DIVERSIFIED EQUITY FUND REVIEW

JOINT PENSION BOARD PRINCIPLES

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
Small Cap Equities	Adding small cap equities doesn't increase or reduce the choice available to members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles.	Given that small cap equity can accommodate at least monthly contributions and redemptions, then there are no issues with unfairness with any plan members. All retirement plan members will be exposed to the same fees, transition costs, contribution and withdrawal rules and regulations.	No issues with liquidity for small cap equities as most options available would provide daily liquidity.	It is important to clearly explain the working of any new product added to the Diversified Equity Fund and the potential risks that they bring. The resources needed to educate members may be greater than what we used in the past. Compared to existing options on the Western Retirement plans, the level of complexity of Small Cap Equities would be considered low.	There have been various levels of interest expressed by members regarding the proposed investment strategies in this table. In addition, all members should prefer to receive enhanced returns if they don't come with increased risk and they look to the Joint Pension Board to seek out investment portfolios that will allow them to achieve that goal. There haven't been widespread requests for small cap equities.	Small cap equity investing has a long history and is commonly used by DC plans. However, it is a strategy that is riskier than average.	Small cap equities are more expensive than large cap equities and would cost the Western Plans about 0.75% in investment management fees.
Emerging Markets Equities	No changes (see Small Cap Equities)	No changes (see Small Cap Equities)	No issues (see Small Cap Equities)	Compared to existing options on the Western Retirement plans, the level of complexity of Emerging Markets Equities would be considered low.	There haven't been widespread requests for emerging markets equities.	Emerging markets equity investing is relatively recent and is not commonly used by DC plans, although there's a growing acceptance level. Also, it is a strategy that is riskier than average.	Emerging markets equities are the most expensive public equities. A separate mandate would cost about 1.00% in investment management fees. Allowing a global equity or an EAFE equity

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
							manager to invest opportunistically in emerging markets would allow the Western Plans to invest in emerging markets equities for the price of a cheaper mandate (typically 0.20% to 0.40% less). Emerging markets investing also involves higher custodian costs, including the requirement to register with the securities regulator of each jurisdiction, although these problems can be eliminated by investing in pooled funds.
Low-Volatility Strategies	No changes (see Small Cap Equities)	No changes (see Small Cap Equities)	No issues (see Small Cap Equities)	Compared to existing options on the Western Retirement plans, the level of complexity of Low-Volatility Strategies would be considered Moderate.	There haven't been widespread requests for low-volatility strategies.	Low-volatility strategies are relatively new, although they're made up of holdings that already account for a large portion of most equity portfolios. Low-volatility strategies have gained more traction in the DB world. By definition this type of strategies is less risky than average as it	Low-volatility strategies are typically priced at the same level as large cap equities, which is around 0.30% for Canadian equity mandates, 0.75% for EAFE equity mandates and 0.70% for global equity mandates.

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
						invests in companies with low leverage or whose stock exhibits low volatililty.	
Real Estate	Adding real estate doesn't increase or reduce the choice available to members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles. Although real estate can have various levels of liquidity, ranging from highly liquid (REITs) to little liquidity (closed-end private real estate), adding any real estate option should not reduce members' choice of liquid options as only a portion of the Diversified Equity Fund will be invested in real estate and overall the fund will retain the same liquidity level.	Real estate investments with high levels of liquidity (e.g. REITs) and that can accommodate at least monthly contributions and redemptions present no issues of unfairness to plan members. Should a real estate option with less than monthly liquidity be chosen, existing members of the Diversified Equity Fund could potentially own a disproportionate share of the illiquid assets if a large number of members decide to redeem their units from the fund. In that case the principle of Fairness would not be upheld.	Real estate can offer various levels of liquidity. Priority should be given to liquid strategies.	Compared to existing options on the Western Retirement plans, the level of complexity of real estate would be considered Moderate, given the absence of any real estate option on the Western Plans.	The Joint Pension Board has received some requests regarding adding real estate to the Western plans.	Real estate is the alternative investment that has the longest track record. It's widely used among DB plans but not as much among DC plans due to the lack of liquidity. The volatility of private real estate typically falls between that of equities and bond, while listed real estate (REITs) is slightly more volatile than large cap equities, mostly because REITs are typically small caps.	The investment management fees for a global REITs mandate would be around 0.60% to 1.00%.
Infrastructure	Adding infrastructure	Similar to real estate	Infrastructure can offer	Compared to existing	There haven't been	Infrastructure is a	The investment

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
	doesn't increase or reduce the choice available to members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles. Although infrastructure can have various levels of liquidity, ranging from highly liquid (listed infrastructure) to little liquidity (closed-end private infrastructure), adding any real estate option should not reduce members' choice of liquid options as only a portion of the Diversified Equity Fund will be invested in infrastructure and overall the fund will retain the same liquidity level.		various levels of liquidity. Priority should be given to liquid strategies.	options on the Western Retirement plans, the level of complexity of infrastructure would be considered High.	widespread requests for infrastructure.	relatively new asset class. It is gaining popularity among DB pension plans but not as much with DC plans because of the lack of liquidity of private infrastructure. With the development of listed infrastructure funds, DC plans have started to add that option. The volatility of private infrastructure typically falls between that of equities and bond, while listed infrastructure is slightly less volatile than large cap equities, mostly because of the large dividend yields.	management fees for a global listed infrastructure mandate would be around 0.70% to 1.00%.
Private Equity	Adding private equity doesn't increase or reduce the choice	Given that private equity offers less than monthly liquidity,	Private equity is an illiquid asset class. Private equity	Compared to existing options on the Western Retirement plans, the	There haven't been widespread requests for private equity.	Private equity has been around since the 1970s, It is fairly common	The investment management fees for a private equity mandate

