Traditional 401(k)s versus the new Roth 401(k)s

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Abstract Starting 1st January, 2006 employers can offer a new retirement plan in addition to a traditional 401(k). This new plan, the Roth 401(k), is a tax-free variation of the traditional 401(k) with no income limits for eligibility. With the introduction of this new account many questions arise about whether one should invest in a traditional or a Roth 401(k) based on the financial factors influencing the decision.

Keywords: 401(k), employee pensions, pensions, retirement saving, Roth 401(k), tax deferral, traditional 401(k)

Introduction

Due to the benefits of tax-deferred retirement savings plans, employees, especially those in their peak earnings years, look to these to save money for retirement. One of the most popular tax-deferred plans used today, sought by employees and provided by many employers, is the 401(k) plan. The 401(k) plan, started in 1982, is an employer-sponsored retirement plan that allows employees on an elective basis to tax-defer a portion of their salary into the various investment alternatives offered by the plan. Often the employer 'sweetens' the offer by providing matching contributions. A description of the general characteristics of these traditional 401(k) plans is provided in Table 1.

As employees approach retirement (for

example 10–15 years before the expected date) the tax implications of receiving various forms of retirement income become more important. As all tax-deferred contributions and the accumulated investment income will be taxed as ordinary income for the individual upon withdrawal, the tax rate applied to this income during retirement becomes an important issue. Clearly, the higher the tax rate during retirement, the less income an employee will receive, other factors the same. Considering the current and future projected government deficits and funding problems along with the threat of rising inflation, the long-term prospects for lower or the same US Federal and state tax rates appears dim.

Due to the likelihood of higher future tax rates, many workers would like the

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Table 1: Characteristics of the traditional 401(k), Roth 401(k) and Roth IRAs in 2006

Feature	Traditional 401(k)	Roth 401(k)	Roth IRA
Eligibility	Employer sponsored - No employee income limits for eligibility.	Employer sponsored - No employee income limits for eligibility.	Single taxpayers with modified adjusted gross income less than \$95,000 (\$150,000 filing jointly)
Employee contributions and limits	Made with pre-tax dollars. Combined amount limits for both traditional and Roth 401(k)s are \$15,000 or \$20,000 if 50 years or older. ^a	Made with after-tax dollars. Combined amount limits for both traditional and Roth 401(k)s are \$15,000 or \$20,000 if 50 years or older.	Made with after-tax dollars. Annual limit \$4,000 (\$5,000 if 50 years or older). No age limit on when contributions must stop.
Employer contributions	Limited to traditional 401(k) only. Tax deductible to employer and tax-deferred. to employee.	Employer cannot contribute.	None
Withdrawals	Must start at 70½. Taxed as ordinary income. Tax penalty of 10 per cent applies if withdrawal occurs before 59½ years old unless hardship exceptions apply. After leave job can roll 401(k) into traditional IRA. Loans allowed up to maximum of \$50,000 or half the account balance.	Must start at 70½ but can retire and roll into a Roth IRA where funds continue to grow tax free and no age limit applies to withdrawals. Withdrawals are tax-free as long as Roth 401(k) is five years old and at least 59½ years of age. Tax penalty of 10 per cent applies to investment earnings if withdrawn before 59½ years of age. Loans allowed up to maximum of \$50,000 or half the account balance.	No age limit to start withdrawals. Distributions tax-free if existed for five years and over 59½, participant disabled or dies, used to pay \$10,000 of first-time qualified home buyer expenses.
Sunset provision	None	Beginning on 1st January, 2006 the Roth 401(k) was created by the Economic Growth and Tax Relief Reconciliation Act 2001 (EGTRRA), and is scheduled to expire in 2010 if not renewed.	None

^aSome employers limit employee's pre-tax contributions to the employer matching amount. Employee contributions above this limit are not tax-deferred.

option of using a tax-free retirement savings plan. As of this writing, the only tax-free retirement savings plan offered to US workers is the Roth IRA, which started in 1997 (Table 1 gives an overview of the its general characteristics). The Roth IRA seems to be especially desirable for younger workers starting their career and while they are in lower tax brackets. Deposits into a Roth IRA are on an after-tax-basis and any distributions in excess of the after-tax deposits to a Roth IRA can be tax-free if certain requirements are met. The after-tax

contributions are not taxed again. The Roth IRA has income eligibility restrictions making it a more viable option for younger workers with lower wages. In 2006, single taxpayers (filing jointly) with modified adjusted gross income over \$95,000 (\$150,000) are not eligible for a Roth IRA. Thus, many employees in their peak earning years are not eligible to contribute after-tax dollars with the possibility of tax-free income by using the Roth IRA. In addition, the maximum limit on annual contributions for Roth IRAs is \$4,000 in 2006 compared with \$15,000 for a 401(k).

