MEMORANDUM

To: John Roberts and Kim Burns, The Natomas Basin Conservancy

From: Allison Shaffer and Sean Fisher

Subject: Natomas Basin Habitat Conservation Plan Fee Program Analysis—Constant Dollars and Real Rate of Return; EPS #192092.2

Date: January 22, 2020

The Economics of Land Use

Economic & Planning Systems, Inc.
400 Capitol Mall, 28th Floor
Sacramento, CA 95814
916 649 8010 tel
916 649 2070 fax

Oakland
Sacramento
Denver
Los Angeles

www.epsys.com

In January 2009, Economic & Planning Systems, Inc. (EPS) prepared a memorandum for The Natomas Basin Conservancy (TNBC) that discussed the use of constant dollars and a real rate of return in the cash flow model developed to calculate the annual Natomas Basin Habitat Conservation Plan (NBHCP) mitigation fee (fee). In 2011 and 2016, EPS refined, expanded, and updated the memorandum to include more years of data for 2009 through 2016 and discussion of additional research into real rates of return. At the request of TNBC, EPS is once again updating the memorandum to contain data for the 3 years from 2017 through 2019.

Constant Dollars

In a long-term cash flow model, such as the 50-year NBHCP fee calculation model, the use of constant dollars makes it easier to compare and understand the magnitude of annual projected costs and revenues. All cost and revenue projections in the current 2020 NBHCP fee model are expressed in constant 2020 dollars and are not inflated. Some cost estimates are adjusted annually to reflect real cost changes that would occur as the habitat grows but not to adjust for inflation. In addition, the model is updated annually to reflect the current-year cost estimates, so cost and revenue projections always reflect current-year dollars.

Real Rate of Return

Because the costs and revenue projections in the 2020 NBHCP fee model are expressed in constant 2020 dollars and exclude inflation, the projected annual return on investments also should exclude inflation. Consequently, a "real rate of return" is used in the model. A real rate of return is the annual percentage return realized on an investment after adjusting to exclude inflation. It represents the annual rate of return that could be expected over and above inflation. For example, if inflation was 2 percent, then a 5 percent return on investments would represent approximately a 3 percent real rate of return, as demonstrated below.

Rate of Return	5%
Less Inflation	(2%)
Real Rate of Return	**3%**

A 3 percent real rate of return is used in the current NBHCP model. For the original 2009 memorandum, EPS researched and summarized historical real rates of return for the 20-year period from 1989 through 2008 for various investments to assess if 3 percent was a reasonable real rate of return to use in estimating investment earnings in the NBHCP model. At that time, it was determined that 3 percent was a reasonable long-term rate of return. In the previous updates to the original memorandum, EPS updated the research to include returns for the years from 2009 to 2016 and added research on 20-Year Treasury Securities to the analysis. For this update, EPS is adding return data for the 3 years from 2017 to 2019. The table below summarizes the historical rates of return for the different investment types researched for the time periods of 1989 through 2008 and 1989 through 2019.

Investment Type	Annual Nominal Rate of Return		Annual Real Rate of Return	
	1989 - 2008	1989 - 2019	1989 - 2008	1989 - 2019
Pooled Money Investment Account	4.95%	3.43%	1.98%	0.95%
Dow Jones Industrial Average	6.29%	8.11%	3.56%	5.70%
	1992 - 2008	1992 - 2019	1992 - 2008	1992 - 2019
20-Year Treasury Security	5.55%	4.51%	3.08%	2.28%

[1] Note that the time periods for the 20-Year Treasury Security are shorter than the time periods for the other investment types because 20-Year Treasury data was unavailable for 1989 through 1991.

Pooled Money Investment Account

Table 1 estimates the average annual real rate of return for the Pooled Money Investment Account (PMIA) for the 2 time periods from 1989 through 2008 and 1989 through 2019. The PMIA is a relatively conservative account used by the State of California for short-term investments. The PMIA fund investments include bonds and similar securities but do not include any equities. As summarized above and detailed in **Table 1**, the PMIA had an average annual real rate of return of approximately 2.0 percent for the 20-year period from 1989 through 2008, which declined to just under 1.0 percent when data from 2009 to 2019 were added to the analysis. It is noteworthy that the PMIA real rates of return have been negative in all years since the Great Recession, except for the most recent year (fiscal year 2018-19), as the Federal Reserve has held interest rates down artificially to help stimulate the economy.

Dow Jones Industrial Average

Table 2 estimates the average annual real rate of return for the Dow Jones Industrial Average (DJIA) stocks for the 2 time periods from 1989 through 2008 and 1989 through 2019. These investments have more risk but also greater return than the PMIA funds. As summarized above and detailed in **Table 2**, the DJIA stocks had an average annual real rate of return of approximately 3.6 percent for the 20-year period from 1989 through 2008, which increased to 5.7 percent when data from 2009 to 2019 were added to the analysis.

20-Year Treasury Securities

Table 3 estimates the average annual real rate of return for the 20-Year Treasury Securities for the 2 time periods from 1992 through 2008 and 1992 through 2019. *Note that these time periods are shorter than the time periods for the other investment types because data were not available for 1989 through 1991*. The 20-Year Treasury Securities are a relatively conservative long-term investment. They have less risk but also less return than the DJIA stocks. Also, because they are long term, they tend to have a greater rate of return that the short-term PMIA investments. As summarized above and detailed in **Table 3**, the 20-Year Treasury Securities had an average annual real rate of return of approximately 3.1 percent for the period from 1992 through 2008, which decreased somewhat to 2.3 percent when data from 2009 to 2019 were added to the analysis.

Summary

Based on this analysis, and historical return rates on various asset classes, it is reasonable to conclude that TNBC could expect a long-term average annual real rate of return on its investments that falls between the rates of 1.0 percent for the short term and conservative PMIA and 5.7 percent for the more risky DJIA stocks. Thus, the 3 percent annual real rate of return on investments assumed in the cash flow model is a reasonable long-term real rate of return. This rate will vary in the short term based on market conditions but is appropriate for use over the long term. Given the atypically long period during which Federal monetary policy has held down the Federal Funds rate, it warrants periodic review of the metrics and whether to continue to use the 3 percent annual rate of return.

Background Materials

In addition to researching the long-term annual real rates of return of the investment types discussed above, EPS researched studies performed by other organizations. One study titled, "A Study of *Real* Real Returns," by Thornburg Investment Management (August 2014), provides detail on real rates of return for several different investment types and verification that the 3 percent annual real rate of return used in the NBHCP cash flow model is reasonable for the type of long-term investments TNBC holds. This study estimates the annual real rate of return as the annual percentage return realized on an investment after adjusting to exclude not only inflation but also taxes and expenses. Even after these additional exclusions, the study estimates long-term annual real rates of return ranging from around 2 to 3 percent for long-term bonds to around 5 to 6 percent for stocks. Based on this study, to the extent TNBC investments are tax-exempt, they could yield greater than the annual 3 percent real rate of return assumed in the cash flow model.

Both the Thornburg Investment Management Study and a recent Morningstar rating and analysis of Thornburg funds are attached.

DRAFT

Table 1
NBHCP Fee Program Real Rate of Return
Real Rate of Return on Pooled Money Investment Account (PMIA)

Fiscal Year (July 1 - June 30)	Real Rate of Return on PMIA: PMIA Average Annual Yield	CPI-U (for Dec.)	Estimated Annual Inflation *(% change in CPI)*	**Real Rate of Return**
Formula	*a*		*b*	*a-b*
2018/2019	2.27%	251.2	1.91%	**0.36%**
2017/2018	1.38%	246.5	2.11%	**(0.73%)**
2016/2017	0.75%	241.4	2.07%	**(1.32%)**
2015/2016	0.43%	236.5	0.73%	**(0.30%)**
2014/2015	0.27%	234.8	0.76%	**(0.49%)**
2013/2014	0.25%	233.0	1.50%	**(1.25%)**
2012/2013	0.31%	229.6	1.74%	**(1.43%)**
2011/2012	0.38%	225.7	2.96%	**(2.58%)**
2010/2011	0.50%	219.2	1.50%	**(1.00%)**
2009/2010	0.65%	215.9	2.72%	**(2.07%)**
2008/2009	2.22%	210.2	0.09%	**2.13%**
2007/2008	4.33%	210.0	4.08%	**0.24%**
2006/2007	5.12%	201.8	2.54%	**2.58%**
2005/2006	3.87%	196.8	3.42%	**0.46%**
2004/2005	2.26%	190.3	3.26%	**(1.00%)**
2003/2004	1.53%	184.3	1.88%	**(0.35%)**
2002/2003	2.15%	180.9	2.38%	**(0.22%)**
2001/2002	3.45%	176.7	1.55%	**1.89%**
2000/2001	6.10%	174.0	3.39%	**2.72%**
1999/2000	5.71%	168.3	2.68%	**3.02%**
1998/1999	5.34%	163.9	1.61%	**3.73%**
1997/1998	5.70%	161.3	1.70%	**4.00%**
1996/1997	5.60%	158.6	3.32%	**2.28%**
1995/1996	5.71%	153.5	2.54%	**3.17%**
1994/1995	5.53%	149.7	2.67%	**2.86%**
1993/1994	4.39%	145.8	2.75%	**1.64%**
1992/1993	4.71%	141.9	2.90%	**1.81%**
1991/1992	6.20%	137.9	3.06%	**3.13%**
1990/1991	8.01%	133.8	6.11%	**1.91%**
1989/1990	8.66%	126.1	4.65%	**4.01%**
1988/1989	8.67%	120.5	4.42%	**4.25%**
Average (1989-2008)	**4.95%**		**2.97%**	**1.98%**
Average (1989-2019)	**3.43%**		**2.48%**	**0.95%**

pmia

Source: California State Treasury, U.S. Bureau of Labor Statistics, and EPS.