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
	available to members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles. Although private equity is an investment option with a low level of liquidity, adding it should not reduce members' choice of liquid options as only a portion of the Diversified Equity Fund will be invested in private equity and overall the fund will retain the same liquidity level.	existing members of the Diversified Equity Fund could potentially own a disproportionate share of the illiquid assets if a large number of members decide to redeem their units from the fund. In that case the principle of Fairness would not be upheld. In addition, the "J-Curve", i.e. the tendency of private equity to deliver negative returns in early years and investment gains in later years, may favour future unitholders of the fund, at the expense of current unitholders. One way to mitigate this is to invest in a portfolio of secondary investments, where the "J-Curve" is less pronounced.	investments may be sold on the secondary market but at a discount and timing dictated by market conditions. Discounts of 10% to 15% and delays of two months to complete the transaction are typical.	level of complexity of private equity would be considered High.		among DB pension plans but extremely rare among DC plans because of the lack of liquidity and the absence of a listed alternative, as for real estate and infrastructure. Only one DC plan has been identified with private equity. Private equity has the highest expected return of all asset classes, but is also the riskiest.	with a fund of funds structure would be around 1.00%. These fees are on top of those charged by the underlying funds.
Active Currency Management	No changes (see Small Cap Equities)	No changes (see Small Cap Equities)	No issues (see Small Cap Equities)	Compared to existing options on the Western Retirement plans, the level of complexity of	There haven't been widespread requests for active currency management.	Active currency management is relatively new to Canadian institutional	The investment management fees for an active currency management mandate

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				active currency management would be considered High.		investors and is only used by large and sophisticated investors. Active currency management strategies can have various levels of volatility, ranging from fixed income type to equity type.	would be around 0.50%.
Global Tactical Asset Allocation	No changes (see Small Cap Equities)	No changes (see Small Cap Equities)	No issues (see Small Cap Equities)	Compared to existing options on the Western Retirement plans, the level of complexity of global tactical asset allocation would be considered High.	There haven't been widespread requests for global tactical asset allocation strategies, although some members have expressed the desire to have strategies that benefit from market downturns.	GTAA is a relatively new strategy that is not common for DC plans. The strategy can exhibit high volatility at times.	The investment management fees for a global tactical asset allocation mandate would be around 1.00%.
Commodities	No changes (see Small Cap Equities)	No changes (see Small Cap Equities)	No issues (see Small Cap Equities)	Compared to existing options on the Western Retirement plans, the level of complexity of commodities would be considered Moderate. Although the commodities themselves (gold, oil, silver, etc.) are well known by members, the way to access them (through ETFs, managed futures, etc.) may be hard to	The Joint Pension Board has received some requests regarding adding commodities to the Western plans.	Direct commodity investing is mostly used by large institutional investors and few DC plans offer commodities. The volatility of commodities is in line with large cap equities.	The investment management fees for an active commodity mandate would be around 0.50% to 1.00%.

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
				understand.			
Market Neutral Strategies	Adding neutral strategies doesn't increase or reduce the choice available to members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles. Although market neutral strategies or any hedge fund can have various levels of liquidity, adding any them should not reduce members' choice of liquid options as only a portion of the Diversified Equity Fund will be invested in hedge funds and overall the fund will retain the same liquidity level.	Similar to real estate	Liquidity levels can vary for market neutral strategies. Priority should be given to liquid strategies.	Compared to existing options on the Western Retirement plans, the level of complexity of market neutral strategies would be considered Very High.	The Joint Pension Board has received some requests regarding adding strategies that involve shorting (such as market neutral strategies) to the Western plans.	Market neutral and other hedge fund strategies are fairly common among DB plans, but not so much among DC plans. A market neutral strategy is expected to have a volatility that is significantly lower than that of large cap equities.	The investment management fees for a market neutral strategy would be around 1.00% to 2.00% in management fees plus a 20% incentive fee.
Long/Short Strategies	Adding long/short strategies doesn't increase or reduce the choice available to	Similar to real estate	Long/short strategies typically don't offer the same level of liquidity as long only strategies.	Compared to existing options on the Western Retirement plans, the level of complexity of	The Joint Pension Board has received some requests regarding adding strategies that	Long/short strategies are gaining in popularity but still don't have much traction in	The investment management fees for a long/short strategy would be around

	CHOICE	FAIRNESS	LIQUIDITY	WELL-INFORMED DECISIONS	RESPONSIVE TO MEMBER PREFERENCES	PRUDENCE	COST EFFECTIVE ADMINISTRATION
	members since the assets will come from existing managers of the Diversified Equity Fund. Members will continue to be offered a broad and diversified choice of both investment and retirement vehicles. Although long/short strategies can have various levels of liquidity, adding any them should not reduce members' choice of liquid options as only a portion of the Diversified Equity Fund will be invested in long/short strategies and overall the fund will retain the same liquidity level.		Although daily liquidity would be uncommon, having to provide a 15 to 30 day notice would still allow us to meet the needs of the plans.	long/short strategies would be considered Very High.	involve shorting (such as long/short strategies) to the Western plans.	DC plans. Long/short strategies (or 130/30) are expected to have lower volatility than long only strategies.	0.75%.

JOINT PENSION BOARD STATEMENT OF INVESTMENT BELIEFS

Statement	Comments
1. Good governance policies improve investment returns	No impact on the decision.
2. Diversification is an investment risk management mechanism; it should provide protection on the downside and the long-term	The proposed investments tend to have a lower correlation with traditional equity markets.

Correlation Matrix (Source: Russell Investments)

	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy
Canada Equity	1.00									
US Equity	0.59	1.00								
EAFE Equity	0.71	0.74	1.00							
Emerging Markets Equity	0.61	0.73	0.74	1.00						
Global Equity	0.72	0.93	0.91	0.86	1.00					
Private Equity	0.65	0.85	0.84	0.79	0.91	1.00				
Global Commodities	0.32	0.52	0.39	0.49	0.51	0.47	1.00			
Global REITs	0.63	0.77	0.79	0.71	0.84	0.77	0.54	1.00		
Global Listed Infrastructure	0.58	0.55	0.60	0.54	0.62	0.55	0.38	0.68	1.00	
Market Neutral Strategy	0.46	0.39	0.42	0.38	0.45	0.38	0.36	0.40	0.44	1.00

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<td>3. Asset classes have specific risk/return characteristics</td>
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Some of the proposed investments have higher expected returns, which come with higher volatility. Emerging markets equities and private equity offer the two highest expected returns but are also riskier. Market neutral strategies offer a lower expected return but are much less volatile.

