Asset Location Strategies with the "Plaid" Model ETF Portfolios

Spaceballs: They've gone to Plaid!

Thanks for tuning in to ***Episode 7*** of the Canadian Portfolio Manager podcast, where we help you become a better ETF investor. I'm your host, Justin Bender, and in today's show, we'll be discussing our new ***Plaid*** portfolios. Many of you may not be old enough (or perhaps too old) to recall the epic scene from Spaceballs, where Dark Helmet recklessly pushes his ship past ***Ludicrous*** speed and into ***Plaid***. In the process, he overshoots Lone Starr's Winnebago Eagle 5, leaving a colourful, checkered display in his wake. This provides Lone Starr's co-pilot, Barf, with an opportunity to drop his now famous one-liner …

Spaceballs: They've gone to Plaid!

But why "plaid"? I searched the Internet, but found nothing definitive.

Some fans suggest the plaid joke is a word-play mash-up of *warp speed* (which is faster than the *speed of light*) muddled with the lengthwise *warp* and the crosswise *weft* used to weave fabrics. (And come to think of it, the lengthwise *warp* on a loom does resemble the thin lines that appear in space whenever a spaceship launches to warp speed). So, in this case, combining a lengthwise *warp* with a crosswise *weft* gives us … ***plaid***.

That may be a bit of a stretch. Another fan proposed it came from a 1950s Warner Bros. cartoon, "The Hypo-Condri-Cat", where two mice, Hubie and Bertie, are messing with Claude, the hypochondriac cat. They worry him into turning green, then purple, and then, well, I'm sure you can guess what came next.

Looney Tunes: "He's turning, ummm. He's uh, he's turning *plaid*!

When Scottish bagpipes start to play, Hubie warns Bertie not to ***overdo it***."

So, are you more like Bertie, who loves to push the limits? If so, today's tour of our ***Plaid*** portfolio won't overdo it for you. We'll even hear from a well-known blogger who has successfully been managing a ***Plaid-like*** portfolio for years. Even for those who are more cautiously Hubie-ish, if it's anything like our ***Ludicrous*** discussion, it's sure to generate more great questions.

Either way, let me know if you ever discover the true origin of the ***plaid*** reference in Space Balls. There may even be a *Spaceballs the Movie* lunchbox in it for you.

Silicon Valley: So, there *is* a mode above Ludicrous mode, am I correct? Yes, it's called Plaid. How do I get into one of these babies?

Similar to the ***Ludicrous*** portfolios, the ***Plaid*** portfolios also employ the same ETFs from the ***Ridiculous*** portfolios, but with a different asset *location* strategy. Unlike the ***Ludicrous*** portfolios, the ***Plaid*** portfolios are truly structured for optimal tax-efficiency. They also require you to manage your portfolio's asset *allocation* from an *after-tax* perspective, which can be a bit of a pain.

The basic idea is to hold all equities in your TFSA and RRSP first, and your taxable account last. Within your TFSA and RRSP, you're free to let your creativity run wild, with numerous ways to arrange your ETFs to reduce foreign withholding taxes. I've outlined one such process in a "mere" 10 steps, which I will share with you now. (As a note, you may need to tweak the process, depending on your specific tax situation or preferences). I also recommend having the blog version of the episode handy for this next section, as we work through an example of how to plan out your ***Plaid*** portfolio.

So, if you're ready to overdo it with me, buckle up.

It all begins with Step 1, which is determining the after-tax value of your RRSP. This is easier said than done. A fee-only financial planner should be able to run retirement projections and provide you with a reasonable tax-rate assumption. But since you can't know for sure what your tax rates will be on future RRSP or RRIF withdrawals, the entire process is more theoretical than exact.

We'll continue with the example of our top-rate Ontario taxpayer "Pat", from our last ***Ludicrous*** portfolio podcast. Good news for Pat! She has found another $1 million to play with – once again with $100,000 in a TFSA, $500,000 in an RRSP, and $400,000 in a taxable account.

