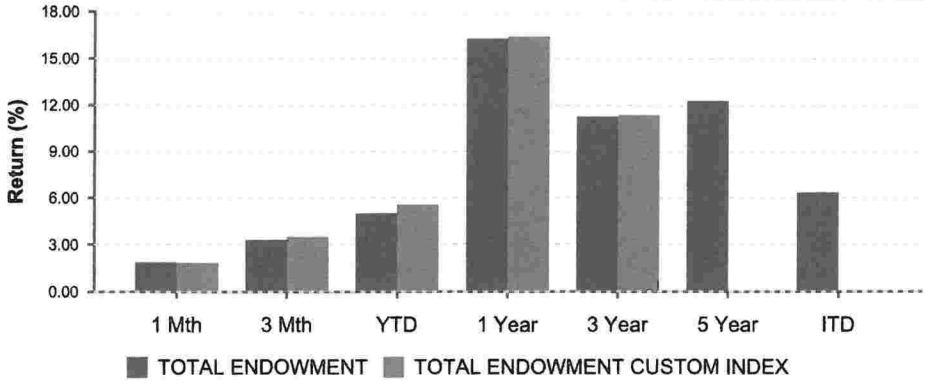
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2014

Total Endowment Summary

STATE STREET.

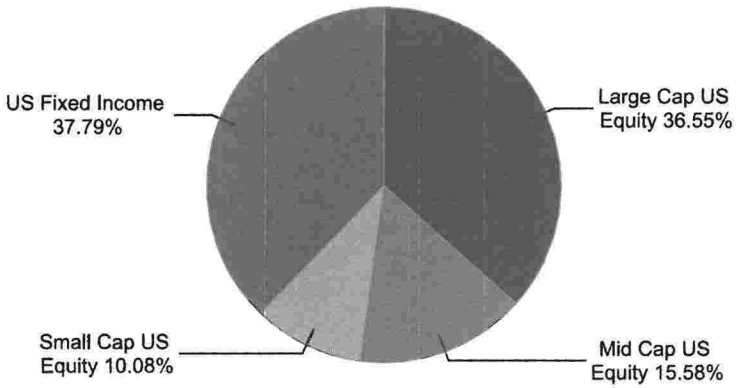
Performance



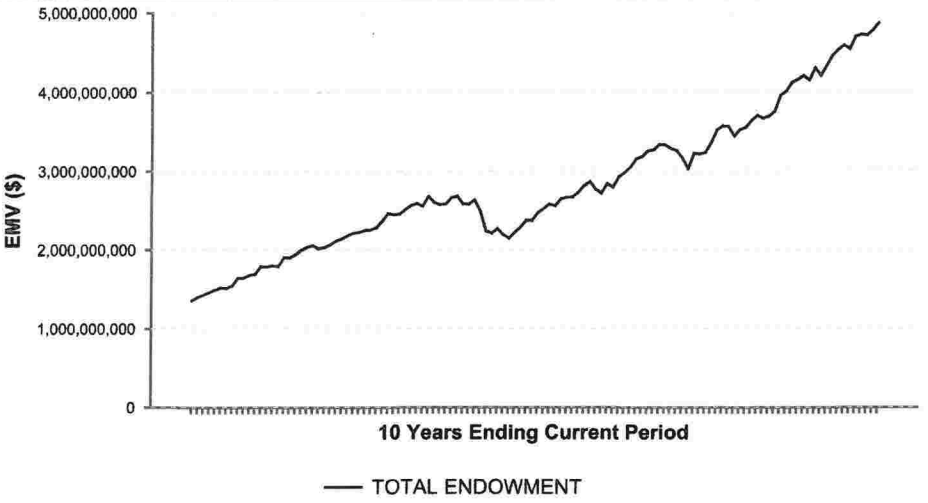
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	1.86	3.31	5.02	16.30	11.27	12.29	6.36	07/99
TOTAL ENDOWMENT CUSTOM INDEX	1.84	3.52	5.57	16.44	11.38			07/99
Excess	0.02	-0.20	-0.55	-0.14	-0.11			

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	4,868,539,602

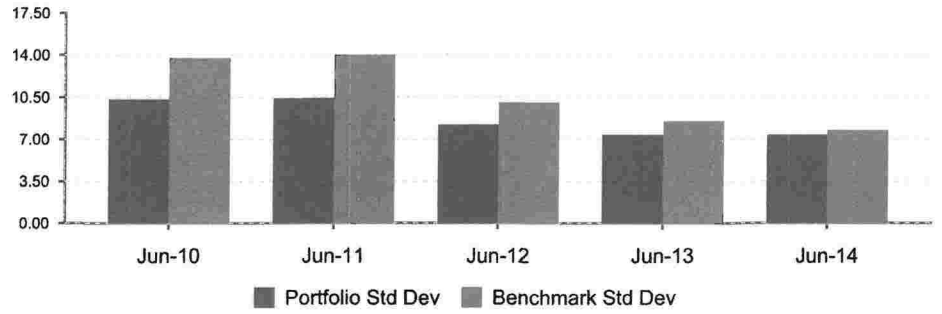


Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	11.27	7.39	7.80	1.51	0.94	0.74	-0.15



OFFICE OF THE
ARIZONA STATE TREASURER

JEFF DEWIT
TREASURER

JUNE 2015

Presented To:

Arizona State Board of Investment

July 23, 2015

EARNINGS DISTRIBUTED
ENDOWMENT FUNDS
JUNE 2015

Recipient		Distributed in Current Month JUNE 2015	Fiscal YTD 14/15	Fiscal YTD 13/14
101	A & M Colleges	$18,997	$227,961	$213,753
102	State Hospital	$11,534	$138,412	$126,639
103	Leg., Exec., & Jud.	$15,436	$185,230	$172,401
104	Military Institute	$1,065	$12,784	$12,041
105	Miners Hospital	$32,415	$388,978	$333,014
107	Normal School ASU/NAU	$6,839	$82,066	$74,618
108	Penitentiaries	$23,538	$282,456	$246,012
109	Permanent Common School	$6,332,035	$75,984,425	$67,781,808
110	School for Deaf & Blind	$9,692	$116,300	$106,667
111	School of Mines	$21,500	$257,994	$241,653
112	State Charitable-Pioneers Home	$103,941	$1,247,286	$1,176,917
112	State Charitable-Corrections	$51,970	$623,643	$588,459
112	State Charitable-Youth Treatment	$51,970	$623,643	$588,459
113	University Fund	$35,752	$429,026	$398,034
114	U of A Land - 1881	$94,102	$1,129,225	$972,149
	Total	**$6,810,786**	**$81,729,431**	**$73,032,624**

Posted in USAS in current month

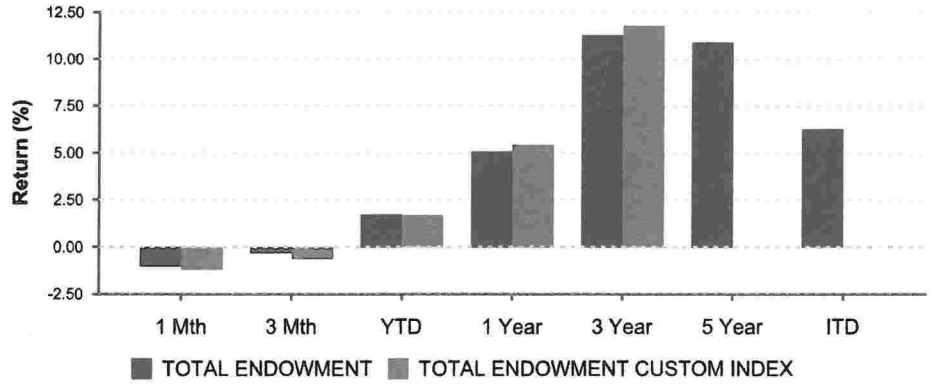
OFFICE OF THE ARIZONA STATE TREASURER

June 30, 2015

Total Endowment Summary

STATE STREET.

