Tax Efficient Withdrawal Strategies

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April 16, 2015

RETIREE INCOME

Presentation Based On

Kirsten A. Cook, William Meyer, and William Reichenstein, "Tax-Efficient Withdrawal Strategies," *Financial Analysts Journal*, March/April 2015.

This study builds on Reichenstein, Horan, and Jennings, "Two Key Concepts of Wealth Management and Beyond," *Financial Analysts Journal, Jan/Feb 2012 and Jan/Feb 2015.*

Outline:

1. Tax-deferred account as a partnership
2. Individual investor's returns across savings vehicles
3. Withdrawal strategies with flat tax structure
4. Withdrawal strategies with progressive tax structure
5. Sensitivity analysis
6. Save some TDA funds for possibility of high-medical-expense years
7. Extensions in progress
8. Summary

1. Tax-Deferred Account as a Partnership

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1. Tax-deferred Account as a Partnership

A TDA is like a partnership where the government "owns" t_n of the partnership's current principal. The investor owns the remaining $(1 - t_n)$ of the principal.

*--Henceforth, **tax-deferred account (TDA)** represents 401(k), 403(b), traditional IRA, Keogh, etc.*

--Henceforth, tax-exempt account (TEA) or Roth represents Roth IRA, Roth 401(k) and Roth 403(b).

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Comparing After-tax Future Values of $1 of pretax funds in TDA to $1 of after-tax funds in Roth

- Assume today's $1 market value earns pre-tax return of r per year for n years. Funds will be withdrawn n years hence when the individual will have a 28% marginal tax rate, i.e., t_n = 28%
- Tax-deferred account:1(1+r)^n$ (1-0.28)
- Roth: 1(1+r)^n$

- If invested in the same asset, the after-tax value of the tax-deferred account will be worth $(1-t_n)$ or 72% of the Roth's after-tax value.

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Partnership Principle

- If invested in the same asset, $1 of *pretax* funds in a TDA will have the same purchasing power as $(1 - t_n)$ dollar of *after-tax* funds in a Roth TEA, where t_n is the tax rate in retirement.

- It is useful to conceptually separate each $1 in a TDA into $(1 - t_n)$ of the investor's *after-tax* funds, with the government owning the remaining t_n.

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2. Individual Investor's Returns Across Savings Vehicles

After-tax Future Values of Bonds and Stocks Held in Roth, Tax-deferred Account, and Taxable Account

Beginning investment value: $1 market value

	Bonds	**Stocks**
Roth	$(1+r)^n$	$(1+r)^n$
Tax-def Account	$(1+r)^n$ (1-.28)	$(1+r)^n$ (1-.28)
Taxable Account	$(1+r(1-.28))^n$	Day Trader: $(1+r(1-.28))^n$ ***Active Investor***: $(1+r(1-.15))^n$ Passive Investor: $(1+r)^n(1-.15)+.15$ Exempt Investor: $(1+r)^n$

r=pre-tax return, n = investment horizon in years
Assume t = t_n = 28% and long-term capital gain tax rate, t_c = 15%.
For simplicity assume all stock returns are capital gains.

Principal, Risk and Returns Sharing for Tax-Deferred Accounts

- For someone who will be in the 28% tax bracket in retirement, the *after-tax* value of a dollar of pre-tax funds in a tax-deferred account grows from \$0.72 today to $\$0.72(1+r)^n$ in n years. **The investor effectively "owns" $(1-t_n)$ of principal, but the *after-tax* value grows tax exempt.**

Effective Tax Rates on Bonds and Stocks Held in Roth, TDA, and Taxable Account

Beginning investment value: $1 market value

	Bonds	**Stocks**
Roth	0%	0%
Tax-def Account	0%	0%
Taxable Account	28%	Day Trader: 28% ***Active Investor***: 15% Passive Investor: < 15% Exempt Investor: 0%

r=pre-tax return, n = investment horizon in years
Assume $t = t_n = 28\%$ and long-term capital gain tax rate, $t_c = 15\%$.
For simplicity assume all stock returns are capital gains.