Figure 1: Matching traditional 401(k) plus traditional 401(k) or Roth 401(k)

Starting 1st January, 2006, employers in the USA can offer the Roth 401(k) in addition to the traditional 401(k). The Roth 401(k), as enacted in the Economic Growth and Tax Relief Reconciliation Act 2001, goes into effect on that date and stays available through 2010 before disappearing (the sunset provision) unless extended by legislative action.¹ Similar to the Roth IRA, the Roth 401(k) is funded using after-tax contributions and can produce tax-free earnings at retirement if certain requirements are met. Employees can contribute to both types of 401(k) accounts but cannot switch assets between the two types of accounts as the tax ramifications and distribution rules differ. Employers' contributions can only go to the traditional 401(k). Employees can contribute amounts to either the traditional 401(k) or a Roth 401(k). Employees may also have a Roth IRA if they do not earn too much (see Table 1 for the characteristics of the Roth IRA).

Consider an employer offering a traditional 401(k) and a Roth 401(k) plan. (See Figure 1). In any given year, an employee can contribute income into the traditional 401(k) on a before-tax basis or into the Roth 401(k) on an after-tax basis. The employer can make matching contributions but they can only go into the traditional 401(k) on a

tax-deferred basis. The employee could elect to place money in the traditional 401(k) in some years and the Roth 401(k) in others, but cannot switch money once committed to a plan.

Comparing the traditional 401(K) with the Roth 401(K)

The advent of the new Roth 401(k) raises questions about whether to invest in a traditional 401(k) or Roth 401(k) or both. The purpose of this paper is to compare the two retirement saving programmes and draw some conclusions as to which is best and under what circumstances based on certain assumptions.

Table 2 compares the traditional 401(k) plan and the Roth 401(k) plan on the basis of the future value after-tax results at retirement at age 65. It is assumed that there is a constant tax rate of 25 per cent on all taxable deposits and withdrawals, worker's salary grows at 5 per cent a year and deposits are made at the end of each year earning an 8 per cent annual rate of return.² Three workers at various ages of their careers are examined. The first is a 24 year-old just entering the workforce with a starting salary of \$40,000. The second employee is an established worker earning \$87,315 at age 40. The third

Table 2: Future value amounts after-tax for a traditional 401(k) and a Roth 401(k)

Year	Age	Salary (\$)	Tax rate	Traditional 401(k)		Roth 401(k)	
				Amt deposited	Future value	Amt deposited	Future value
2005	24	40,000	0.25	2,400	56,310	1,800	42,232
2006	25	42,000	0.25	2,520	54,746	1,890	41,059
2007	26	44,100	0.25	2,646	53,225	1,985	39,919
2008	27	46,305	0.25	2,778	51,747	2,084	38,810
2009	28	48,620	0.25	2,917	50,309	2,188	37,732
2010	29	51,051	0.25	3,063	48,912	2,297	36,684
2011	30	53,604	0.25	3,216	47,553	2,412	35,665
2012	31	56,284	0.25	3,377	46,232	2,533	34,674
2013	32	59,098	0.25	3,546	44,948	2,659	33,711
2014	33	62,053	0.25	3,723	43,699	2,792	32,775
...							
2042	61	243,256	0.25	14,595	19,857	10,947	14,893
2043	62	255,419	0.25	15,325	19,305	11,494	14,479
2044	63	268,190	0.25	16,091	18,769	12,069	14,077
2045	64	281,600	0.25	16,896	18,248	12,672	13,686
2046	65	295,680	0.25	17,741	17,741	13,306	13,306
Traditional 401(k) accumulation				Roth 401(k) accumulation			
Starting age		Before tax	After tax	Starting age	Before tax	After tax	
24		1,406,232	1,054,674	24	1,054,674	1,054,674	
40		670,698	503,023	40	503,023	503,023	
50		353,595	265,197	50	265,197	265,197	

employee, a 50 year-old, is in their peak earning years with a salary of \$142,227. All salaries are a result of the 5 per cent annual growth rate based on the original \$40,000 starting salary at age 24.

In Table 2, each of the three employees has the option to place up to 6 per cent of their annual salary into either a traditional or Roth 401(k).³ Assume a marginal tax rate of 25 per cent on taxable deposits and withdrawals. A 6 per cent deposit into the traditional tax-deferred 401(k) in the first year equals \$2,400 [$\$40,000 \times 0.06$]. A 6 per cent deposit into the Roth 401(k) equals \$1,800 after-tax [$\$40,000 \times 0.06 \times (1 - 0.25)$]. Table 2 indicates that the after-tax disposable income is the same regardless of which plan one chooses. The after-tax disposable value for a 24 year-old is \$1,054,674, a 40 year-old \$503,023 and \$265,197 for a 50 year-old. Given equal and constant tax rates on deposits and withdrawals employees should be indifferent between the two plans.