DRAFT

Table 2
NBHCP Fee Program Real Rate of Return
Real Rate of Return on Dow Jones Industrial Average (DJIA)

Year		DJIA at Close of Year	DJIA Average Annual Yield	CPI-U (for Dec.)	Estimated Annual Inflation *(% change in CPI)*	Real Rate of Return
		Real Rate of Return on DJIA				
Formula			*a*		*b*	*a-b*
2019	[1]	28,538.44	22.3%	257.2	2.38%	**19.96%**
2018		23,327.46	(5.6%)	251.2	1.91%	**(7.54%)**
2017		24,719.22	25.1%	246.5	2.11%	**22.97%**
2016		19,762.60	13.4%	241.4	2.07%	**11.34%**
2015		17,425.03	(2.2%)	236.5	0.73%	**(2.96%)**
2014		17,823.07	7.5%	234.8	0.76%	**6.76%**
2013		16,576.66	26.5%	233.0	1.50%	**25.00%**
2012		13,104.10	7.3%	229.6	1.74%	**5.51%**
2011		12,217.60	5.5%	225.7	2.96%	**2.57%**
2010		11,577.50	11.0%	219.2	1.50%	**9.53%**
2009		10,428.10	18.8%	215.9	2.72%	**16.10%**
2008		8,776.39	(33.8%)	210.2	0.09%	**(33.93%)**
2007		13,264.80	6.4%	210.0	4.08%	**2.35%**
2006		12,463.20	16.3%	201.8	2.54%	**13.75%**
2005		10,717.50	(0.6%)	196.8	3.42%	**(4.02%)**
2004		10,783.00	3.1%	190.3	3.26%	**(0.11%)**
2003		10,453.90	25.3%	184.3	1.88%	**23.44%**
2002		8,341.63	(16.8%)	180.9	2.38%	**(19.14%)**
2001		10,021.60	(7.1%)	176.7	1.55%	**(8.66%)**
2000		10,788.00	(6.2%)	174.0	3.39%	**(9.55%)**
1999		11,497.10	25.2%	168.3	2.68%	**22.54%**
1998		9,181.43	16.1%	163.9	1.61%	**14.49%**
1997		7,908.25	22.6%	161.3	1.70%	**20.94%**
1996		6,448.27	26.0%	158.6	3.32%	**22.69%**
1995		5,117.12	33.5%	153.5	2.54%	**30.91%**
1994		3,834.44	2.1%	149.7	2.67%	**(0.53%)**
1993		3,754.09	13.7%	145.8	2.75%	**10.97%**
1992		3,301.11	4.2%	141.9	2.90%	**1.27%**
1991		3,168.83	20.3%	137.9	3.06%	**17.26%**
1990		2,633.66	(4.3%)	133.8	6.11%	**(10.45%)**
1989		2,753.20	27.0%	126.1	4.65%	**22.31%**
Average (1989-2008)			**6.29%**		**2.73%**	**3.56%**
Average (1989-2019)			**8.11%**		**2.40%**	**5.70%**

djia

Source: U.S. Bureau of Labor Statistics, Yahoo Finance, and EPS.

[1] CPI estimate as of November 2019.

DRAFT

Table 3
NBHCP Fee Program Real Rate of Return
Real Rate of Return on 20-Year Treasury Securities

	Real Rate of Return on 20-Year Treasury			
Year	20-Year Treasury Average Annual Yield (Dec 1)	CPI-U (for Dec.)	Estimated Annual Inflation *(% change in CPI)*	**Real Rate of Return**
Formula	*a*		*b*	*a-b*
2019	2.15%	257.2	2.38%	**(0.23%)**
2018	2.98%	251.2	1.91%	**1.07%**
2017	2.60%	246.5	2.11%	**0.49%**
2016	2.84%	241.4	2.07%	**0.77%**
2015	2.61%	236.5	0.73%	**1.88%**
2014	2.55%	234.8	0.76%	**1.79%**
2013	3.63%	233.0	1.50%	**2.13%**
2012	2.47%	229.6	1.74%	**0.73%**
2011	2.67%	225.7	2.96%	**(0.29%)**
2010	4.17%	219.2	1.50%	**2.67%**
2009	4.40%	215.9	2.72%	**1.68%**
2008	3.18%	210.2	0.09%	**3.09%**
2007	4.57%	210.0	4.08%	**0.49%**
2006	4.78%	201.8	2.54%	**2.24%**
2005	4.73%	196.8	3.42%	**1.31%**
2004	4.88%	190.3	3.26%	**1.62%**
2003	5.11%	184.3	1.88%	**3.23%**
2002	5.01%	180.9	2.38%	**2.63%**
2001	5.76%	176.7	1.55%	**4.21%**
2000	5.64%	174.0	3.39%	**2.25%**
1999	6.69%	168.3	2.68%	**4.01%**
1998	5.36%	163.9	1.61%	**3.75%**
1997	6.07%	161.3	1.70%	**4.37%**
1996	6.65%	158.6	3.32%	**3.33%**
1995	6.12%	153.5	2.54%	**3.58%**
1994	7.99%	149.7	2.67%	**5.32%**
1993	6.40%	145.8	2.75%	**3.65%**
1992		141.9		
Average (1992-2008)	**5.55%**		**2.47%**	**3.08%**
Average (1992-2019)	**4.51%**		**2.23%**	**2.28%**

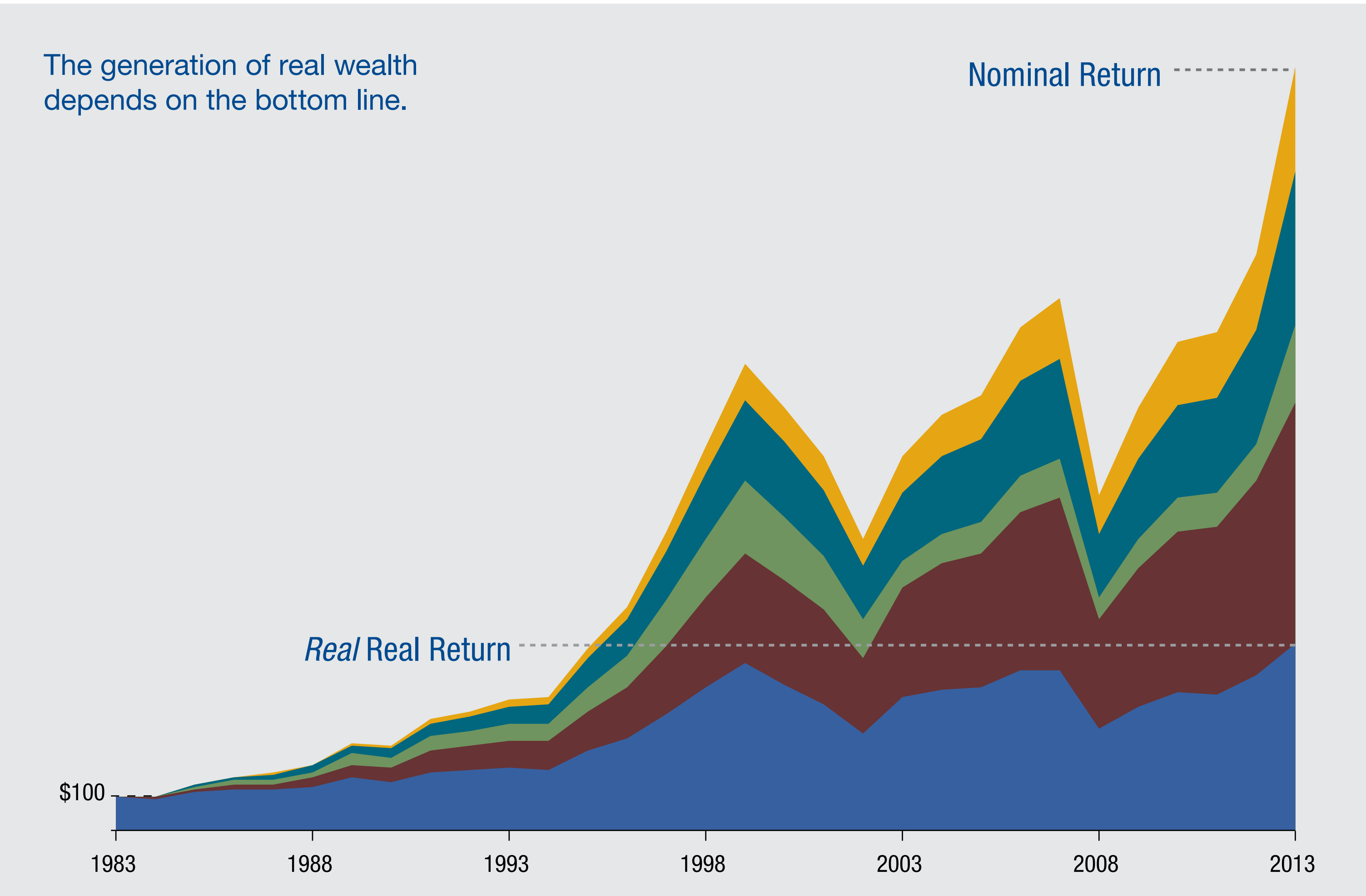
20

Source: U.S. Treasury, U.S. Bureau of Labor Statistics, and EPS.

[1] 20-Year Treasury estimate as of November 1, 2019.

THIS PAGE INTENTIONALLY LEFT BLANK

A Study of *Real* Real Returns



Volume 21, August 2014

Thornburg
INVESTMENT MANAGEMENT

Unconventional Policies, Market Surprises and Other Signs of the Times

Investors could be forgiven for scratching their heads over the collisions between consensus views and actual market and economic performance since our report a year ago. After a banner year for stocks and high-yield bonds in 2013, investors were almost uniformly advised to stay the same course in 2014, given the U.S. Federal Reserve's announced tapering of its asset purchase program and the eventual rise in benchmark interest rates. But if the Fed has repeatedly over-estimated inflation and economic growth in recent years, Wall Street has also misfired: stocks have had a rough ride higher so far in 2014, particularly the growth stocks that were supposed to benefit from the still elusive acceleration in U.S. growth. And after stumbling 2% in 2013, the total return of the Barclays U.S. Aggregate Bond Index unexpectedly climbed 3.93% in the first half of 2014. Indeed, U.S. Treasury bond yields spent the first six months of the current year noticeably lower than they were at the end of 2013, even as the Fed has steadily reduced its "Quantitative Easing" (QE).

