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TAX RATIONALITY AND THE DEMAND FOR DIVIDENDS

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ABSTRACT: This paper investigates how taxes affect the individual's choice of investment income between dividends and long term capital gains. Using the Internal Revenue Service Individual Income Tax Model, we examine whether an individual's choice of dividends or long term capital gains is consistent with the objective of tax reduction or rationality. In addition, we measure the average aggregate tax burden of dividends when all sources of tax avoidance including tax exempt and tax deferred investment are considered.

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Tax Rationality and the Demand for Dividends

1. Introduction.

Previous work by Black (1976), Miller and Scholes (1978) and Miller (1985) attempts to reconcile the payment of dividends to shareholders with tax rationality. Rationality requires that shareholders attempt to reduce the tax liability of investment income when choosing between dividends and long term capital gains. For most individuals, rationality implies that additional investment income will be received as long term capital gains rather than as dividends, all else equal. This implication follows from the Internal Revenue Code (IRC), where, except in special circumstances,[1] dividends are taxed as ordinary income while 60 percent of realized long term capital gains are exempted from taxation. However, in spite of the tax penalty on dividend income, the Statistics of Income Individual Income Tax Returns reports that U.S. shareholders received $49.4 billion in taxable dividend income in 1984. If the $49.4 billion had been received as long term capital gains instead of dividends, shareholders' tax liability would have been reduced, on average, by up to $13.8 billion.[2]

Given the large receipt of dividends each year, we investigate how an individual's tax rate affects the choice of investment income between dividends and long term capital gains. Three samples are constructed from the Internal Revenue Service (IRS) Individual Tax Model where, a priori, the

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[1] These circumstances include the $100 ($200 if married and filing jointly) dividend exclusion, $750 of dividends paid to shareholders of electric utilities that can be deferred into capital gains at the time of sale, and liquidating dividends which qualify as returns to capital.

[2] The average marginal tax rate for individuals receiving dividends is given in Table 1 as 46 percent. The marginal tax rate on realized long term capital gains is 40 percent of 46 percent or 18 percent. Thus, the average tax rate difference between dividends and realized long term capital gains is, thus, 28 percent, implying an average tax savings of 0.28*$49.4 billion or $13.8 billion.

individual's cost of receiving dividends rather than long term capital gains differs for each sample. We then examine whether an individual's tax rate influences the choice of investment income between dividends or long term capital gains in a manner consistent with tax reduction or rationality. Further, because the cost of receiving dividends rather than long term capital gains is overstated by the amount of tax avoidance provided through 'accumulators', we measure the aggregate dividend tax avoidance provided to investors through investment in tax exempt and tax deferred investments, such as pension funds, individual retirement accounts and whole life insurance.

Section 2 of the paper discusses tax rationality and the individual's choice of investment income as dividends and long term capital gains. Section 3 describes the IRS Tax Model and reports descriptive statistics for the samples constructed from the Model. Section 4 examines the relation between dividends, long term capital gains and tax rates for members of the investing public, potentially constrained and dividend exclusion samples. Section 5 measures the effect of tax free and tax deferred investment on the overall tax liability of dividends paid by U.S. corporations. Section 6 contains the conclusion.

2. Taxes and Dividends

Previous work on taxes and investor demand for dividends focuses on the relation between the dividend yield of an investor's portfolio and his tax rate. Elton and Gruber (1970), Pettit (1977), and Lewellen, Stanley, Lease and Schlarbaum (1978) find that high tax rate individuals prefer low dividend yield securities. Pettit (1977), in particular, finds that the dividend yield on an investor's portfolio is significantly negatively related to his tax rate, holding other portfolio characteristics such as income and risk constant. Yet, he concludes that "the magnitude of the effect [of taxes] on portfolio choice is not large (p. 420)." However, studies by Lewellen, Stanley, Lease, and Schlarbaum (1978) and Pettit (1977) rely on data obtained from surveying investment brokerage house clients, which may be inaccurate with respect to reported income and tax rates.

In this paper we investigate how taxes affect the demand for dividends by examining three samples drawn from the IRS Individual Income Tax Model where an individual's taxes would be reduced by a different choice of investment income between dividends or long term capital gains. The first sample we investigate, the investing public, is composed of individuals for whom dividends are taxed more heavily than long term capital gains. Hence, if these investors are concerned about the higher taxation of dividends relative to realized long term capital gains, then as their marginal tax rates increase, they are expected to switch from dividends to realized long term capital gains to reduce the tax liability from investment income.