20-Yr Expected Return and Volatility (Source: Russell Investments)
<table>
<tr><th></th><th>Canada Equity</th><th>US Equity</th><th>EAFE Equity</th><th>Emerging Markets Equity</th><th>Global Equity</th><th>Private Equity</th><th>Global Commodities</th><th>Global REITs</th><th>Global Listed Infrastructure</th><th>Market Neutral Strategy</th></tr>
<tr><td>20-Yr Return</td><td>7.40%</td><td>7.80%</td><td>7.80%</td><td>9.00%</td><td>8.00%</td><td>9.60%</td><td>5.10%</td><td>7.50%</td><td>6.50%</td><td>4.30%</td></tr>
<tr><td>20-Yr Volatility</td><td>19.40%</td><td>22.90%</td><td>20.60%</td><td>30.00%</td><td>20.90%</td><td>24.30%</td><td>20.20%</td><td>22.70%</td><td>17.70%</td><td>9.50%</td></tr>
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<td>4. Alternative investments should be considered on a case by case basis and should meet the following three conditions:
a. They’re fully liquid
b. They have a consistent valuation method
c. They’re fully transparent</td>
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Of all the proposed investment strategies, the following ones meet all three criteria:
• Small cap equities
• Emerging markets equities
• Low volatility strategies
• Real estate (with REITs only)
• Infrastructure (with listed infrastructure only)
• Active currency management
• Global tactical asset allocation
• Commodities

The following strategies don’t meet all three criteria:
• Private equity: A private equity investment would not be fully liquid. It is a long-term commitment, i.e. approximately 12 years to get all your investment back. Investments can be sold on the secondary market, but at a discount and the process can take up to a few months. Although a consistent valuation methodology is applied, the assets are not marked-to-market, which means that the valuations are based on appraisals and assumptions. There’s no issue with transparency, as the name of the underlying investments can be obtained.
• Market neutral and long/short strategies: Although the assets that these strategies invest in are typically marked-to-market and fully liquid, the investment vehicles available don’t meet the standards of our traditional managers with respect to redemptions. The norm for market neutral and long/short strategies would be to require a 10 to 15 business day notice before a withdrawal can be made, although some hedge funds may have
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	tougher restrictions. This would require administration to go outside of our normal rebalancing process to redeem assets from these strategies. There are no issues with valuation as the assets are marked-to-market. A number of strategies offer full transparency and in general the level of transparency in the hedge fund industry has improved.
5. Portfolio rebalancing between asset classes allows members to maintain the risk of the portfolio and is the member's responsibility (except for the Balanced Growth & Balanced Income funds)	No impact on the decision.
6. Active management may add value in some markets but passive management is the Pension Board's default choice	The following strategies can be implemented with passive management: • Small cap equities • Emerging markets equities • Real estate (with REITs only) • Infrastructure (with listed infrastructure only) • Commodities However, research has demonstrated the potential to add value in these strategies with active management. In addition, some asset classes (such as small cap equities and emerging markets equities) are difficult to implement passively as some of the names in the benchmarks are difficult to invest in. The following strategies can only be implemented with an active manager: • Low-volatility strategies • Private equity • Active currency management • Global tactical asset allocation • Market neutral strategies • Long/short strategies
7. Liquidity is extremely important for a Defined contribution plan	See Joint Pension Board Principles and belief #4 for comments on liquidity.
8. It is very difficult to repeatedly time the market through ongoing changes to	No impact on the decision.

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<tr><td>the equity/bond mix</td><td></td></tr>
<tr><td>9. Investment costs must be monitored</td><td>Investment management fees are expected to be higher for most of the asset classes under consideration. The table below presents some fee estimates:
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<tr><th>Asset Class</th><th>Expected Fees</th></tr>
<tr><td>Canadian Equity Large Cap</td><td>0.30%</td></tr>
<tr><td>Canadian Equity Small Cap</td><td>0.75%</td></tr>
<tr><td>EAFE Equity</td><td>0.75%</td></tr>
<tr><td>Global Equity</td><td>0.70%</td></tr>
<tr><td>U.S. Equity (Passive)</td><td>0.07%</td></tr>
<tr><td>U.S. Equity Small Cap</td><td>0.85%</td></tr>
<tr><td>Emerging Markets</td><td>1.00%</td></tr>
<tr><td>Global REITs</td><td>0.60% to 1.00%</td></tr>
<tr><td>Global Listed Infrastructure</td><td>0.70% to 1.00%</td></tr>
<tr><td>Private Equity</td><td>1.00%</td></tr>
<tr><td>Active Currency Management</td><td>0.50%</td></tr>
<tr><td>GTAA</td><td>1.00%</td></tr>
<tr><td>Commodities</td><td>0.50% to 1.00%</td></tr>
<tr><td>Hedge Funds</td><td>1.00% to 2.00% management fee + 20% incentive</td></tr>
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<tr><td>10. Foreign currency hedging is desirable to reduce risk</td><td>Currently, 50% of the Diversified Equity Fund is exposed to currency fluctuations and the remainder is either hedged or invested in Canadian dollars. Most of the proposed strategies have at least some foreign exposure. Given that the new strategies are expected to represent approximately 15% of the Diversified Equity Fund, it should not present any major challenges to maintain a 50% hedge ratio with the publicly traded equity strategies in the portfolio.</td></tr>
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ADDITIONAL FACTORS

Small Cap Equities

As of January 27, 2012 the P/E ratio of various large cap and small cap indices were as follows:

S&P/TSX	S&P/TSX 60	S&P/TSX Small Cap	S&P 500	Dow Jones	Russell 2000
14.78	14.31	20.81	15.11	14.02	44.40

Russell's Top Rated Managers

Strategy	Number of High Opinion / Rank Managers
Small Cap Equities	55 (Canada, U.S. International and Global)
Emerging Markets Equities	30
Low-Volatility Strategies	0
Real Estate	15
Infrastructure	12
Private Equity	10
Active Currency Management	4
Global Tactical Asset Allocation	0
Commodities	6
Market Neutral Strategies	2
Long/Short Strategies	10

Emerging Markets Equities

Diversified Equity Fund Emerging Markets Exposure
As of September 30, 2011

Manager	Emerging Markets Constraints	As of Sep 30, 2011	Max	DEF Weight
AllianceBernstein	May include emerging markets	6.15%	15%	15%
Fidelity	If country to be added to MSCI EAFE Index or stock traded on a designated stock exchange + up to15% in Emerging Markets Pooled Fund	5.60%	15%	15%
Harris	Max 15%	2.70%	15%	8.75%
T. Rowe Price	MSCI World AC + 15%	16.30%	27.79%	8.75%
Diversified Equity Fund		**3.42%**	**8.24%**	
Emerging Markets as a % of Non-Canadian Equities (based on MSCI AC World Index)		13.40%	13.40%	
Room to market neutral		9.98%	5.16%	