Internationally, China's economic reboot toward more domestic consumption and away from investment amid worries about its growing debt load has weighed on its economic growth, not to mention global commodities prices. Japan's monetary reflation weakened the yen versus the dollar and boosted inflation expectations and asset prices last year, but structural reforms needed for meaningful and sustained long-term economic growth remain to be seen. In Europe, despite the recent European Central Bank measures to boost bank lending, disinflation persists. Elsewhere, emerging markets look poised for a modest recovery in 2015 after four years of declining growth, with emerging markets asset prices already rising smartly midway through 2014. But it's far from clear that reforms in a handful of big, fiscally challenged developing countries grappling with current-account deficits will continue, given a renewal of cheaply financed, speculative inflows.

"Inflation may appear tame, but investors should keep in mind that QE and rock-bottom interest rates in most of the developed world can't go on indefinitely without consequence."

Inflation may appear tame, but investors should keep in mind that QE and rock-bottom interest rates in most of the developed world can't go on indefinitely without consequence. Interestingly, after gold's 12-year bull-run came to an end last year, prices for the yellow metal rose 10.5% in the first half of 2014. Benchmark U.S. stock market indexes recently hit record highs, while bond yields of some of the eurozone's most troubled economies are not far off those of U.S. Treasuries. Issuance of riskier "covenant-lite" loans has been running at double its 2007 level. As the reach for yield grows and asset prices rise, so too do associated risks.

If central bankers typically take key interest rates down on elevators and up on escalators, there's a risk that QE and zero-level rates can potentially turn asset reflation into more generalized inflation, especially if the economic recovery does finally pick up steam. Another threat to investor returns comes from new and sharply higher investment income tax rates. Then there are investment expenses and fees. The challenges to investors looking to generate returns after inflation, taxes and expenses—the *real* real return—are considerable. The market context is also challenging. But a thorough understanding of the various challenges, and the vehicles available to navigate through them, should help investors chart a promising course.

Thornburg's View of *Real* Real Returns

As we've noted before, nominal returns are a misleading driver of an investor's investment and asset-allocation planning. That's because they are significantly eroded by taxes, expenses and inflation. Moreover, allocation strategies that heavily rely on nominal returns may take insufficient advantage of different investment vehicles that potentially offer valuable diversification benefits, which can shelter portfolios during the inevitable periods of market volatility and help position them for subsequent upturns. Examining the *real* real returns of individual asset classes over longer periods can help investors build more successful portfolios. More broadly, understanding the importance of *real* real returns facilitates informed investment decisions, which in turn improves the odds of accumulating real wealth.

The chart below illustrates the erosion of nominal returns from taxes, expenses and inflation. It uses the nominal returns of the S&P 500 Index and real-world data for the past 30 years.

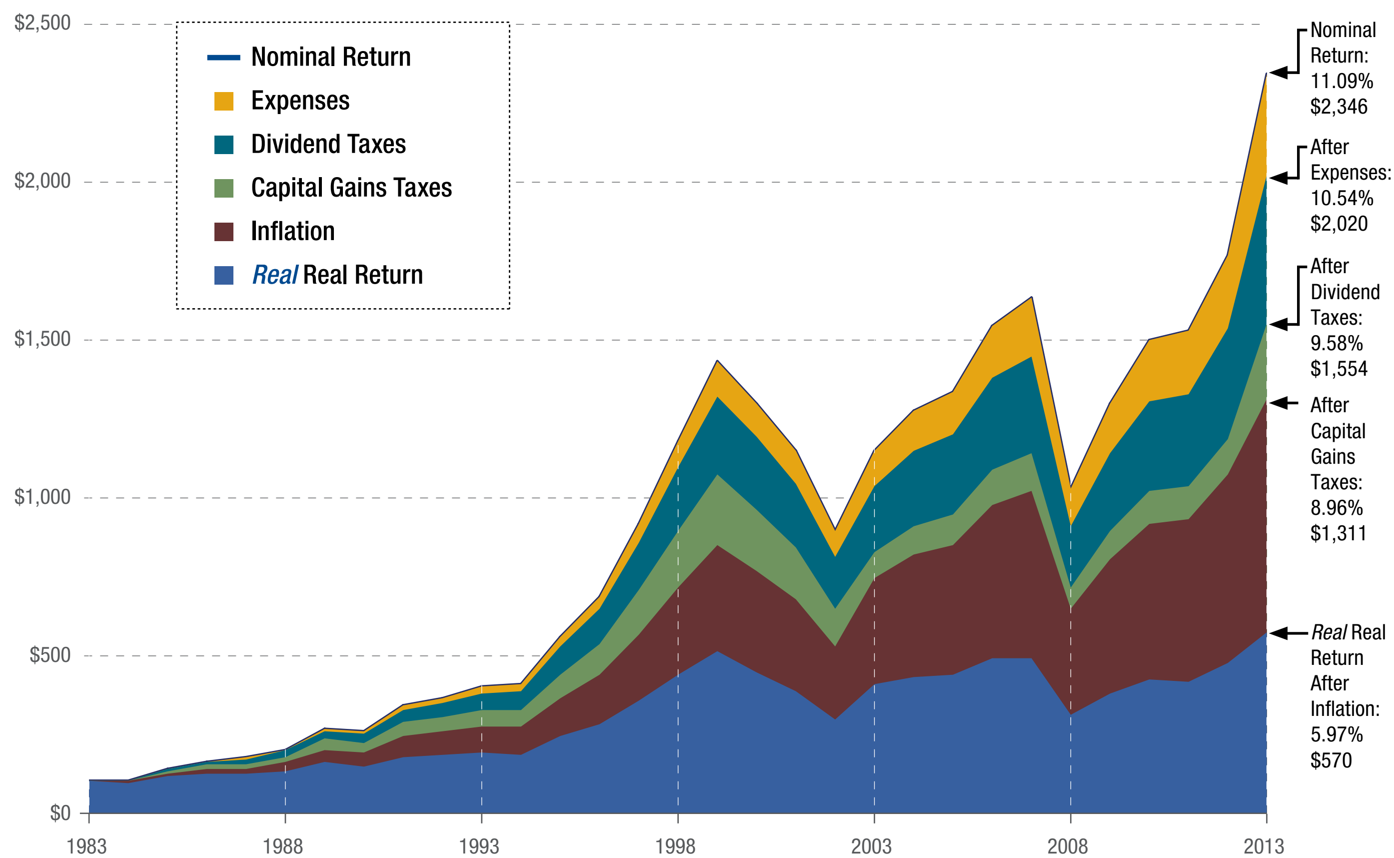
Capital Punishment

Significant increases in investment taxes in 2013 have taken a huge bite out of nominal returns for investors in the top income tax bracket. The American Taxpayer Relief Act of 2012, or ATRA, was anything but for top earners. It raised the highest marginal income tax rate to 39.6% from 35% for individuals with incomes over $400,000, and $450,000 for married couples filing jointly. These taxpayers were additionally subject to a hike in qualifying dividend and long-term capital gains taxes to 20% from 15%.

But top earners weren't the only ones subject to tax hikes. Those with adjusted gross income of at least $200,000, or married joint-filers making $250,000, also paid a new 3.8% tax on "unearned" net investment income above those thresholds as part of the Affordable Care Act (ACA).

Growth of a Hypothetical $100

S&P 500 Index from December 31, 1983 to December 31, 2013



Results reflect past performance and do not guarantee future results. The performance of an index is not indicative of any particular investment. Investors may not make direct investments into any index. Sources are provided at the end of this study.

Still, the hit was clearly hardest for people in the top bracket, as this additional tax on net investment income applies to interest payments on corporate and U.S. government bonds, a category taxed at the same rate as ordinary income, raising the total tax levy to 43.4%. It also swelled the total tax take on qualified dividends and long-term capital gains to 23.8% from 15%, an eye-popping 59% jump.

Tax rates do, of course, change over time, as does the tax treatment of different types of investment income. Over the last three decades, the highest marginal income tax rates have run from 28% to 50%. In calculating *real* real returns, we use the maximum marginal rate in effect at a given time. We assume that dividends were taxed at the maximum rate in the year they were received. As for capital gains—the difference between the price paid for an investment and the higher price at which it was sold—we assume they are long term, the tax treatment of which is more favorable than that involving short-term capital gains.

Apart from the purposes of this study, investors should also be aware of the other tax increases beyond those raised on investment income. The Social Security tax rate paid by employees increased to 6.2% last year from 4.2%. Individuals earning $200,000 or married joint-filers with income of $250,000 had to pay the "Additional Medicare Tax," which was also mandated by the ACA, of 0.9%. Limitations on total itemized deductions and personal exemption phaseouts took effect in 2013 on adjusted gross income of $250,000 for singles and $300,000 for joint-filers.

Last year's tax hikes and additional levies are significant and complex. Investors should consult a financial or tax advisor.

Inflation's Taxation

If investment income tax rates rose steeply on top earners, affected investors may at least take a little solace in the relatively mild bite out of their nominal returns from inflation, which economist Milton Friedman has called "taxation without legislation." Prices for goods and services in the United States rose just 1.5% in 2013, substantially less than the 1.7% pace in 2012 and less than half of the 3.0% in 2011. That means the decline in the purchasing power of a dollar—and so in the real return from an investment portfolio—has moderated.

Tax Changes That Took Effect in 2013

Type of Tax	Applies to:	2012 Maximum Rate	2013 Maximum Rate
Tax on Ordinary Income	Ordinary income, including interest income generated outside of tax-advantaged accounts	35%	39.6%
Tax on Qualifying Dividends	Qualifying dividends earned on stocks held outside tax-advantaged accounts	15%	20%
Tax on Long-Term Capital Gains	Gains on investments held longer than 12 months	15%	20%
Unearned Income Medicare Contribution Tax	The lesser of net investment income or the excess of modified adjusted gross income over a threshold based on filing status	N/A	3.8%

Source: Internal Revenue Service

But there's no guarantee the benign inflation environment will last. Consumer prices jumped 0.4% in May of 2014 from the month before, the biggest climb in more than a year. On an annual basis, they rose 2.1%, the fastest 12-month increase since October 2012. The rise in prices was broad-based, from electricity to food, transportation, medical care, apparel and other items. It also built on the 2% annual rise posted the month before. April's pace matched the U.S. Federal Reserve's 2% inflation target, a level it considers conducive for price stability and economic growth. The Fed's preferred measure, the personal consumption expenditures price index, has also been rising briskly, climbing 1.8% in May from the year before and marking its fastest pace since October 2012, as well.

