Michigan Department of Treasury
Bureau of Investments

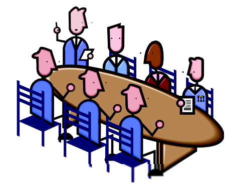
Gregory J. Parker
Director of Investments – Public Markets
March 17, 2022

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.
- MPSERS returns substantially beat peer returns over longer time periods.

Bureau of Investments

As of December 31, 2021



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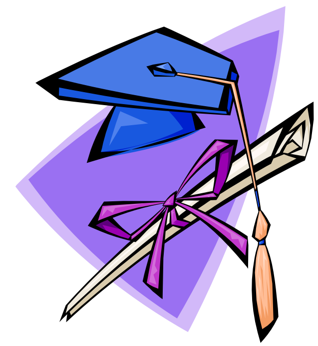
As of December 31, 2021



- 75 BOI Employees.
- 49 Investment Professionals.
- 33 Individuals with a Masters Degree or higher.
- 16 C.F.A. Charter holders.
- 11 Other professional designations.
- Total of $146.3 billion assets under management.
- The large investment pool is an advantage for the MPSERS.

MPSERS Funded Ratio

$66.4 Billion as of December 31, 2021

FY Ending September	Market Value of Assets	Actuarial Value of Assets	Actuarial Accrued Liability	Funded Ratio Based on Actuarial
2020	$51,456	$52,587	$86,338	60.9%
2019	$50,857	$51,422	$85,202	60.4%
2018*	$50,343	$50,630	$83,375	60.7%
2017*	$47,012	$47,255	$76,693	61.6%
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%
1983	$6,285	$6,035	$8,434	71.6%

($ 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

MPSERS
Contributions and Distributions

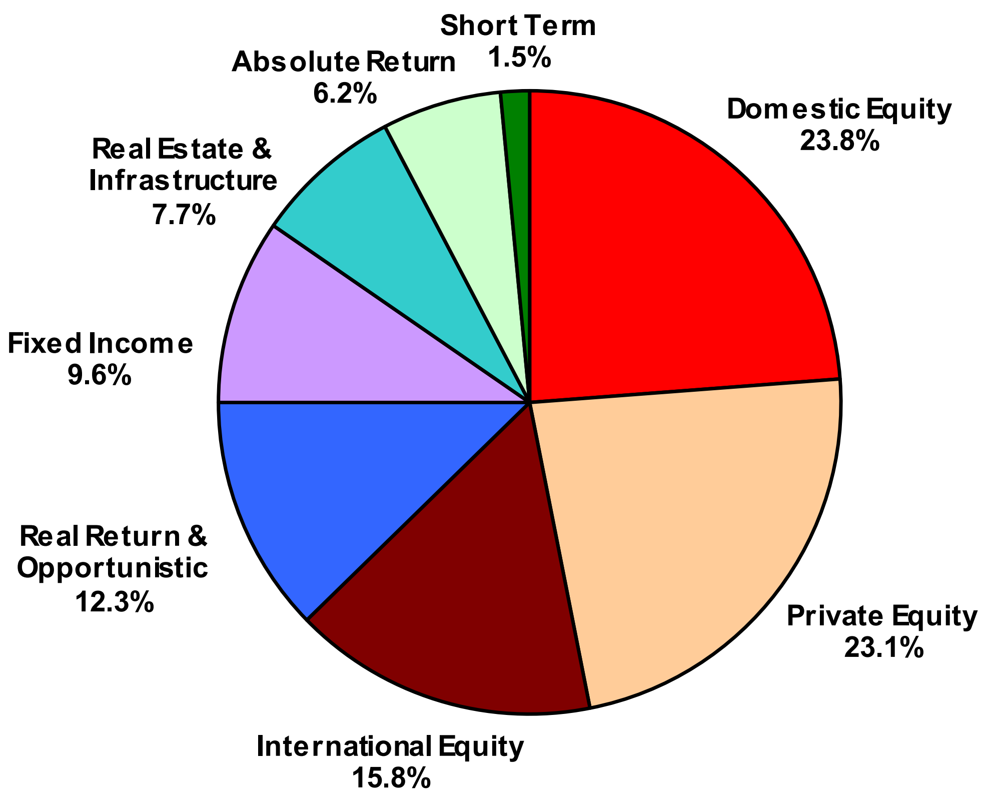
FY 2021

Contributions	
Members	$617.3
Employer	3,830.6
Total Contributions	$4,447.9
Pension Benefit Distributions	5,759.1
Net	**($1,311.2)**
• Equal to (per quarter on average)	($327.8)
• Or about 1.8% of total market value of fund	