Miller and Scholes (1978) point out that there are investors whose taxes would be less if they received additional dividends rather than additional long term capital gains. Hence, the second sample examines potentially constrained investors or individuals affected by the provisions of

Section 163(d) of the Internal Revenue Code (IRC), which limits the deductibility of investment interest expense in relation to investment income.[3] Individuals constrained by the investment interest limitation in Section 163(d) are unable to deduct some portion of their investment interest expense in the current tax year. In this circumstance, if they receive additional dividends, then they may deduct dollar for dollar additional investment interest expense, thereby leaving current taxes unchanged. If, instead, they receive additional long term capital gains, then additional investment interest expense cannot be deducted in the current year and must be carried over to future tax years, thereby deferring tax savings. Thus, they lose the interest that could be earned on the tax savings from immediate deduction of investment interest expense.[4] Because the loss from postponing deductions is limited to interest earned on the tax savings, the potentially constrained investor's incentive to increase dividend income is not large. However, when compared to individuals for whom the receipt of dividends over long term capital gains increases their taxes, it is expected that potentially constrained investors will exhibit less aversion to dividends than the investing public.

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[3]Section 163(d) of the IRC limits the deduction of investment interest expense, which is defined as interest paid or accrued on indebtedness incurred on property held for investment, to the sum of net investment income plus $10,000 ($5,000 for married, filing separately). Net investment income is gross income from interest, dividends, rents, royalties, and any net short term capital losses less investment expenses. For purpose of computing the interest limitation, long term capital gains are excluded. Investment interest deductions in excess of the limitation may be carried over to future tax years until they are fully deducted.

[4]For example, suppose a constrained investor receives $100,000 in salary, $1,000 in interest income and has $12,000 in investment interest expense and a 50 percent tax rate. Under current law, ignoring the standard deduction, personal exemptions and all other sources of income or deduction, the individual's taxes are ($100,000-$11,000)*0.50 or $44,500. Were he to receive an additional $1,000 in dividends, current taxes remain unchanged at $44,500 or ($101,000-$12,000)*0.50. If the $1,000 were received as long term capital gains, then current taxes increase by $200 (0.40*$1,000*0.50).

The third sample, the dividend exclusion sample, consists of individuals who receive less than the $100 dividend exclusion ($200 if married and filing jointly) in total dividends and long term capital gains. For these individuals, taxes would be reduced by switching from long term capital gains to dividends. Given the small amount of investment income they receive, the sample also provides a means to determine if the dollar magnitude of taxation affects the choice of dividends and long term capital gains.

Finally, Miller and Scholes (1978) note that tax exempt and tax deferred investments provide individuals with another avenue or a 'second blade' of dividend tax reduction. If tax exempt and tax deferred investments are an important source of dividend tax avoidance, then the tax penalty associated with a dollar of dividends paid by corporations is less than the individual's marginal tax rate. In order to properly estimate the cost of receiving investment income as dividends rather than as long term capital gains, we identify and separate fully taxable distributions of dividends from tax exempt and tax deferred investments such as pension funds, individual retirement accounts and life insurance.

3. The IRS Tax Model

The data for this study are provided by the Internal Revenue Service Statistics of Income Individual Income Tax Model data file (henceforth Model) which contains a stratified random sample of unaudited 1040 and 1040A tax returns for 203,356 U.S. residents in 1979. Each record in the Model contains line by line totals of all 1040 and 1040A items along with relevant totals from Schedule A (Itemized deductions), Schedule B (Interest and dividend income), Schedule D (Capital gains and losses), Schedule E (Supplemental income), and other special form items. Hence, the Model contains all taxable

investment returns reported by an individual. Since the penalty for misstating income or dividends is greater for tax filing purposes than for other survey purposes, a high degree of accuracy is assured in the Model.