In response to the 2008 financial crisis, the Fed that year slashed key interest rates nearly to zero, and has kept them there ever since. It also launched three successive rounds of QE asset purchases—expanding its balance sheet from $800 billion in 2007 to $4.3 trillion today—in an effort to defibrillate the moribund economy. (See our March 2014 article, "Quantitative Easing's Elusive Targets" at www.thornburg.com/articles.) Although the economy was lifted out of recession in 2009, it has limped along at an annual growth rate of just over 2% ever since. Nonetheless, the Fed in January began to trim its asset purchases, and is expected to end them completely this fall. The Fed isn't expected to raise interest rates until the second half of 2015.

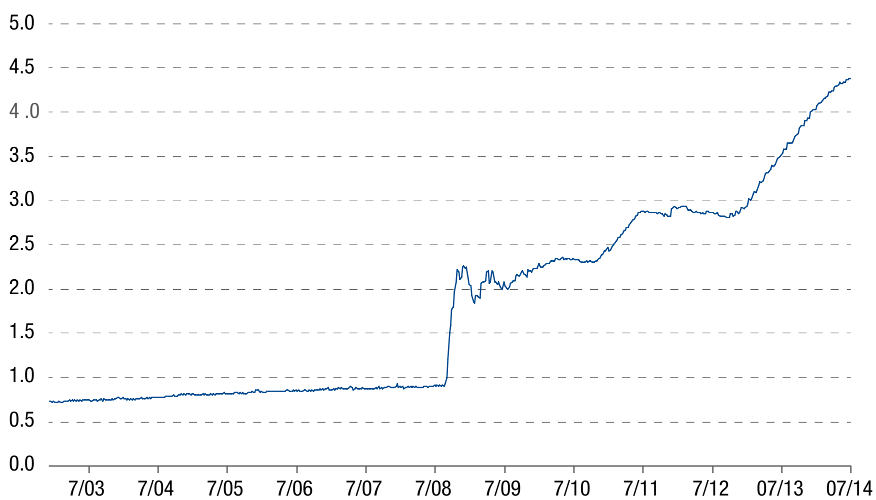
Some question whether it will have to move sooner on rates, given the lag between rate hikes and the time it takes for them to ripple through the economy and check price pressures. Federal Reserve Bank of St. Louis President James Bullard on June 26 added to the speculation by suggesting the "economy could tolerate at least a little bit of the central bank getting back to a more normal stance" on monetary policy. "I don't think financial markets have internalized how close we are to our ultimate goals," Mr. Bullard added.[1]

Reinforcing the point on the same day, Federal Reserve Bank of Richmond President Jeffrey Lacker said: "Even if growth remains relatively subdued, as it has been over the past five years…you can reach a situation in which real rates need to rise just to equilibrate the balance between pressure on current resources and pressure on future resources."[2]

Investors in short-term instruments such as T-bills and money market funds will no doubt welcome an increase in rates, as they have suffered a negative real return between inflation and near-zero nominal yields on the securities. Whether the Fed will raise rates at the pace necessary to keep potential above-target inflation in check without choking off the modest economic recovery remains to be seen. In the meantime, investors should factor in the threat of inflation into their long-term planning.

Growth of The Federal Reserve's Balance Sheet

1/1/2003 – 7/9/2014 (in Trillions)

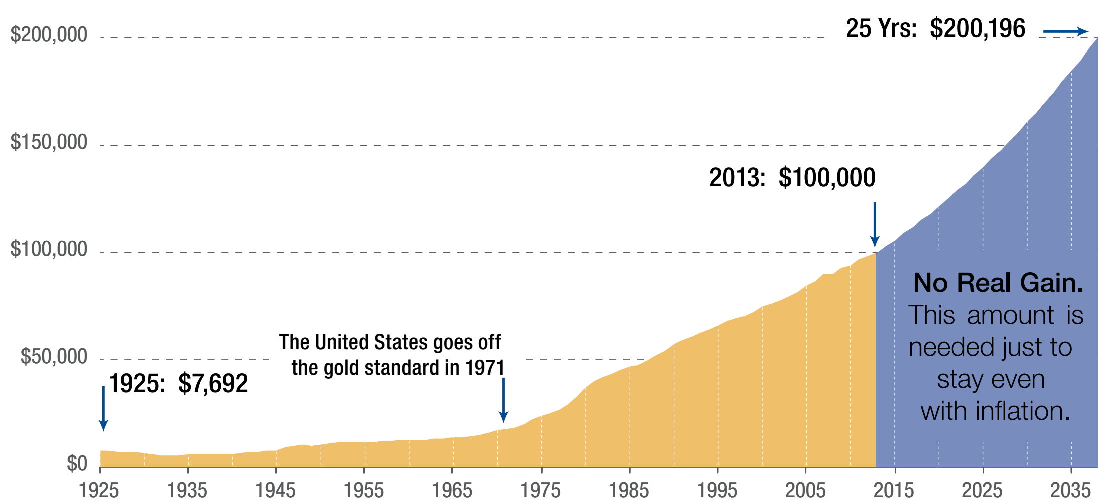


Source: Bloomberg

Expense Erosion

This study employs a 0.50% rate for investment expenses, which we consider a reasonable long-term proxy for overall expenses of varying types of investments, from higher-cost international equities to lower-cost asset classes such as U.S. government bonds. We don't apply this rate to real estate, of course. On homes held more than a year, we deduct the typical 6% commission. Though we can't build them into our calculations, as homeowners know, maintenance expenses on housing can run into the thousands of dollars a year.

A Picture of Inflation



The gold area in the graph shows the equivalent of $100,000 in 2013 dollars, based on CPI, for each year. So, $100,000 in 2013 had the same purchasing power as $7,692 in 1925.

The blue area represents a projection based upon the 30-yr average rate of 2.82%, showing 2013's $100,000 inflating to $200,196 in 25 years.

Source: Calculated by Thornburg Investment Management using data presented in the Ibbotson SBBI® 2013 Classic Yearbook, ©2013.

[1] WSJ.com, June 26, 2014
[2] WSJ.com, June 26, 2014

Nominal Outcomes and Net Results

Big Bites Out of 2013's Outsized Gains

Last year proved extraordinary for equities, while the rebound in real estate that began in 2012 continued to run strong through 2013. But both high-grade fixed income and commodities tumbled. The nominal numbers were striking. The S&P 500 Index soared 32%, while the smaller stocks comprising the Russell 2000 Index sky-rocketed 39% and the international stocks within the MSCI EAFE Index drove it 23% higher. At 11%, nominal returns in real estate entered into the double digits for the first time since 2004.

> "QE, ground-level interest rates and expectations the economic recovery would gain traction largely fueled the big gains in share prices. But the same factors pulled the rug out from under fixed income: If the Fed was confident enough in the recovery to signal the beginning of the end of QE, interest rate hikes couldn't be too far off, undercutting existing investment-grade bonds."

QE, ground-level interest rates and expectations the economic recovery would gain traction largely fueled the big gains in share prices. But the same factors pulled the rug out from under fixed income: If the Fed was confident enough in the recovery to signal the beginning of the end of QE, interest rate hikes couldn't be too far off, undercutting existing investment-grade bonds. Long-term government bonds tumbled a nominal 11%, while municipal bonds stumbled 2.6%, and high-end U.S. corporate bonds fell 1.5%. The near-zero yields on Treasury bills left their returns flat in nominal terms. As for commodities, the U.S. recovery wasn't nearly enough to boost prices for energy and base metals. Anemic growth in Europe, Japan, and especially China's ebbing from its erstwhile red-hot growth rates also hurt the commodities complex, which shed 10% on the Dow Jones-UBS Commodities Index last year.

But 2013 also proved surprising in the big impact on those nominal returns from last year's sharp tax hikes. After inflation, expenses and taxes, the *real* real return on S&P 500 Index was just under 25%, a drop of nearly eight percentage points from the nominal return, while almost nine points were chopped off the top-line return of the Russell 2000 Index. The MSCI EAFE Index lost six points for a *real* real return of almost 17%. Real estate shed three points for a bottom-line return last year of 7.8%.

Meanwhile, the negative nominal returns of fixed income and commodities were exacerbated once taxes, inflation and expenses were taken into account. The worst-performing category, long-term government bonds, saw its nominal 11% loss deepen to a negative 14% return on a *real* real basis. High-grade corporate bonds were also hit hard, with the nominal 1.5% drop turning into a real 5.2% loss. The *real* real losses in 2013 on muni bonds, intermediate-term government bonds and T-bills all came in around 2%. The *real* real loss on commodities deepened one point to 11% last year.