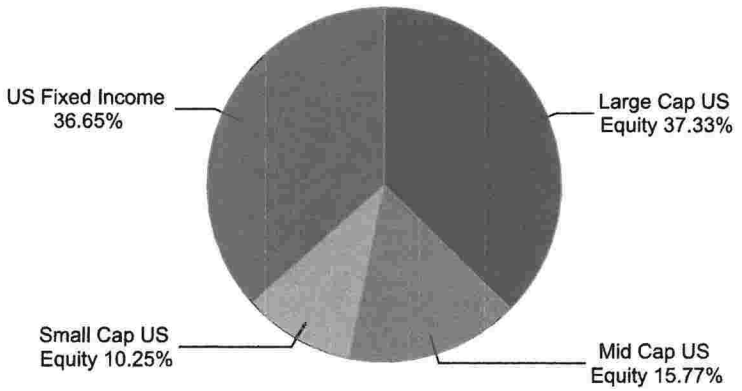
Performance



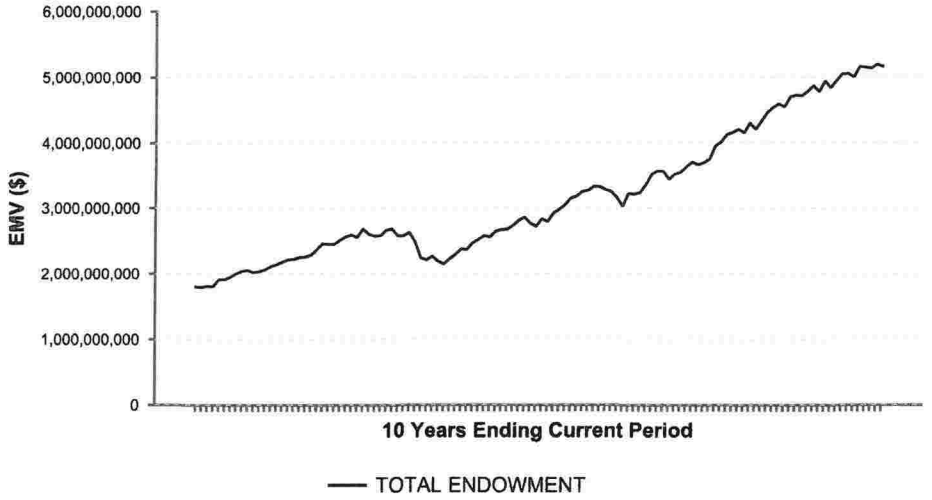
	1 Mth	3 Mth	YTD	1 Year	3 Year	5 Year	ITD	Incept Date
TOTAL ENDOWMENT	-1.05	-0.32	1.74	5.09	11.34	10.96	6.28	07/99
TOTAL ENDOWMENT CUSTOM INDEX	-1.22	-0.63	1.70	5.45	11.83			07/99
Excess	0.17	0.31	0.04	-0.36	-0.48			

Asset Allocation

	Ending Market Value
TOTAL ENDOWMENT	5,169,839,062

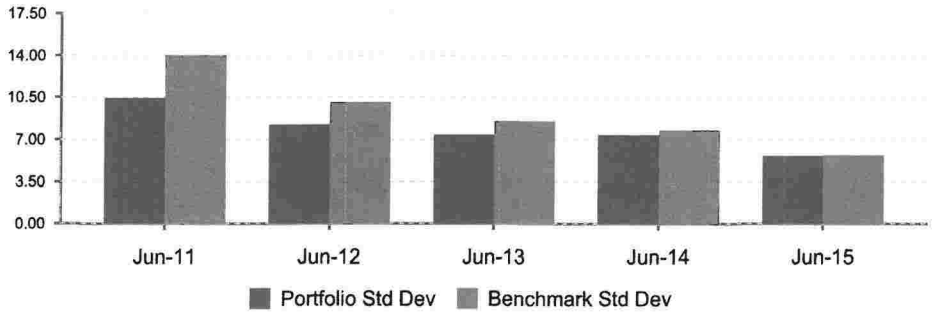


Ending Market Value



3 Year Risk Statistics

	Return	Portfolio Std Dev	Benchmark Std Dev	Sharpe Ratio	Beta	Tracking Error	Information Ratio
TOTAL ENDOWMENT	11.34	5.63	5.72	2.00	0.98	0.32	-1.53



	A	B	C
1	FRED Graph Observations		
2	Federal Reserve Economic Data		
3	Link: https://fred.stlouisfed.org		
4	Help: https://fred.stlouisfed.org/help-faq		
5	Economic Research Division		
6	Federal Reserve Bank of St. Louis		
7			
8	GDPDEF	Gross Domestic Product: Implicit Price Deflator,	
9		Index 2009=100, Quarterly, Seasonally Adjusted	
10			
11	Frequency: Quarterly		
12	observation_date	GDPDEF	
13	2008-07-01	99.673	
14	2008-10-01	99.815	
15	2009-01-01	100.062	
16	2009-04-01	99.895	
17	2009-07-01	99.873	
18	2009-10-01	100.169	
19	2010-01-01	100.522	
20	2010-04-01	100.968	
21	2010-07-01	101.429	
22	2010-10-01	101.949	
23	2011-01-01	102.399	
24	2011-04-01	103.145	
25	2011-07-01	103.768	
26	2011-10-01	103.917	
27	2012-01-01	104.466	
28	2012-04-01	104.943	
29	2012-07-01	105.508	
30	2012-10-01	105.935	
31	2013-01-01	106.349	
32	2013-04-01	106.570	
33	2013-07-01	107.084	

	A	B	C
1	FRED Graph Observations		
2	Federal Reserve Economic Data		
3	Link: https://fred.stlouisfed.org		
4	Help: https://fred.stlouisfed.org/help-faq		
5	Economic Research Division		
6	Federal Reserve Bank of St. Louis		
7			
8	GDPDEF	Gross Domestic Product: Implicit Price Deflator,	
9		Index 2009=100, Quarterly, Seasonally Adjusted	
10			
11	Frequency: Quarterly		
12	observation_date	GDPDEF	
13	2009-07-01	99.873	
14	2009-10-01	100.169	
15	2010-01-01	100.522	
16	2010-04-01	100.968	
17	2010-07-01	101.429	
18	2010-10-01	101.949	
19	2011-01-01	102.399	
20	2011-04-01	103.145	
21	2011-07-01	103.768	
22	2011-10-01	103.917	
23	2012-01-01	104.466	
24	2012-04-01	104.943	
25	2012-07-01	105.508	
26	2012-10-01	105.935	
27	2013-01-01	106.349	
28	2013-04-01	106.570	
29	2013-07-01	107.084	
30	2013-10-01	107.636	
31	2014-01-01	108.117	
32	2014-04-01	108.709	
33	2014-07-01	109.165	

	A	B	C
1	FRED Graph Observations		
2	Federal Reserve Economic Data		
3	Link: https://fred.stlouisfed.org		
4	Help: https://fred.stlouisfed.org/help-faq		
5	Economic Research Division		
6	Federal Reserve Bank of St. Louis		
7			
8	GDPDEF	Gross Domestic Product: Implicit Price Deflator,	
9		Index 2009=100, Quarterly, Seasonally Adjusted	
10			
11	Frequency: Quarterly		
12	observation_date	GDPDEF	
13	2010-07-01	101.429	
14	2010-10-01	101.949	
15	2011-01-01	102.399	
16	2011-04-01	103.145	
17	2011-07-01	103.768	
18	2011-10-01	103.917	
19	2012-01-01	104.466	
20	2012-04-01	104.943	
21	2012-07-01	105.508	
22	2012-10-01	105.935	
23	2013-01-01	106.349	
24	2013-04-01	106.570	
25	2013-07-01	107.084	
26	2013-10-01	107.636	
27	2014-01-01	108.117	
28	2014-04-01	108.709	
29	2014-07-01	109.165	
30	2014-10-01	109.300	
31	2015-01-01	109.310	
32	2015-04-01	109.919	
33	2015-07-01	110.253	

EXHIBIT H

Center for the Study of Economic Liberty
at Arizona State University

Policy Report

No. 2015-02

October 7, 2015

SHOULD THE PERMANENT FUND SIT ON ITS ASSETS?

BY SCOTT BEAULIER
Executive Director, Center for the Study of Economic Liberty at Arizona State University

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

Published by the Center for the Study of Economic Liberty at Arizona State University
Tempe, Arizona 85287 | (480) 965-1131 | economiclibertyasu.com

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 Friedman[1]

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 Utah[14] and Arizona, distributions 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?

The Arizona State Land Trust operates on a large capital surplus. Why sit on such a large stock of assets and why aim for a steady accumulation of funds?

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 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

The Arizona State Land Trust has grown its Permanent Fund to a portfolio of more than $5 billion in assets today.

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 EQUITY[21]

"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 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.

The payments should be biased towards more benefits now and lower payouts later, but just the opposite seems to be occurring.

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.

The role of the trust is not to squirrel money away, but rather to maximize benefits to its beneficiaries.

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.

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.

