John Hancock Investment Management

All data is as of September 30, 2023 **Q3 - 2023**

Model portfolios Investor fact sheet

John Hancock International Equity Model Portfolio

Strategy

Actively managed
The portfolio targets consistent alpha generation through active regional, market capitalization, and sector positioning

Multimanager approach
Underlying strategies are managed by a diverse set of asset managers, each with specialized expertise

Active/passive implementation
Positions consist of ETFs and active mutual funds to mitigate cost and allow for alpha generation

Integrating asset allocation and manager research

For more than 30 years, our Multi-Asset Solutions Team has combined asset allocation with manager research and oversight to seek better outcomes for investors.

Multi-Asset Solutions Team

- Portfolio managers/strategists
- Model portfolio construction and delivery

59 **investment professionals**

- 31 CFA charterholders
- 2 Ph.D.s

Manager research team

Investment manager due diligence and oversight

30 **investment professionals**

- 32 CFA charterholders
- 19 Ph.D.s

Managed by

Manulife Investment Management

Established asset manager with global resources and expertise extending across equity, fixed-income, and alternative investments as well as asset allocation strategies

Nathan W. Thooft, CFA
On the portfolio since 2022
Investing since 2000

Bruce G. Picard, CFA
On the portfolio since 2022
Investing since 2000

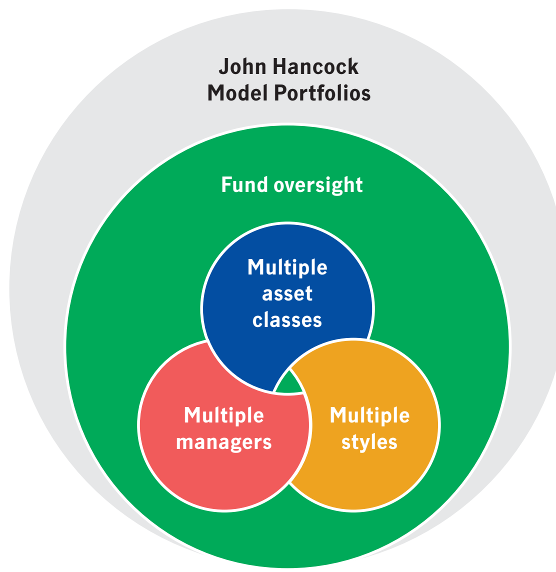
Robert E. Sykes, CFA
On the portfolio since 2022
Investing since 2001

David M. Kobuszewski, CFA
On the portfolio since 2022
Investing since 2000

Blending complementary managers from around the world

Our method delivers layers of diversification for investors in our asset allocation portfolios.

- Oversight
- Multiple asset classes
- Multiple managers
- Multiple styles



A leader in asset allocation

Multimanager approach since 1988 and model portfolios since 2011

1988
Firm introduces multimanager approach to investing

1995
Multimanager asset allocation portfolios for retirement plans

2005
Target-risk portfolios for individuals

2009
Alternative Asset Allocation Fund

2011
Asset allocation model portfolios

2016
U.S. sector rotation portfolios

2019
Over $100 billion in multi-asset portfolios under management

2022
Building block model portfolios

Quarterly commentary

Highlights

- International equities were lower during the third quarter, driven by weakness in China and rising interest rates.
- The portfolio generated negative total returns and trailed its benchmark.
- Asset allocation decisions detracted from returns, as did manager selection.

Market review and outlook

The world equity markets lost ground during the quarter. After a strong July, stocks turned lower on concerns that rising oil prices would cause inflation to reaccelerate and force global central banks to keep interest rates higher for longer. At the same time, weaker-than-expected economic data and renewed instability in China's property sector raised the prospect of slowing global growth. The European markets dragged the MSCI EAFE Index lower, with France and Germany leading the way on the downside. The Asia region exhibited relative strength, however, as Japan's market produced a positive return and was a notable outperformer. Japanese stocks were boosted by the Bank of Japan's easy monetary policy, the country's relatively stable inflation outlook, and the stimulative effect of weakness in the yen.

Consistent with the weakness for risk assets worldwide, emerging-market equities posted negative returns. Still, the MSCI Emerging Markets Index finished September with a narrow gain on a year-to-date basis.