Table 1 presents descriptive statistics for the investing public, the potentially constrained, and the dividend exclusion samples in comparison to the U.S. population. The 'investing public' sample identifies individuals whose tax liability would be reduced by the receipt of long term capital gains over dividends. To construct this sample, first, we limit the sample to individuals with positive marginal tax rates to ensure that the receipt of dividends and long term capital gains has tax consequences to them. Second, we require that the dividends received by individuals exceed the exclusion amount of $100 ($200 if married and filing jointly) to ensure that dividends are taxed at a higher rate than long term capital gains. Third, we eliminate individuals whose investment interest expense exceeds net investment income before dividends and short term capital gains by more than $10,000 ($5,000 if married and filing separately) from the sample because these individuals are potentially constrained by Section 163(d). These exclusions result in a sample of 44,145 investors, who receive greater salary and wage income (SW79) and interest income (INT79) than the average individual in the U.S. population.[5] Members of the investing public receive, on average, $2,359.9 in taxable dividends and $2,159.3 in long term capital gains. Indicative of the investing public's greater financial resources is its higher average marginal tax rate of 32.3 percent compared to 18.9 percent for the U.S. population.

The 'potentially constrained' sample includes 3,880 returns where

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[5]The Model provides sampling rates which correspond to the frequency that a given return occurs in the total U.S. population. In constructing Table 1 all sample observations are weighted by their population sampling rates to obtain a representative (random) sample in the U.S. population.

Table 1

Descriptive Statistics for the U.S. Population (N=203,536), Investing Public (N=45,145), Potentially constrained (N=3,880) and Dividend Exclusion (N=10,105) samples from IRS Individual Tax Model for tax year 1979

	MEAN VALUES FOR 1979			
Data Item	U.S. Population	Investing Public	Potentially Constrained	Dividend Exclusion
DIV79[a]	$ 361.2	$ 2,359.9	$ 20,650.2	$ 0.0
LTCG79	756.6	2,159.3	26,896.4	5.7
NDIV79	17.3	138.2	784.9	6.7
SW79	13,261.2	23,544.1	106,946.9	22,030.9
INT79	$ 797.0	$ 3,063.3	$ 4,642.3	$ 1,203.1
TXRT79	18.9%	32.3%	50.6%	27.3%
DTXRT79	44.5%	45.5%	60.8%	0.0%

[a]DIV79 are taxable dividends received by individuals after the exclusion amount of $100 ($200 if married and filing jointly); LTCG79 are long term capital gains before 60 percent exclusion reported by individuals; NDIV79 are nontaxable dividends reported by individuals; SW79 is salary and wage income reported by individuals; INT79 is interest income reported by individuals; TXRT79 is the individual's marginal tax rate on any additional income; DTXRT79 is a dividend weighted marginal tax rate estimate computed by weighting TXRT79 by the proportion of taxable dividends received by each taxpayer relative to total taxable dividends received.

investment interest expense exceeds investment income less dividends and short term capital gains by more than $10,000 ($5,000 if married and filing separately). Potentially constrained investors receive more than eight times the amount of dividends and long term capital gains as the average member of the investing public. Further, their salary and wage income of $106,946.9 averages over four times the salary and wages of the investing public. Consistent with their greater financial resources, potentially constrained investors have an average marginal tax rate of 50.6 percent.

The 'dividend exclusion' sample is composed of 10,105 individuals for whom the sum of dividends and long term capital gains is less than the $100 exclusion ($200 if married and filing jointly) and greater than zero. The average marginal tax rate of 27.3 percent reflects the low amounts of investment income these individuals receive. Thus, the differences between the dividend exclusion sample and the investing public result largely from differences in investment income, as salary and wage income is, on average, approximately the same for both samples.

4. Empirical Results.

In this section we examine how tax rate affects the individual's relative receipt of dividend income in each of the three samples to determine whether the choice of investment income is consistent with tax reduction. We measure an individual's relative receipt of dividends, DIVRAT, as the ratio of taxable dividends after the $100/$200 exclusion (DIV79) to the sum of taxable dividends and realized long term capital gains before the 60 percent exclusion (LTCG79), where:

$$DIVRAT = DIV79/(DIV79 + LTCG79) \quad (1)$$

Hence, DIVRAT aggregates the total dollar value of taxable dividends relative to the total dollar value of all equity returns for each investor's portfolio. Moreover, because the market value of invested wealth enters both the numerator and denominator of DIVRAT, DIVRAT controls for the size of an investor's portfolio.