Let's assume Pat is also expected to pay top rates on her RRIF withdrawals in retirement. Therefore, her $500,000 RRSP is worth only **$232,350** after the government gets its cut. This is calculated by subtracting Pat's 53.53% top tax rate from 100%, and then multiplying her $500,000 before-tax RRSP value by that percentage, which is about 46 and a half %.

In Step 2, we use Pat's *after*-tax RRSP value to calculate her total after-tax portfolio value. Adding together her $100,000 TFSA, plus the $232,350 after-tax RRSP, plus her $400,000 taxable account, that gives Pat a total after-tax portfolio value of **$732,350.**

In Step 3, we calculate how much to purchase of each ETF, again, from an after-tax perspective. For example, if you're targeting 18% in after-tax Canadian equities, you would multiply 18%, times your total after-tax portfolio value of $732,350. That tells you to purchase about $131,823 in a Canadian equity ETF, like VCN, as your after-tax allocation. If you're interested, you can refer to the blog post version of this podcast to see all the after-tax asset class weights Pat would have targeted at the end of December 2018.

Asset Class	Asset % After-Tax	Total $ After-Tax
Canadian Bonds	40.00%	$292,940
Canadian Equities	18.00%	$131,823
U.S. Equities	23.34%	$170,963
International Equities	14.16%	$103,709
Emerging Markets Equities	4.49%	$32,915
Total	100.00%	$732,350

Or, you can just move on to Step 4, where we fill Pat's TFSA with as many Canadian and international equity ETFs as possible. Canadian equities are a natural fit there, since dividends from Canadian stocks are not subject to foreign withholding taxes.

A Canadian-based international equity ETF is also a great option for your TFSA. Since it holds the underlying stocks directly, it has the same foreign withholding tax drag in both a TFSA and an RRSP. Just make sure you don't exceed the after-tax target value for either your Canadian or international equity ETFs.

There is only $100,000 of cash available in Pat's TFSA, so she won't go over her target by purchasing either asset class. So, in our example, I've assumed Pat purchases Canadian equities in her TFSA first, but international equities would also be acceptable.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**90.00%**	**$900,000**	**$0**	**$500,000**	**$400,000**
Cash	-	90.00%	$900,000		$500,000	$400,000
Canadian Equities		**10.00%**	**$100,000**	**$100,000**	**$0**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	10.00%	$100,000	$100,000		
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

This brings us to Step 5, which is to add international equity ETFs to the RRSP. Here's the trick to managing your portfolio's after-tax asset mix: Gross up your after-tax target values when dealing with your before-tax RRSP. So, even though you ultimately need $103,709 of international equities after-tax, you'll actually need to purchase $223,174 before-tax in your RRSP. We calculate this by again subtracting Pat's 53.53% tax rate from 100%, and then ***dividing*** the after-tax target of $103,709 by that percentage.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**67.68%**	**$676,826**	**$0**	**$276,826**	**$400,000**
Cash	-	67.68%	$676,826		$276,826	$400,000
Canadian Equities		**10.00%**	**$100,000**	**$100,000**	**$0**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	10.00%	$100,000	$100,000		
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

In Step 6, we'll add emerging markets equity ETFs to the RRSP. The key here is to use a U.S.-based emerging markets equity ETF (like VWO or IEMG), to reduce your product costs and foreign withholding taxes. In other words, optimal asset location requires that you're comfortable with the Norbert's gambit process for cheaply converting from Canadian to U.S. dollars. Again, we'll need to gross up the before-tax VWO purchase to $70,830, to create $32,915 of after-tax exposure. Using the same formula as before, that means taking $32,915 and dividing it by 100% minus 53.53%.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**60.60%**	**$605,996**	**$0**	**$205,996**	**$400,000**
Cash	-	60.60%	$605,996		$205,996	$400,000
Canadian Equities		**10.00%**	**$100,000**	**$100,000**	**$0**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	10.00%	$100,000	$100,000		
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

Next up, in Step 7, we'll add any remaining Canadian equity ETFs to the RRSP. In Step 4, we bought $100,000 in after-tax Canadian equity ETFs, but we still need to buy an additional $31,823 to complete this asset allocation ($131,823 - $100,000). As in our prior RRSP purchases, we'll need to gross up the before-tax VCN purchase to $68,481.