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3. Withdrawal Strategies with Flat Tax Structure

Conclusion: In general, withdrawals should come from taxable account first, but the withdrawal order between TDA and TEA is irrelevant. After all, properly viewed the investor's returns are tax-exempt in both the TDA and TEA.

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Conventional Wisdom

- The conventional wisdom says retirees should withdraw funds from taxable accounts until exhausted then TDAs until exhausted and then TEAs until exhausted.

- The idea is that taxable accounts are taxed most heavily and then TDAs and then TEAs. We showed that, properly viewed, TDAs and TEAs grow tax free.

Assumptions

25% flat tax bracket, 4% interest rate, withdrawals at beginning of year

Taxable account = $513,105.56

TEA = $379,589.92

TDA = $379,589.92/(1-.25) = $506,119.89

RETIREE INCOME

	Str 1A		Str 1B		Str 2A		Str 2B	
Year	TEA	tax acct	TEA	tax acct	TDA	tax acct	TDA	tax acct
0	379590	513106	379590	513106	513106	379590	513106	379590
1	347974	528499	394774	482149	463965	528499	526365	482149
2	315092	544354	410564	450263	420123	544354	547419	450263
3	280896	560684	426987	417421	374528	560684	569316	417421
4	245332	577505	444067	383594	327109	577505	592089	383594
5	208345	594830	461829	348752	277794	594830	615772	348752
6	169879	612675	480302	312864	226505	612675	640403	312864
7	129874	631055	499514	275900	173166	631055	666019	275900
8	88269	649987	519495	237827	117692	649987	692660	237827
9	45000	669486	540275	198612	60000	669486	720366	198612
10	0	689571	561886	158220	0	689571	749181	158220
11		663908	584361	116617		663908	779148	116617
12		637475	607736	73765		637475	810314	73765
13		610250	632045	29628		610250	842727	29628
14		582207	641340	0		582207	855120	0
15		553323	620194			553323	826925	
16		523573	598202			523573	797602	
17		492930	575330			492930	767106	
18		461368	551543			461368	735391	
19		428859	526805			428859	702406	
20		395375	501077			395375	668102	
21		360886	474320			360886	632426	
22		325363	446493			325363	595324	
23		288774	417552			288774	556736	
24		251087	387454			251087	516606	
25		212269	356153			212269	474870	
26		172288	323599			172288	431465	
27		131106	289743			131106	386324	
28		88689	254532			88689	339377	
29		45000	217914			45000	290552	
30		0	179830			0	239774	
31			140223				186965	
32			99032				132043	
33			56194				74925	
34			11641				15522	
		30	34.26			30	34.26	

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Withdrawal Strategies

Str 1A: Withdraw (WD) from TEA then taxable account

--TEA exhausted in 10 years, and taxable acct exhausted in 30 years.

--Longevity = **30 years**

Str 1B: WD from taxable acct then TEA

--Longevity = **34.26 years**

Str 2A: WD from TDA then taxable account

--TDA exhausted in 10 years, and taxable acct exhausted in 30 years.

--Longevity = **30 years**

Str 2B: WD from taxable acct then TDA

--Longevity = **34.26 years**

Longevity gain is due to investor's return of 4% in TEA and TDA versus 3% return in taxable account.

4. Withdrawal Strategies with Progressive Tax Structure

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Assumptions

- Spending: $81,400 each year for single individual
- Inflation rate = 0% (for simplicity to keep tax brackets constant)
- 2013 federal tax brackets
- Personal exemption + standard deduction (≥65)= $11,500
- Top of 15% bracket = $36,350
- Thus, she can WD $47,750 from TDA each year with these WDs taxed at 15% or less
- WDs occur at beginning of year
- Str 1-5: asset is bonds earning 4% interest
- Str 5: 50% stks/50% bonds with stks earning -12.6%, 5%, and 22.6% returns for 4% geometric avg return

Withdrawal Strategies

Strategy 1. WD from Roth then TDA then taxable account – opposite of Conventional Wisdom

Strategy 2. Conventional Wisdom – Taxable account then TDA then TEA

Strategy 3. WD each year from TDA to top of 15% bracket and then withdraw (WD) from taxable account. Later, WD from TDA to top of 15% bracket and then WD from Roth.