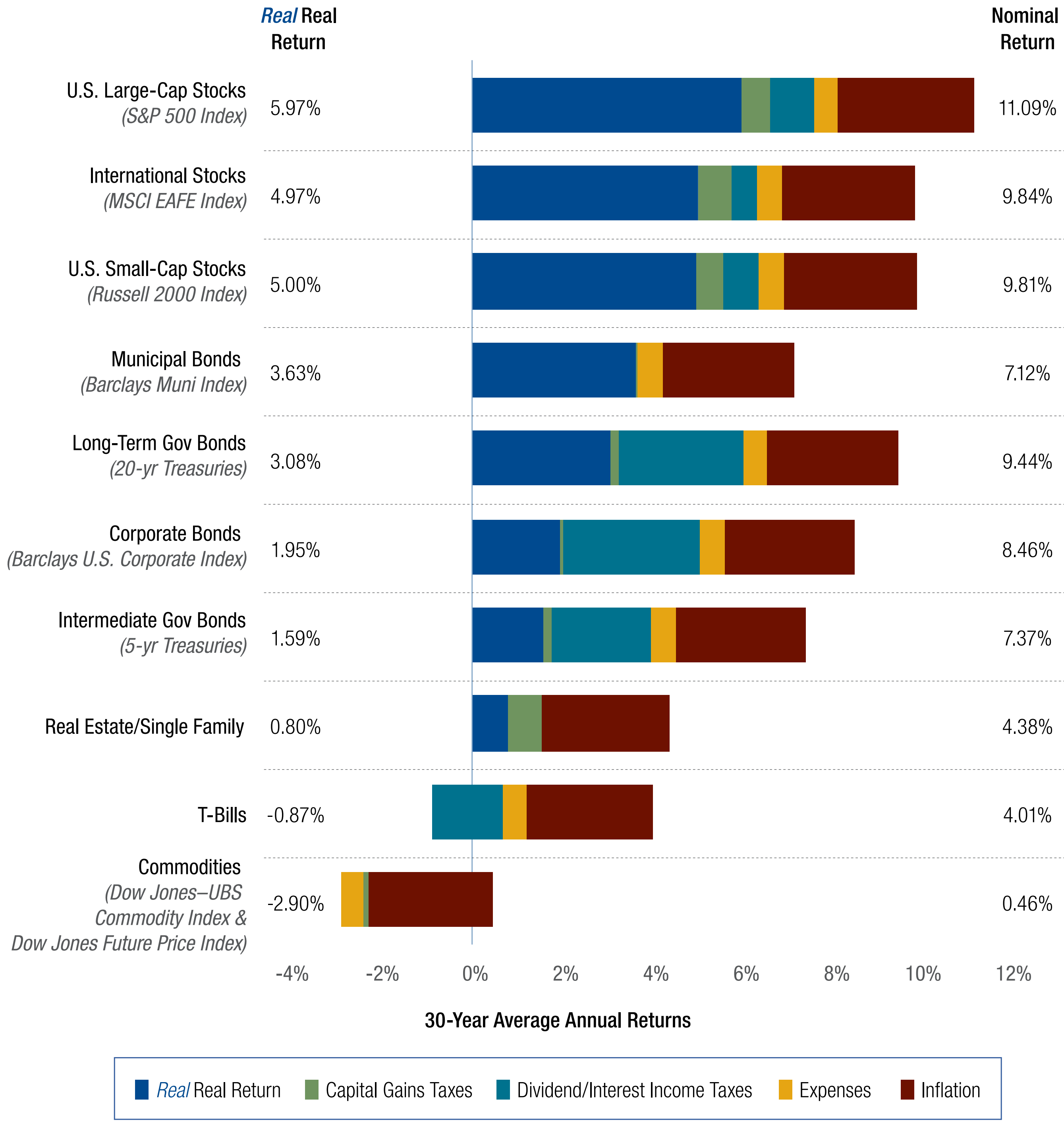
30-Year Trends Stirred, Not Shaken

Equities consolidated their position as the best-performing asset class over the last three decades in both nominal terms and after adjusting for taxes, inflation and expenses. Bonds, meanwhile, saw their returns ebb in both nominal and *real* real terms in the 30-year period through 2013. Though in the case of municipal and long-term government bonds, their returns were still materially positive, and their gains, along with those of stocks and real estate, have continued into the first half of 2014.

The S&P 500 Index posted an average annual nominal return of 11.09%, and a *real* real return of 5.97% in the 30 years through 2013, again making U.S. large-cap stocks the best-performing asset class

Erosion of Total Returns Over 30 Years

in a Taxable Account, as of 12/31/2013



Methodology: This chart shows how fees, taxes on dividends and capital gains, and inflation erode real wealth. The amount at the far right shows the nominal return of an investment, while the area in gold reflects the amount eaten away by fees (in our example, fees of 50 basis points (0.50%) were applied to the investment, with the exception of real estate, which includes a one-time 6% commission). The impact of taxes on income from the investment (either dividend or interest income) is represented by the area in teal. Taxes on capital gains provide a further drag on performance and are represented by the area in green, while the silent tax of inflation, in burgundy, can often turn a positive nominal return into a negative *real* real return. Sources and descriptions of each index and asset class are provided at the end of this study.

Past performance does not guarantee future results.

in our study. U.S. small-cap stocks and international stocks ran neck-and-neck in nominal returns, with each gaining just over 9.8%. But in *real* real terms, the Russell 2000 Index edged out the MSCI EAFE Index, 5% to 4.97%, becoming the second-best performer over the 30-year period. Interestingly, in last year's results, long-term government bonds actually outperformed in nominal terms these two stock categories, but with an average annual nominal 9.44% return over the 30 years through 2013, they failed to do so again.

Long-term government bonds shed three-tenths of a point off their 2012 net gain, producing a *real* real average annual return of 3.08% over the three-decade timespan. Municipal bonds, meanwhile, remained the top performer within fixed i ncome, with a 7.12% nominal and 3.63% average annual *real* real return during the period. T-bills again proved a losing proposition, as their nominal 4.00% return shrank to a *real* real 0.87% loss. Given the Fed's financial repression in recent years and its repeated guidance that benchmark interest rates will remain low for some time after the slated end of its QE program, it seems clear the decades-long bond bull market since the 1982 peak in interest rates is effectively over.

Although residential real estate enjoyed a nice jump in 2013, its three-decade average annual nominal return increased just marginally last year to 4.38%, while its net return inched up to a still low 0.8%. Commodities, which have had a strong run so far in 2014, continued to lag badly in the longer timeframe, with a nominal return of just 0.46% and a *real* real negative return of 2.9%.

What accounts for equities' long-run outperformance? Certainly in recent years, the extraordinary monetary stimulus has helped equities and artificially boosted demand for long-term government bonds, pushing down their yields and total returns. The source and timing of returns also, of course, have a significant impact. Bonds generate most of their return from interest income, and for taxable bonds, the income is taxed in the year in which it is received, at higher ordinary-income tax rates. Moreover, if taxes are paid annually from interest income, it reduces the amount available to compound over time. Equities, by contrast, generate most of their returns from capital gains, which are not taxed until they are actually realized—as the stocks are sold. Again, qualifying capital gains and dividend income are now effectively taxed at the total 23.8% rate for individuals making at least $200,000 a year, or couples making $250,000. While a significant increase, that's still nearly 20 points less than the new total levy on interest income of top earners that's generated outside of tax-advantaged accounts.

Despite the long-run outperformance of equities, investors would be well-advised not to put all their money into that, or any single, asset class. As recent times have shown, returns dispersion among asset classes can vary dramatically from year to year. Fixed-income returns, particularly of investment-grade paper, often correlate negatively with equity returns—in other words, they move in opposite directions, which helps smooth portfolio volatility. Lastly, consistent income from a well-managed compilation of bonds can anchor portfolios.

Real Real Returns

Annual Returns after Taxes, Inflation and Expenses as of 12/31/13

	S&P 500	Small Co (Russell 2000)	Int'l (EAFE)	Municipal Bonds	Long-Term Govt Bonds	Corp Bonds	Intermediate Gov Bonds	Real Estate*	T-Bills	Commodities	Inflation
30 Years	5.97%	5.00%	4.97%	3.63%	3.08%	1.95%	1.59%	0.80%	-0.87%	-2.90%	2.82%
20 Years	4.85%	4.88%	1.98%	2.20%	1.83%	0.93%	0.76%	0.74%	-1.11%	-1.92%	2.37%
15 Years	0.94%	4.07%	1.07%	1.86%	1.32%	0.69%	0.76%	0.54%	-1.50%	-0.39%	2.37%
10 Years	3.28%	4.58%	3.15%	1.36%	1.37%	0.37%	0.35%	-0.60%	-1.84%	-3.51%	2.37%
5 Years	12.38%	13.86%	7.89%	3.16%	-1.93%	3.62%	-0.33%	-1.38%	-2.48%	-1.52%	2.08%
1 Year	24.55%	30.03%	16.54%	-4.47%	-14.39%	-5.18%	-3.37%	7.78%	-1.96%	-11.36%	1.50%

Sources and descriptions of each index and asset class are provided at the end of this study.

* For the one-year *real* real return, the 6% real estate commission was not deducted.

Performance data quoted represents past performance and does not guarantee future results.

The Upshot of *Real* Real Returns for Planning

Alongside the appropriate investment mix, portfolio construction must take into account tax, inflation and expense considerations to maximize real wealth generation. Even small moves to optimize portfolio allocation and efficiency can significantly improve returns over time.