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

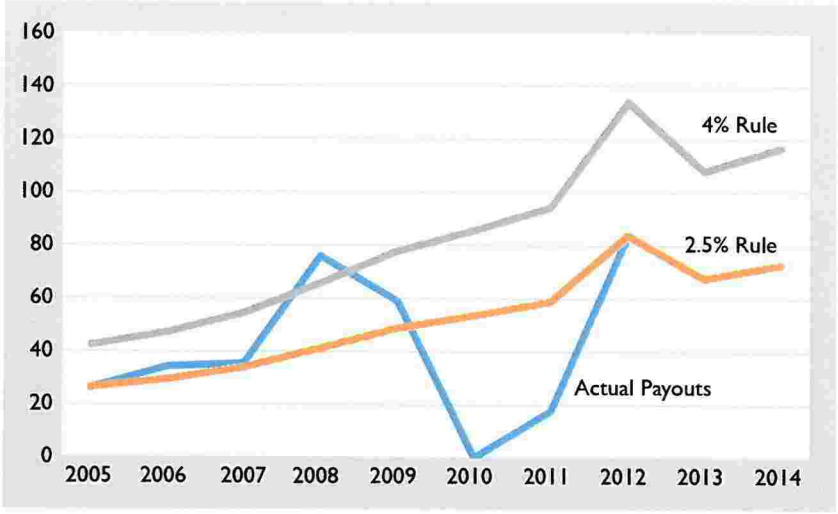


TABLE 2
Actual Permanent Educational Fund Payouts vs. Alternatives (Figures in Millions)

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

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)

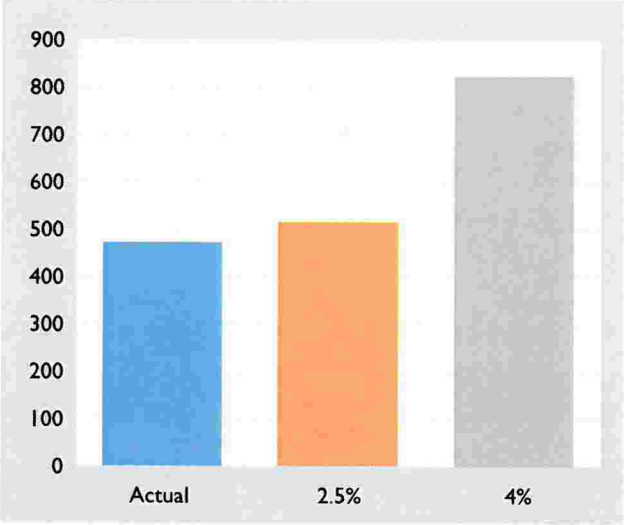


TABLE 3
Projected Permanent Educational Fund Payouts, 2015-2026 (Figures in Millions)

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

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 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)

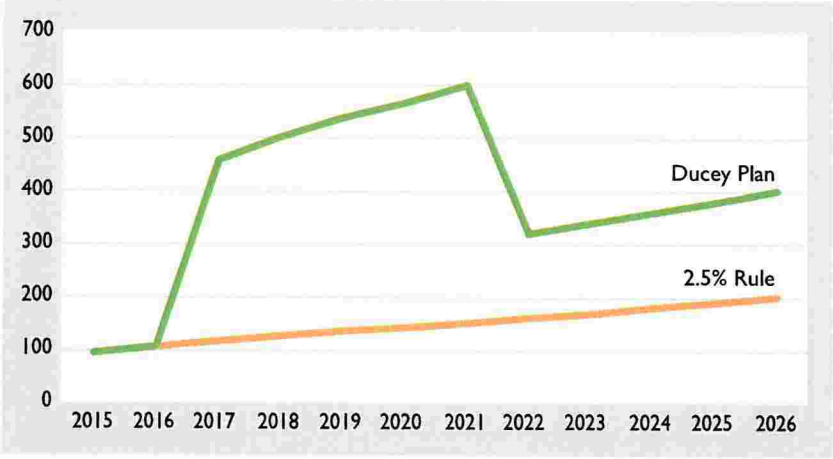


TABLE 4
Projected Permanent Educational Fund Payouts, 2015-2026 (Figures in Millions)

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)

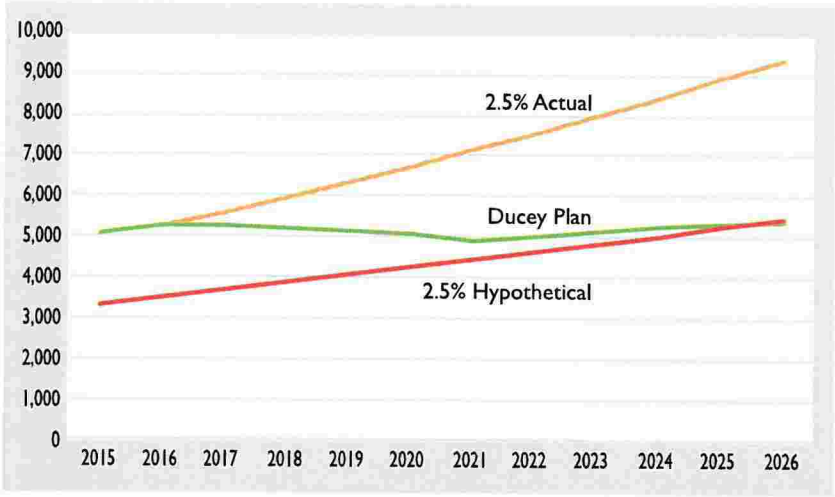
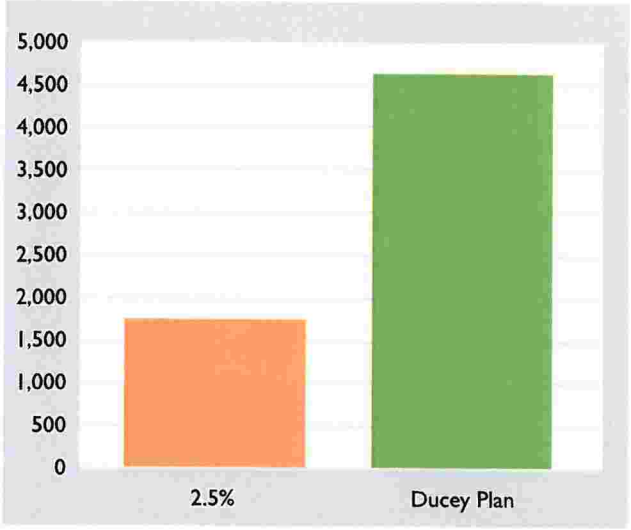


FIGURE 5
Projected Permanent Fund Distributions, 2015-2026 (Figures in Millions)



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

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.

REFERENCES

Arizona State Land Department, 2014, Annual Report for Fiscal Year 2013-2014.

Beaulier, S., 2015, "Why do state land trusts sit on their land?" Arizona State University Center for the Study of Economic Liberty Working Paper, forthcoming.

Brown, J. R., Dimmock, S. G., Kang, J.-K., & S. Weisbenner, 2013, "How university endowments respond to financial market shocks: Evidence and implications," *American Economic Review*, forthcoming.

Card, D., 1999, "The Causal Effect of Education on Earnings," in O. Ashenfelter and D. Card, eds., *Handbook of Labor Economics*, Vol. 3A. Amsterdam: Elsevier Science: 1801-63.

Cejnek, G., Franz, R., Randal, O., and N. Stoughton, 2014, "A Survey of University Endowment Management Research," *Journal of Investment Management*, Third Quarter.

Federal Reserve Bank of St. Louis, "Total Gross Domestic Product for Arizona," accessed online on August 11, 2015 at following website: https://research.stlouisfed.org/fred2/series/AZNGSP.

Fischer, H., 2015, "Education cuts stalling Arizona budget approval," *Arizona Daily Star*, March 6.

Friedman, M., 1957, *A Theory of the Consumption Function*, Princeton, NJ. Princeton University Press.

Landsburg, S. 1997. *Fair Play*, New York, NY. Free Press.

Merton, R. C., 1971, "Optimal consumption and portfolio rules in a continuous-time model," *Journal of Economic Theory*, 3 (4): 373–413.

Millard, J., 2015, "Gov. Ducey unveils plan to bolster education spending without raising taxes," *Phoenix Business Journal*, June 4.

Modigliani, F, and R. H. Brumberg, 1954, "Utility analysis and the consumption function: an interpretation of cross-section data," in K. K. Kurihara, ed., *Post-Keynesian Economics*, New Brunswick, NJ. Rutgers University Press: 388–436.

Modigliani, F., and R. H. Brumberg, 1990, "Utility analysis and aggregate consumption functions: an attempt at integration," in A. Abel, ed., *The Collected Papers of Franco Modigliani: Volume 2, The Life Cycle Hypothesis of Saving*, Cambridge, MA. The MIT Press: 128–197.

Myers, S.C., and N.S. Majluf, 1984, "Corporate financing and investment decisions when firms have information that investors do not have," *Journal of Financial Economics* 13: 187-221.

Office of the Arizona State Treasurer, 2015, "Treasurer position on State Land Endowment proposal," accessed at following website on August 11, 2015: http://www.aztreasury.gov/trust-fund-letter/

Sanchez, Y., and M. Pitzl, 2015, "Treasurer blasts Ducey's educational plan," *Arizona Republic*, July 15.

Shumway, J., 2015, "Fact check: Gosar correct on private land in Ariz.," *Arizona Republic*, April 13.

State of North Dakota Department of North Dakota Trust Lands, 2013, 60th Biennial Report of the Board of University and School Lands and Commissioner of University and School Lands.

State of Utah School and Institutional Trust Lands Administration, 2014, Fiscal Year 2014 Annual Report.

Tobin, J., 1967, "Life-cycle saving and balanced growth," in W. Fellner, et al., eds., *Ten Economic Essays in the Tradition of Irving Fisher*, New York. Wiley.

