



Michigan Department of Treasury Bureau of Investments



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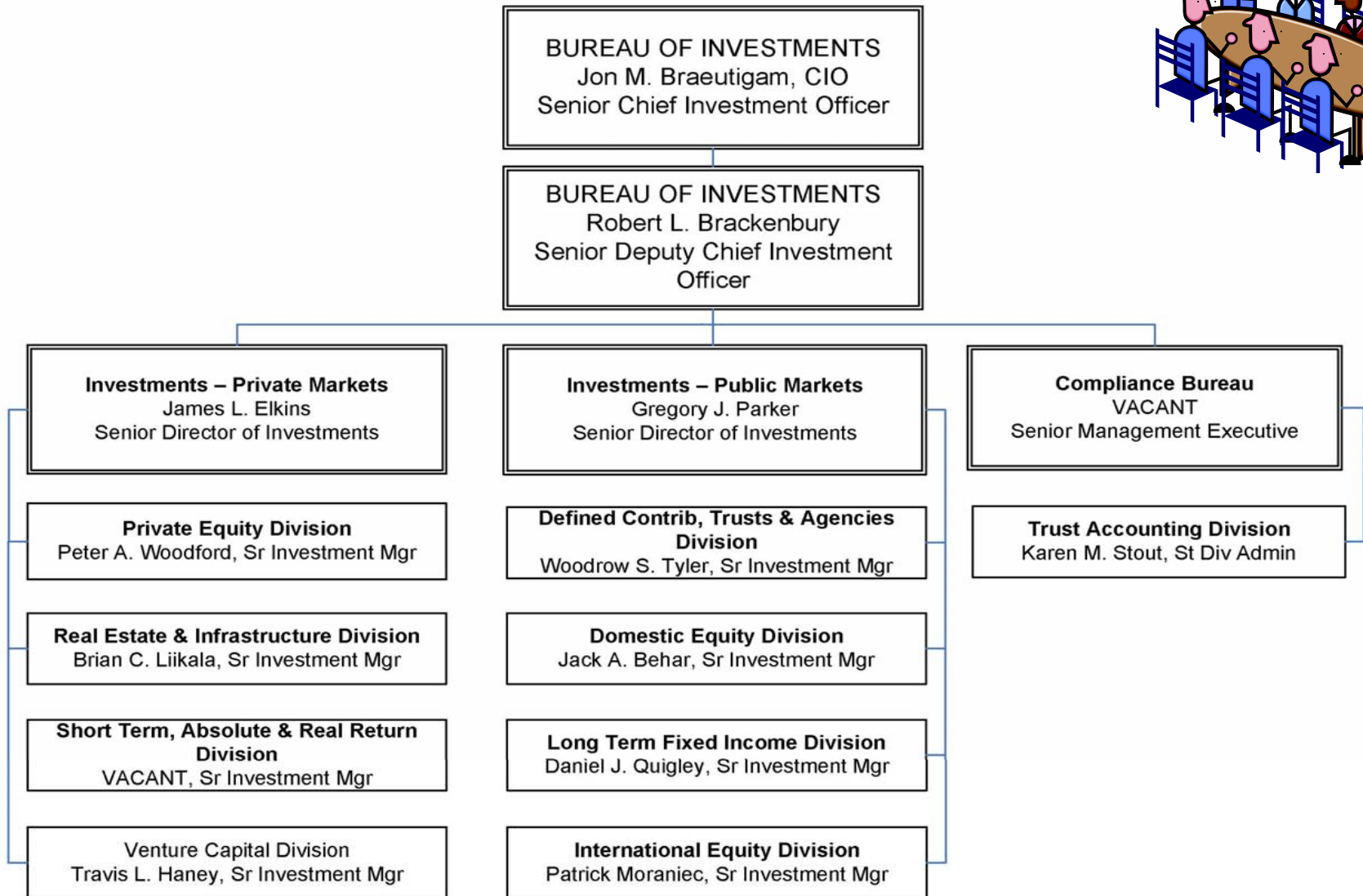
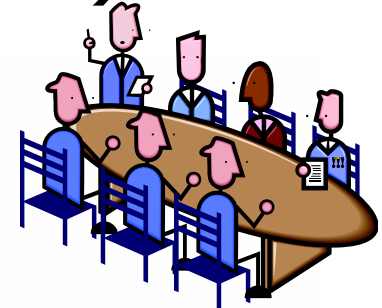


Executive Summary

- The market value of the MPERS plan is up and the funding ratios are constant.
- Over the past year the plan substantially beat peers and most asset classes ranked and earned returns in excess of their performance benchmark.
- The market value of the MPERS plan is different than the actuarial value. If the market value of plan assets does not decline, then the actuarial value will trend up in future years.