As Pat is a top-rate taxpayer in Ontario, U.S. equity ETFs are actually more tax-efficient than Canadian equity ETFs in her taxable accounts. That's why we've left the U.S. equities for last. If you have a lower tax rate, you might want to swap Steps 7 and 8. Either way, you don't have to perfect this decision in pursuit of an overall asset location benefit.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**53.75%**	**$537,515**	**$0**	**$137,515**	**$400,000**
Cash	-	53.75%	$537,515		$137,515	$400,000
Canadian Equities		**16.85%**	**$168,481**	**$100,000**	**$68,481**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	16.85%	$168,481	$100,000	$68,481	
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

Which brings us to Step 8 … or possibly Step 7 for you … when you add U.S. equity ETFs to your RRSP. For Pat, we need to purchase $367,900 in before-tax U.S. equity ETFs in her RRSP to end up with $170,963 after-tax. However, after Step 7, she only had $137,515 of cash available to invest in the RRSP. So, first, she can use all remaining RRSP cash to buy a U.S.-based U.S. equity ETF, like VTI. This will eliminate the 15% foreign withholding tax on U.S. dividends. Then, she'll move on to Step 9 to complete the allocation.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**40.00%**	**$400,000**	**$0**	**$0**	**$400,000**
Cash	-	40.00%	$400,000			$400,000
Canadian Equities		**16.85%**	**$168,481**	**$100,000**	**$68,481**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	16.85%	$168,481	$100,000	$68,481	
U.S. Equities		**13.75%**	**$137,515**	**$0**	**$137,515**	**$0**
Vanguard Total Stock Market ETF *(U.S.-listed)*	VTI	13.75%	$137,515		$137,515	
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

In Step 9, we'll buy U.S. equity ETFs in Pat's taxable account. The VTI shares that Pat purchased in Step 8 in her RRSP are only worth $63,903 after-tax. This means she still needs to purchase $107,060 of after-tax U.S. equities in her taxable account ($170,963 - $63,903). Since there are no foreign withholding tax advantages of holding U.S.-based U.S. equity ETFs in a taxable account – and since Pat is ludicrously intelligent – I'll assume she purchases $107,060 of VUN.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Cash		**29.29%**	**$292,940**	**$0**	**$0**	**$292,940**
Cash	-	29.29%	$292,940			$292,940
Canadian Equities		**16.85%**	**$168,481**	**$100,000**	**$68,481**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	16.85%	$168,481	$100,000	$68,481	
U.S. Equities		**24.46%**	**$244,575**	**$0**	**$137,515**	**$107,060**
Vanguard U.S. Total Market Index ETF	VUN	10.71%	$107,060			$107,060
Vanguard Total Stock Market ETF *(U.S.-listed)*	VTI	13.75%	$137,515		$137,515	
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

***FINALLY*, this brings us to Step 10. We'll now buy tax-efficient bond ETFs in Pat's taxable account,** probably using an ETF like ZDB.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Fixed Income		**29.29%**	**$292,940**	**$0**	**$0**	**$292,940**
BMO Discount Bond Index ETF	ZDB	29.29%	$292,940			$292,940
Canadian Equities		**16.85%**	**$168,481**	**$100,000**	**$68,481**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	16.85%	$168,481	$100,000	$68,481	
U.S. Equities		**24.46%**	**$244,575**	**$0**	**$137,515**	**$107,060**
Vanguard U.S. Total Market Index ETF	VUN	10.71%	$107,060			$107,060
Vanguard Total Stock Market ETF *(U.S.-listed)*	VTI	13.75%	$137,515		$137,515	
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