Strategy 4. Convert each year from TDA to Roth to top of 15% bracket and WD additional funds from taxable account. Later, WD from TDA to top of 15% bracket and WD additional funds from Roth.

Withdrawal Strategies

Strategy 5

At beginning of each year, the retiree makes two separate Roth conversions of $47,750, which takes her income to top of 15% bracket. She also withdraws funds from taxable account until exhausted and then from Roth TEA. One Roth TEA will contain short-term bonds and the other US stocks (with repeating returns sequence of -12.6%, 22.6%, and 5%). At end of year, she recharacterizes the Roth with the lower value and retains the other. In late retirement years, she withdraws funds from tax-deferred account and tax-exempt account.

Summary of
"Tax-Efficient Withdrawal Strategies"

Withdrawal Strategy	Longevity of Fin Portfolio
Strategy 1: Roth then TDA then Taxable	30 years
Strategy 2: Taxable then TDA then Roth	33.15 years
Strategy 3: WD each year from TDA to top of 15% bracket and then WD from Taxable. After Taxable is exhausted, WD from TDA (top of 15% bracket) and then from Roth	34.37 years
Strategy 4: Convert each year from TDA to Roth to top of 15% bracket and also WD from Taxable. Later, WD from TDA and Roth	35.51 years
Strategy 5: Make two Roth conversions beginning of year and recharacterize lower valued Roth at end of year	**36.17 years**

RETIREE INCOME

	Strategy 1			Strategy 2			Strategy 3			Strategy 4			Strategy 5		
Year	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct
0	234928	916505	549601	234928	916505	549601	234928	916505	549601	234928	916505	549601	234928	916505	549601.17
1	159669	953165	571585	244325	953165	486929	244325	903505	526289	293985	903505	477106	293985	895579	477106
2	81400	991292	594449	254098	991292	421750	254098	889986	502277	355405	889986	402436	364286	881742	402436
3	0	1030944	618227	264262	1030944	353964	264262	875925	477545	419281	875925	325527	428995	867352	325527
4		968939	636031	274833	1072181	283467	274833	861302	452071	485712	861302	246309	495815	844459	246309
5		904454	654349	285826	1115069	210150	285826	846094	425832	554801	846094	164716	574189	828578	164716
6		837389	673194	297259	1159671	133900	297259	830278	398807	626653	830278	80674	647294	812061	80674
7		767642	692582	309149	1206058	54600	309149	813829	370970	695433	813829		716900	786957	
8		695106	712529	321515	1224166		321515	796722	342299	683063	796722		714271	768775	
9		619667	733050	334376	1169890		334376	778931	312767	670199	778931		703132	749866	
10		541212	754161	347751	1113443		347751	760428	282350	656820	760428		691070	722274	
11		459617	775881	361661	1054738		361661	741185	251020	642906	741185		687408	701505	
12		374760	798227	376127	993685		376127	721173	218750	628435	721173		675195	679905	
13		286507	821216	391173	930190		391173	700360	185512	613386	700360		662016	649515	
14		194725	844867	406819	864155		406819	678714	151277	597734	678714		657191	625835	
15		99272	869199	423092	795479		423092	656203	116015	581457	656203		643769	601209	
16		0	894232	440016	724056		440016	632791	79695	564528	632791		629333	567671	
17			845345	457617	649775		457617	608442	42285	546922	608442		623201	540718	
18			794503	475921	572524		475921	583120	3753	528612	583120		608419	512686	
19			741627	494958	492182		458675	556785		509570	556785		592569	475607	
20			686636	514756	408627		436835	529396		489766	529396		584967	444972	
21			629445	535347	321730		414121	500912		469169	500912		568656	413110	
22			569967	556761	231356		390499	471289		447749	471289		551215	372048	
23			508110	579031	137368		365932	440480		425472	440480		541958	337270	
24			443778	602192	39620		340382	408439		402304	408439		523927	301101	
25			376873	578906	0		313811	375117		378210	375117		504698	255559	
26			307292	517406			286176	340462		353151	340462		493580	216121	
27			234928	453447			257437	304420		327090	304420		473614	175106	
28			159669	386929			227547	266937		299987	266937		428216	160868	
29			81400	317750			196462	227954		271799	227954		381003	146061	
30			0	245804			164134	187412		242485	187412		331901	130661	
31				170980			130512	145249		211997	145249		280834	114646	
32				93163			95546	101399		180290	101399		227726	97989	
33				12234			59181	55795		147315	55795		172492	80667	
34							21361	8367		113020	8367		115050	62652	
35										41586			55310	43916	
36													13946		
		30			33.15			34.37			35.51			36.17	