Tax-Deferred Accounts Versus Taxable Accounts

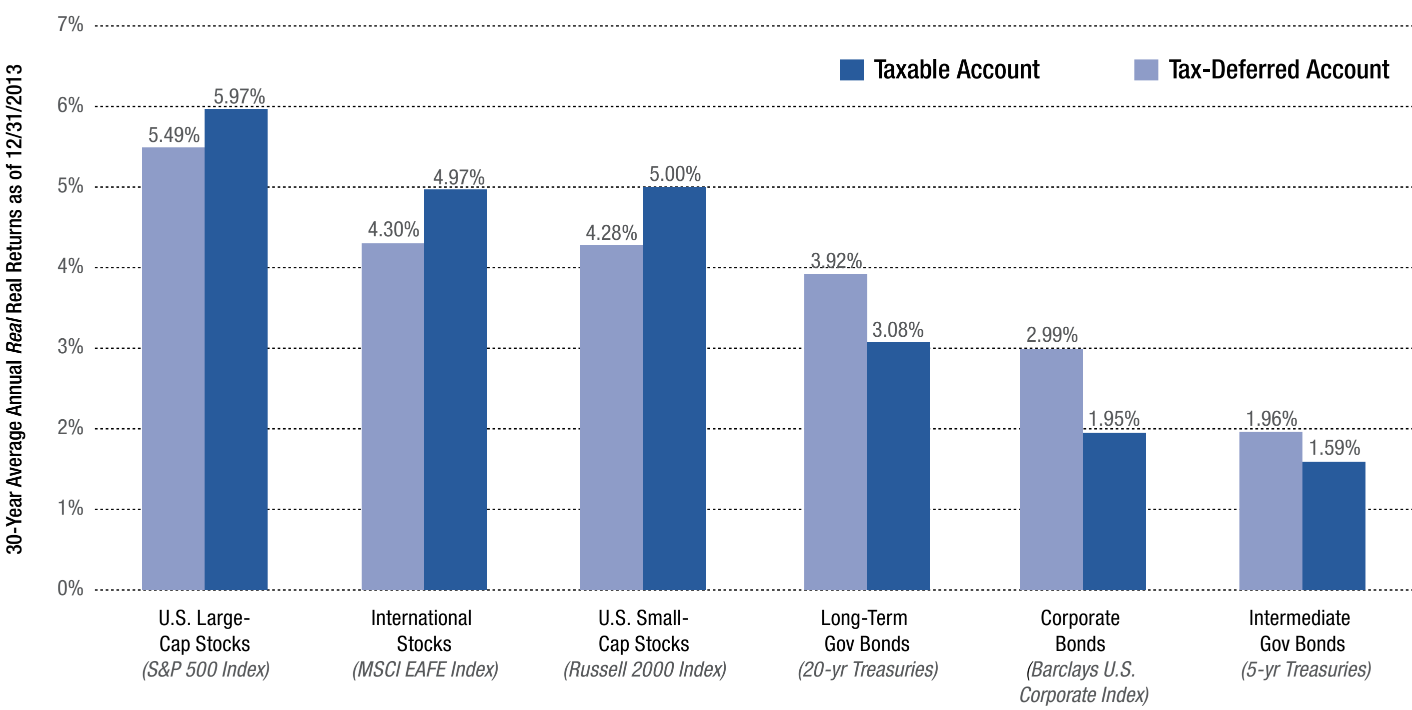
The type of account in which investments are held can have a huge impact on their *real* real returns. In an IRA or employer-sponsored retirement account, taxes on interest, capital gains and dividend income are deferred until an investor receives account distributions, which are then taxed at the ordinary-income tax rates in effect. If the rate is lower than that in effect during the accumulation phase, this can produce significant savings. As noted, beginning in 2013, the maximum marginal rate for interest income became 39.6%. When taxes are deducted from an account each year, this reduces the amount available for reinvestment. In tax-deferred accounts, income and capital gains are allowed to compound without taxation, having a potentially profound cumulative effect.

Performance of Asset Classes in Different Types of Accounts

The chart below shows the performance of the study's various asset classes over time. While the *real* real return of corporate bonds in a taxable account was 1.95% over the past 30 years, it jumped to 2.99% in a tax-deferred account. The 1.04% difference may seem small, but it's actually far larger than the differentials between equity returns in taxable and tax-deferred accounts. Furthermore, over 30 years of compounding, the financial impact of such a difference, which is also quite evident in the *real* real returns of taxable and tax-deferred long- and intermediate-term bonds, adds up significantly.

On the equities front, the taxable dividend yield of U.S. large-cap stocks is relatively low, so the average return differential between the two account types is minor. The same applies to U.S. small-cap and international stocks.

Tax-Deferred Account vs. Taxable Account: *Real* Real Returns



Performance data quoted represents past performance and does not guarantee future results.

Methodology: The chart above shows how the *real* real return of investments can shift when held in a tax-deferred account. In the tax-deferred account, taxes are deferred until the end of the 30-year period. Sources and descriptions of each index and asset class are provided at the end of this study.

What accounts for the disparate impact on *real* real returns of bonds in the two types of accounts? Remember that interest income is taxed annually in taxable accounts, and at an individual's highest marginal income tax rate. So the long-run erosion in returns from bonds held in tax-deferred accounts isn't nearly as extensive as it is in taxable accounts.

Taxable or Municipal Bonds?

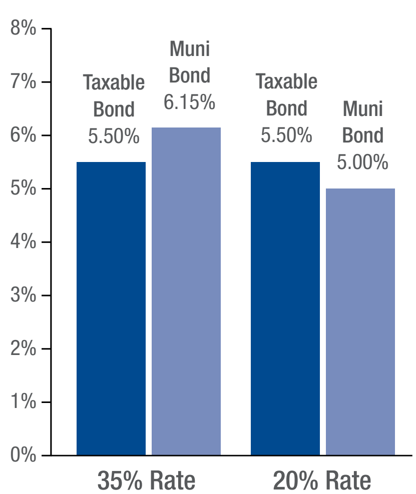
Investors should consider the implications of tax rates in determining whether taxable or municipal bonds make the most sense for their portfolios. Municipal bonds are fewer in variety and generally pay lower interest rates than taxable bonds, but the interest is usually free from federal taxes (though it may be subject to the Alternative Minimum Tax).

A simple way to compare these returns is to calculate the taxable equivalent yield, which shows what a taxable bond would have to yield to equal the tax-free yield of a municipal bond. The formula:

$$\frac{\text{Tax-free yield}}{\text{1 - ordinary income tax bracket}}$$

Taxable Equivalent Yield

Comparing 5.50% Taxable and 4.00% Municipal Bonds



For illustration purposes only. Not representative of any actual investment.

In the example, we compare yields for two hypothetical bonds—a taxable bond yielding 5.50% and a municipal bond yielding 4.00%. The municipal bond is generally more sensible for an investor in the higher tax brackets, while an investor in the lower tax brackets would be better off with the taxable bond.

Asset Allocation

Asset allocation is a primary driver of investment outcomes. When possible, allocation should emanate from a long time horizon. Too often we see investors stung in their pursuit of short-term returns. In the aftermath of the financial crisis, many investors grew fearful of risk and shifted portfolios to cash. Only after a strong rally in late 2012 and early 2013 did they rotate back into equities. If they had held onto their equity positions, they would have more than fully recovered. For example, since its previous high point in October 2007 through the first half of 2014, the S&P 500 Index has produced annualized returns, with reinvested dividends, of 5.7%. Those investors who bought at the market bottom in March 2009 through June 2014 would have realized annualized returns of nearly 25% and a cumulative return of 224%.

The same challenge of poor timing—investors chasing performance after asset prices have already risen and fleeing after prices have already fallen—applies just as much to fixed-income investors, who tend to purchase bond funds at the wrong time, just as interest rates are about to rise and prices are about to fall. Most investors are best served by allocating to both equity and fixed income, enabling them to ride out volatile markets psychologically and financially.

Political Risk

Changes in tax, regulatory, fiscal and monetary regimes can have a severe impact on the economy and the markets. The ACA, passed in 2010, affects roughly one-sixth of the U.S. economy and imposes significant new taxes on investment income. Marginal income tax rates also increased sharply for top earners in 2013. In response to the financial crisis, financial sector regulation has increased markedly and retarded loan growth and banks' dividend distributions, crimping economic recovery and shareholder returns. Meanwhile, monetary policy entered uncharted territory with the Fed's near-zero interest rates and unprecedented QE, the unwinding of which remains an untested work in progress. It's likely the Fed's balance sheet will remain exceedingly large, as Chairwoman Janet Yellen recently suggested, "for some time."[3]

While inflation may not currently seem a threat, its potential to become one to investors' real returns, not to mention people's purchasing power, can't be dismissed. Investors must also remain cognizant of new regulatory and tax regimes involving health care, financial services and other sectors. They should pay special attention to the impact from higher individual marginal income tax rates and new taxes on investment income. Such changes can dramatically affect broad economic as well as individual portfolio performance—and the generation of real wealth.

Shortsighted and Farsighted

Investors should also keep in mind the potential effects of three common timing and time-horizon points.

Actively managed mutual funds buy and sell securities, potentially generating profits that must be paid to investors as capital gains distributions. Those who purchase a fund shortly before such distributions are paid without having participated in most of the preceding gains still suffer the tax implications if the purchase was made for a taxable account. This is especially important for purchases late in the calendar year. Before a purchase, investors should

[3]Bloomberg.com, June 18, 2014

ask their investment managers if a near-term capital gain distribution is in the pipeline. Also, investors are usually better served by placing higher-turnover equity funds in tax-deferred accounts, and lower-turnover funds in taxable accounts.

The benefits of tax-deferred accounts are well known. But investors also need to consider their short- and longer-term liquidity needs. For example, young people saving for a down payment on a house shouldn't use a tax-deferred account, as federal regulations heavily penalize early distributions from them. Liquidity considerations are also a key component of comprehensive financial planning.

The Bottom Line

Investors often focus only on nominal returns for portfolio construction, without considering the impact on inflation, taxes and expenses. Tax rates can change. As we saw in 2013, new and sharply higher taxes can seriously erode real returns. That impacts the relative attractiveness of different asset classes. A spike in inflation would do much the same by undermining the purchasing power of investment returns. As the Fed slowly exits its ultra-easy monetary policy, investors should closely consider whether it is doing so in a timely way so as to avoid a build in inflationary pressures or asset price bubbles. Expenses, of course, eat into returns as well.

Well beyond nominal performance, investors should evaluate the potential *real* real return of asset classes. Optimal portfolio construction and the generation of real wealth depend on it. ■

> "Investors should pay special attention to the impact from higher individual marginal income tax rates and new taxes on investment income. Such changes can dramatically affect broad economic as well as individual portfolio performance—and the generation of real wealth."

Important Information

This information should not be considered tax advice. Any tax statements contained herein are not intended to be used, and cannot be used, for the purpose of avoiding tax penalties. Please consult your independent tax advisor as to any tax, accounting or legal statements made herein.

Statements contained herein are based upon information furnished from independent sources. While we do not guarantee their correctness, we believe them to be reliable and have ourselves relied upon them.

Diversification does not ensure a profit or guarantee against a loss.

Alternative Minimum Tax (AMT) – A federal tax aimed at ensuring that high-income individuals, estates, trusts, and corporations pay a minimal level income tax. For individuals, the AMT is calculated by adding tax preference items to regular taxable income.

Quantitative Easing – The Federal Reserve's monetary policy used to stimulate the U.S. economy following the recession that began in 2007/08.