EXHIBIT I

STATE TRUST LANDS AND EDUCATION FUNDING

Cameron Artigue
Grady Gammage, Jr
Dan Hunting
Mark Stapp

November, 2015

With the recent passage of Proposition 123, Arizona voters are being asked to weigh in on two significant measures related to state trust land this year. The new proposition relates to how money produced by the sale of trust lands is used to support education. This is headed for a vote on May 17, 2016. A previously referred proposition will also appear on the fall ballot and would allow the State Land Department, which administers trust land, to keep some of its revenue to operate the Department.

These two proposals highlight a relatively obscure part of Arizona's heritage: a huge holding of land by the people of the State, not for recreation or open space, but to make money for schools. The purpose of this paper is not to examine the propositions in depth or make any recommendations about how to vote, but rather to provide perspective on the history and role of state trust land.

The federal government has given new states lands to support education since the Northwest Ordinance of 1787. Arizona was given more than 10 million acres of land by the federal government to be held "in trust" for various beneficiaries, mostly related to education. As Arizona was the last of the lower forty-eight states, the federal government imposed fairly tough restrictions on how it could be sold or leased. Until the 1980's the land was principally used for grazing, timber, and farming. In 1980, the Urban Lands Act created a process for selling or leasing trust land for urban development.

Arizonans have heard more about state trust land in the last few years. Much of northeast Phoenix has been developed on leases or on former state trust land parcels. Attempts to reform the management of the Arizona State Land Department (ASLD) have been on the ballot repeatedly. Reform efforts have focused on trying to increase the revenue ASLD can generate from its operations. Many stakeholders desire reform. Ranchers have sought grazing reform since most of the acreage is used for grazing cattle. Environmental groups have wanted to make it easier to set aside some parcels of trust land for preservation.

Until recently, however, there has been very little focus on what happens to the money from state land and how much actually gets to the intended beneficiaries. Following a proposal by Governor Ducey, the focus has moved squarely to how the "Permanent Fund" created from the disposition of the state trust land should be managed and invested for the future.

I. BRIEF HISTORY OF THE PERMANENT FUND

Early History

Congress enacted the Arizona-New Mexico Enabling Act on June 20, 1910.[1] The first paragraph of § 28 said that all "money proceeds" of trust lands "shall be subject to the same trusts as the lands producing the same." The state's fiduciary duty, therefore, extends to financial assets gleaned from the sale of trust lands. Thus, the trust includes both land assets and the cash assets that come from land dispositions. The Permanent Fund is thus a sort of replacement for lands that have been disposed. Although both land and financial assets are subject to the same trust, they are managed by different state agencies—land by ASLD and the Permanent Fund by the State Treasurer.

The seventh paragraph of § 28 specified rules for treatment of the Permanent Fund:

> *A separate fund shall be established for each of the several objects for which the said grants are made and confirmed by the said enabling act to the state, and whenever any moneys shall be in any manner derived from any of said lands, the same shall be deposited by the state treasurer in the fund corresponding to the grant under which the particular land producing such moneys was, by said enabling act, conveyed or confirmed. No moneys shall ever be taken from one fund for deposit in any other, or for any object other than that for which the land producing the same was granted or confirmed. The state treasurer shall keep all such moneys invested in safe, interest-bearing securities, which securities shall be approved by the governor and secretary of state, and shall at all times be under a good and sufficient bond or bonds conditioned for the faithful performance of his duties in regard thereto.*[2]

Arizona's legislature enacted the State Lands Code in 1915, which created the State Land Department. The Enabling Act contained 13 separate land grants for separate beneficiaries. To this day, Arizona statutes recognize 13 separate funds for universities, penitentiaries, and other minor purposes.[3] By far the largest beneficiary (representing 85-90 percent of the acreage and a like percentage of financial assets) are the common schools (*i.e.*, K-12). Generally, everything is lumped together and called "the Permanent Fund."

In the first decades of statehood Arizona was (like other states) careless in the discharge of its fiduciary obligations towards the Permanent Fund. From the start, the legislature tried to steer trust funds into loans to private landowners. By 1925 approximately two million dollars had been loaned to private agricultural interests. The legislature even tried to forgive many borrowers' obligation to pay interest on loans from the Permanent Fund. In *Rowlands v. State Loan Board of Arizona*[4], the Supreme Court held that the Constitution prohibited the forgiveness of interest on the loans. A fundamental legal question, of course, was whether loans to private individuals constituted "safe, interest bearing securities" within the meaning of the Constitution. In 1941 the Arizona Supreme Court said yes.[5]

Six years later, the Supreme Court struck a different and almost apologetic tone regarding the investment of the Permanent Fund. In *Murphy v. State*[6], the Court decried the "legislative

intermeddling in the duties of the state treasurer" and explained how "pressure groups" had forced the treasurer to invest the Permanent Fund in "questionable investments."

In 1957 New Mexico wanted to invest some of its Permanent Fund in equities and pressed Congress for an amendment. Congress could have amended the Enabling Act in many ways to permit such investments. Instead Congress simply repealed the entire seventh paragraph of § 28. As a result, after 1957—and until the Enabling Act was amended in 1999—the Enabling Act said almost nothing about the Permanent Fund.

In 1957 New Mexico amended its constitution to permit its Permanent Fund to invest in equities. Arizona did not. As financial matter, Arizona missed a great opportunity by failing to follow New Mexico's lead because Arizona's Permanent Fund did not benefit from the appreciation in stocks that occurred from the late 1950's through the late 1990's.

Over the course of the 20th century, management of the Permanent Fund gradually became more responsible. It is impossible to pinpoint any single event as marking the change, but in hindsight a good choice would be the U.S. Supreme Court decision in *Lassen v. Arizona Highway Dept.*[7] Since statehood the Arizona Highway Department had acquired "free" rights of way over trust lands, based on the (probably accurate) justification that the trust land holdings enjoyed a net increase in value due to the new highway frontage. The Arizona Supreme Court held that the highway department need not compensate the State Land Department for the rights of way. The U.S. Supreme Court disagreed and held that the highway department had to pay actual cash value for the right of way. The Court explained that the Enabling Act was designed to allow Arizona "*to accumulate funds with which it could support its schools*." *Lassen*'s admonition to treat the trust seriously was echoed in many decisions over the next 25 years.[8]

In the meantime, Arizona's passage of the Urban Lands Act in 1980 changed the focus from mineral and grazing leases to the sale of more-valuable lands for urban development. Growth in the Permanent Fund accelerated. In 1978, the Permanent Fund stood at a modest $100 million[9]. In 1984, it had grown to $170 million. By 1996 the Permanent Fund was $767 million (Figure 1).

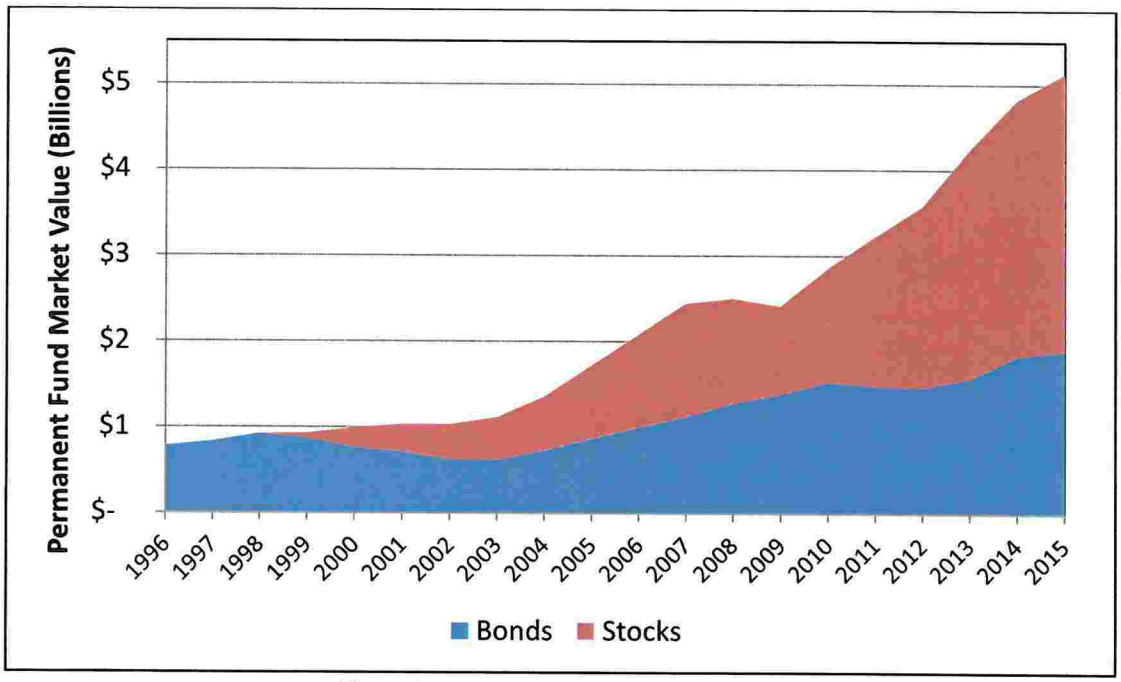


Figure 1: Permanent Fund Value Since 1996.