Real Estate

Diversified Equity Fund
Exposure to REITs
As of September 30, 2011

Manager	REITs Allocation	DEF Weight	Strategy
Beutel, Goodman	0.00%	10.00%	No specific target for REITs as they are a subset of the Financial sector. Currently REITs don't pass Beutel, Goodman's cash flow analysis and they find them very expensive. Should they decide to invest in REITs, their allocation would be around 2% of the portfolio.
CC&L	1.50%	10.00%	CC&L benchmark weight for REITs is 2.4% and they could go as high as 7.4%.
Greystone	0.00%	10.00%	Their policy allows them to invest up to 8.5% in the real estate sector (benchmark weight of 3.5% + 5%). The real estate sector includes REITs and real estate corporations. In the past they've held less than 4%.
SSgA MidCap	8.50%	2.50%	No strategy as passively managed.
SSgA S&P 500	0.89%	17.50%	No strategy as passively managed.
PanAgora	7.72%	2.50%	Their typical exposure to REITs is +/- 3.5% compared to the benchmark; the benchmark is currently at 8.75%.
Harris	0.00%	8.75%	They don't typically invest in REITs.
T. Rowe Price	0.19%	8.75%	No specific exposure to REITs.
AllianceBernstein	0.00%	15.00%	No specific exposure to REITs. It has generally been less than 5% in the past.
Fidelity	2.31%	15.00%	No specific exposure to REITs. Over the past three years their exposure to REITs has been 1.8% on average, compared to 3.0% for the benchmark.
Diversified Equity Fund	**1.07%**		

- Additional issue with an allocation in real estate: high exposure to real estate for individual investors through home ownership

Infrastructure

Diversified Equity Fund
Exposure to Listed Infrastructure
As of September 30, 2011

Manager	Listed Infrastructure Allocation (Based on the S&P Global Infrastructure Index)	DEF Weight	Strategy
Beutel, Goodman	1.83%	10.00%	No specific target for listed infrastructure as they are a subset of other sectors. Would consider them if they met their selection criteria.
CC&L	3.40%	10.00%	CC&L could go as high as 10% in Utilities (benchmark weight is 5%), 5.8% in railroads (benchmark weight is 0.8%) and 2.7% in SNC Lavalin (benchmark weight is 0.2%).
Greystone	0.00%	10.00%	Listed Infrastructure stocks can be found in Oil and Gas Transportation (5.5%), Road and Rail (3.4%) and Utilities (2.0%) for a total of approximately 11%. As a growth manager, Greystone has rarely been above 10% combined in these sectors. At present, they hold 4% in Oil and Gas Transportation (TransCanada Corp.) and 3% Road and Rail (Canadian National Railway) for a total of 7%.
SSgA MidCap	0.48%	2.50%	No strategy as passively managed.
SSgA S&P 500	1.49%	17.50%	No strategy as passively managed.
PanAgora	0.00%	2.50%	No specific target for listed infrastructure.
Harris	0.00%	8.75%	Would invest in listed infrastructure stocks if they met their criteria, but the allocation would typically be small.
T. Rowe Price	2.11%	8.75%	No specific target for listed infrastructure.
AllianceBernstein	1.72%	15.00%	No specific target for listed infrastructure. Their allocation to a broader infrastructure universe (not just the S&P Global Infrastructure Index) has been between 2.6% and 11.2% in the past.
Fidelity	0.90%	15.00%	No specific target for listed infrastructure.
Diversified Equity Fund	**1.37%**		

Long/Short Strategy

- Track record of endowment fund 130/30 strategy
- Returns are net of fees
- Fees are approximately 0.76%

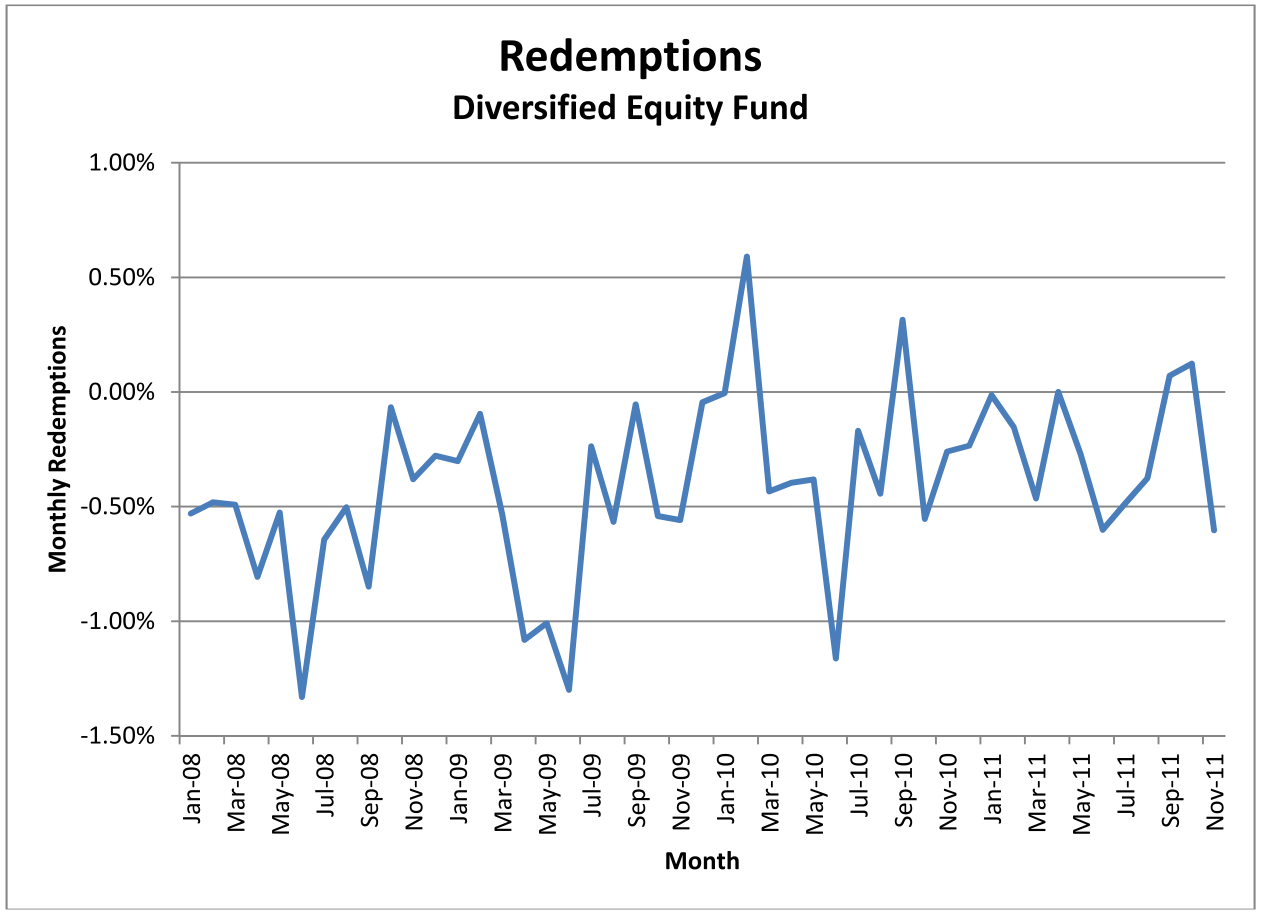
J.P. Morgan Large Cap Core Plus (130/30 Strategy)
As of November 30, 2011