So, after "just" 10 simple steps, we've built Pat's final *Plaid* portfolio, with a *before-tax* asset allocation of around 70% equity and 30% fixed income.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP	Taxable
Fixed Income		**29.29%**	**$292,940**	**$0**	**$0**	**$292,940**
BMO Discount Bond Index ETF	ZDB	29.29%	$292,940			$292,940
Canadian Equities		**16.85%**	**$168,481**	**$100,000**	**$68,481**	**$0**
Vanguard FTSE Canada All Cap Index ETF	VCN	16.85%	$168,481	$100,000	$68,481	
U.S. Equities		**24.46%**	**$244,575**	**$0**	**$137,515**	**$107,060**
Vanguard U.S. Total Market Index ETF	VUN	10.71%	$107,060			$107,060
Vanguard Total Stock Market ETF *(U.S.-listed)*	VTI	13.75%	$137,515		$137,515	
International Equities		**22.32%**	**$223,174**	**$0**	**$223,174**	**$0**
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	22.32%	$223,174		$223,174	
Emerging Markets Equities		**7.08%**	**$70,830**	**$0**	**$70,830**	**$0**
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	7.08%	$70,830		$70,830	
Total Portfolio		**100.00%**	**$1,000,000**	**$100,000**	**$500,000**	**$400,000**

But as with her ***Ludicrous*** portfolio, looks can deceive. Once Pat cleverly adjusts for future taxes due on the ETFs in her RRSP, she is in fact invested in her intended 60% equity, 40% fixed income *after-tax* asset allocation.

ETF Holdings	Symbol	Asset %	Total $	TFSA	RRSP After-tax	Taxable
Fixed Income		40.00%	$292,940	$0	$0	$292,940
BMO Discount Bond Index ETF	ZDB	40.00%	$292,940			$292,940
Canadian Equities		18.00%	$131,823	$100,000	$31,823	$0
Vanguard FTSE Canada All Cap Index ETF	VCN	18.00%	$131,823	$100,000	$31,823	
U.S. Equities		23.34%	$170,963	$0	$63,903	$107,060
Vanguard U.S. Total Market Index ETF	VUN	14.62%	$107,060			$107,060
Vanguard Total Stock Market ETF *(U.S.-listed)*	VTI	8.73%	$63,903		$63,903	
International Equities		14.16%	$103,709	$0	$103,709	$0
Vanguard FTSE Developed All Cap ex North America Index ETF	VIU	14.16%	$103,709		$103,709	
Emerging Markets Equities		4.49%	$32,915	$0	$32,915	$0
Vanguard FTSE Emerging Markets ETF *(U.S.-listed)*	VWO	4.49%	$32,915		$32,915	
Total Portfolio		100.00%	$732,350	$100,000	$232,350	$400,000

If we compare Pat's balanced ***Plaid*** portfolio to any of our other models' 2019 60/40 after-tax portfolios, it had the highest after-tax portfolio value and after-tax return (**$828,690** and **13.15%** respectively). In comparison, the ***Ridiculous*** portfolio's after-tax portfolio value and after-tax return were **$824,15**2 and **12.54%** respectively, while the ***Light*** portfolio's after-tax portfolio value and after-tax return were **$822,456** and **12.30%** respectively.

Ludicrous was the only portfolio that beat ***Plaid***, with an after-tax value of **$833,932** and an after-tax return of 13.87%. But remember, this was because it took more after-tax equity risk than all the other portfolios. That is, it wasn't actually an after-tax 60/40 portfolio.

Model ETF Portfolio	TFSA	RRSP	Taxable	Portfolio Value ($)	Portfolio Growth (%)
Ludicrous Model ETF Portfolio (ATAA)	120,380	247,565	451,895	819,840	11.95%
Light Model ETF Portfolio	114,728	266,570	441,159	822,456	12.30%
Ridiculous Model ETF Portfolio	114,847	267,304	442,001	824,152	12.54%
Plaid Model ETF Portfolio	121,917	275,305	431,467	828,690	13.15%
Ludicrous Model ETF Portfolio	120,380	251,527	462,025	833,932	13.87%

Spaceballs: My brains are going into my feet!

Okay, that was exhausting. Who else feels like their brains have gone into their feet? These tax concepts are not easy, so don't beat yourself up if you're struggling with them.