The asset class faced headwinds from a wide range of factors, including slowing global growth, high interest rates in the developed markets, and U.S. dollar strength. Resurgent concerns about China's property sector also weighed on sentiment at various points throughout the period. Despite these challenges, the emerging markets outperformed their developed-market peers. The category benefited from positive returns for India, Turkey, and most oil-producing nations. Weakness in Mexico and South Africa weighed on performance, as did declines for the technology-sensitive markets of South Korea and Taiwan.

Portfolio review

The portfolio posted negative absolute returns and trailed its benchmark. From an asset allocation perspective, an overweight in developed equities relative to emerging-market equities hurt returns, as did an overweight in infrastructure.

Overall, manager selection hurt relative returns. The top contributor to returns was John Hancock Multifactor Developed International ETF. The top detractors were John Hancock Emerging Markets Equity Fund and John Hancock Disciplined Value International Fund.

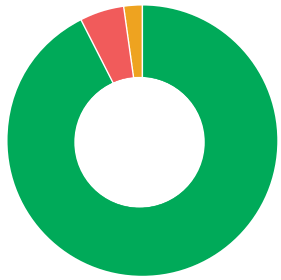
Portfolio changes

We increased the allocation to John Hancock Multifactor Developed International ETF and lowered exposure to John Hancock Emerging Markets Equity Fund.

Distinguishing features

- Diversified international equity exposure
- A mix of market capitalizations, sectors, and factors with exposure to international developed- and emerging-market equity

Strategy allocation (%)



Manager	Underlying fund	Ticker	Current quarter
Equity			
Dimensional Fund Advisors	John Hancock Developed International ETF	JHMD	23.41
Boston Partners	John Hancock Disciplined Value International Fund	JDVIX	15.08
Manulife Investment Management	John Hancock Emerging Markets Equity Fund	JEMMX	12.90
Axiom International Investors	John Hancock Int'l Dynamic Growth Fund	JIJIX	14.28
Dimensional Fund Advisors	John Hancock Emerging Markets ETF	JHEM	12.39
Dimensional Fund Advisors	John Hancock Int'l Small Company Fund	JSCIX	5.92
BlackRock Fund Advisors	iShares Core MSCI EAFE ETF	IEFA	4.98
Franklin Templeton Investments	Franklin FTSE Japan ETF	FLJP	3.58
Total equity			**92.54**
Alternatives			
Wellington Management	John Hancock Infrastructure Fund	JEEIX	5.28
Total alternatives			**5.28**
Cash			2.18
Total underlying expenses[1]			0.67

See the conflicts disclosure on the last page for further information.

1 Morningstar, as of the date of the material. Weighted average annual net expense ratio is provided based on aggregation of the underlying fund fees. Share classes used for calculation may not be available to all investors, and expense ratios charged may vary.

Average annual total returns (%)	QTD	YTD	1 year	3 year	5 year	10 year	Inception 1/1/23
International Equity Model Portfolio Composite, gross of fees	-4.31	4.50	—	—	—	—	4.50
International Equity Model Portfolio Composite, net of fees	-5.02	2.18	—	—	—	—	2.18
Blended benchmark[2]	-3.77	5.34	—	—	—	—	5.34

Source: Manulife Investment Management (a Manulife company).

2 A custom blended benchmark reflects the portfolio's asset allocation under normal conditions. This custom blended benchmark comprises 98% Russell 3000 Index and 2% FTSE 3-Month U.S. Treasury Bill Index.

John Hancock Investment Management LLC and Manulife Investment Management (US) LLC are affiliated SEC registered investment advisers using the brand name John Hancock Investment Management.

Important performance information

Performance figures shown are of the International Equity Model Portfolio Composites, managed by Manulife Investment Management, gross of fees, and represents a single, non-fee-paying affiliated seed capital account, which is representative of the investment strategy. Net performance results reflect the deduction of, from the respective gross-of-fee returns, the highest industry-applied bundled fees (3.00% annually). Actual fees may vary depending on, among other things, the applicable fee schedule and portfolio size. Performance may not be reflective of a full market cycle. The short-term results of a relatively new model portfolio are not necessarily indicative of its long-term prospects. Manulife Investment Management claims compliance with the Global Investment Performance Standards (GIPS®). To receive a complete list and description of Manulife Investment Management's composites and/or a report that adheres to the GIPS, contact our institutional sales team at 888-332-7132. GIPS® is a registered trademark of CFA Institute. CFA Institute does not endorse or promote this organization, nor does it warrant the accuracy or quality of the content contained herein.