Changing only the assumed tax-rate for deposits and withdrawals (but keeping the same rate for both), clearly impacts the numbers but not the result of indifference between the two plans. If the marginal tax rates are equal and constant, the after-tax value of each decision is the same within each age group. All other factors the same, the decision could make a difference to the US Treasury. Under the Roth 401(k) the Treasury receives the same tax revenue, in present value terms, sooner.

Relaxing the assumptions

Table 3 applies adjusted, annual future tax brackets based on a 3 per cent change in the Consumer Price Index (CPI). The IRS adjusts the tax brackets each year based on the observed increase in the CPI.⁴ Thus, in Table 3 the marginal tax rates on both deposits and withdrawals are more realistic than the assumption used in Table 2 where the

Table 3a: Future value of accumulated amounts after-tax for a traditional 401(k) and a Roth 401(k)

	Year	Age	Salary ^a	Indexed tax rate ^b	Traditional 401(k) Amt deposited	Future value ^c	Roth 401(k) Amt deposited	Future value ^c
1	2005	24	40,000	0.15	2,400	56,310	2,040	47,863
2	2006	25	42,000	0.15	2,520	54,746	2,142	46,534
3	2007	26	44,100	0.15	2,646	53,225	2,249	45,241
4	2008	27	46,305	0.15	2,778	51,747	2,362	43,985
5	2009	28	48,620	0.15	2,917	50,309	2,480	42,763
6	2010	29	51,051	0.15	3,063	48,912	2,604	41,575
7	2011	30	53,604	0.15	3,216	47,553	2,734	40,420
8	2012	31	56,284	0.15	3,377	46,232	2,870	39,297
9	2013	32	59,098	0.15	3,546	44,948	3,014	38,206
10	2014	33	62,053	0.15	3,723	43,699	3,165	37,144
...								
39	2043	62	255,419	0.25	15,325	19,305	11,494	14,479
40	2044	63	268,190	0.25	16,091	18,769	12,069	14,077
41	2045	64	281,600	0.25	16,896	18,248	12,672	13,686
42	2046	65	295,680	0.25	17,741	17,741	13,306	13,306
43	2047	66						

^aSalary increases 5 per cent annually^bCPI increases 3 per cent annually^cDeposits earn 8 per cent annually

Age of start	401(k) Future value	Roth 401(k) Future value
24	1,406,232	1,151,343
40	670,698	526,140
50	353,595	265,197
	Annuitised annual before-tax amount 401(k)	Roth 401(k)
Monthly factor	6.00	6.00
24	101,249	82,897
40	48,290	37,882
50	25,459	19,094

tax rates were equal and consistent over the time period presented and there was no consideration for the legislatively mandated indexed tax brackets.

Table 3 compares the after-tax disposable income at retirement age 65 between the two 401(k) plans using the indexed tax rates. It is assumed that the accumulated amount at retirement includes the employer's 6 per cent match into the traditional 401(k) using the same rate of return assumption. The marginal tax rate on retirement income is a function of the total retirement income received from all sources. As it is known that the employee will receive retirement

income from the employer's 6 per cent match into the traditional 401(k), this should be included along with other sources of retirement income, which is assumed to be zero for the purposes of this illustration, and the marginal tax-rate is applied to all retirement income. As most retirees, for tax purposes, take annuities at retirement instead of a lump sum withdrawal, the before-tax values in each plan are annuitised and the traditional 401(k) is subject to tax. The annuity factor of \$6 per month per \$1,000 of premium is based on a single life, age 65, life income annuity with no refund feature. One can observe at the

Table 3b: After-tax disposable income of traditional 401(k) versus Roth 401(k) with matching contributions

Age	Annuitised traditional 401(k), employer match before tax	Annuitised traditional 401(k), employee before tax	Annuitised Roth 401(k), contribution after tax	After-tax disposable income, employee select traditional 401(k)	After-tax disposable income, select Roth 401(k)
	(1)	(2)	(3)	(1 +2)	(1 ^a +3)
24	\$101,249	\$101,249	\$82,897	\$172,123	\$168,958
40	\$48,290	\$48,290	\$37,882	\$82,093	\$81,343
50	\$25,459	\$25,459	\$19,094	\$45,826	\$42,007

^aAdjusted for after-tax**Table 4:** Comparing the plans under different assumptions as to CPI and salary growth rates