One investor who has yet to break a sweat managing his own Plaid-like portfolio is Michael James, the popular blogger behind ***Michael James on Money***. Michael is now retired. But he made his living as a tech sector mathematician … so no wonder. Creating useful tax spreadsheets is not only his life's passion, some of his creations are so advanced, I am a bit concerned they could become self-aware at any moment.

Hi Justin – Michael James here. Thanks very much for your informative portfolio series running from ***Light*** to ***Plaid***. My own portfolio most resembles ***Plaid***, although I use fewer ETFs. Before I describe my portfolio, it's important to note that I do almost none of the work by hand. I have a spreadsheet that does all the calculations to the point where it tells me exactly what trades to make when I rebalance. I even have a script that emails me when I have to rebalance or invest new cash, so I rarely have to look at my portfolio.

Like your ***Plaid*** portfolio, I measure my asset allocation in after-tax amounts (after all, you can only buy food with after-tax dollars). My spreadsheet even shows me after-tax account balances. I use U.S. ETFs, so I've had lots of practice with Norbert's gambit, and my asset location includes filling my RRSPs with stocks instead of bonds. My fixed income is mostly in taxable accounts.

When rebalancing, I have to remember that I have to trade pre-tax amounts. So, say my spreadsheet figures out that I need to sell stock in my RRSP, it has to increase the amount to a pre-tax figure before telling me how much to trade.

It's impossible to know what my future tax rates will be, but an estimate is better than just assuming zero taxes when calculating my asset allocation.

My spreadsheet actually computes expected future taxes in real time, but a rough estimate would have been fine as well. Creating my spreadsheet certainly took some work, but now that it's done, running my ***Plaid-like*** portfolio is quite easy. And I'm happy to have a more accurate handle on my portfolio's true risk level.

All the best, Justin.

Thank you for sharing your insights with us, Michael. In Terminator terminology, your advanced rebalancing spreadsheet sounds like a T-1000 compared to my obsolete T-800 rebalancing spreadsheet, so I think it's time to hit the self-destruct button it.

But first, before we discuss reasons for and against investing in the ***Plaid*** portfolios, I've been receiving many reader questions on whether they should hold Canadian-based or U.S.-based international equity ETFs in their RRSPs. This sounds like a perfect opportunity for another …

ETF Kombat!

… where we pit two ETFs against one another to test their might.

In today's show-down, two international equity ETFs will go head-to-head for your investment dollars, competing across your TFSA, RRSP, and taxable accounts. PWL's Director of Marketing, Martin Dallaire, will once again be judging the match.

In one corner, we have the Canadian-based iShares Core MSCI EAFE IMI Index ETF (with ticker symbol XEF). On the other side of the border, tracking the exact same index, there's the iShares Core MSCI EAFE ETF (with ticker symbol IEFA). Although either ETF will provide investors with low-cost and diversified international equity market exposure, there can be only one winner.

Round One… Fight!

As we learned in Episode 3 of the CPM Podcast, when it comes to your TFSA, a Canadian-based international equity ETF, like XEF, is *expected* to be more tax-efficient than a U.S.-based international equity ETF, like IEFA. This is because XEF holds the underlying international stocks directly. So, it's only subject to one layer of withholding taxes, from when the foreign dividends are paid directly to Canada. In contrast, IEFA is subject to two layers of withholding taxes. The first layer occurs when the foreign dividends are initially paid to the U.S., and these are not recoverable. The second layer is levied when the net dividends are paid from the U.S. to Canada. Unlike in your RRSP, there is no U.S.-Canada tax treaty to eliminate the 15% withholding tax on foreign dividends paid from the U.S. to your TFSA.

IEFA is less than a third the cost of XEF, with an expense ratio of 0.07% per year, compared to 0.22% for XEF. However, IEFA's fee advantage is no match for XEF's tax-efficient structure. Over the past five years ending December 31, 2019, XEF would have returned an average of 8.46% per year after all fees and foreign withholding taxes. IEFA would have returned 8.24%, lagging XEF by 0.22% per year.