Figures are in millions

MPSERS Asset Allocation

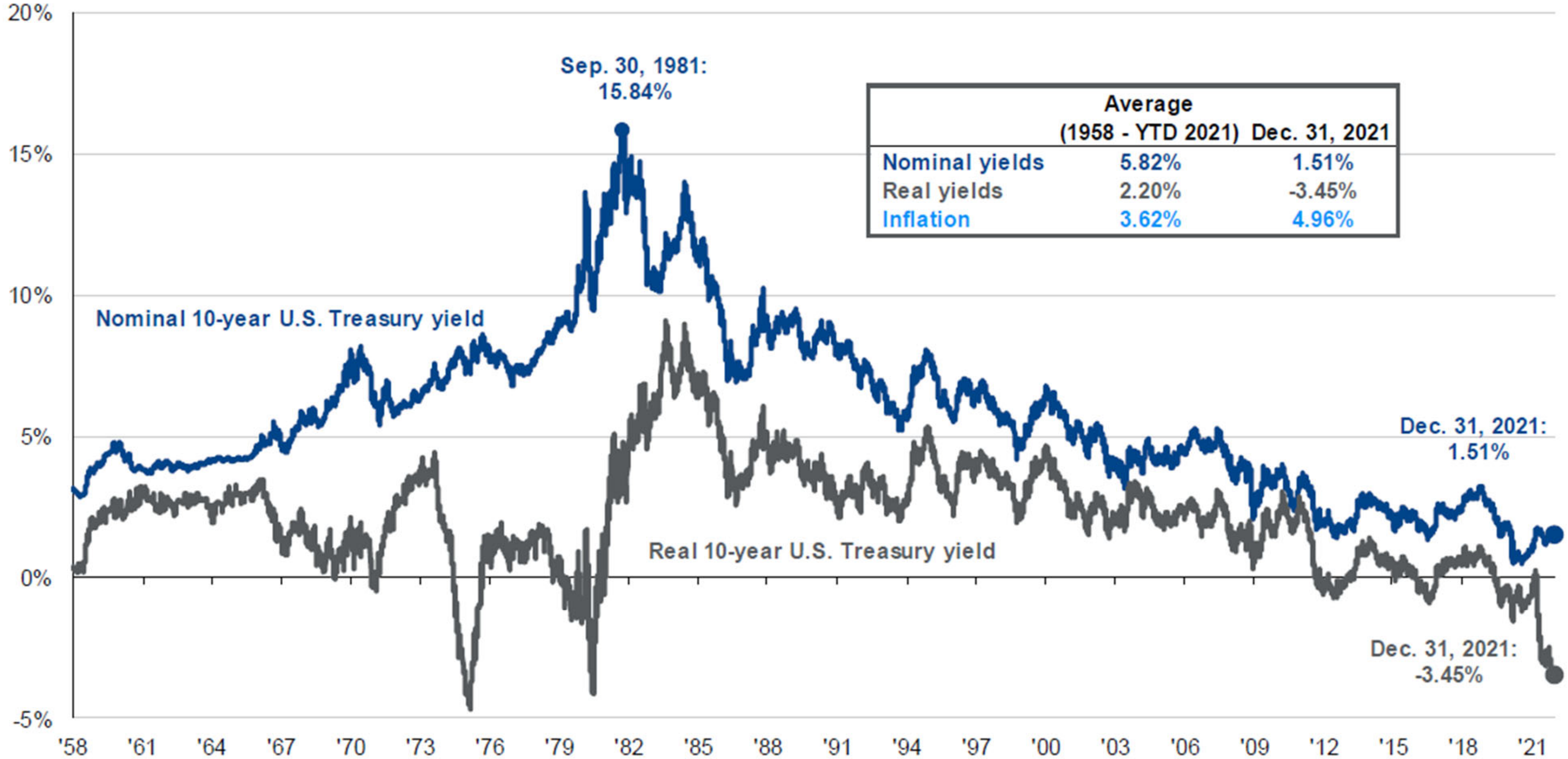
As of December 31, 2021



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

Interest Rates and Inflation

Nominal and real U.S. 10-year Treasury yields



	Average (1958 - YTD 2021)	Dec. 31, 2021
Nominal yields	5.82%	1.51%
Real yields	2.20%	-3.45%
Inflation	3.62%	4.96%

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. For the current month, we use the prior month's core CPI figures until the latest data is available.
Guide to the Markets – U.S. Data are as of December 31, 2021.