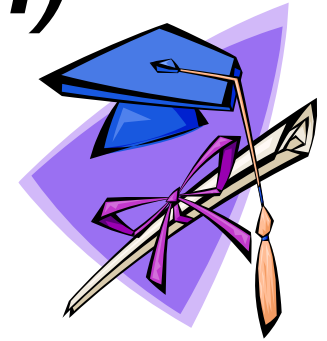
Bureau of Investments (BOI) As of February 2018





Bureau of Investments (BOI)

As of February 2018



- 75 BOI Employees
- 45 Investment Professionals
- 30 Individuals with a Masters Degree or higher
- 15 C.F.A. Charter holders
- 15 Other professional designations
- Total of \$92.4 billion assets under management
(as of 12/31/17)
- The large investment pool is an advantage for
the MPSERS



MPERS Funded Ratio

\$48.4 Billion as of 12/31/17

Year	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Funded Ratio Based on Actuarial Value
2016	\$43,461	\$43,204	\$72,310	59.7%
2015	\$42,382	\$41,006	\$67,728	60.5%
2014*	\$43,773	\$39,626	\$66,105	59.9%
2013	\$40,016	\$38,044	\$63,840	59.6%
2012	\$37,700	\$38,450	\$62,716	61.3%
2011	\$34,675	\$41,038	\$63,427	64.7%
2010	\$35,855	\$43,294	\$60,927	71.1%
1983	\$6,285	\$6,035	\$8,434	71.6%
<i>MPERS Estimated Market Value Funded Ratio</i>				
12/31/2017	\$48,393	- - -	\$72,310	66.9%

(\$ in Millions)

*Revised actuarial assumptions and/or methods.

Source: Pension Plans Component Unit Financial Reports and Actuarial Valuations, years ending in September