Also, as IEFA trades in U.S. dollars, Canadian investors would have first needed to convert their loonies to dollars to purchase the fund. Without using the Norbert's gambit strategy to cheaply buy U.S. dollars, this could have cost investors an additional 2% at the onset, further reducing the returns on IEFA.

X-E-F wins.

Round Two... Fight!

Although IEFA took a beating in the first, TFSA round, the RRSP is a more level tax playing field for the ETF. Here, the second layer of 15% U.S. withholding taxes no longer applies, due to U.S./Canadian tax treaties. This results in a similar foreign withholding tax drag in both.

But being a U.S.-based fund, IEFA does have the upper hand when it comes to fees and economies of scale. These benefits have enabled IEFA to outperform XEF by 0.25% per year after fees and foreign withholding taxes over the same five-year period.

However, Canadian investors need to be thoughtful when purchasing IEFA in their RRSP if they don't have any U.S. dollars. If you simply accept the brokerage's currency conversion cost of around 2%, it will take around 8 years before breaking even. This is calculated as the 2% upfront currency conversion cost divided by the 0.25% annual expected return benefit. Plus, when you eventually sell your IEFA shares and convert your dollars back to loonies, you'll get hit with another currency conversion cost, further eroding the expected return benefits of holding IEFA in your RRSP.

So, if you're considering purchasing IEFA in your RRSP, first make sure you're purchasing enough to make it cost-effective, such as $10,000 or more. Also, be sure to use the Norbert's gambit to cheaply convert your Canadian dollars to U.S. dollars for each purchase.

I-E-F-A wins". But make sure you know how to do the "Norton's gamble".

Round Three... Fight!

Finally, we'll take this fight to your taxable account. Once again, XEF is expected to have the upper hand when it comes to withholding taxes, as only one layer applies and is usually recoverable. IEFA is subject to two layers of withholding taxes on foreign dividends, and only the second layer from the U.S. to Canada is generally recoverable.

With its lower product fees and economies of scale, IEFA is still a worthy contender. But it can't compete with XEF's tax-efficient structure. Over the same five-year period, XEF returned 5.79% after all fees, withholding taxes, and income taxes. IEFA returned 5.65%, lagging its rival by 0.14% per year after-tax (using Ontario's top tax rates). Investors in XEF would have also appreciated the convenience of purchasing the fund with their Canadian dollars, and also avoiding any tedious T1135 tax reporting (which could be required if you hold IEFA in a taxable account).

Finish it!

Overall, XEF is the winning holding for your TFSA and taxable account. IEFA may have a slight advantage in your RRSP, but only if you're willing to complicate your life by dealing with U.S. dollars and Norbert's gambit. If you'd rather stick with Canadian-dollar purchases across your entire portfolio, XEF is the best everyday option for all account types.

X-E-F wins – Practicality

Our grand Spaceballs-inspired adventure is very nearly over. As with all our other portfolios, let's wrap with a review of the advantages and disadvantages of going to ***Plaid***.

There are three main advantages.

First, it's officially the most tax-efficient portfolio in the bunch … and also the most fashionably dressed. As the ***Plaid*** portfolios offer the most portfolio management flexibility, you can hold U.S.-based foreign equity ETFs in your RRSP and Canadian equities in your TFSA, reducing your withholding tax drag.

Second, it offers lower expected capital gains from rebalancing. Since you can hold most of your equities in your RRSP and TFSA, you can also do most of your portfolio rebalancing there. This can reduce the tax drag from occasional rebalancing. This may be more significant if you're not adding enough new cash to your portfolio to rebalance it organically over time.

Third, you can benefit from lower expected year-end capital gains distributions. Once again, since most of your equities are held in TFSAs and RRSPs, you won't be hit with big year-end capital gains distributions from your equity ETFs. You could still receive distributions from the tax-efficient bond ETFs in your taxable accounts, but hopefully not to the same extent.

Now to five disadvantages to going plaid, especially if you use clashing colors.