To measure ex ante tax rate, we use the marginal tax rate an individual would face in the absence of any dividend and/or realized long term capital gains income. Because income from either source increases marginal tax rate, it is necessary to remove the effect of dividends and the taxable portion of long term capital gains from an individual's ex post marginal tax rate. Holding the type of return filed (i.e. regular, income averaging or minimum tax) by an individual constant, we recompute his tax liability in the absence of dividends and long term capital gains by appropriately restating his adjusted gross income, itemized deductions and any additional taxes owed, such as minimum tax or alternative minimum tax. We then increase taxable income by one dollar and measure the resultant increase in total tax liability as the pre-dividend and pre-long term capital gains marginal tax rate, TXDC79. By using TXDC79 as the measure of marginal tax rate, we eliminate the built-in

positive relation between investment income and tax rates in the following regressions.

4.1 Investing Public

In panel A of Table 2, the DIVRAT ratio is regressed against marginal tax rate (TXDC79), interest income (INT79) and salary and wages (SW79) for 45,145 individuals whose taxes would be reduced by the choice of investment income as long term capital gains rather than as dividends. The coefficient estimate of -0.27 for TXDC79 in equation (1) indicates that DIVRAT falls from an average of 0.82 for lowest marginal tax rate individuals to 0.67 for highest marginal tax rate individuals.[6] The fall in the average value of DIVRAT from lowest to highest tax brackets implies that high tax bracket investors receive proportionally less of their investment income as dividends than low tax bracket investors. Further, the t-statistic of -26.0 for the coefficient of TXDC79 confirms that this is a strong statistical effect, consistent with individuals reducing their receipt of taxable dividends as their marginal tax rates increase.

Simple regressions of DIVRAT on interest income (INT79) and salary and wages (SW79) are also shown in equations (2) and (3) to isolate the effect of tax rate from other income or substitution effects. The negative relation in equations (2) and (3) between DIVRAT and INT79, and DIVRAT and SW79, respectively, indicate that interest income and salary and wages by themselves proxy for income. However, when TXDC79 is included with INT79 and SW79, as in equation (4), the relation between DIVRAT and TXDC79 remains significantly negative despite the presence of the other income variables.

In panel B of Table 2, the same analysis is performed as in panel A but

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[6] These averages are obtained by substituting 14 percent and 70 percent, the lowest and highest marginal tax brackets, respectively, in equation (1) for TXDC79 and solving for DIVRAT.

Table 2

Regression results for the ratio of taxable dividends to the sum of taxable dividends and long term capital gains (DIVRAT) on pre-dividend and pre-long term capital gains marginal tax rate (TXDC79), interest income (INT79) and salary and wages (SW79) for 45,145 investing public returns in Panel A and 175 groups in Panel B, for tax year 1979[a]

PANEL A: INDIVIDUAL RETURNS N=45,145

DIVRAT	INTERCEPT	TXDC79	INT79	SW79	R^2
(1)	0.86 (157.81)	-0.27 (-26.0)			0.02
(2)	0.74 (402.59)		-12.27* (-28.58)		0.02
(3)	0.73 (381.33)			-0.83* (-10.67)	0.0
(4)	0.84 (152.38)	-0.21 (-18.58)	-10.28* (-24.24)	-0.02* (-0.30)	0.03

PANEL B: GROUPED DATA N=175

DIVRAT	INTERCEPT	TXDC79	INT79	SW79	R^2
(1)	1.03 (34.22)	-1.05 (-18.16)			0.69
(2)	0.59 (35.33)		-62.0* (-1.22)		0.34
(3)	0.58 (28.62)			-6.51* (-5.03)	0.14
(4)	1.03 (33.62)	-1.04 (-14.43)	-23.28* (-4.52)	3.11* (3.52)	0.74

*Coefficient is reported as $x10^7$.

[a]T-statistics are in parenthesis. The R^2 reported is adjusted R^2.

for grouped data rather than for individual return data. The 45,145 sample is partitioned into 175 groups based on salary and wage income, interest income, and pre-dividend and pre-long term capital gains marginal tax rate to ensure an adequate number of returns per group. The DIVRAT ratio is then computed for each group rather than for each individual. Hence, the DIVRAT variable used in panel B is not the average of individual DIVRAT ratios but rather a value weighted mean computed as the sum of taxable dividends divided by the sum of total taxable dividends and realized long term capital gains for each group. Correspondingly, more weight is given in the regressions to those individuals reporting larger dividends and long term capital gains. Further, the regressions are estimated using weighted least squares to eliminate heteroscedasticity which results from an unequal number of tax returns per group. Accordingly, the weights correspond to the number of tax returns per group.