	November 2011	Three-Month	Year-to-Date	One-Year	Three-Year	Since Inception (April 2008)
J.P. Morgan 130/30	0.99%	7.01%	-0.18%	3.84%	8.61%	1.63%
S&P 500	2.14%	7.00%	3.43%	6.75%	6.79%	-0.24%
Value Added	-1.15%	0.01%	-3.61%	-2.91%	1.82%	1.87%

Private Equity

1) Redemption History for the Diversified Equity Fund

The chart below shows the net redemptions (contributions minus redemptions) for the Diversified Equity Fund since January 2008. Net redemptions from the Diversified Equity Fund have never accounted for more than 1.3% of assets in the fund, despite the stock market meltdown of 2008/2009. Typically redemptions are larger in June, ahead of the July faculty retirements. Note that contributions were not allowed in the Diversified Equity Fund from January 2008 to November 2009, which increased the size of net redemptions.



2) Risk of Assets Fleeing the Retirement Plans

Although plan members can technically redeem all of their Diversified Equity Fund investments at any point in time, most of the assets must remain in the Western Retirement Plans. Approximately 72% of the assets in the Western Retirement Plans as of November 30, 2011 were "Regular" Pension Plan assets. This means that those assets can't be moved out of the plan as long as the member is employed by the University.

Asset Distribution
As of November 30, 2011

	Assets	%
Total Pension Plan Regular Assets	764,553,097	72.0%
Total "moveable"[1] assets	296,696,893	28.0%
Total Retirement Plan Assets	1,061,249,990	100.0%

[1] Moveable assets include Voluntary accounts, Life income Fund (LIF) accounts and Registered Retirement Income Fund (RRIF) accounts

3) Secondary Market

The process of selling a private equity investment with Adams Street Partners (the private equity manager on the Operating & Endowment Fund) on the secondary market would work as follows: The University would notify ASP of our desire to sell, then ASP would survey their other clients to create a market. Western would try to negotiate a price with the potential buyers. Over the years, ASP has only conducted the process about 6 to 8 times. The negotiated pricing has gone from par of NAV to a slight discount to NAV (80 to 85% of NAV at most). Market conditions will dictate the demand, and thus the timing of the process and the price of the deal. With strong demand the pricing could be negotiated over a month, with another month lag for transfer and signing legal documents. ASP has to approve the sale, which is standard in the industry.

As such, although possible to accomplish, selling a private equity investment on the secondary market should be used as a last resort only, given the potential price discount and the amount of time necessary to complete the transaction.

4) Monthly Valuation

Adams Street Partners has confirmed that they can provide monthly estimated valuations to adjust the regular valuations that are provided on a quarterly basis.

In conclusion, given the history of redemptions and that members have to leave most of their assets invested in the Retirement Plans, the liquidity risk of having a private equity component in the Diversified Equity Fund is small, as the absolute worst case scenario in terms of redemptions (which would be many times worst than anything experienced during the 2008/2009 financial crisis) could be handled.

SUGGESTIONS – TOWN HALL MEETINGS

The following suggestions were made by plan members at the town hall meetings:

- I suggest that you investigate the basket of non-Canadian equities and underweight those with significant European investment.
- Review overlap within Canadian equity managers
- Review global equity versus U.S equity / international equity structure
- Review materiality of some of the allocations in the Fund (e.g. U.S. Small Cap Equity and U.S. Mid Cap Equity)
- Reduce the total number of mandates
- I would prefer a different allocation to Canadian equities than 30%
- Don't invest in areas that are more volatile; stay conservative at this time
- Significantly reduce the exposure to global and international equities. Significantly increase exposure to commodities. This will be where the growth is as understated inflation numbers are proven to be horribly understated
- Getting into some alternative funds
- Like idea of alternative funds
- Work towards less risk exposure, be more conservative
- More should be passively managed; save fees and get better returns
- Have core, value, growth, low volatility strategies for Canada, U.S., global as structure for fund

UBC'S EXPERIENCE

The UBC's faculty pension plan has some allocation to alternative investments in its Balanced Fund.

Hedge Fund allocation:
UBC's Balanced Fund has a target 3% allocation in BlackRock Global Market Selection. It's a hedge fund with monthly valuation, similar to what their plan has. The fund has liquid investments that are marked-to-market, so there are no valuation issues. BlackRock requires an 11-day notice for a redemption. UBC rebalances very infrequently. Their investment policy allows the weight of the fund to fluctuate between 1% and 5% and it has never been breached because of market conditions.

Real Estate Allocation:
UBC's Balanced Fund has a 6% allocation to Bentall Westpen Properties Fund, an open-ended private real estate fund. This is the same fund that the Western's Operating & Endowment Fund invests in. The fund has quarterly liquidity, subject to a 5% redemption fee. Redemptions require a 30-day notice and investors may face a queue if there are too many requests.