Performance does not reflect the platform or program sponsor, trading costs, administrative management fees, or other expenses that would be incurred by a participant portfolio and would reduce returns. Performance does reflect the deduction of investment expenses for the underlying funds. The results do not represent actual trading, which is conducted by the platform or program sponsor on behalf of the client. It should not be assumed that investors would have obtained the performance shown had they invested in the manner shown and does not represent performance that any third-party investor actually attained. Actual performance may differ substantially from the performance presented. Returns for periods shorter than one year are cumulative. The performance presented is based on an assumption that the trades were executed at the same time as the model. The performance of your account may materially differ from the performance shown due to assumptions that include, but are not limited to, trade execution timing; your investment advisor, not John Hancock Investment Management, determines when to implement trade in the account; differences in market conditions; client-imposed investment restrictions; the timing of client investments and withdrawals; fees payable; foreign exchange rates; and account size.

Performance shown does not reflect the performance of model-based program accounts managed by your investment advisor using model portfolios. Your investment advisor may or may not add model portfolios in your account. John Hancock Investment Management is not responsible for determining the suitability or appropriateness of a strategy based on the model portfolios. John Hancock Investment Management does not have investment discretion of your account and does not place trade orders for your account. All information and data, including allocations, are subject to change.

The portfolio's performance depends on the advisor's skill in determining asset class allocations, the mix of underlying funds, and the performance of those underlying funds. The portfolio is subject to the same risks as the underlying funds and exchange-traded funds in which it invests: Stocks and bonds can decline due to adverse issuer, market, regulatory, or economic developments; foreign investing, especially in emerging markets, has additional risks, such as currency and market volatility and political and social instability; the securities of small companies are subject to higher volatility than those of larger, more established companies; and high-yield bonds are subject to additional risks, such as increased risk of default. Liquidity—the extent to which a security may be sold or a derivative position closed without negatively affecting its market value, if at all—may be impaired by reduced trading volume, heightened volatility, rising interest rates, and other market conditions. Owning an ETF generally reflects the risks of owning the underlying securities it is designed to track, which may cause lack of liquidity, more volatility, and increased management fees. Hedging and other strategic transactions may increase volatility of a portfolio and could result in a significant loss. The principal value of each portfolio is not guaranteed, and you could lose money at any time.

This material is for informational purposes only and is not intended to be, nor shall it be interpreted or construed as, a recommendation or providing advice, impartial or otherwise, regarding any security, mutual fund, ETF, sector, or index. Investors should consult with their financial professional before making any investment decisions. Manulife Investment Management (US) LLC performs asset allocation for the models and other investment-related services. Neither John Hancock Investment Management nor its affiliates offer tax advice. Investors should consult with their tax advisor regarding their specific situation. Certain of the assumptions have been made for modeling purposes and are unlikely to be realized. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the returns have been stated or fully considered. Model returns have many inherent limitations and may not reflect the impact that material economic and market factors may have had on the decision-making process if client funds were actually managed in the manner shown. Changes in the assumptions may have a material impact on the model returns presented; other periods selected may have different results, including losses. There can be no assurance that an account managed in accordance with the model will achieve profits or avoid incurring substantial losses. These portfolios are only available through investment professionals. Not all strategies may be available on all platforms, and fees and terms may vary. Past performance does not guarantee future results.

Conflicts disclosure

The information in the charts shown reflects the current portfolio allocations across the underlying model portfolios. Allocations are as of the date indicated, are subject to change, and should not be relied on as current thereafter.

Certain model portfolios may include ETFs and mutual funds that are managed by an unaffiliated investment manager (unaffiliated funds) or an affiliate (affiliated funds). Recommendation of the model portfolios that use affiliated funds raises conflicts of interest. To the extent that the advisor does use affiliated funds as the components of the model portfolios, this will generate advisory and other fees for John Hancock Investment Management (a Manulife company) and, in certain cases, its affiliates, when intermediary accounts and other persons use the model portfolios, and the management fees of affiliated funds may be higher than fees charged by other funds. Clients should review any information provided by the managed account program sponsor for further details regarding the extent to which model portfolios provided may include affiliated funds. In addition, affiliates may engage the investment managers that are recommended or included in the model portfolios as subadvisors to the John Hancock funds or have other business relationships with such investment managers. Some sponsors and intermediaries have other business relationships with John Hancock Investment Management or its affiliates.

Manulife Investment Management (US) LLC, 197 Clarendon Street, Boston, MA 02116