The Consumer Price Index (CPI) measures prices of a fixed basket of goods bought by a typical consumer, including food, transportation, shelter, utilities, clothing, medical care, entertainment, and other items. The CPI, published by the Bureau of Labor Statistics in the Department of Labor, is based at 100 in 1982 and is released monthly. It is widely used as a cost-of-living benchmark to adjust Social Security payments and other payment schedules, union contracts, and tax brackets. CPI is also known as the cost-of-living index.

Sources

Real real returns were calculated by Thornburg Investment Management using data obtained from the following sources:

Tax rate data are from the IRS.

Inflation/Consumer Price Index–Urban (CPI-U) and Treasuries data were obtained from the Ibbotson SBBI 2014 Classic Yearbook, © 2014. All rights reserved. Used with permission.

Commodity data were obtained from Global Financial Data.

Real estate data were obtained from the U.S. Census Bureau.

Corporate and municipal bond data were obtained from Barclays.

Index data for the S&P 500, MSCI EAFE, and Russell 2000 were obtained from FactSet.

Tax rates were obtained from the Internal Revenue Service. The taxable account scenario applied the highest marginal tax rate in each calendar year allowable per the IRS to compute hypothetical dividend and interest taxes. The study assumes that all equity dividends are qualified for the periods covered under The Jobs and Growth Tax Relief Reconciliation Act of 2003. The tax deferred account scenario applied the highest marginal tax rate at the end of the 30-year period.

Index & Asset Class Descriptions

Bonds are debt investments in which an investor loans money to an entity (corporate or governmental) which borrows the funds for a defined period of time at a fixed interest rate. Bonds are subject to certain risks including loss of principal, interest rate risk, credit risk, and inflation risk. The value of a bond will fluctuate relative to changes in interest rates; as interest rates rise, the price of a bond falls.

Government bonds, or Treasuries, are negotiable debt obligations of the U.S. government, secured by its full faith and credit and issued at various schedules and maturities. Income from Treasury securities is exempt from state and local, but not federal, taxes. Treasury bill data is based on a one-bill portfolio containing, at the beginning of each month, the bill having the shortest maturity not less than one month. Intermediate government bond data is based on a one-bond portfolio with a maturity near five years. Long-term government bond data is based on a one-bond portfolio with a maturity near twenty years.

Municipal bonds are debt obligations issued by states, cities, counties, and other governmental entities. Municipal bonds offer a predictable stream of income which is free from federal and, in some cases, state and local taxes, but may be subject to the alternative minimum tax. Because of these tax savings, the yield on a muni is usually lower than that of a taxable bond. Higher grade munis have higher degrees of safety with regard to payment of interest and repayment of principal and marketability in the event you must sell before maturity. This study uses the Barclays Municipal Bond Index as a general representation of the investment grade municipal bond market.

A corporate bond is a debt security issued by a corporation. Corporate bonds are taxable and have more credit risk compared to Treasuries. This study uses Barclays U.S. Corporate Investment Grade Index, which is a general representation of the investment-grade corporate bond market.

The Barclays U.S. Aggregate Bond Index is composed of approximately 8,000 publicly traded bonds including U.S. government, mortgage-backed, corporate and Yankee bonds. The index is weighted by the market value of the bonds included in the index.

A stock is a share in the ownership of a company. As an owner, investors have a claim on the assets and earnings of a company as well as voting rights with the shares. Compared to bonds, stock investors are subject to a greater risk of loss of principal. Stock prices will fluctuate, and there is no guarantee against losses. Stock investors may or may not receive dividends. Dividends and gains on an investment may be subject to federal, state or local income taxes.

Cov-lite (Covenant Light) – Loan agreements which do not contain the usual protective covenants for the benefit of the lending party.

The S&P 500 Index is an index consisting of 500 stocks chosen for market size, liquidity and industry grouping, among other factors. The S&P 500 is designed to be a leading indicator of U.S. equities and is meant to reflect the risk/return characteristics of the large-cap universe.

The Russell 2000 Index measures the performance of the small-cap segment of the U.S. equity universe. The unmanaged index is a subset of the Russell 3000® Index representing approximately 10% of the total market capitalization of that index. It includes approximately 2000 of the smallest securities based on a combination of their market cap and current index membership. Small-cap stocks are subject to greater volatility than large-cap stocks.

The MSCI EAFE (Europe, Australasia, Far East) Index is an unmanaged index. It is a generally accepted benchmark for major overseas markets. Index weightings represent the relative capitalizations of the major overseas developed markets on a U.S. dollar adjusted basis. The index is calculated with net dividends reinvested in U.S. dollars. There are special risks associated with international investing, including currency fluctuations, government regulation, political and economic risks, and differences in liquidity.

Compared to the other investments in this study, single-family homes are relatively illiquid. Property values can fluctuate and there are no guarantees. Gains on the sale of a property may be taxable at the federal, state, or local level. Real estate data in this study uses U.S. Census Bureau's Survey of Construction single-family homes sold. For the one-year *real* real return, the real estate commission was not deducted. For longer periods, a 6% commission was applied to approximate the economic reality of a typical real estate investment transaction.

A commodity is a physical good – such as food, grain, oil, natural gas, and metals – which is interchangeable with another product of the same type, and which investors buy or sell in an active market, usually through futures contracts. If you buy a futures contract, you are basically agreeing to buy something that a seller has not yet produced for a set price on a specific future date. The futures market is extremely liquid, risky, and complex. Commodity prices can be affected by uncertainties such as weather and war and there are no guarantees against losses. In this study, commodities are represented by the Dow Jones-UBS Commodity Index, from 1999 to present. Prior to that, returns are represented by the Dow Jones Futures Price Index. The index is designed to be a highly liquid and diversified benchmark for commodities traded on U.S. exchanges. For purposes of this study, it is assumed that commodity exposure is obtained through a vehicle tracking the index and not by purchasing the underlying futures contracts.

The performance of an index is not indicative of the performance of any particular investment. Unless otherwise noted, index returns reflect the reinvestment of income dividends and capital gains, if any, but do not reflect fees, brokerage commissions or other expenses of investing. Investors may not make direct investments into any index.

Before investing, carefully consider the Fund's investment goals, risks, charges, and expenses. For a prospectus or summary prospectus containing this and other information, contact your financial advisor or visit thornburg.com. Read them carefully before investing.

Reprinted by permission of Morningstar, Oct. 20, 2016

MORNINGSTAR®

Thornburg Global Opportunities I THOIX

Take note of the risks as well as the rewards here.

Morningstar's Take THOIX

Morningstar Rating	★★★★★
Morningstar Analyst Rating	Bronze

Morningstar Pillars

Process	Positive
Performance	Positive
People	Positive
Parent	Neutral
Price	Neutral

Role In Portfolio
Supporting

Fund Performance THOIX

Year	Total Return (%)	+/- Category
YTD	-1.58	-7.36
2015	1.46	3.15
2014	18.91	16.12
2013	28.75	3.56
2012	22.19	6.35

Data through 9-30-16

1-14-16 | by William Samuel Rocco

Thornburg Global Opportunities Fund merits a Morningstar Analyst Rating of Bronze thanks to the strength of its management and other positives, but it also comes with significant risks and requires a long time horizon.

This fund has a stable, seasoned, and skilled management team. Brian McMahon and Vinson Walden have been at the helm of this world-stock Morningstar Category fund since it opened in mid-2006. McMahon joined Thornburg in 1984 and has had considerable success as both a bond skipper and as an equity manager. (He has run the stock portion of Bronze-rated Thornburg Investment Income Builder TIBAX for 13 years.) Walden joined the firm in 2002 and is a talented investor as well.

McMahon and Walden employ an extremely distinctive strategy that comes with extraordinary upside potential. The managers hold just 30-40 names, regularly allow their stock selection to lead to sizable sector and country overweightings, and invest significant amounts in smaller-market and smaller-cap equities as they pursue good businesses at appealing valuations. The resulting portfolio is exceptionally concentrated and quite unlike those of most world-stock offerings and most global indexes.

McMahon and Walden have earned great returns with this strategy. From its mid-2006 inception through Dec. 31, 2015, this fund has comfortably outgained all other world-stock funds and crushed its benchmark, the MSCI ACWI Index.

That's impressive. But this fund's issue, sector, and country concentration can backfire when a major holding or area of focus blows up. Indeed, while it finished 2015 in the world-stock category's top third, it sank 7.9% last September--roughly twice as much as its average peer and the index fell--largely due to its hefty stakes in a handful of healthcare stocks that plunged. It also posted an oversized decline in the late-2007 to early-2009 equity meltdown. Thus, though this fund has real merit as a focused global vehicle, it demands a tolerance for rough spells--especially during downturns--and a commitment to the long haul.

Process Pillar Positive | William Samuel Rocco 01/14/2016

The managers pursue higher-quality businesses with good prospects for the future that are attractively priced relative to their intrinsic value. On the quality side, they assess the governance structure of the company as well as its competitive position, its income statement, balance sheet, and its margin and capital structures. On the valuation side, they prefer companies that are selling at a 30% discount to their intrinsic values. They evaluate long-term cash flows, cash earnings, and cash profits, as well as other factors, when determining intrinsic values. While doing so, they focus on 30-40 names and readily pile into sectors and markets where they find lots of compelling opportunities. They pay ample attention to smaller-market and smaller-cap stocks that meet their standards. They move at a measured pace and do a fair amount of currency hedging.

The end result is a very focused portfolio that has much different sector and geographic weightings than the world-stock category norm and the MSCI ACWI Index. This approach is repeatable and comes with considerable upside potential, and the managers have executed it well so far, so this fund earns a Positive Process rating. But because of its exceptional concentration and distinctiveness, this strategy also comes with ample downside risk, so it requires a tolerance for rough spells and a long time horizon.

This fund still looks quite unlike the average world-stock fund category and the MSCI ACWI Index as of Nov. 30, 2015. It owns 34 stocks and has 51% of its assets in its top 10 names, while its typical peer has roughly 75 equities and 30% of its assets in its top 10 holdings. The index includes more than 2,400 stocks and has less than 10% of its assets in its top 10 names.

Further, this fund has 15% of its assets in the communications-services sector--which is composed of sizable stakes in Numericable 6NU, Level 3 Communications LVLT, and T-Mobile US TMUS plus a modest position in Altice ATC--while its average peer and the index both have 5% positions in that sector. This fund also has a relatively sizable stake in the technology sector.