Additional Longevity Comes from Two Principles

1. *Investor generally receives smaller portion of return on assets held in taxable account than TDA or TEA.*

2. *Look for opportunities to withdraw funds from TDA when those funds would be taxed at low rate for that retiree. These are likely to occur before RMDs begin and in years with high medical expenses.*

Strategy 1: TEA then TDA then Tax Acct – Opposite of Conventional Wisdom

Years 1-3: WD $81,400 at beg of years from TEA

Years 4-16: WD $99,271.67 at beg of years from TDA

Years 17-30: WD $81,400 at beg of years from taxable account

Beginning TEA, TDA, and taxable account balances are set so they are exhausted in Years 3, 16, and 30.

Strategy 2: Tax Acct then TDA then TEA - the Conventional Wisdom

- Years 1-7: WD $81,400 from tax acct at BOY
- Year 8: WD remaining tax acct balance + some from TDA
- Years 9-24: WD $99,271.67 from TDA
- Year 25: WD remaining TDA balance + some from TEA
- Years 26-33: WD $81,400 from TEA
- Year 34: WD remaining TEA balance
- Longevity = 33.15 years

Strategy 2: Insight Why Conventional Wisdom is Not Optimal

- Years 1-7: WD $81,400 from tax acct. She could have WD funds from TDA that would have been taxed at ≤ 15%.
- Years 9-24: WD $99,271.67 from TDA with $51,521.67 taxed at 25%.
- Years 26-33: WD $81,400 from TEA. Her AGI was $0. She could have WD funds from TDA that would have been taxed at 0% to 15%.

Strategy 3: Earlier years WD from TDA and Tax Acct and in Later Years from TDA and TEA

- Years 1-18: WD $47,750 from TDA and $38,641.25 from taxable account to meet spending need.
- Year 19: WD $47,750 from TDA, remaining tax acct balance + some from TEA.
- Years 20-34: WD $47,750 from TDA and $38,641.25 from TEA to meet spending need.
- Year 35: WD remaining funds.
- She never pays more than 15% on TDA WD.
- Longevity = 34.37 years

Strategy 4: Early Years convert $ from TDA and WD from Tax Acct. Later Years WD from TDA and TEA

- Years 1-6: Convert $47,750 from TDA and WD $81,400 + $4,991.25 from taxable account.
- Year 7: Convert $47,750 from TDA, WD remaining funds from tax acct + some from TEA.
- Years 8-34: WD $47,750 from TDA and $38,641.25 from TEA to meet spending need.
- Year 35: WD remaining TDA + some from TEA.
- Year 36: WD remaining funds from TEA
- Longevity = 35.51 years

Strategy 4: Insights Why Strategy 4 Beats Strategy 3

- After beginning-of-yr-1 distribution, Str 4 has $47,750 more in TEA and $47,750 less in taxable account than Str 3.
- After beginning-of-yr-7 distribution, Str 4 has $377,144 more in TEA than Str 3.
- Longevity advantage of Str 4 compared to Str 3 depends in part on size of taxable account.