MPERS

Contributions and Distributions

FY 2017

Contributions

Members	\$428.0
Employer	<u>2,398.9</u>

Total Contributions \$2,826.9

Pension Benefit Distributions 4,807.0

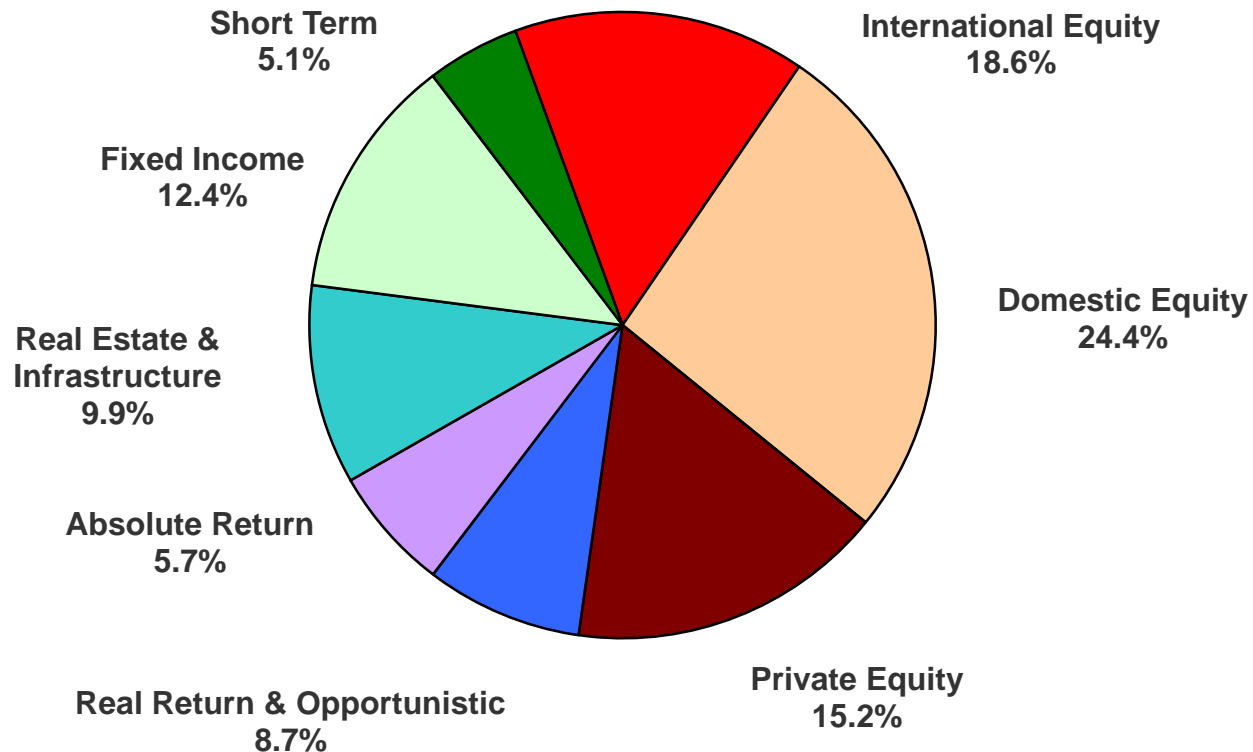
Net **(\$1,980.1)**

- Equal to (per quarter on average) (\$495.0)
- Or about 4.1% of total market value of fund



MPERS Asset Allocation

As of December 31, 2017



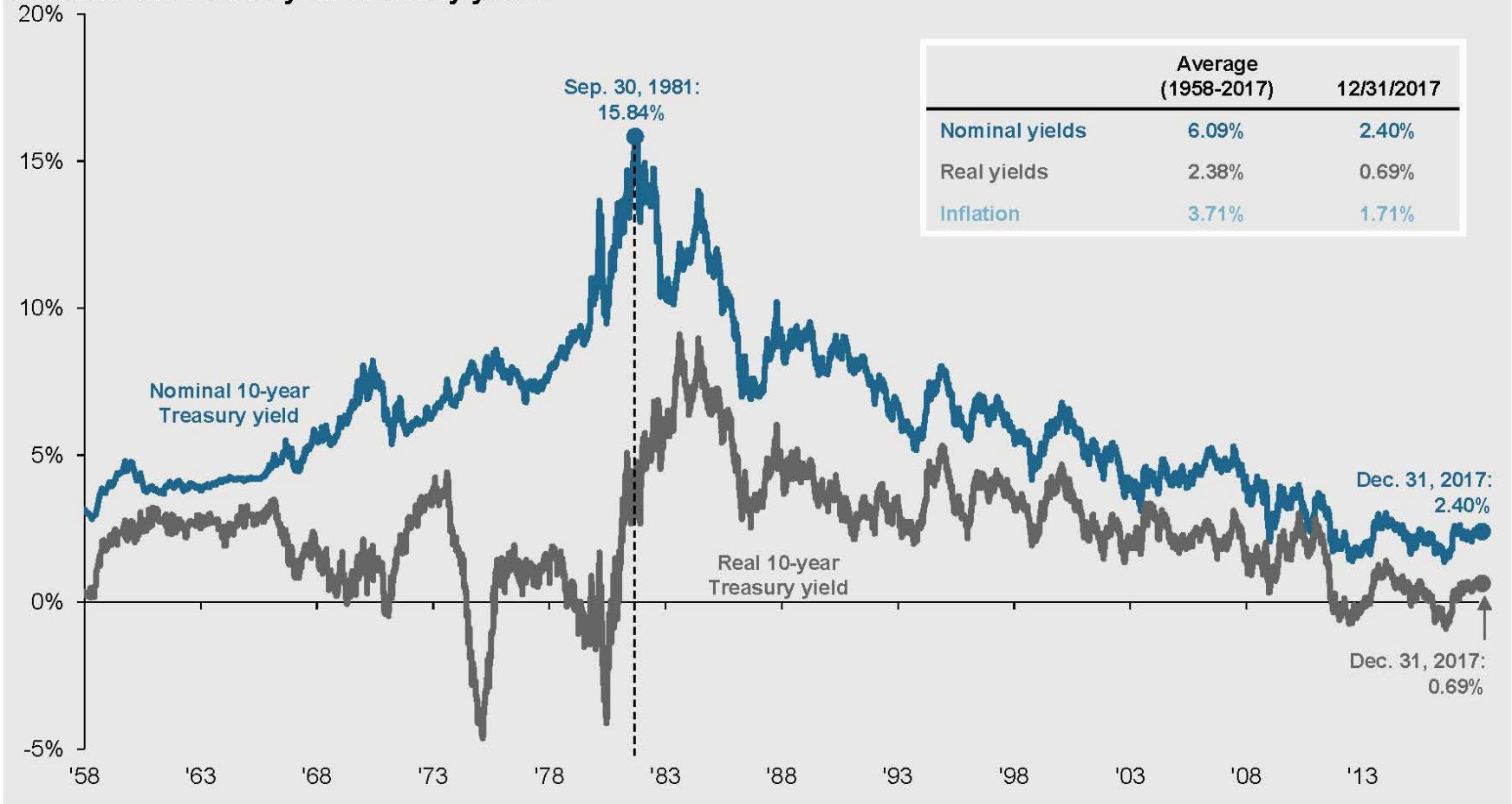
Diversification is essential to protect the funds. However, still reliant on equity markets.