First, you're not Marty McFly. Without a time-traveling DeLorean, you will never know for sure what the future tax rates will be for your registered account withdrawals and taxable capital gains. This means you'll never know for sure if you're actually maximizing your future tax efficiency.

Second, you'll need to take more *before*-tax equity risk. In other words, to go ***Plaid*** like Pat did, you'll have to allocate 70% to equities before-tax, understanding it's really just 60% after-tax. Pat can live with that. She has nerves of steel, and understands that it's not her, but the government taking the extra equity risk. But not all investors are as rational. If you might blink when markets go risky, you may want to take Hubie's advice and not overdo it.

Third, you'll need to love numbers. I personally love numbers, but even I got a splitting headache creating this podcast. And that's using relatively straightforward, static examples. Your real-life portfolio management will be much more complicated. You will need to continually update your after-tax ETF values. Especially as unrealized capital gains accumulate in your taxable account, they'll create lower after-tax values for the appreciated funds you continue to hold.

Fourth, you'll need to be a pro at Norbert's gambit. Part of the ***Plaid*** portfolios' tax efficiency comes from investing in U.S.-based foreign equity ETFs in your RRSP, which requires you to get up close and personal with Norbert's gambit. Are you really ready for that?

Fifth and finally, you'll need to be mindful of higher expected minimum RRIF withdrawals. As your RRSP will be significantly biased toward equities, it will also be expected to grow faster than your taxable account. This sounds great, until your minimum annual RRIF withdrawals bump you into a higher tax bracket. Or worse yet, they might subject you to the dreaded Old Age Security claw-back.

So, do you think you've got what it takes to go *Plaid*? Before we conclude entirely, we'll wrap with an "Ask Bender" question from a listener named David. He sounds like he may be a candidate for doing so.

Hi Justin,

I've been using VTI and VXUS in my RRSP to take advantage of the lower management fees, as well as save on foreign withholding tax, while keeping my Canadian equity in my TFSA. I try to keep an after-tax allocation of roughly 1/3 Canadian, American, and international markets. This seemed to be a logical decision when I set up my investments a number of years ago.

However, I am now in the fortunate position of having used up all of my contribution room in these accounts and have started investing in a taxable account. This had made trying to figure out asset location quite a bit more complicated, due to unknown future capital gains taxes. And I've been wondering if it's even worth worrying about the withholding tax on foreign equity in my TFSA.

I know at PWL you simply hold the same portfolio in each account type, but it feels wrong to have the same asset allocation in each account, knowing that Canadian equity has tax benefits in non-registered, and foreign equity has withholding tax in the TFSA. Unfortunately, this seems like a mathematically unsolvable problem without knowing future information, but it also seems to be admitting defeat to hold assets in a sub-optimal account.

Should I just bite the bullet and hold the same asset allocation in each account? Or is it worthwhile to keep my asset allocation of my registered accounts optimal for foreign withholding tax, while keeping 1/3 of each market in my taxable account?

Hi David,

There are many great questions here. As you're already successfully managing your portfolio from an after-tax perspective, you likely only need a few tweaks to optimize your portfolio. As you mentioned, true optimization is impossible with so many unknowns. But perhaps we can find a reasonable solution that helps you move on from any "analysis paralysis."

Although I recommend that most DIY investors simply hold the same asset mix across all accounts, I should point out that those of us at PWL Toronto do typically manage our clients' portfolios a little differently. Our asset location strategy is usually similar to the ***Ludicrous*** portfolios from Episode 6, where the rule of thumb is to hold equities in the TFSA first, taxable account second, and RRSP last. Then again, some of my other PWL colleagues do simply hold balanced funds across all accounts, similar to the ***Light*** portfolios from Episode 4. It's still a great strategy with many benefits.

As you mentioned in your question, David, you're currently managing your portfolio's asset mix on an after-tax basis, which is similar to the ***Plaid*** asset location strategy from our current episode. You also have a 100% equity allocation, which does reduce the potential benefits from any asset location strategy. Asset location strategies are generally more useful for investors with a mix of stocks and bonds in their portfolio, but there are still some opportunities available for more aggressive portfolios.