Stratgy 5: Early Yrs Convert $ from TDA and WD from Tax Acct then TEA

- Years 1-6: Convert two $47,750 amounts from TDA and WD $81,400 + $4,991.25 from tax acct. At end of year, recharacterize Roth TEA with lower balance.
- Years 7: Convert two $47,750 amounts from TDA, WD remaining funds from tax acct + some from TEA.
- Years 8-27: Convert two $47,750 amounts from TDA and WD $81,400 + $4,991.25 from TEA. At end of year, recharacterize Roth TEA with lower balance.
- Years 28-35: WD $20,425 (Top 10%) from TDA and WD remaining $ from TEA to meet spending goal.
- Year 36: WD remaining TDA + some from TEA.
- Year 37: WD remaining funds.

Str 5: Insights Why Strategy 5 Beats Strategy 4

- The recharacterization option is valuable.
- Suppose converted TDA containing stocks rises from $47,750 to $60,000 at end of year. The $12,250 in gain is tax free due to Roth TEA status that year and forever.
- If stocks fall, then recharacterize Roth TEA containing stocks and retain Roth TEA containing bonds.
- Our model understates value of this option: 1) can convert > 2 amounts and 2) 21.5 month expiration period. Look-back feature allows precise conversion amount.

5. Sensitivity Analysis

Table 3: Sensitivity Analysis

Case	Strategy 1	Strategy 2	Strategy 3	Strategy 4	Strategy 5
Base	30.00	33.15	34.37	35.51	36.17
relative adv		3.15	1.22	1.14	0.66
Stocks-Bonds	30.96	33.15	34.87	35.72	36.13
relative adv		2.19	1.72	0.85	0.41
3% Return	25.68	27.07	28.10	28.59	29.10
relative adv		1.39	1.03	0.49	0.51
Lower Wealth	30.00	32.73	33.56	34.05	34.53
relative adv		2.73	0.83	0.49	0.47
Higher Volatility					36.60
relative adv					0.43
Sequence of Rets					36.45
relative adv					0.28

Except for Higher Volatility and Sequence of Returns Cases, “relative adv” denotes the relative advantage in terms of additional longevity compared to the next lower Strategy – e.g., Strategy 2 compared to Strategy 1. Relative advantage for Higher Volatility Case denotes the additional longevity in this Strategy 5 compared to Strategy 5 in the Base Case from increasing the volatility of the underlying investment asset. Relative advantage for Sequence of Returns Case denotes the additional longevity in this Strategy 5 compared to Strategy 5 in the Base Case from the more favorable sequence of returns.

Discussion of Sensitivity Analysis

- In practice, the longevity of a financial portfolio can vary with several factors including a) withdrawal strategy, b) asset allocation, c) asset returns, d) asset location, and e) size of the portfolio. The objective is to hold everything else constant, while changing only the withdrawal strategy.
- In this section, we present sensitivity analyses where we change the asset allocation, the rate of return, and the size of the portfolio. We did not address the asset-location decision because this decision may affect the portfolio's risk (Meyer and Reichenstein 2013b), and there is disagreement on how to calculate a portfolio's asset allocation (Reichenstein 2006a).
- Separately, we examined the sensitivity of the additional longevity of Strategy 5 compared to Strategy 4 to a) the volatility of the risky asset and b) the sequence of returns.
- In summary, the longevities of the financial portfolio always increase as we move from Strategy 1 to Strategy 5. Moreover, the relative sizes of the additional longevities as we move from Strategy 1 to 5 are consistent with expectations. In short, the lessons from this detailed example appear to prevail for other retirees.

6. Save some TDA funds for possibility of high-medical-expense years

High Medical Expenses Last 3 Years

- Now, assume the female retiree has $81,400 in medical expenses her last three years and dies at 94. Her beneficiary son is in 25% tax bracket.