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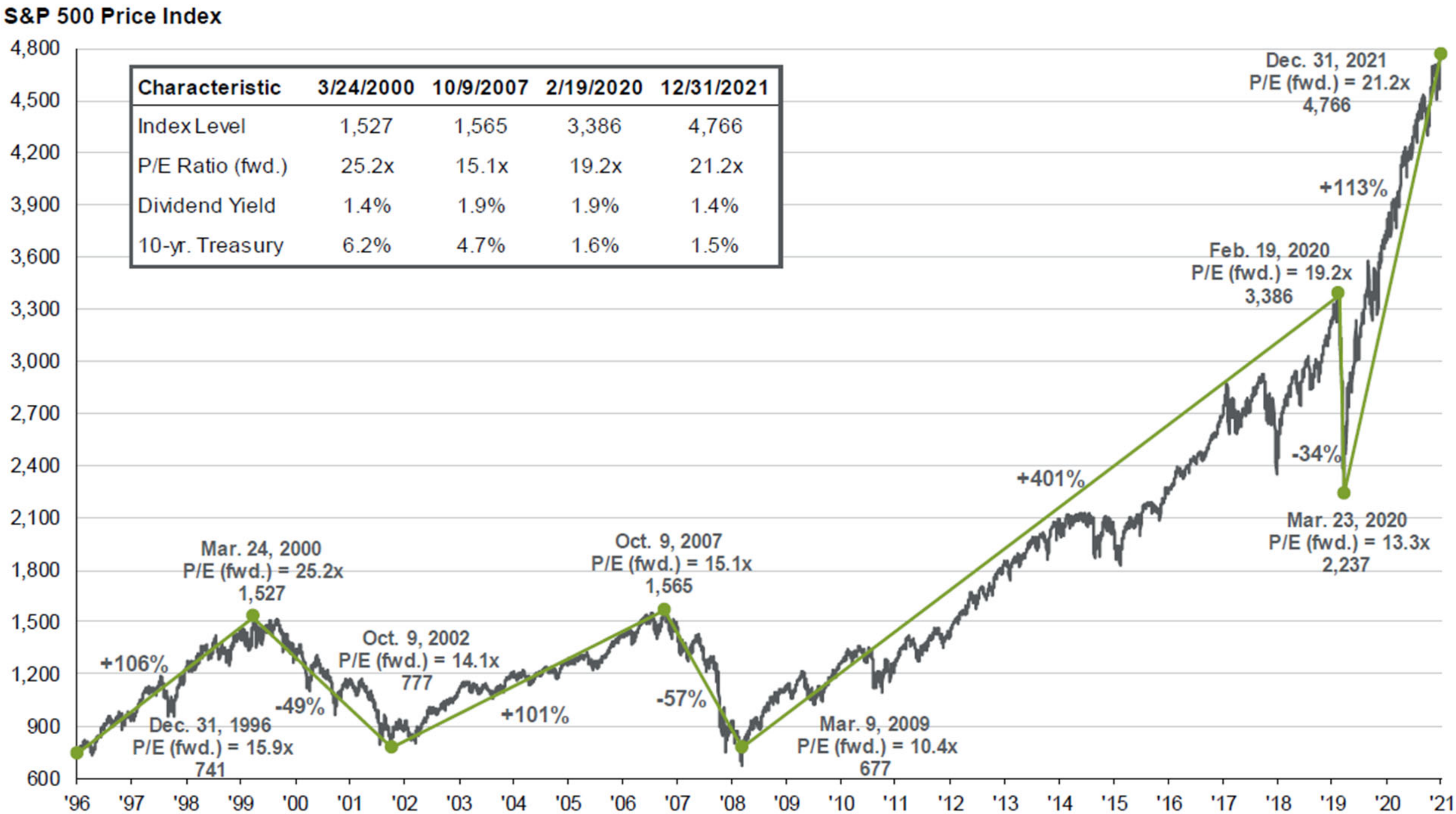
S&P 500 – Index at Inflection Points



Characteristic	3/24/2000	10/9/2007	2/19/2020	12/31/2021
Index Level	1,527	1,565	3,386	4,766
P/E Ratio (fwd.)	25.2x	15.1x	19.2x	21.2x
Dividend Yield	1.4%	1.9%	1.9%	1.4%
10-yr. Treasury	6.2%	4.7%	1.6%	1.5%

Source: Compustat, FactSet, Federal Reserve, Refinitiv Datastream, 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 J.P. Morgan Asset Management estimates. 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 December 31, 2021.