Let me illustrate, after making several assumptions, about you, your investments, and your investment accounts.

First, we'll assume you are a resident of Alberta for tax purposes. We'll say you are earning $100,000 annually, making your marginal tax rate 36% in 2020, and you will be in a similar tax bracket in retirement. Let's further assume your marginal tax rates on eligible Canadian dividends, capital gains, and foreign dividends are 15.15%, 18%, and 36% respectively.

Now, to your investments. Let's assume all your equity ETFs have similar returns over your investment horizon, before product fees and foreign withholding taxes. We'll split your equities as you described earlier. In other words, we'll put $100,000, or a third, in VCN, a Canadian equity ETF; and $100,000 in VTI, a U.S. equity ETF. For the remaining third, we'll put $75,000 in VIU, an international equity ETF; and $25,000 in VWO, an emerging markets equity ETF.

You'll note that I split your VXUS holding into separate international and emerging markets equity ETFs – this will provide us with more options when locating the asset classes across accounts.

Finally, we'll make some assumptions concerning your account values. Here, we'll assume you have $100,000 to invest in your taxable account and $75,000 to invest in your TFSA. As you're managing your portfolio from an after-tax perspective, we'll assume your RRSP is worth $125,000 after the government gets their cut. In total, your ***Plaid*** portfolio is worth $300,000 after-tax.

So, based on all of these assumptions, where should we locate each asset class for maximum tax-efficiency?

Starting with the taxable account: It's best to hold Canadian equity ETFs in your taxable account first. The lower tax rate on eligible dividends for an Alberta taxpayer earning $100,000 is more than enough to offset the withholding tax drag on foreign dividends received in the TFSA by the remaining foreign equities. In our example, we would purchase $100,000 of VCN in the taxable account.

Next, the TFSA: Canadian-based international equity ETFs that hold the underlying stocks directly are a great choice for your TFSA. Funds with this structure will only be subject to one layer of withholding taxes on their foreign dividends, which cannot be avoided if we hold the fund in an RRSP instead. In our example, we would purchase $75,000 of VIU in your TFSA.

Finally, there's your RRSP. A U.S.-based emerging markets equity ETF, like VWO, would be subject to two layers of withholding tax when held in a TFSA, so it's better to hold it in your RRSP instead. There, it would avoid the second layer of withholding taxes.

U.S.-based U.S. equity ETFs are exempt from the 15% withholding tax on U.S. dividends, so you've already made an excellent choice to hold VTI in this account. So, in your RRSP, you would purchase $25,000 of VWO after-tax, and $100,000 of VTI after-tax. Note that these are the Canadian dollar figures, and would need to be adjusted to U.S. dollar figures before purchasing. And as you are managing your portfolio from an after-tax perspective, you would need to gross up these figures, just as I did in our example for this episode.

Fortunately, it sounds like you're already very comfortable with these concepts.

Now, I know my assumptions are probably not 100% accurate for you. But based on them and your portfolio size, the annual cost savings should be around $360. That's about $30 per month, or around $1 per day. David, I'll leave you to decide whether you feel the potential cost savings are worth the extra hassle. It may be easier just to save a bit more in your portfolio each month. Then again, like Michael James, it sounds like you've already wrapped your head around the most gnarly after-tax asset allocation concepts. If so, you may not find the extra work overwhelming at all. Whatever you decide, I wish you all the best with your investing success.

We've now reached the end of our portfolio journey. Our ***Plaid*** portfolios overshot the complexity of the rest of our models by about a million miles, so no one will blame you if you decide to stop and rewind. As I've said before, you can begin and end your adventures with a ***Light*** portfolio, and still be light years ahead of most DIY investors.

Then again, as your wealth (hopefully) accumulates, and your portfolio navigation skills mature, you may eventually want to accelerate your efforts.

There are more great CPM episodes in the works, but I'd love to hear from you regarding any topics you would like me to cover. And as always, your voicemail messages are greatly appreciated. Just record your question using the voice memo app on your iPhone (or any similar app) and email the file to jbender@pwlcapital.com. Thanks for listening!