- In Strategies 3 through 5, she withdraws funds the last three years from TDA and pays no taxes due to deductible medical expenses.

- If her son has 25% marginal tax rate, his after-tax inheritance in Strategies 1-5 will be, respectively, $81,400, $317,750, $410,943, $486,280, and $534,055.

	Strategy 1			Strategy 2			Strategy 3			Strategy 4			Strategy 5		
Year	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct	TEA	TDA	tax acct
26			307292	517406			286176	340462		353151	340462		493580	216121	0
27			234928	453447			297623	269424		367277	269424		513323	140110	0
28			159669	386929			309528	195545		381968	195545		533856	61058	0
29			81400	317750			321910	118711		397247	118711		534055	0	0

Insight from High Medical Expenses

- Ideally, save some funds in TDA to satisfy non-trivial probability of having high medical bills, especially late in life. In such years, marginal tax rate should be low, potentially zero.

7. Extensions in Progress

Marginal Tax Rates vs. Tax Brackets

- The analysis in this study showed the value of a strategy that will minimize the average of marginal tax rates on TDA withdrawals and conversions. This study assumed marginal tax rate = tax bracket.

- Complications: Marginal tax rate is not always the tax bracket. Yet, the marginal tax rate is the key variable.

Why Might Marginal Tax Rate Differ from Tax Brackets

1. Taxation of Social Security benefits
2. Increase in Medicare Part B and D premiums
3. Pease and PEPs: elimination of itemized deductions and personal exemption phase out
4. Increase in preferential capital gain tax rate
5. Net investment income tax
6. Medicare surtax

Next, let's look at the taxation of Social Security benefits and increase in Medicare Parts B and D premiums.

Taxation of Social Security Benefits

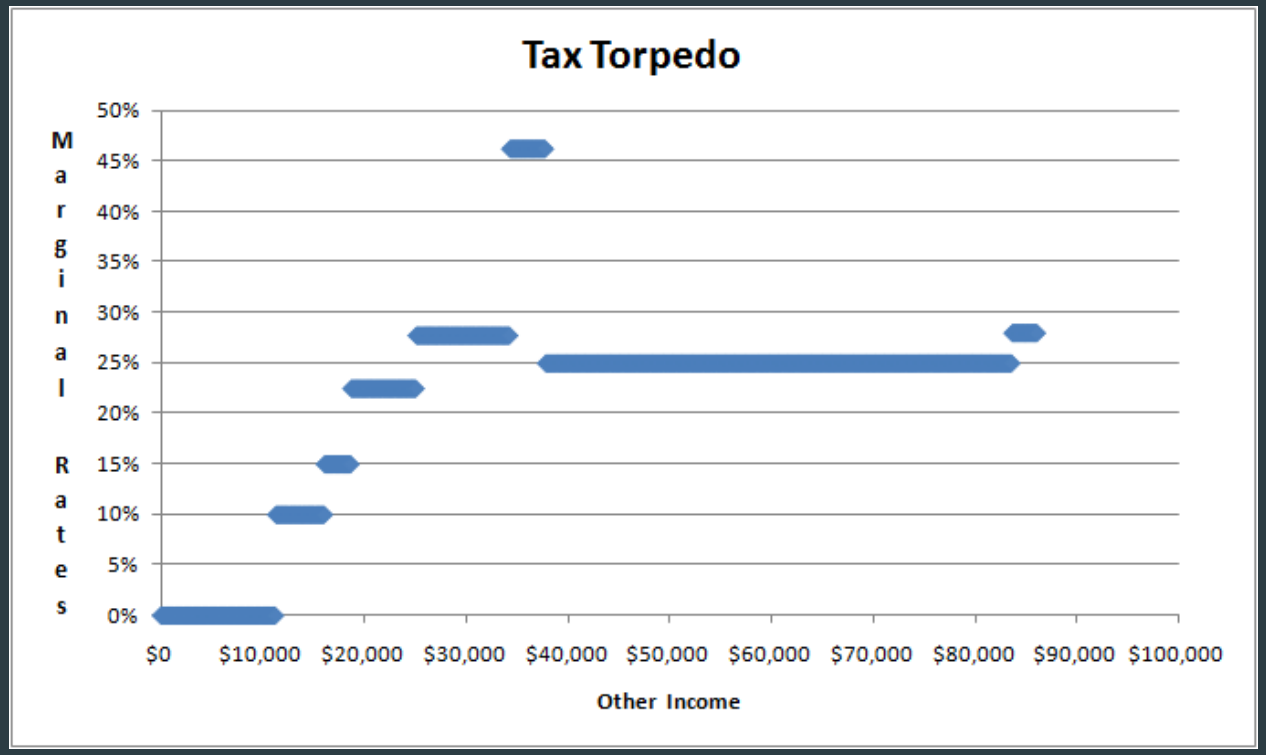
- For most single taxpayers, taxable portion of SS benefits is:

Provisional Income	Taxable Portion of SS Benefits
≤ $25,000	$0
$25,000 to $34,000	$0.50 for each dollar in this range
≥ $34,000	+ an additional $0.85 for each dollar above $34k until 85% of SS benefits are taxed

Provisional Income = AGI (excluding taxable SS benefits) + tax-exempt interest + 0.5*SS benefits.

Threshold income levels for couples: $32K and $44K.

Figure 1. Graph of Marginal Tax Rates (that is, the Tax Torpedo)



Tax bracket	0%	10%	10%	15%	15%	25%	25%
SS tax/per $	$0	$0	$0.50	$0.50	$0.85	$0.85	$0
Marginal Tax Rate	0%	10%	15%	22.5%	27.75%	46.25%	25%

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Medicare Parts B and D Premiums

- Medicare monthly premiums in 2015 are based on 2013 Modified Adjusted Gross Income (i.e., AGI + tax-exempt interest). There is a two year lag.

Singles	Couples	Part B	Part D
≤ $85K	≤ $170K	$104.90	Plan premium (PP)
85-107K	170-214K	$146.90	PP + $12.30
107-160K	214-320K	$209.80	PP + $31.80
160-214K	320-428K	$272.70	PP + $51.30
> 214K	> 428K	$335.70	PP + $70.80

Continued

- Increases in Medicare premiums are *de facto* tax increases.

- A $1 increase in Modified Adjusted Gross Income (i.e., AGI + tax-exempt interest) can cause a couple's Part B & D premiums to increase by $1,977.60 per year. This represents a 197,760% marginal tax rate.

Work in Progress at Retiree Inc.

- Gamma strategies: We measure and you can show to clients the value you can add by helping them make smart financial decisions. The largest values added come from making 1) smart Social Security claiming decisions and 2) smart tax-efficient withdrawal strategies.

- We are working to extend our software to incorporate tax-efficient withdrawal strategies that incorporate humps in marginal tax rate curves caused by 1) taxation of Social Security benefits, 2) increases in Medicare premiums, and 3) other factors.

8. Summary

Key Concepts and Ideas

- You can consistently add value to client accounts by using the Tax Code.
- A tax-deferred account is like a partnership with the government being a silent partner that "owns" t_n of the partnership's principal.
- Effective tax rate for TDA is 0%, same as for TEA.
- Look for opportunities to withdraw funds from TDAs when tax rate will be unusually low.
- These may occur before RMDs begin, when medical costs are high, before tax rate hike, and when charitable contributions are high.

Key Ideas for

Withdrawal Strategies

- Concerning withdrawals from TDA and conversions from TDA to Roth TEA, try to minimize the average of marginal tax rates on TDA withdrawals/conversions.
- Withdraw from TDA (or convert to Roth TEA) up to top of low bracket.
- Lower wealth taxpayers should beware of tax torpedo and higher wealth taxpayers should beware of increases in Medicare premiums.
- Roth conversions with recharacterizations, as necessary, help accommodate jumps in marginal tax rates.

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