Reforms in the 1990's

The Permanent Fund is a replacement for permanent dispositions of trust lands, not a general catchment for all revenue from trust lands. The Permanent Fund only receives revenues from non-renewable sources, *i.e.*, land sales and mineral royalties ("Permanent Fund Receipts"). Revenues from renewable resources—including rent on long-term leases, permits, and interest on deferred payments associated with land sales— is distributed directly to the beneficiaries on an annual basis ("Expendable Receipts"). Since the inception of the Trust, Permanent Fund Receipts have totaled $3.249 billion. The vast majority, $3.12 billion or 96 percent, has come since the Urban Lands Management Act became law in 1982. Of this, less than 10 percent had been from mineral sales until 2010 when 28 percent of Permanent Fund Receipts came from mineral sales and that percentage grew to as much as 32.67 percent in 2011 before declining slightly. This remains a potential, but finite source of revenue to the Permanent Fund. Expendable Receipts have also grown significantly since the Urban Lands Management Act and since 2002 have averaged approximately $66 million.

As of the 1990's the Permanent Fund had never invested in equities even though such investments were authorized by Congress in 1957. Bond investments generate income when bonds are held and capital gains or losses when bonds are sold. Arizona's Permanent Fund thus experienced both income and capital gains, but did not grow significantly except from land sales.

In 1995, the legislature asked the Arizona Auditor General to conduct a performance audit of the Land Department. Auditor General Douglas Norton prepared a report that became very influential. The report identified two problems regarding the investment of Permanent Funds.

First was the lack of equity investments. The Auditor General observed that, while equity investments are more volatile, they earn greater long-term returns than bonds. The report advised investing in equities as Congress had authorized 40 years before.

Second, the report criticized the Permanent Fund's payout strategy as being too generous in one respect and too stingy in another. The unwise generosity consisted of paying out *all* interest income earned on the Permanent Fund to the beneficiaries each year, with no allowance for inflation. Instead the Auditor General advised that the Permanent Fund should pay out only post-inflation "real" returns. On the other hand, the Auditor General saw no reason to tie distributions to the type of investment returns—whether they derived from interest income or capital gains—and recommended that they should be treated equivalently. To address all of these issues, the Auditor General suggested tying the amount of distributions to the Permanent Fund's *market value*. To smooth out fluctuations in the market, the report suggested using a 3-year or 5-year look back.

In 1997, the "Growing Smarter" commission proposed statewide reforms to urban planning and growth management, including reform of the State Land Department. One of the commission's proposals became Proposition 102, which amended Arizona's Constitution as proposed in the 1997 Auditor General report. The investment restriction to "interest bearing securities" was removed and investments in "prudent equity securities" were authorized up to a limit of 60 percent.

The critical part of the measure prescribed a formula for making annual distributions. The amount of an annual distribution is determined by multiplying a dollar valuation by a specific rate of return. That is:

> *Amount (in dollars) x rate of return (in percent) = annual distribution.*

The amount is easy to calculate: it is the average of the monthly market values of the fund for the immediately-preceding five fiscal years.

The percentage is the average annual total rate of return for the immediately-preceding five calendar years, minus inflation (as measured by a federally-published index called the "GDP price deflator.") The "annual total rate of return" is determined by dividing (i) the amount credited to a fund for each fiscal year, plus unrealized capital gains and losses, by (ii) the average monthly market value of the fund during that year.

Prop 102 was presented on the understanding that its success would require parallel changes to the Enabling Act. Congress did so in 1999 by adding two new sentences to the first paragraph of § 28:

> *The trust funds (including all interest, dividends, other income, and appreciation in the market value of assets of the funds) shall be prudently invested on a total rate of return basis. Distributions from the trust funds shall be made as provided in article 10, Section 7 of the Constitution of the state of Arizona.*

This is the last time Congress amended the Enabling Act or otherwise addressed the subject of distributions from the Permanent Fund. These two sentences thus supply the federal framework for future discussion of these issues.

Voters considered two more ballot measures at the 2000 election. Neither bears directly on the current debate over distributions, but they are recent enough to deserve explanation.

Voters approved Prop 301, an initiative measure that included a sales tax dedicated to education and established the classroom site fund. The first $72 million in earnings subsidizes the legislature's payment to the state funding formula. Earnings above $72 million are distributed to districts and charter schools on a per pupil basis, primarily for teacher pay.

The voters rejected Prop 100, a constitutional amendment that would have allowed up to 5 percent of auction proceeds to fund specified ASLD operations, including "land use planning" but excluding "personnel expenses."

Fund Distributions Since 2000

The stock market crashed in late 2008 and bottomed out in early 2009. The constitutional formula thus looked back on some very bad returns. For the first time since 1998, the distribution in 2010 was literally zero. The legislature and the education community had both come to rely upon an annual distribution from the Permanent Funds. Separately, during the budget crisis that attended the recession, the legislature revived the idea of using trust fund revenues to partially fund ASLD's operations. In 2009, the Legislature authorized the diversion of up to 10 percent of the proceeds of land sales to fund ASLD operations. The education community sued, alleging that the diversion of trust funds violates the Arizona Constitution.

The legislature responded to the zero distribution by proposing Proposition 118. The measure received bipartisan support at the legislature, as the education community wanted more money for education and the legislature wanted greater predictability in budgeting. Voters narrowly approved the measure in the 2012 election.

Prop 118 did not repeal the variable-payout formula that was enacted in 1998 and used from 1999 through 2012. Rather, Prop 118 temporarily replaced that formula through FY 2020-21. The amount of annual distributions continued to look back to the fund's average market values over the previous five years. But instead of multiplying that market value by the average realized rate of return, that value is multiplied by a flat figure of 2.5 percent.

Prop 118 was advocated as a means to bring more money to education butit has had the opposite effect. Given the surge in stock market values since 2008, distributions would have been higher if they were based upon a five year look-back on actual rates of return.

Comparisons to similar mechanisms for trust distribution show that the current 2.5 percent formula is quite conservative. In North Dakota, distributions have ranged from 3.5 to almost 8 percent in the past 8 years. In New Mexico, the beneficiaries receive a standard 5 percent return on an endowment that is grown largely through oil and gas revenues. University endowments often use either a 4 percent or 5 percent annual payout rate as a stable and safe number to distribute over time. The Internal Revenue Service requires "private foundations" to distribute 5 percent of their net asset value every year to ensure that the foundations are genuinely charitable and not simply an effort at tax exempt hoarding of private assets. The current state treasurer, Jeff DeWit, has stated that a 3.75 percent annual payout would represent a safe and stable distribution amount.

Whatever level of payouts is selected, it is clear that the system of managing payouts should not be constantly changing. Doing so requires public votes to amend the constitution, and creates confusion, inconsistency, and unstable funding. Ideally, the system might authorize the State Board of Investment to manage within a range. But empowering any group with such discretion over public monies would inevitably become politicized. It is probably better to mandate a long term fixed payout—somewhere in the 4-5 percent range. The current system of a temporary 2.5 percent distribution then returning to an old, volatile system is not rational. Proposition 123 would return distributions to 2.5 percent after the 10 year relatively high payout period. This makes it likely that the voters will revisit the distribution yet again at some point in the future.

II. HOW DID THE PERMANENT FUND GROW SO LARGE AND WHAT SHOULD WE DO WITH THE MONEY?

As of 2015, the Permanent Fund has grown to $5.2 billion, approximately $1.95 billion, or 38 percent from earnings on the Total Permanent Fund Receipts and $3.25 billion from land and mineral sales receipts. A recent study by the Center for the Study of Economic Liberty at the W.P. Carey School of Business found that the fund's extraordinary growth is mostly due to investment gains that were not distributed either under the old formula or the 2.5 percent formula. It seems clear that both the formulaic payout and the flat 2.5 percent payout were flawed. The variable-payout formula was unduly volatile and unpredictable. The flat 2.5 percent payout is unduly conservative.

Exactly how much "extra" has been accumulated in the trust is a subjective determination requiring a number of different assumptions. The Center for Economic Liberty Policy report found that if the 2.5 percent formula had applied back to 2005, an additional $40 million would have gone to the beneficiaries. If a 4 percent distribution—still considered conservative by most standards—had applied, an additional $350 million would have been paid by the end of 2014 (Figure 2 and

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

Table 1). Other estimates have suggested even higher numbers.

