Michigan Department of Treasury
Bureau of Investments

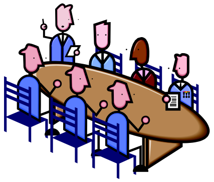
May 28, 2020

Executive Summary

- Long term market returns have been robust but in the next ten years most industry experts anticipate lower returns.
- Therefore, most plans are lowering (or have lowered already) their plans actuarial assumed rate of return.
- The plan’s returns substantially beat peer returns over longer time periods.

Bureau of Investments (BOI)

As of March 31, 2020



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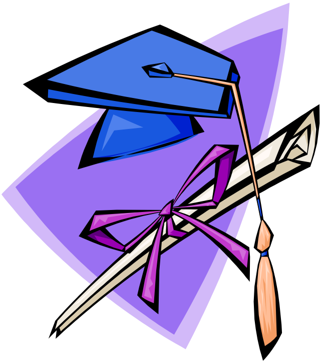


- 78 BOI Employees.
- 51 Investment Professionals.
- 36 Individuals with a Masters Degree or higher.
- 16 C.F.A. Charter holders.
- 12 Other professional designations.
- Total of $92.7 billion assets under management.
- The large investment pool is an advantage for the MSPRS.

MSPRS Funded Ratio

$1.4 Billion as of 3/31/2020

FY Ending September	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Funded Ratio Based on Actuarial Value
2018*	$1,492	$1,499	$2,271	66.0%
2017*	$1,391	$1,398	$2,147	65.1%
2016	$1,278	$1,273	$2,008	63.4%
2015	$1,233	$1,197	$1,851	64.7%
2014*	$1,250	$1,133	$1,800	63.0%
2013	$1,127	$1,069	$1,724	62.0%
2012	$1,052	$1,069	$1,671	64.0%
1983	$178	$178	$272	65.4%

($ in Millions)

*Revised actuarial assumptions and/or methods.

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

Pension Plan Only

MSPRS
Contributions and Distributions
FY 2019

Contributions	
Members	$3.7
Employer	144.1
Total Contributions	$147.8
Pension Benefit Distributions	180.2
Net	**($32.4)**

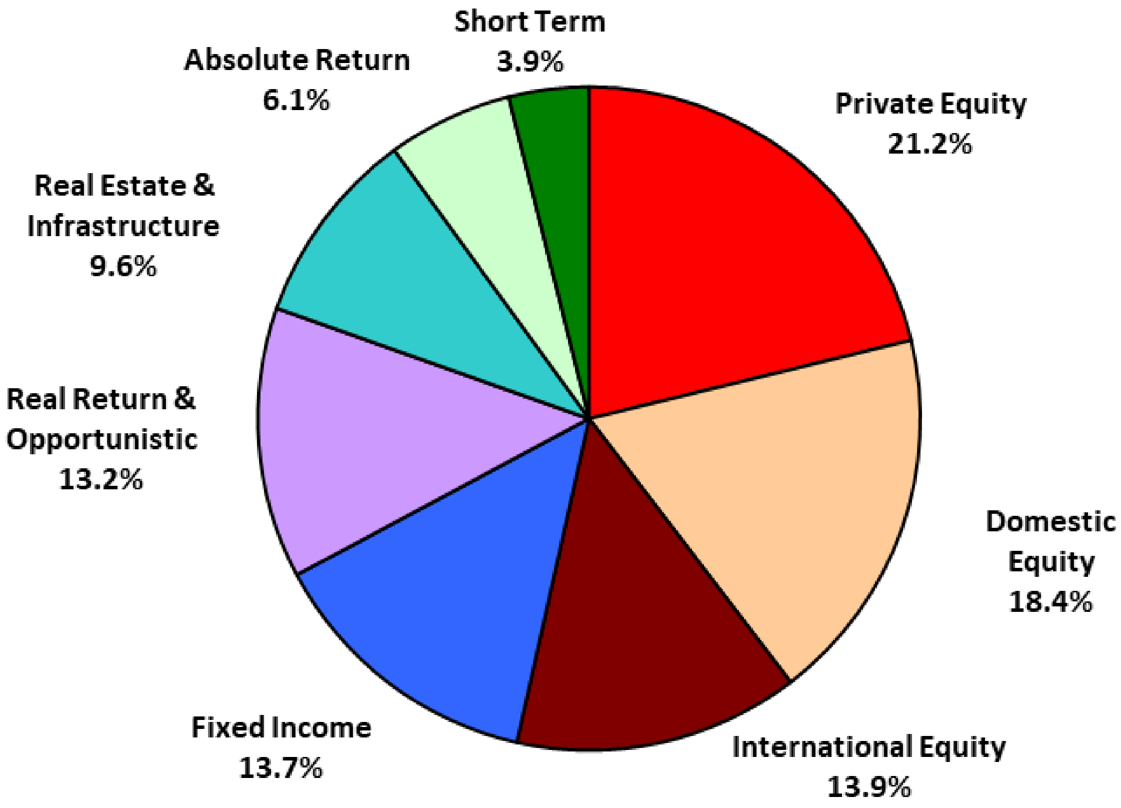
- Equal to (per quarter on average) ($8.1)
- Or about 2.4% of total market value of fund