Meanwhile, though the managers added to their stakes in Allergan AGN and Concordia Healthcare CXR late last year, they also sharply trimmed their positions in Express Scripts ESRX and Valeant Pharmaceutical International VRX and Concordia Healthcare CXR, and this fund's overall healthcare weighting is down to 12.7%, which is in line with the category and index weightings.

Finally, the fund has less exposure to giant caps and more to mid-caps and smaller large caps than its average peer and the index. But its asset base is still pretty moderate, and it will probably have to move up the market-cap ladder if it gathers a lot of assets owing to management's commitment to focus on 30-40 stocks.

Performance Pillar Positive | William Samuel Rocco 01/14/2016
This fund has posted impressive gains. From its mid-2006 inception through Dec. 31, 2015, it earned a 10% annualized return, which was the best in the world-stock category and more than 5 percentage points better than the category norm (a 4.7% gain) and the MSCI ACWI Index (4.3%). This fund also walloped its average peer and the index over the trailing five-year and three-year periods.

But this fund has not thrived in all conditions. In fact, while it has shone in rallies, it often has struggled in sell-offs, when its concentration has backfired. It suffered an aggregate decline of 65% in the late-2007 to early-2009 global meltdown versus aggregate drops of 56% and 58% for its average peer and the index, respectively. It also lost more than its typical rival and the benchmark in 2011's terrible third quarter. Finally, its hefty stakes in a handful of healthcare stocks that blew up contributed to its 7.9% loss in September 2015, while its average peer declined 4.7% and the index lost 4.3%.

Despite these losses--and more volatility than its average peer and the index overall--this fund has earned a topnotch Morningstar Risk-Adjusted Return since inception, and it merits a Positive Performance rating. That said, it likely will continue to experience some marked rough spells in the future because of its focused nature--especially during sell-offs--and it demands a lot of patience.

People Pillar Positive | William Samuel Rocco 01/14/2016
Brian McMahon has been a comanager on this fund since its mid-2006 inception. He joined Thornburg in 1984 and ran municipal-bond funds for the firm from the mid-1980s through the 1990s. He has been the lead equity manager on Bronze-rated Thornburg Investment Income Builder TIBAX, a world-allocation category fund, since its late-2002 inception, and he and his comanagers have earned strong long-term returns there. He served as Thornburg's president and CEO, but gave up those positions at the start of 2016, while retaining the CIO role, so he now has fewer executive responsibilities than before.

Vinson Walden has been a comanager on this fund since it opened as well. He has spent 13 years at Thornburg and previously worked at Lehman Brothers. He comanaged Thornburg's portion of Litman Gregory International MSILX from early 2008 through late 2015, and he now runs that sleeve on his own.

The equity team at Thornburg has lost several managers since the end of 2011, including Lewis Kaufman, the former skipper of Neutral-rated Thornburg Developing World THDAX, who left in early 2015. But it has also added 12 new members who remain at the firm. Overall, the equity team has grown to 25 from 19 since 2011. Because of McMahon and Walden's experience and skill, as well as the overall size and depth of the equity team at Thornburg, this fund earns a Positive People rating.

Parent Pillar Neutral | William Samuel Rocco 03/03/2016
Employee-owned Thornburg Investment Management has focused on areas where it has proven expertise, and it now has 11 bond funds and eight equity funds. The funds use sound and distinctive strategies. They have earned solid long-term returns overall. The interests of the employees are fairly well-aligned with those of investors in the funds. The portfolio managers' compensation plan and ownership stakes in the funds are pretty good.

Jason Brady took over the president and CEO roles from Brian McMahon on Jan. 1, 2016. (Brady continues to serve as a comanager on several of the firm's funds, while McMahon continues to serve as the firm's CIO as well as a comanager on two of its funds.) These changes make sense from a succession-planning perspective and from other perspectives, and they are a wash for fund investors.

However, although the firm has significantly increased the size of its investment team over the years and has some seasoned and skilled managers on staff, it has lost eight portfolio managers since the end of 2010, and it recently announced that Bill Fries, who is the longest-serving manager on the firm's foreign large-growth fund, will give up that position at the end of 2016. Because of that portfolio-manager turnover, plus the facts that fees and the board of directors are average here, the firm earns a Parent rating of Neutral despite its strengths.

Price Pillar Neutral | William Samuel Rocco 01/14/2016
This fund has unexceptional expense ratios and receives a Neutral Price rating.The Institutional share class, which has about half of the assets, had an expense ratio of 0.97% as of its Sept. 30, 2015, annual report. That expense ratio receives a Below Average Morningstar Fee Level, but it is close to the median of 1.02% for institutional world-stock category funds. The A share class, which has roughly one fourth of the assets, had an expense ratio of 1.32% as of its Sept. 30, 2015, annual report. That is near the median of 1.35% for front-load world-stock funds and receives an Average fee level. The C share class, which has about one fifth of the assets, had an expense ratio of 2.10% as of its Sept. 30, 2015, annual report. That expense ratio is close to the median of 2.06% for level load world-stock funds and receives an Average fee level.

Thornburg Global Opportunities Fund

Total Returns as of September 30, 2016

Annualized for periods over one year

	YTD	1-YR	3-YR	5-YR	10-YR	SINCE INCEP.
A Shares (Incep: 7/28/06)						
Without sales charge	-1.82%	2.57%	8.42%	14.35%	8.55%	9.19%
With sales charge	-6.25%	-2.05%	6.77%	13.30%	8.05%	8.70%
I Shares (Incep: 7/28/06)	-1.58%	2.91%	8.82%	14.82%	9.05%	9.69%
MSCI AC World Index (Since 7/28/06)	6.60%	11.96%	5.17%	10.63%	4.34%	4.64%

Returns for periods less than one year are not annualized.

Class I shares may not be available to all investors. Minimum investments for the I share class may be higher than those for other classes.

Performance data shown represents past performance and is no guarantee of future results. Investment return and principal value will fluctuate so shares, when redeemed, may be worth more or less than their original cost. Current performance may be lower or higher than quoted. For performance current to the most recent month end, visit thornburg.com or call 877-215-1330. The maximum sales charge for the Fund's A shares is 4.50%. There is no up-front sales charge for class I shares. The total annual fund operating expense for the Fund are as follows: A shares, 1.32%; I shares, 0.97%.

Investments carry risks, including possible loss of principal. Additional risks may be associated with investments outside the United States, especially in emerging markets, including currency fluctuations, illiquidity, volatility, and political and economic risks. Investments in small- and mid-capitalization companies may increase the risk of greater price fluctuations. Investments in the Fund are not FDIC insured, nor are they bank deposits or guaranteed by a bank or any other entity.

Before investing, carefully consider the Fund's investment goals, risks, charges, and expenses. For a prospectus or summary prospectus containing this and other information, contact your financial advisor or visit thornburg.com. Read them carefully before investing.

★★★★★ Class I shares Overall Morningstar rating of 5 stars, among 953 funds, based on risk-adjusted returns, uses a weighted average of the Fund's three-, five-, and 10-year ratings: respectively, 5 stars, 5 stars, 5 stars among 953, 735, and 425 World Stock funds, as of 9/30/16.

To determine a fund's Morningstar Rating™, funds with at least a three-year history are ranked in their categories by their Morningstar Risk-Adjusted Return scores. The top 10% receive 5 stars; the next 22.5%, 4 stars; the middle 35%, 3 stars; the next 22.5%, 2 stars; and the bottom 10% receive 1 star. The Risk-Adjusted Return accounts for variation in a fund's performance (including the effects of all sales charges), placing more emphasis on downward variations and rewarding consistent performance. Other share classes may have different performance characteristics.

Based on total returns before sales charges, Morningstar ranked the fund (I shares) in the top 98% for the one-year period, 4% over three years, 3% over five years, 1% over 10 years, among 1141, 953, 735, and 425 World Stock funds, respectively, as of 9/30/16.

Top 10 Holdings as of 9/30/16: VEREIT, Inc., 5.6%; Level 3 Communications, Inc., 5.5%; Aena S.A., 5.5%; Altice N.V., 5.5%; Mondelez International, Inc., 5.1%; Alphabet, Inc., 5.0%; Baidu, Inc., 4.9%; Barratt Developments plc, 4.7%; Citigroup, Inc., 4.0%; T-Mobile US, Inc., 3.8%.

Securities mentioned are for illustration purposes only. Holdings are subject to change. Under no circumstances does the information contained within represent a recommendation to buy or sell any security.

The MSCI All Country (AC) World Index is a market capitalization weighted index that is representative of the market structure of 46 developed and emerging market countries in North and South America, Europe, Africa, and the Pacific Rim. The index is calculated with net dividends reinvested in U.S. dollars.

The performance of any index is not indicative of the performance of any particular investment. Unless otherwise noted, index returns reflect the reinvestment of income dividends and capital gains, if any, but do not reflect fees, brokerage commissions or other expenses of investing. Investors may not make direct investments into any index.

Morningstar Analyst Rating is a forward-looking analysis based on a five-tier scale with three positive ratings of Gold, Silver, and Bronze, a Neutral rating, and a Negative rating. If a fund receives a positive rating of Gold, Silver, or Bronze, it means Morningstar analysts think highly of the fund and expect it to outperform over a full market cycle of at least five years. A Neutral rating indicates the fund isn't likely to deliver standout returns but also isn't likely to significantly underperform, according to the analysts. A Negative rating is given to a fund that has at least one flaw likely to significantly hamper future performance and is considered by analysts to be an inferior offering. Morningstar evaluates funds based on five pillars – Process, Performance, People, Parent, and Price – which its analysts believe lead to funds that are more likely to outperform over the long term on a risk-adjusted basis. Analysts assign a rating of Positive, Neutral, or Negative to each pillar. Analysts consider numeric and qualitative factors, but the ultimate view on the individual pillars and how they come together is driven by the analyst's overall assessment and is overseen by an Analyst Ratings Committee. For more detailed information go to www.morningstar.com/invglossary.