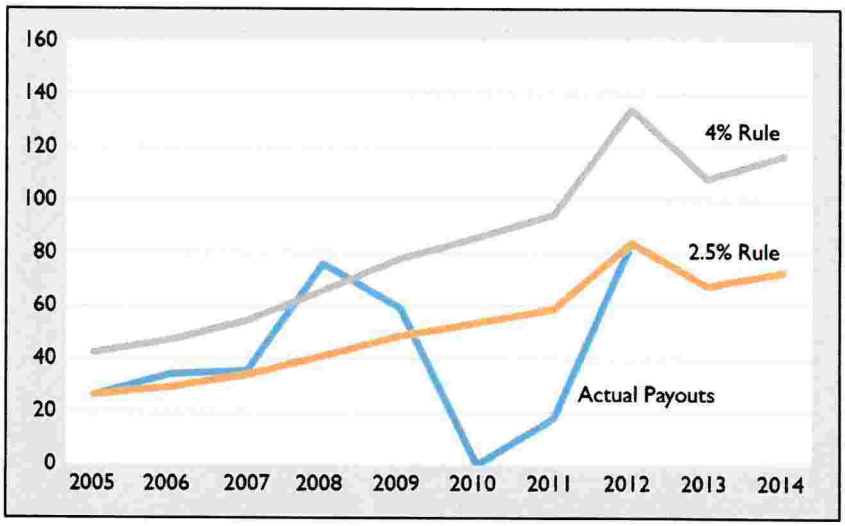


Figure 2: Payouts Under Various Scenarios

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

Table 1: Permanent Fund Since 2004.

One recurrent question is how to define the "corpus" of the Permanent Fund and whether it is legal or good policy to invade that corpus at this time. These are not simple questions.

The legal term "corpus" represents the original value of trust assets, usually with an expectation that it will remain intact, though trust provisions often allow invasion for emergencies or other

uses. Modern trust theory would generally hold that the corpus should be managed so as to preserve its original buying power, protecting it against inflation. Thus, if one put $1 million in trust for designated beneficiaries with typical trust instructions that they are to live off the income, a financial manager would try to invest this $1 million corpus so that it might earn 6 or 7 percent and would then subtract about 2 percent as a hedge against inflation. The remaining 4-5 percent would be distributed to the beneficiaries.

Aggressive interpretations of what is distributable, coupled with less than robust investment returns could be viewed as reaching into the corpus of the trust. No constitutional or statutory prohibition expressly says that "the state may not invade the corpus." But various court decisions set up the clear expectation that the "corpus" of the land trust is not to be cavalierly spent. It is not clear whether emergency circumstances would allow such invasion but an express desire to use money from the corpus could easily prompt long and contentious litigation. A desire to increase education funding without raising taxes does not constitute an emergency.

A complex question here, however, is defining the "corpus" of the Permanent Fund. As noted above, the corpus should be viewed as both the land assets and the proceeds from dispositions of non-replaceable assets. If this trust is managed consistent with modern trust management theory, a margin for inflation protection should also be added. So the corpus here would be the value of all the land which has been sold since statehood with some inflation adjustment.

Arizona Republic columnist Bob Robb has suggested that all earnings should be distributed, with the remaining land viewed as the protection against inflation. By this reckoning, somewhere between $1.5 and $2 Billion could be regarded as extra accumulation from the past, and should be distributed. At some point, this view would no longer afford inflation protection as most of the valuable urban state land will have been sold or leased.

Most university endowments would reset the value of the corpus every year. That would suggest that, after each annual distribution, the entire remaining balance in the trust becomes the corpus for the next year going forward. This philosophy would grow the corpus quickly in a rising market, by retaining annual returns over the distributed amount.

If the corpus of Arizona's Permanent Fund were similarly reset each year, there would be no "excess" currently available for distribution. On the other hand, if the "corpus" is regarded as the original value of the land which was sold with some additional amount added as a protection against inflation, there is arguably over $300 million extra which has been accumulated. The question of how much of the value of the fund should be regarded as excess and might therefore be available for distribution is a question of intergenerational equity. Should that money (whatever the amount) be taken out of the Permanent Fund at this time and be used to make up for current underfunding of education in the state? Or should that money remain in the trust to continue to grow through investment building a bigger endowment for future generations?

This is the context of the current debate. Proposition 123's proposed 6.9 percent payout can be thought of as simply distributing excess accumulated over the last decade. Returning to the conservative 2.5 percent payout after the high 10 year period can be viewed as a prudent "rebuilding" of the corpus. If the market declines in the next few years the higher payout number could be found to result in an invasion of the "corpus" if the legislature does not lower distributions. The risks of this scenario might give rise to legal challenges. Proposition 123

presents Arizona voters with an important policy choice that is untethered from conventional partisan labels. Some "conservatives" react negatively to using an "endowment" to satisfy current needs—they view the trust like a retirement account, and believe that planning for future needs is inherently conservative. Others feel that the government should not be accumulating money in the first place. Some "liberals" think squandering an endowment because we are unwilling to raise taxes to fund education is inappropriate. Others feel that funding education is the most critically important function of government and needs to be supported however possible.

However voters react to Prop 123, there has been a history of reluctance to reform the operation of the State Land Department, with propositions to do so turned down in the 2000, 2002, 2004, 2006 and 2010 elections.

III. WHAT ABOUT LAND MANAGEMENT?

It is important to consider the land side of the trust since converting land to cash is the main source of growth in the Permanent Fund. The question of how the lands held by the State Trust should be managed is beyond the scope of this paper. Several questions have been debated for a long time. Is it better to lease or to sell? Should the state engage in planning and zoning of the land before it is sold? Should planning money be appropriated by the legislature or should private parties be incentivized to plan state land? Is a state agency capable of administering a complex program of land development and management? Should the Land Department be allowed to keep some of its proceeds in order to manage the department? What is the balance between natural resource protection and land development? Should the State Land Department be insulated from legislative or gubernatorial influence, e.g., should the commissioner serve at the pleasure of the governor?

In recent decades many reforms have been proposed and rejected by the voters. For purposes of discussing the management of the Permanent Fund, one must make assumptions about probable land sales in future years, as well as direct distributions to the beneficiaries from leasing and other annual revenues from the land. When most of the income from state trust land was derived from grazing, agricultural, and mining leases it represented a small but stable income stream to the beneficiaries. Since 1980, when the Department began earning significant money from disposing of land for urban development the additions to the Permanent Fund became much less predictable (Figure 3).

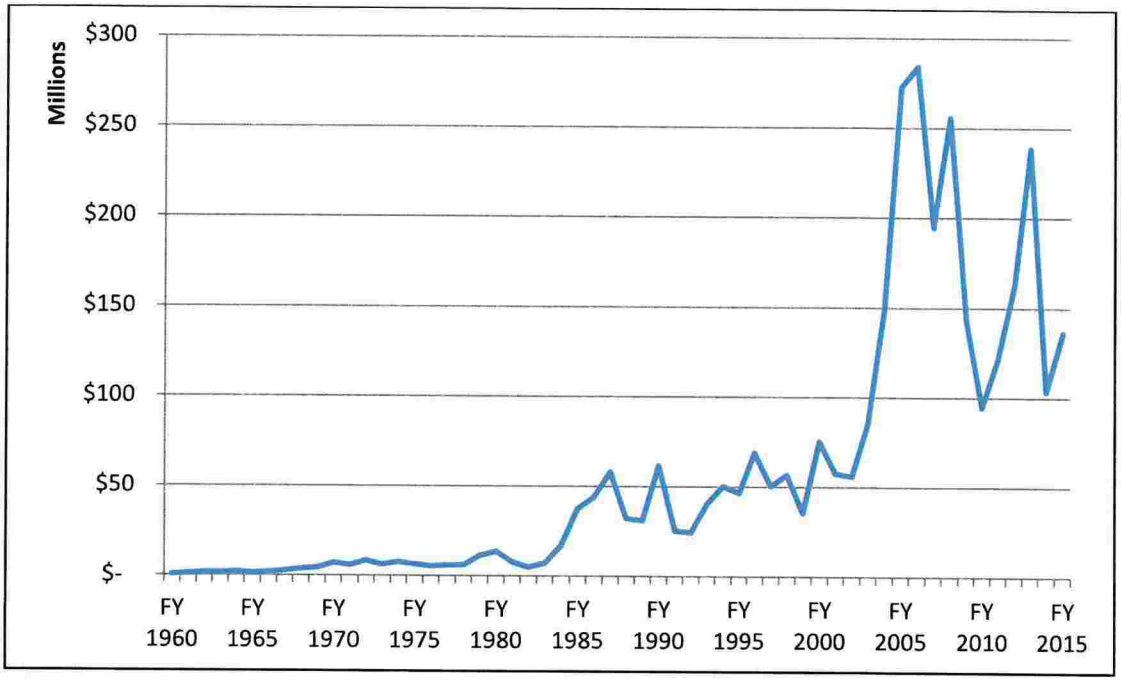


Figure 3: Permanent Fund Receipts Since 1960

Making the assumption that the managers of the Trust can sell a defined amount of land each fiscal year may seem reasonable on the surface, but the odds diminish greatly in light of well-known swings in the real estate market and the constraints placed on disposition of trust lands. Real estate is an inherently volatile and cyclical industry. The reasons it is difficult to make these assumptions with a high degree of certainty are several— location and utility, illiquidity (sale process), and fungibility.