Figures are in millions

Includes Pension Plan and OPEB

MSPRS Asset Allocation

As of March 31, 2020

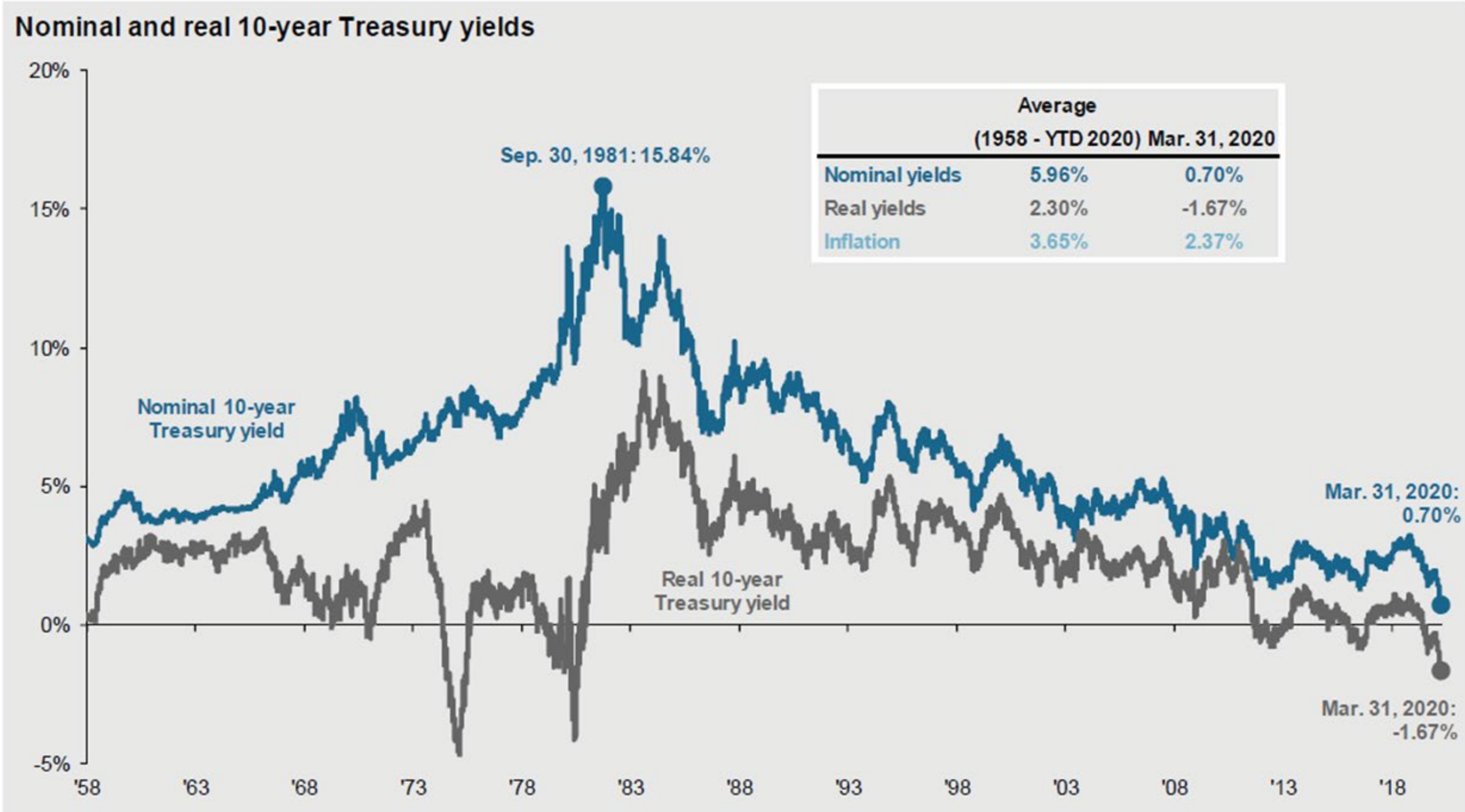


Diversification is essential to protect the funds. However, still reliant on equity markets to generate the actuarial rate of return.

Interest Rates and Inflation

Interest rates and inflation

Fixed income