They also have a 4% target allocation to the BcIMC Real Pool Fund, another open-ended real estate fund. Redemptions can also be done on a quarterly basis.

The total real estate allocation of the fund can vary between 7% and 13% and that has never been breached. Both real estate funds provide quarterly valuation, which is a challenge given that the pension plan has monthly valuation. They use a return of 0% for those months that don't have any returns.

DIVERSIFIED EQUITY FUND DEMOGRAPHICS

1) Distribution by Plan

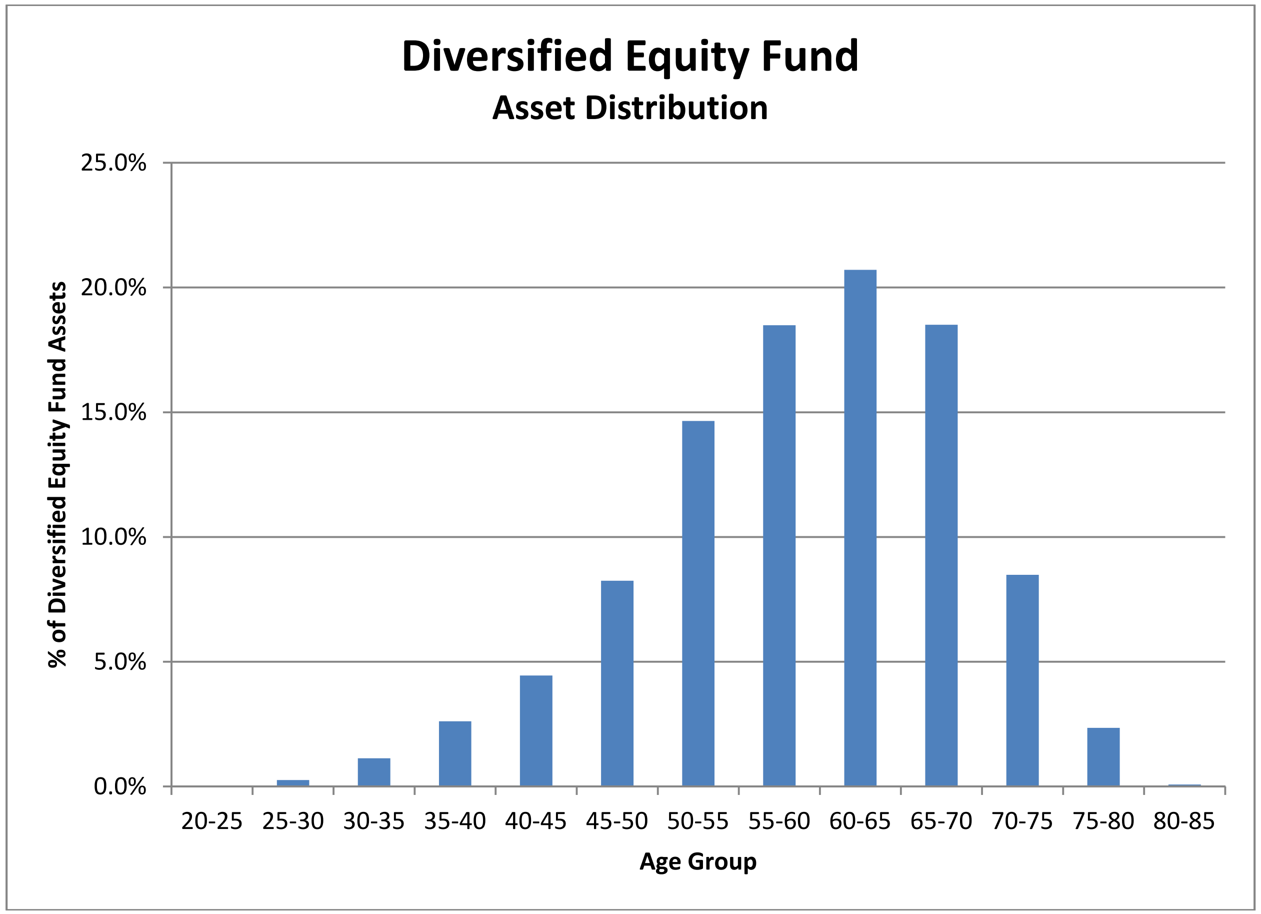
The table below shows the distribution of assets by plan as of December 31, 2010. Most of the assets are in the Academic and Administrative staff pension plan, although there's a significant component (12.3%) in the RIF.

Diversified Equity Fund
Asset Distribution
As of December 31, 2010

Plan	Assets ($)	Assets (%)
Academic	$237,451,268	48.9%
Administrative	$188,392,206	38.8%
RIF	$59,970,816	12.3%
Total	$485,814,290	100.0%

2) Distribution by Age Group

The chart below shows the distribution in assets of the Diversified Equity Fund as of December 31, 2010. Approximately 69% of the Diversified Equity Fund assets have held by members who are more than 55 years old.



SIMULATIONS

Several simulations were performed with different investment horizons, asset classes included and rebalancing constraints. See table below for details.

Variables	Details
Capital market forecast horizon	10 years and 20 years
Asset classes used	Existing only, all asset classes available, existing plus emerging markets equities, private equity and market neutral strategies
Rebalancing constraints	No constraint, maximum 10% change in allocation

For each simulation, three portfolios are compared to the existing Diversified Equity Fund: the portfolio with the highest Sharpe Ratio $(E[R] - R_f)/\sigma$, the portfolio with the maximum return and the portfolio with the lowest risk.