Land in urban areas with excellent access, in the path of growth and in a location where demand persists, is more valuable than inaccessible, rural land. This was the basis for the Urban Land Management Act referenced above. Although there are 9.3 million acres of Trust land remaining, only a small portion of that is in urbanized areas, has excellent access, is not already encumbered by existing leases and is in an area where demand for that land persists. The other factor is utility – its productive capability. This is based on market demand, physical characteristics and legally permissible uses. Not all of the land in and around urban areas is suitable for development. The inventory of developable, marketable land is also finite and, as sales occur, declining. This means that successive years of sales will diminish the ability in future years to generate sales. Since the Urban Lands Management Act, even given 3 notable economic recessions (the Savings and Loan Crises of the 1980s; the tech bubble of the late 1990s and the financial crises beginning in 2008) the Total Permanent Fund Receipts have still grown on average, even during the financial crises. Figure 4 shows receipts from land sales and separately from mineral sales which together equal Total Permanent Fund Receipts since 2003 (Source: Arizona State Land Department).

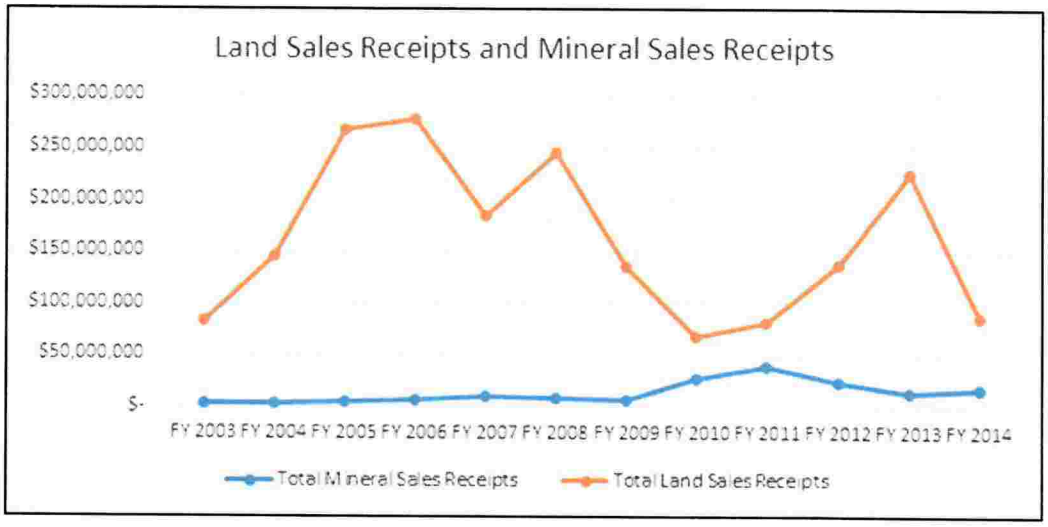


Figure 4: Land and Mineral Sales Receipts

Additionally, real estate is inherently less liquid than other assets. Other assets often trade continuously in an open market that is often global in scope. Real estate, especially raw land, is quite different. The sale process is slow and uncertain because pricing requires local knowledge. This is made considerably more difficult for the managers of the Trust because land sales or leases of more than 10 years must be through a public auction to the highest and best bidder. In addition, disposition is based on minimum values set by appraisal. The auction must be advertised over a long time period and is open to all qualified bidders. Not only does this process result in delay, it increases uncertainty for the buyer. Markets change during the process or appraisals do not fairly represent the market's perception of value. Sometimes there are zero bids at auction.

Finally, real estate is not fungible: one parcel of land is not the same as all others. It is thus difficult to value and as the size of the asset increases, the per unit value deceases. Selling large quantities of land in a single sale will result in lower per unit prices. The effect may impact the value of all future land sales in a negative way. This is a poor management strategy unless the sole purpose is to liquidate the lands. This strategy will not optimize the value of the Trust.

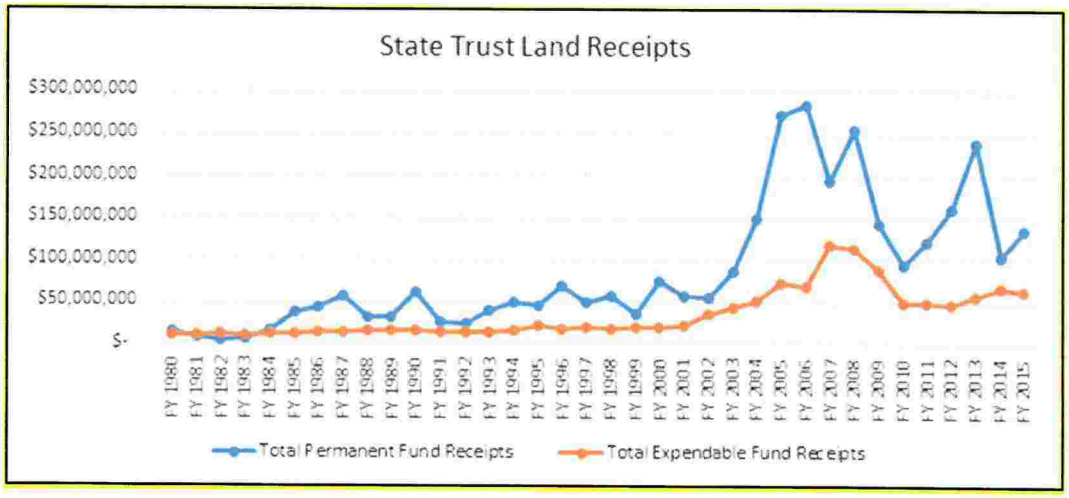


Figure 5: State Trust Land Receipts

The history of ASLD's land sales is one of very slow disposition of land because of the issues raised above and based on the assumption that land values will always go up and that in the context of a permanent trust one can always justify waiting until later. This is a mentality of trade-offs whereby the increase in value of the asset will rise more by waiting than what it can earn in the Permanent Fund. Whether this is actually the case depends on the real estate cycle, the specific land being considered and the rate of return earned in the Permanent Fund. There is no single right answer that can be applied categorically.

There are additional practical issues associated with management of a Trust so diverse. Experienced staff is needed to dispose of land. Another issue is the various encumbrances on Trust land resulting from years of management—grazing and other natural resource uses pose a constraint that is not easily halted. Yet another issue is management of the Trust. To those who work in the Land Department, an important motivating factor is not so much the sales price of land (although that is a critical factor), but the desire to avoid criticism for having sold too early or too cheaply, or to speculators who might then profit "too much". Establishing a strategy for disposition of such a large inventory of land could sell too much, too quickly which would cause a decrease in value of each additional acre sold – supply well beyond demand will reduce the value of land for all land owners. A measured approach optimizes value. This is easy in theory, but difficult in reality because of all of the exogenous factors impacting value. It is highly probable that a forced policy to sell a defined amount of land will result in less than optimizing the value. The management of Trust land is very complicated. While a full examination of this issue is far beyond the scope of this paper, if the State is to focus more on the land trust as a continuing long term and stable source of educational funding it would be logical to give the Land Department some expectation as to how much money it should seek to add to the trust on average every year and allow it to derive a strategic plan to achieve the goal through approaches that recognize the numerous issues associated with disposing of land in such a way as to optimize its value. This could be done simply as a management directive from the governor to the Land Commissioner and in bad economic times or given particular circumstance of an individual year the Land Department should have the flexibility to say that the presumptive target cannot be met. But based on past performance over the past couple of decades, it would appear reasonable to expect the Land Department to add $150-200 million to the Permanent Fund every year.

The Land Department is not like other state agencies. In order for the Land Department to have stable successful operations, it must receive stable funding at a level sufficient to attract and retain employees with real estate experience. It should be viewed as an enterprise capable of self-funding. The ballot proposal currently scheduled for vote in 2016 is one way to do this. But its revenue projections, driven by annual sales, could fluctuate widely. In the private sector, a trust manager would charge a percentage of fixed assets. For an endowment of this size, the fee might be .25 percent, which would currently be about $12 million, could fund most of the Land Department's management expenses. Either a percentage of revenue or of assets going to fund Land Department operations requires a constitutional amendment.

IV. HOW MUCH CAN STATE TRUST LAND AND THE PERMANENT FUND HELP EDUCATION?

Any plan to increase education funding must be put into context to gauge its impact on Arizona's K-12 education system. This context should include consideration of not only the percentage change to Arizona's education expenditures, but also a look at how per-pupil expenditures would change and the change to education expenditures per $1,000 in personal income. A more accurate picture of the funding situation emerges when these three units of analysis are applied.