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ASSET MANAGEMENT

MPSERS FUND
Time-Weighted Rate of Return

As of December 31, 2021

Asset Class	One Year*		Three Years*		Five Years*		Seven Years*		Ten Years*	
w/Benchmark	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank	Rate	Rank
Total Plan	**22.2%**	**6**	**16.2%**	**23**	**13.4%**	**16**	**10.9%**	**11**	**11.7%**	**11**
Median - Greater than $10 Billion**	17.1%		15.1%		11.4%		9.4%		10.0%	

- Historically the investment results have compared very favorably to other large public pension plans (Larger than $10 billion). Over the past ten years, our investment returns added approximately $16 billion in value compared to what a peer median-performing pension fund would have earned.

* Annualized Returns

** 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.

MPSERS FUND
Time-Weighted Rates of Return
As of December 31, 2021

Asset Class w/Benchmark	One Year* Rate	One Year* Rank	Three Years* Rate	Three Years* Rank	Five Years* Rate	Five Years* Rank	Seven Years* Rate	Seven Years* Rank	Ten Years* Rate	Ten Years* Rank
Total Plan	**22.2%**	**6**	**16.2%**	**23**	**13.4%**	**16**	**10.9%**	**11**	**11.7%**	**11**
Median - Greater than $10 Billion**	17.1%		15.1%		11.4%		9.4%		10.0%	
Domestic Equities	**25.7%**		**24.7%**		**17.9%**		**14.2%**		**16.3%**	
S&P 1500 Index	28.5%		25.6%		18.0%		14.7%		16.4%	
International Equities	**9.4%**		**15.1%**		**11.0%**		**8.0%**		**8.7%**	
International Blended Benchmark***	7.8%		13.2%		9.6%		6.6%		7.4%	
Bonds	**2.1%**		**5.6%**		**4.7%**		**4.4%**		**4.1%**	
Barclays U.S. Aggregate	-1.5%		4.8%		3.6%		3.0%		2.9%	
Private Equity	**51.9%**		**24.5%**		**21.8%**		**18.3%**		**17.7%**	
Alternative Blended Benchmark****	33.8%		19.4%		20.4%		17.4%		20.1%	
Real Estate & Infrastructure	**21.3%**		**6.5%**		**8.1%**		**8.6%**		**10.0%**	
NCREIF Open Fund Index Net	21.0%		8.2%		7.7%		8.6%		9.4%	
Absolute Return	**16.3%**		**8.0%**		**7.5%**		**5.4%**		**6.4%**	
HFRI FOF Cons 1 month lagged	9.7%		6.2%		4.7%		3.6%		3.9%	
Real Return / Opportunistic	**15.2%**		**13.3%**		**14.2%**		**11.9%**		**12.0%**	
Benchmark	9.2%		7.4%		7.4%		7.3%		7.3%	
Cash Equivalents	**0.2%**		**1.3%**		**1.5%**		**1.2%**		**1.0%**	
30-Day T-Bill	0.0%		0.9%		1.1%		0.8%		0.6%	

* Annualized Returns

** 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.

*** International blended benchmark is S&P Developed BMI-EPAC 50/50 prior to 1/1/2010. S&P Developed BMI-EPAC 75 USD / 25 Local, 1/1/2010 to 9/30/10.

**** Inception to present: S&P500 + 300 BP w ith a 3 month lag

U.S. Economy

- Unprecedented fiscal & monetary stimulus is sustaining the US economy.
- 2022 GDP growth estimates is around 2.5%, and with higher than normal inflation.
- Fed Reserve appears ready to manage inflation.

Conclusion

- 2020 began with the sharpest recession on record, then experienced the fastest-ever rebound.
- Much of the US economy recovered well in 2020, but unevenly. With expanded access to vaccines and significant additional stimulus anticipated, 2021 should experience significant growth & economic rebounds.
- We will continue to maintain a long-term focus with sufficient liquidity to manage through short-term market changes.