The expected return and standard deviations used for each asset class are as follows:

	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy
20-Yr Return	7.40%	7.80%	7.80%	9.00%	8.00%	9.60%	5.10%	7.50%	6.50%	4.30%
20-Yr Volatility	19.40%	22.90%	20.60%	30.00%	20.90%	24.30%	20.20%	22.70%	17.70%	9.50%
10-Yr Return	6.70%	7.10%	7.10%	8.40%	7.30%	8.90%	4.40%	6.80%	5.70%	3.60%
10-Yr Volatility	18.90%	22.90%	20.40%	30.20%	20.70%	21.40%	19.60%	22.50%	17.00%	8.00%

The following correlation matrix was used:

	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy
Canada Equity	1.00									
US Equity	0.59	1.00								
EAFE Equity	0.71	0.74	1.00							
Emerging Markets Equity	0.61	0.73	0.74	1.00						
Global Equity	0.72	0.93	0.91	0.86	1.00					
Private Equity	0.65	0.85	0.84	0.79	0.91	1.00				
Global Commodities	0.32	0.52	0.39	0.49	0.51	0.47	1.00			
Global REITs	0.63	0.77	0.79	0.71	0.84	0.77	0.54	1.00		
Global Listed Infrastructure	0.58	0.55	0.60	0.54	0.62	0.55	0.38	0.68	1.00	
Market Neutral Strategy	0.46	0.39	0.42	0.38	0.45	0.38	0.36	0.40	0.44	1.00

Similation #1 looks at the Diversified Equity Fund existing asset classes. The optimal portfolio based on the Sharpe Ratio would involve a small increase in Canadian equities, a larger one in global equities combined with the elimination of the U.S. equity allocation and a reduction in EAFE equities. We could marginally reduce the risk of the portfolio by increasing the allocation to Canadian equities.

Simulation #1
20-Year Russell Capital Market Forecasts
Existing Asset Classes
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	7.73%	18.71%	0.231	39.03%	0.00%	18.66%	0.00%	42.31%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max return	8.00%	20.90%	0.220	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	7.58%	18.22%	0.229	56.15%	18.02%	25.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%

Simulation #2 includes all asset classes. Without any constraints, the optimal portfolio would have a significant allocation to private equity. The Canadian allocation would remain roughly the same at 29.4%. No other asset class would get an allocation. Global commodities global listed infrastructure and market neutral strategy don't get any allocation in the optimal portfolio, but they do get one in the minimum risk portfolio.

Simulation #2
20-Year Russell Capital Market Forecasts
All Asset Classes
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	8.95%	21.31%	0.261	29.44%	0.00%	0.00%	0.00%	0.00%	70.56%	0.00%	0.00%	0.00%	0.00%	3.40%
Max return	9.60%	24.30%	0.255	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	5.12%	13.37%	0.128	11.42%	0.00%	2.79%	0.00%	0.00%	0.00%	19.16%	0.00%	9.64%	56.99%	3.40%

Simulation #3 focuses on a smaller number of alternative investments: emerging markets equities, private equity and market neutral strategy. Again, as expected, private equity gets a large share, but market neutral strategy fails to pick up any allocation in the optimal portfolio, although it does get a large allocation in the minimum risk portfolio.

Simulation #3
20-Year Russell Capital Market Forecasts
Existing Asset Classes Plus Emerging Markets, Private Equity and Market Neutral Strategy
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	8.95%	21.31%	0.261	29.44%	0.00%	0.00%	0.00%	0.00%	70.56%	0.00%	0.00%	0.00%	0.00%	3.40%
Max return	9.60%	24.30%	0.255	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	5.22%	13.97%	0.130	14.51%	3.96%	9.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	72.18%	3.40%

Simulation #4 introduces limits on asset changes. The existing weight in the Diversified Equity Fund can only increased or decreased by a maximum of 10%. New asset classes have a 10% maximum. The optimal portfolio would get the maximum increase in Canadian equities and a small increase in global equities. U.S. equity would get the maximum reduction and EAFE equities would be slightly reduced.

Simulation #4
20-Year Russell Capital Market Forecasts
Existing Asset Classes
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	7.68%	18.52%	0.231	40.00%	12.50%	26.60%	0.00%	20.90%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max return	7.78%	19.16%	0.228	20.00%	15.90%	36.60%	0.00%	27.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	7.66%	18.42%	0.231	40.00%	17.63%	34.87%	0.00%	7.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%

Simulation #5 includes all asset classes and also has the 10% change limit. Private equity ends up with the maximum 10% allocation. The allocation to Canadian equity would be increased by the maximum allowed. Both U.S. and EAFE equity are reduced by the maximum 10%. No other asset class gets any allocation in the optimal portfolio. Global commodities, global listed infrastructure and market neutral strategy get the maximum 10% allocation in the minimum risk portfolio.

Simulation #5
20-Year Russell Capital Market Forecasts
All Asset Classes
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	7.71%	18.12%	0.238	40.00%	12.50%	20.00%	0.00%	7.50%	10.00%	0.00%	0.00%	10.00%	0.00%	3.40%
Max return	8.08%	19.99%	0.234	20.00%	12.50%	20.00%	10.00%	27.50%	10.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	6.95%	16.17%	0.219	30.00%	12.50%	20.00%	0.00%	7.50%	0.00%	10.00%	0.00%	10.00%	10.00%	3.40%

Simulation #6 focuses on a smaller number of alternative investments: emerging markets equities, private equity and market neutral strategy. The results are similar as for simulation #5 for EAFE equity. Private equity gets the full 10% allocation and Canadian equity gets increased by the maximum 10%. U.S. and EAFE equity allocations get reduced, but not by as much as in simulation #5. Market neutral strategy still doesn't pick up any allocation in the optimal portfolio, but gets the maximum 10% allocation in the minimum risk portfolio.

Simulation #6
20-Year Russell Capital Market Forecasts
Existing Asset Classes Plus Emerging Markets, Private Equity and Market Neutral Strategy
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.72%	18.77%	0.230	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max Sharpe Ratio	7.87%	18.76%	0.238	40.00%	12.50%	27.43%	2.57%	7.50%	10.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Max return	8.08%	19.99%	0.234	20.00%	12.50%	20.00%	10.00%	27.50%	10.00%	0.00%	0.00%	0.00%	0.00%	3.40%
Min risk	7.31%	17.34%	0.225	40.00%	14.44%	28.06%	0.00%	7.50%	0.00%	0.00%	0.00%	0.00%	10.00%	3.40%

Simulation #7 is similar to simulation #1, with the exception that the capital market forecasts are based on a 10-year horizon instead of 20. The optimal portfolio is similar as in simulation #1, i.e. small increase in Canadian equities, a larger one in global equities combined with the elimination of the U.S. equity allocation and a reduction in EAFE equities. We could marginally reduce the risk of the portfolio by increasing the allocation to Canadian equities.