As a result of grouping, the coefficient estimates for equations (1)-(4) in panel B increase over those in panel A. In particular, the coefficient estimate for TXDC79 increases from -0.27 for equal weighted returns to -1.05 for value weighted returns in equation (1). The coefficient estimate for TXDC79 for grouped returns indicates that DIVRAT averages 0.88 for lowest tax rate individuals compared to 0.29 for highest tax rate individuals. Consistent with tax rationality, individuals receiving larger dollar amounts of dividends and long term capital gains reduce their relative receipt of taxable dividends more sharply than individuals receiving smaller amounts of dividends and long term capital gains. In dollar terms, the reduction in DIVRAT from 0.88 to 0.29 from lowest to highest tax bracket group amounts to a reduction in taxes of $20,175 per return for investors in the 70 percent

bracket.[7] In equation (4) of panel B, the t-statistic of TXDC79, after controlling for INT79 and SW79, remains high at -14.43. The R^2 of the regression improves from 3 percent to 74 percent. Thus, while taxes appear to explain little of a given individual's demand for dividends, the group results suggest that taxes act as a significant deterrent on the overall demand for dividends.

4.2 Potentially Constrained Investors

The potentially constrained sample contains individuals with positive marginal tax rates whose investment income less dividends and short term capital gains exceeds their investment interest expense by more than $10,000 ($5,000 if married and filing separately).[8] For these investors, the receipt of additional dividends leaves their current taxes unchanged, while the receipt of additional realized long term capital gains increases their taxes. Thus, it is expected that potentially constrained investors will show less aversion to dividends than the investing public.

In equation (1) in panel A of Table 3, DIVRAT and TXDC79 are significantly positively correlated. The coefficient estimate of TXDC79

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[7]The average total of dividends and long term capital gains for individuals in a 70 percent bracket is $81,420. The tax bill on investment income for DIVRAT=0.88 is $52,890, while the tax bill on investment income for DIVRAT=0.29 is $32,715, which amounts to a difference of $20,175.

[8]We designate potentially constrained investors this way because, according to the IRS data, no investor should be found actually constrained. An individual filing his tax return does not report his total investment interest expense but only that portion which is allowed. For filing purposes the reported amount may not exceed the interest limitation imposed by Section 163(d). Interest expense is broken into three categories in the Model: home mortgage, credit card and other interest. We use "other interest" to measure investment interest expense. However, there are individuals who are misclassified as potentially constrained because they have reported interest expense on borrowing for personal consumption along with their investment interest expense. The overlap between personal and investment interest expense means that we oversample the number of potentially constrained investors, thus weakening the overall results.

Table 3

Regression results for the ratio of taxable dividends to the sum of taxable dividends and long term capital gains (DIVRAT) on pre-dividend and pre-long term capital gains marginal tax rate (TXDC79), interest income (INT79) and salary and wages (SW79) for potentially constrained sample in Panel A and regressions results of the ratio of dividends before exclusion to the sum of dividends before exclusion and long term capital gains for dividend exclusion sample in Panel B, for tax year 1979.[a]

PANEL A: POTENTIALLY CONSTRAINED

DIVRAT	INTERCEPT	TXDC79	INT79	SW79	R^2
Individual returns N=3,880					
(1)	0.55 (22.03)	0.15 (3.45)			0.0
(2)	0.63 (99.21)		-1.19* (-3.09)		0.0
(3)	0.62 (79.35)			0.36* (2.07)	0.0
(4)	0.55 (22.14)	0.13 (2.99)	-1.19* (-3.11)	0.21* (1.17)	0.01
Grouped returns N=125					
(5)	0.41 (7.16)	0.04 (0.38)	-10.40* (-3.53)	0.89* (1.60)	0.10

PANEL B: DIVIDEND EXCLUSION

DIVRAT	INTERCEPT	TXDC79	INT79	SW79	R^2
Individual returns N=10,105					
(1)	0.92 (133.51)	-0.0 (-0.03)			0.0
(2)	0.92 (343.79)		-2.67* (-1.06)		0.0
(3)	0.91 (317.38)			0.52* (1.72)	0.0
(4)	0.92 (130.63)	-0.01 (-0.60)	-3.03* (-1.19)	0.65* (1.96)	0.0
Grouped returns N=125					
(5)	0.85 (70.30)	0.08 (2.01)	-64.32* (-5.16)	3.17* (3.32)	0.23