Interest Rates and Inflation

Fixed income

Nominal and real 10-year Treasury yields



Source: BLS, Federal Reserve, FactSet, J.P. Morgan Asset Management.

Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for December 2017, where real yields are calculated by subtracting out November 2017 year-over-year core inflation.

Guide to the Markets – U.S. Data are as of December 31, 2017.



S&P 500 – Last 10 Years





MPERS FUND

Time-Weighted Rate of Return

Public Funds (DB) > \$10 Billion

As of December 31, 2017

Asset Class w/Benchmark	CY 2017									
	One Year*		Three Years*		Five Years*		Seven Years*		Ten Years*	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Total Plan	16.2%	33	8.7%	15	10.7%	9	9.9%	8	6.4%	25
Median - Greater than \$10 Billion	15.2%		7.9%		9.1%		8.5%		5.9%	

* Annualized Returns



Time-Weighted Rates of Return

Individual asset classes doing well on a relative basis

Asset Class w/Benchmark	12/31/2017	
	Three Years	One Year
	Rate	Rate
Total Plan*	8.7%	16.2%
Median*	7.9%	15.2%
Domestic Equities	10.7%	22.3%
S&P 1500 Index	11.4%	21.1%
International Equities	9.4%	28.6%
MSCI ACWI Ex USA	7.8%	27.2%
Bonds	4.2%	5.5%
Barclays Aggregate	2.2%	3.5%

*Comparison universe is the State Street Universe comprised of Public Funds greater than \$10 Billion on the Total Plan level and greater than \$1 Billion for asset classes.



Time-Weighted Rates of Return

Asset Class w/Benchmark	12/31/2017	
	Three Year Rate	One Year Rate
Private Equity	12.3%	17.5%
Alternative Blended Benchmark	14.1%	22.1%
Real Estate & Infrastructure	9.5%	8.7%
NCREIF - Property Blended Index	8.0%	5.6%
Absolute Return	3.3%	9.2%
HFRI FOF Cons 1 month lagged	2.1%	4.4%
Real Return & Opportunistic	8.1%	12.0%
Benchmark	7.4%	7.6%
Cash Equivalents	0.8%	1.2%
30-Day T-Bill	0.3%	0.8%

*Comparison universe is the State Street Universe comprised of Public Funds greater than \$10 Billion on the Total Plan level and greater than \$1 Billion for asset classes.



U.S. Economy

- Forecasted for modest higher growth.
- Housing continues to turn upwards.
- Auto sales are doing well.
- Energy – less dependence on foreign sources.
- Consumer debt service is low.
- Stock market hitting all time high.
- Labor market nearing full employment.
- Federal tax stimulus.



Concerns

- Need to address U.S., states, and municipalities long-term liabilities.
- World is uncertain (Iran, North Korea, Russia, Syria, etc.).
- Rising interest rates.
- Federal trade policies.
- Equity market volatility has returned.



Conclusion

- We have experienced a 'Bull Market' since 2009.
- The MPSERS fund is growing nicely and beating peers.
- The economy is doing well.