Simulation #7
10-Year Russell Capital Market Forecasts
Existing Asset Classes
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	7.01%	18.33%	0.241	42.56%	0.00%	17.78%	0.00%	39.65%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max return	7.30%	20.70%	0.227	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	6.86%	17.90%	0.238	59.39%	15.87%	24.74%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%

Simulation #8 is similar to simulation #2, but with a 10-year investment horizon. Again, results are similar to simulation #2. Private equity ends up with an even larger allocation, at the expense of non-Canadian equities. No other asset class would get an allocation in the optimal portfolio. Global commodities, global listed infrastructure and market neutral strategy don't get any allocation in the optimal portfolio, but they do get a significant one in the minimum risk portfolio.

Simulation #8
10-Year Russell Capital Market Forecasts
All Asset Classes
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	8.55%	20.08%	0.296	15.88%	0.00%	0.00%	0.00%	0.00%	84.12%	0.00%	0.00%	0.00%	0.00%	2.60%
Max return	8.90%	21.40%	0.294	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	4.21%	12.59%	0.128	9.23%	0.00%	0.31%	0.00%	0.00%	0.00%	16.80%	0.00%	8.44%	65.21%	2.60%

Simulation #9 is similar to simulation #3, but with a 10-year investment horizon. Similar results, with private equity getting an even larger allocation at the expense of non-Canadian equities. Market neutral strategy still doesn't get any allocation, although it does get a large allocation in the minimum risk portfolio.

Simulation #9
10-Year Russell Capital Market Forecasts
Existing Asset Classes Plus Emerging Markets, Private Equity and Market Neutral Strategy
No Constraints

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	8.55%	20.08%	0.296	15.88%	0.00%	0.00%	0.00%	0.00%	84.12%	0.00%	0.00%	0.00%	0.00%	2.60%
Max return	8.90%	21.40%	0.294	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	4.41%	13.02%	0.139	10.84%	0.00%	1.62%	0.00%	0.00%	7.97%	0.00%	0.00%	0.00%	79.57%	2.60%

Simulation #10 is similar to simulation #4, but with a 10-year investment horizon. Results are similar to simulation #4. The optimal portfolio would get the maximum increase in Canadian equities and a small increase in global equities. U.S. equity would get the maximum reduction and EAFE equities would be slightly reduced.

Simulation #10
10-Year Russell Capital Market Forecasts
Existing Asset Classes
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	6.98%	18.25%	0.240	40.00%	12.50%	27.43%	0.00%	20.07%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max return	7.08%	18.95%	0.236	20.00%	15.07%	37.43%	0.00%	27.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	6.96%	18.16%	0.240	40.00%	16.10%	36.40%	0.00%	7.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%

Simulation #11 is similar to simulation #5, but with a 10-year investment horizon. Results are slightly different than those in simulation #5. Private equity gets the maximum 10% allocation, U.S. and EAFE equity get reduced by the maximum 10% as in simulation #5, but emerging markets equity gets some allocation and global listed infrastructure doesn't get the maximum allocation. Global commodities, global listed infrastructure and market neutral strategy get the maximum 10% allocation in the minimum risk portfolio.

Simulation #11
10-Year Russell Capital Market Forecasts
All Asset Classes
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	7.11%	18.02%	0.250	40.00%	12.50%	25.87%	1.17%	7.50%	10.00%	0.00%	0.00%	2.96%	0.00%	2.60%
Max return	7.27%	18.72%	0.249	40.00%	12.50%	20.00%	10.00%	7.50%	10.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	6.24%	15.87%	0.229	30.00%	12.50%	20.00%	0.00%	7.50%	0.00%	10.00%	0.00%	10.00%	10.00%	2.60%

Simulation #12 is similar to simulation #6, but with a 10-year investment horizon. Results are slightly different than those for simulation #6. Private equity gets the full 10% allocation. U.S. and EAFE equity allocations get reduced and emerging markets equity gets some allocation. Market neutral strategy doesn't pick up any allocation, except in the minimum risk portfolio. Private equity also gets an allocation in the minimum risk portfolio.

Simulation #12
10-Year Russell Capital Market Forecasts
Existing Asset Classes Plus Emerging Markets, Private Equity and Market Neutral Strategy
+/- 10% Change from Existing Allocation

	Expected Return	Volatility	Sharpe Ratio	Canada Equity	US Equity	EAFE Equity	Emerging Markets Equity	Global Equity	Private Equity	Global Commodities	Global REITs	Global Listed Infrastructure	Market Neutral Strategy	Risk-Free Rate
Existing Portfolio	7.02%	18.56%	0.238	30.00%	22.50%	30.00%	0.00%	17.50%	0.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max Sharpe Ratio	7.16%	18.22%	0.250	40.00%	12.50%	28.04%	1.66%	7.80%	10.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Max return	7.39%	19.57%	0.244	20.00%	12.50%	20.00%	10.00%	27.50%	10.00%	0.00%	0.00%	0.00%	0.00%	2.60%
Min risk	6.73%	17.03%	0.242	40.00%	12.50%	23.20%	0.00%	7.50%	6.80%	0.00%	0.00%	0.00%	10.00%	2.60%

Simulation Summary

- Due to the limitations in data available, small caps, low-volatility strategies, active currency management, global tactical asset allocation and long/short strategies were not included in the simulation.
- The simulation results highlight one of the flaws of mean-variance optimization, i.e. asset classes with a superior profile (higher return, lower volatility) get all the allocation. Nevertheless, the results give some ideas on how to restructure the portfolio.
- The Canadian allocation seems close to optimal at around 30% as it doesn't lose much of its allocation, even in unconstrained simulations.
- Private equity seems to be adding the most value of all asset classes as it picks up the largest allocation in unconstrained simulations.
- U.S. and EAFE equity seem to be the two worst asset classes as they pick up the minimum allocations most of the time.
- Global equity seems to be superior to a U.S. equity / EAFE equity combination as it picks up more allocation when looking at the existing asset classes and does better when all asset classes are involved.
- Only emerging markets equity and global listed infrastructure do bring some value to the optimal portfolio as they pick up allocations in constrained portfolios.
- Global commodities and market neutral strategy don't get any allocation in the optimal portfolio, even when new strategies are capped at 10%. They do get large allocations in the minimum risk portfolio though.