*Coefficient is reported as $x10^7$.
[a]T-statistics are in parenthesis. The R^2 reported is adjusted R^2.

indicates that DIVRAT rises from 0.57 for lowest tax rate individuals to 0.65 for highest rate individuals, indicating that higher tax rate individuals receive a greater portion of their investment income as dividends than lower tax rate individuals. In equation (4), the coefficient for TXDC79 remains significantly positive despite the inclusion of INT79 and SW79. In equation (5), after controlling for INT79 and SW79, a weighted least square regression of the 3,880 potentially constrained returns classified into 125 groups shows that TXDC79 and DIVRAT are unrelated.

In contrast to the strong aversion to dividends observed for the investing public, potentially constrained investors display no aversion to dividends. Whereas members of the investing public reduce the portion of investment income received as dividends as their tax rates increase, potentially constrained increase the portion of investment income received as dividends as their tax rates increase. The lack of strong positive effect for TXDC79 on the choice of investment income is due, in part, to the relatively small gain from additional dividends which is limited to interest earned on the tax savings from investment interest deductions. Further, uncertainty about the level of investment income or investment interest expense generated by an individual's portfolio will reduce the motivation to increase dividends in relation to long term capital gains. If investment interest expense turns out to be less than expected or dividend income greater than expected, then additional dividends will be taxed as ordinary income and individuals would be better off to receive long term capital gains instead. Thus, in light of the small and uncertain gains from increasing dividend income, the non-negative relation between DIVRAT and TXDC79 in the potentially constrained sample is convincing evidence that individuals respond rationally to specific provisions of the tax code in attempting to reduce the tax liability of investment

income.[9]

4.3 Dividend Exclusion Sample

The dividend exclusion sample consists of individuals for whom the sum of dividends and long term capital gains is less than the exclusion amount ($100, or $200 if married and filing jointly) but greater than zero. The sample is further restricted to individuals whose marginal tax rate is positive to again ensure that the choice between dividends and long term capital gains has tax consequences for these investors. By construction then, these individuals do not pay taxes on dividends, while long term capital gains are taxed at 40 percent of their marginal tax rate. Thus, these individuals should prefer dividends to realized long term capital gains.

The results of equation (1) in panel B of Table 3 for the dividend exclusion sample show no relation between DIVRAT and TXDC79. The lack of relation between DIVRAT and TXDC79 is striking given that the sample consists of 10,105 individual returns. In addition, equations (2) and (3) in panel A confirm that DIVRAT is unrelated to both INT79 and SW79. In equation (4), the effect of TXDC79 on DIVRAT is measured after controlling for possible substitution and income effects with INT79 and SW79. Consistent with the results for equation (1), there is no relation between DIVRAT and TXDC79. Equation (5) shows a weighted least square regression for 125 groups constructed from the 10,105 returns in the dividend exclusion sample. The coefficient of TXDC79 in equation (5) shows a small, nevertheless positive relation between DIVRAT and TXDC79. Thus, DIVRAT increases from 0.86 to 0.90,

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[9]The pending Tax Reform Bill will eliminate the unconditional deduction of $10,000 ($5,000 if married and filing separately) in investment interest expense for each individual. Under the proposed change, individuals must receive investment income in order to deduct any investment interest expense. Thus, all investors would be potentially constrained by the investment interest limitation and, in all likelihood, would exhibit less aversion to dividends relative to capital gains than under current law.

as TXDC79 increases from 14.0 percent to 70.0 percent.

The results in panel B of Table 3 provide additional support for rationality. First, as expected, individuals in the dividend exclusion sample show no aversion to dividends. Second, given the small amounts of investment income reported for this sample in Table 1, it is understandable that investors in the dividend exclusion sample are not greatly concerned with reducing taxation of investment income. Were all of the average $5.7 in long term capital gains reported in Table 1 received instead as dividends, then members of the dividend exclusion sample would save $0.62 per year, assuming a marginal tax rate of 27.3 percent.[10] Thus, the lack of strong impact of tax rate on the choice of investment income is directly traceable to the small amounts of tax savings at stake in the dividend exclusion sample.