	Average (1958 - YTD 2020)	Mar. 31, 2020
Nominal yields	5.96%	0.70%
Real yields	2.30%	-1.67%
Inflation	3.65%	2.37%

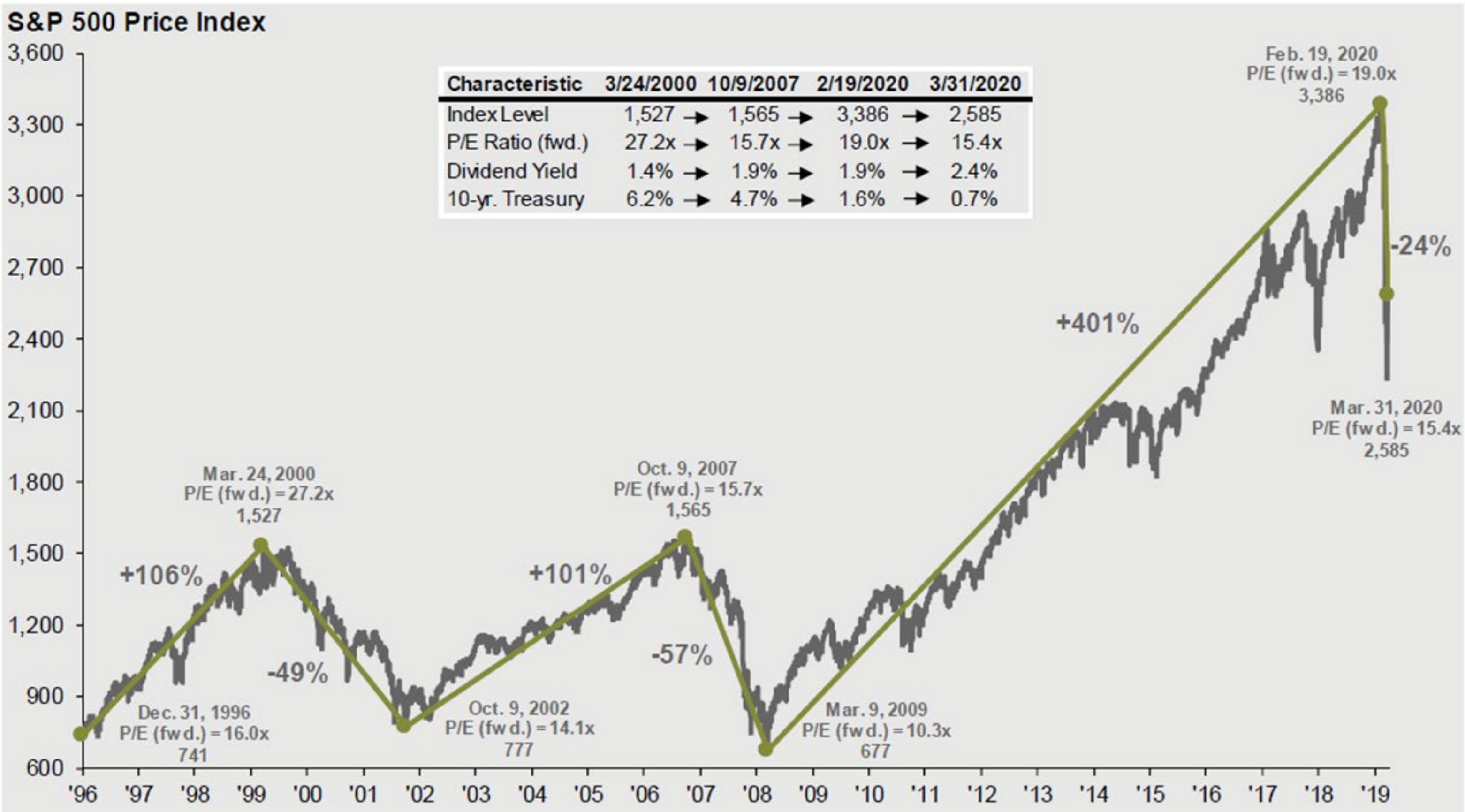
Source: BLS, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for March 2020 where real yields are calculated by subtracting out February 2020 year-over-year core inflation.
Guide to the Markets – U.S. Data are as of March 31, 2020.