Starting age	Annuitised traditional 401(k) employer match	Annuitised traditional employee contributions	Annuitised Roth, employee contributions	After-tax, select traditional	After-tax, select Roth
<i>Assume: CPI grows at 3 per cent and salary grows at 2 per cent</i>					
24	66,362	66,362	56,407	112,815	112,815
40	22,626	22,626	19,232	40,727	39,596
50	9,895	9,895	8,411	17,811	17,316
<i>Assume: CPI grows at 1 per cent and salary grows at 5 per cent</i>					
24	101,249	101,249	79,157	145,798	155,093
40	48,290	48,290	35,549	72,435	76,595
50	25,459	25,459	18,425	43,280	40,065

After-tax select traditional is the sum of the employer match plus the employee contribution to a traditional 401(k) after-tax at retirement age 65.

After-tax select Roth is the sum of the employer match plus the employee contribution to the Roth 401(k) after-tax at age 65.

bottom of Table 3 that investing in the traditional 401(k) at all three ages provides slightly higher disposable income than in investing in the Roth 401(k).

Table 4 compares the after-tax values under different assumptions about growth rates in CPI and wages.

Conclusions

Starting 1st January, 2006 employees who are offered the Roth 401(k) in addition to the traditional 401(k) will have to make a choice between the two retirement plans. Clearly, if the marginal tax rates imposed during the accumulation period are equal to the marginal tax rates imposed at withdrawal the financial results are the same. If marginal tax rates during accumulation

are lower than at retirement then the Roth 401(k) will be more desirable, as it is better to pay lower taxes when the deposit is made.

Future tax rates are clearly unknown and cause individuals to guess, estimate or project future tax rates. Adjusting tax brackets annually as mandated by Congress provides a more realistic picture of the applicable tax rates and directly addresses the ubiquitous assumption that retirement tax rates will be lower than the tax rates imposed during accumulation. This may not be the case.

Clearly, future factors can change but from using adjusted tax brackets over one's working life, the analysis indicates that the traditional 401(k) could be preferred to the Roth 401(k) option given the more realistic estimation of tax rates. If CPI grows faster than wages the

traditional 401(k) is preferred. Only when employee wage growth over time significantly exceeds (by at least 3 per cent or greater) the growth in the CPI does the Roth 401(k) become the plan of choice.

Employers may find the Roth 401(k) plan problematic. Note that employers must elect to offer the Roth option. Implementation of the Roth 401(k) option retirement plan has to add to the difficulty of record keeping. In addition, due to the Roth's uncertain future (expiration of legislation at the end of 2010), employers may be reluctant to implement the option. Hewitt Associates found that 33 per cent of companies surveyed plan to offer the Roth 401(k) in 2006. The majority may be correct not to offer the plan, not because of the additional costs of record keeping, but the plan may not be the one that produces the best benefit for most employees.

It is unlikely Congress will let a saving incentive plan like the Roth 401(k) expire especially given the low average savings rate of the country. In addition, under the Roth 401(k) the US Treasury receives tax receipts now instead of at retirement. If Congress does allow the plan to expire, employees will be able to keep benefits earned up to that point and may be able to roll-over balances into a version of a Roth IRA account.

Based on the analysis of the 401(k)

plans under the assumptions provided, the above comments and conclusions are extended to traditional IRA and Roth IRA plans. The mechanics and environment are identical except for the matching and contribution limitations. The Roth option, given the indexing of the tax brackets, may not produce the superior results as historically projected.

References

- 1 Educational and non-profit employers that offer 403(b) plans will be able to add Roth accounts. The Roth option will not be permitted in 457 plans offered by government employees.
- 2 Based on figures from the Social Security Administration, the annual geometric mean increase in the US national average wage has been approximately 5% over the period 1959–2004. The 8 per cent return on investments is a somewhat conservative assumption as the geometric mean return for large company stocks over the last 75 years is approximately 10 per cent.
- 3 Six per cent is a common match employers provide their employees. Under law, the employer's matching contribution must go into the traditional 401(k).
- 4 See IRC ss. 1(f), 63(c)(4), 151(d)(4). Based on the Social Security Administration statistics the geometric mean annual return on the CPI has been approximately 3 per cent over the period 1959–2004.

Further reading

Proposed Roth 401(k) Regulations, Department of Treasury, Internal Revenue Service, 26 CFR Part 1, REG-152354-04; 70FR. 10062–10066, 2nd March, 2005.

Senate Finance Committee Report's discussion of Proposed Roth 401(k) from Senate Report 106–411, Retirement Security and Savings Act 2000.

The Economic Growth and Tax Relief Reconciliation Act 2001.