Proposition 123 will generate $3.5 billion over 10 years. The amount directed to K-12 education each year would gradually increase from $299 million in FY 2016 to $400 million in FY 2025, with an average payout to education of $350 million annually. Most of this funding comes from increased distributions from the Permanent Fund, but there is also a small portion of General Fund revenue in the plan. For FY 2016, the legislation passed during the special session of the legislature includes $172 million from the Permanent Fund, a continuation of the $74 million General Fund appropriation from the last regular session which, along with an additional $3 million, will be directed to Basic State Aid for schools. This $249 million Basic State Aid package will be supplemented by an additional $50 million that may be used either for maintenance and operations or capital outlay.

Overall Funding Increase

For FY2016, the state's General Fund appropriation to the Department of Education was $3,889,519,500. Adding $300 million to this would represent a 7.7 percent increase in state education funding. However, it would be inaccurate to say that the state's schools will receive 7.7 percent more funding in FY2016 under the Governor's plan. State funding is one of three components of school funding. Funding from the state represents 36 percent of total K-12 funding in Arizona, with an additional 49 percent coming from local districts, and 15 percent for the federal government. A $299 million increase in FY2016 would be an increase of 2.8 percent to Arizona's total K-12 revenue.

It should also be noted that Arizona's K-12 expenditures will necessarily increase as the state's population grows. Historically, student population has grown at a rate of 3 percent per year, but since 2009, K-12 enrollments have grown by just 0.5 percent annually. It is possible, depending upon how final legislation is written, that a portion of the proposed $350 million increase to education goes to support this increased caseload and not to increased services to the existing student population.

Per-pupil funding

To get perspective on what an extra $299 million would actually mean to Arizona's school systems and to understand how this would affect the state's education position compared to other states, it is appropriate to look at revenue expenditures per pupil. The most recent data available for national comparison is from 2013. Applying the $299 million funding increase to the 2013 data provides an estimate of how overall per-pupil funding would be affected and how the state's position in national rankings might change.

Arizona's K-12 funding in FY2013 from all sources, local, state, and federal, was $8,599 per pupil. This amount ranked 48th among the 50 states, and was 31 percent below the national

average of $12,380 per pupil. The state's portion of this funding amounted to $3,116 per pupil which was 45 percent below the national average of $5,650, ranking Arizona 50th in the nation for state funding per pupil.

Adding $299 million to the FY2013 figures would raise Arizona's total per-pupil revenue to $8,917. This would place the state 28 percent below the national average and move the state's ranking up by 2 places to 46th in the nation, ahead of Oklahoma, but lagging behind Tennessee.

Funding per $1k personal income

While per-pupil funding measures the impact of funding changes on the educational system, another measure is used to gauge impacts on the economy of the state. Expressing K-12 funding in dollars per $1,000 of total personal income provides insight into the burden that education funding places upon the taxpayers.

In FY2013, Arizona's total education funding amounted to $33.04 per $1,000 of personal income. This was 49th in the nation and 22 percent below the national average of $42.25. The state's share of funding was $11.97 per $1,000 of personal income, 38 percent below the national average and ranked 48th in nation.

Note that Arizona's local funding of education, largely from property taxes levied by school districts, is just 15 percent below the national average when measured against personal income, and 24 percent less on a per-pupil basis. Also note that the state receives federal support at levels considerably higher than the nation as a whole, exceeding the average by 25 percent when measured against total personal income and 11 percent by per-pupil spending. These figures suggest that low levels of education financing from at the state level have been somewhat counterbalanced by local and federal funds.

Were $299 million in additional state revenue added to the FY2013 figures, the total funding per $1,000 in personal income would rise by $1.22 to $34.26. This would place Arizona at 19 percent below the national average at a ranking of 47th place. The state commitment would rise to $13.19, which is 32 percent below the national average of $19.29 per $1,000 of personal income. This change in state funding is insufficient to change the state's ranking, which would remain at 48th place.

Other Implications of Prop 123

In addition to increasing distributions from the Permanent Fund of the State Land Trust, Proposition 123 contains other provisions that may affect education funding. First, there is a provision that the legislature may reduce the distribution from the Permanent Fund to as low as 2.5 percent if the amount of returns to the fund drop. This measure is designed to preserve the corpus of the trust and could reduce education funding to its current level if the market performs poorly.

Second is a provision that reduces the annual inflation funding adjustment in the event of an economic downturn. Had this provision been in place during the Great Recession, the inflation adjustment would have been suspended for four years from 2008-2011. When the next cyclical economic downturn hits this provision will be triggered and schools will receive less funding for the duration of the recession.

Finally, there is a provision that could suspend the inflation adjustment if the General Fund appropriation to the Department of Education (ADE) reaches 49 percent of the total General Fund budget. This suspension would be mandatory if the ADE percentage reaches 50 percent. This trigger effectively puts an upper limit on Arizona's K-12 spending. This limit, using the current budget figures of $9.2 billion total budget and $3.8 billion for ADE, would kick in if the ADE appropriation were raised by $1.4 billion. Although such a large increase seems unlikely to happen, it should be noted that an increase in K-12 funding of $2.8 billion annually would be needed to bring Arizona's funding up to the national average.

V. CONCLUSION

Several conclusions can be drawn from the history of the state's management of Trust lands and the Permanent Land Endowment Trust Fund ("Permanent Fund").

1. Neither the pre-2012 distribution formula, nor the current temporary 2.5 percent distribution represent sound management of the Permanent Fund:—the former is too volatile; the latter is too low.

2. Arizona should not constantly amend the Constitution to tinker with the management of the Permanent Fund. A long term, stable and sustainable payout to the beneficiaries should be set, similar to what is done for other endowments or foundations. Changes should be made only very rarely.

3. Long history and the practice of other similar institutions suggests that the payout should be fixed at a set percentage of the annual value of the Permanent Fund. The percentage should be in the range of 4 percent to 5 percent annually. The exact number depends on how conservative or "safe" we want to be in protecting the assets.

4. The corpus of the State Trust consists of both the remaining State Trust Land and the money received in exchange for past sales of Trust Land. Protection of the Permanent Fund held as corpus should include some hedge against inflation, which suggests the 4 percent-5 percent distribution range, assuming somewhat higher average returns. Invading the corpus, or even the risk of such invasion, is likely to be met with significant legal challenges.

5. Because of past distribution practices, there are currently potential "excess" funds in the Permanent Fund over what might be regarded as corpus. It is difficult conceptually to determine the exact amount of this excess. The excess in the Permanent Fund could be spent for current educational needs by adding an additional distribution for the next few years. This is the essence of Proposition 123. An alternative would be to keep some or all of the excess to build the Permanent Fund to a more robust level. Choosing between retaining or distributing any excess represents a classic public policy choice: spend now to alleviate a current problem; or save for future generations. This is a legitimate topic for debate.

6. Management of State Trust Lands has been inconsistent and underfunded for decades. The Land Department should be given a clearer mandate and a presumptive target for

production. A realistic target could be average annual sales in the range of $100 million, with the understanding that the trust has a diminishing portfolio of valuable urban lands and cannot control swings in the real estate market.

7. In order to achieve significant consistent production for education, the State Land Department needs more funding and more stability. Allowing the Department to be funded from its production is a good idea. The proposition expected to be scheduled for vote in the fall of 2016 is one way to do this. Another alternative would be a small percentage of trust assets being used by the Department every year.

8. Even with stable realistic distributions, better funding for the Land Department and more consistent management, it is unlikely that State Trust Lands will ever be able to pay a significant percentage of the cost of education in the State. Prop 123 would increase overall funding by about $299 million. Arizona would remain near the bottom of states in per pupil funding.

Prop 123 will slightly improve Arizona's overall education finance situation, increasing total K-12 spending by approximately $278 per student. This would move Arizona up a few places in the national rankings, but would still leave Arizona spending almost 30 percent less than the national average on K-12 education.

---

[1] 36 Stat. 557 (1910)
[2] These provisions of the Enabling Act were replicated in Arizona's Constitution. As originally enacted, the first, second, and seventh paragraphs of § 28 of the Enabling Act were repeated, respectively, in sections 1, 2, and 7 of Article X of Arizona's Constitution.
[3] A.R.S. § 37-521 *et seq*
[4] 24 Ariz. 116, 207 P.359 (1922)
[5] *State ex rel. Conway v. Versluis*, 58 Ariz. 368, 120 P.2d 410 *(1941).*
[6] 65 Ariz. 338, 181 P.2d 336 (1947)
[7] 385 U.S. 458 (1967)
[8] See, e.g.
[9] Opinion of the Attorney General I00-028 (2000)

Cameron Artigue, Member, Gammage and Burnham
Grady Gammage Jr., Member, Gammage and Burnham
Dan Hunting, Senior Policy Analyst, Morrison Institute for Public Policy
Mark Stapp, Executive Director, Center for Real Estate Theory and Practice

November 2015 / Established in 1982, Morrison Institute for Public Policy is a leader in examining critical Arizona and regional issues, and is a catalyst for public dialogue. An Arizona State University resource and part of the ASU College of Public Service and Community Solutions, Morrison Institute uses nonpartisan research and communication outreach to help improve the state's quality of life.

MorrisonInstitute.asu.edu