J.P.Morgan
Asset Management

S&P 500 – Index at Inflection Points

S&P 500 Index at inflection points

Equities



Characteristic	3/24/2000	10/9/2007	2/19/2020	3/31/2020
Index Level	1,527 →	1,565 →	3,386 →	2,585
P/E Ratio (fwd.)	27.2x →	15.7x →	19.0x →	15.4x
Dividend Yield	1.4% →	1.9% →	1.9% →	2.4%
10-yr. Treasury	6.2% →	4.7% →	1.6% →	0.7%

Source: Compustat, FactSet, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management.
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat. Forward price to earnings ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.
Guide to the Markets – U.S. Data are as of March 31, 2020.

J.P.Morgan
Asset Management

MSPRS FUND
Time-Weighted Rate of Return

Public Funds (DB) > $10 Billion

As of March 31, 2020

Asset Class w/Benchmark	One Year*		Three Years*		Five Years*		Seven Years*		Ten Years*	
	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Total Plan	**0.2%**	**16**	**6.6%**	**17**	**6.4%**	**12**	**8.1%**	**13**	**8.6%**	**13**
Median - Greater than $10 Billion**	-1.2%		4.7%		4.7%		6.2%		7.1%	

- Historically the investment results have compared favorably to other large public pension plans (Larger than $10 billion). Over the past ten years, the returns added approximately $12 billion in value compared to what a peer median investment return would have earned.

* Annualized Returns

** Comparison uiverse is the stte Street Universe comprised of Pubic Funds greater than $10 Bilion on the total plan level and greater than $1 Billion for asset classes.

U.S. Economy

- Equity market volatility has returned in 2020.
- Employment data is poor and is likely to remain so into the near a moderate horizons.
- Corporate earnings are likely to be negatively impacted.
- Low gas prices and low interest rates add some stimulus to the economy.
- Are these positives enough to outweigh the negatives of Coronavirus and Trade Wars on the US and Global economies?

Conclusion

- We had experienced a ‘Bull Market’ since 2009, but we are now at the end of the cycle.
- The U.S economy was doing well through December 2019. It is now contracting but it is uncertain how much is temporary with a fast recovery and how much will be more lasting with a slow recovery.
- We will continue to maintain a long-term focus with sufficient liquidity to manage through short-term market changes.