4.4 Nontaxable dividends

DIVRAT is replaced with the ratio of nontaxable dividends to the sum of nontaxable dividends and realized long term capital gains (NDIVRAT) to see whether the relations observed for DIVRAT are characteristic of all dividends or simply taxable dividends. The results using nontaxable dividends show no relation between NDIVRAT and TXDC79 as the t-statistics for the coefficients of TXDC79 are indistinguishable from zero in all three samples. In general, the lack of significance for TXDC79 in the nontaxable dividend regressions further reinforces the belief that it is the relative tax liability of dividends versus realized long term capital gains that produces the observed relations with marginal tax rate.

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[10]The tax rate on long term capital gains is 40.0 percent of 27.3 percent or 10.90 percent. Hence, taxes owed on $5.7 of long term capital gains are 10.9 percent of $5.7 or $0.62.

5. Tax Avoidance and Accumulators

Since individuals respond rationally to taxes, as our results suggest, then firms must also be concerned with the tax implications of dividend policy. However, the tax consequences of a firm's dividend policy must also take into account the fact that dividends are received by both taxable and nontaxable shareholders. In this regard, the marginal tax rates on dividends computed by Peterson, Peterson and Ang (1985), among others, reflect the tax liability of taxable dividends rather than total dividends paid by firms. As such, the marginal tax rate estimates overstate the tax liability of dividends by the amount of dividend tax avoidance provided by tax free and tax deferred investment.

To determine the average tax burden on dividend income, Table 4 traces the total cash dividends paid by domestic corporations in 1979, some $86.7 billion, to tax exempt, tax deferred and taxable recipients and shows the proportion of dividends that remain taxable after all exemptions and deferrals.[11] Of the $86.7 billion reported in dividends paid in the Statistics of Income Corporate Returns, some $49 billion are dividends paid on New York Stock Exchange (NYSE) shares. The remainder is made up of common dividend distributions by other listed firms, by cash payments designated as dividends by all other domestic corporations, by preferred dividends and by corporate dividends taxed through partnerships.[12]

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[11] For a detailed explanation of the items in Table 4, see appendix.

[12] The payment of preferred dividends and the payment of dividends by small corporations taxed as partnerships which must be excluded in order to determine the average tax liability on common dividends. The total payment of preferred dividends is small and most accrue to U.S. corporations. In 1979, NYSE firms paid $2.2 billion in preferred dividends. (For information on preferred dividends, see the New York Stock Exchange Fact Book and the Mutual Fund Fact Book.) Thus, the $86.7 billion in total dividends paid is reduced by an upperbound estimate of $3.0 billion in preferred dividends and by $0.1 billion in corporate dividends taxed through partnerships to give total domestic common dividends paid of $83.6 billion in 1979.

Table 4

TAX EXEMPT, TAX DEFERRED, AND TAXABLE RECIPIENTS OF DIVIDEND INCOME:
Dollar Amounts (in billions) and Percentages Relative to Total U. S. Common Dividends Paid in 1979

Tax Exempt Dividends				
a. $100/$200 Dividend Exclusion	$ 1.5	(1.8%)		
b. Nontaxable Dividend Distributions	1.6	(1.9%)		
c. Dividends paid to U.S. Corporations from domestic corporations (85% Exclusion)	11.8	(14.1%)		
d. Tax Exempt Organizations				
— Private Foundations	1.3	(1.6%)		
— All Other (including University Endowments, Charities, Fraternal Orders, etc.)	4.1	(4.9%)		
e. Evasion	2.6	(3.1%)		
Total Tax Exempt Dividends			$ 22.9	(27.4%)
Tax Deferred Dividends				
f. IRA/Keogh Individual Holdings	$ 0.1	(0.1%)		
g. Whole Life Insurance Reserves	0.7	(0.8%)		
h. Pension Funds (Total of insured, private, state, & local, and U.S. Government funds)	12.6	(15.1%)		
Total Tax Deferred Dividends			$ 13.4	(16.0%)
Taxable Dividends				
Taxable Dividends reported by individuals on Form 1040	33.5			
Less: Foreign Dividends received by U.S. citizens	1.0			
i. Total Taxable Domestic Dividends	32.5	(38.9%)		
j. U.S. dividends received by foreign corporations and individuals	5.1	(6.1%)		
k. Taxable portion of Corporate Dividends (15%)	2.1	(2.5%)		
l. Dividends taxed as Capital Gains	0.9	(1.1%)		
Total Taxable Dividends			$ 40.6	(48.6%)
Total Identified Tax Exempt, Tax Deferred and Taxable Dividends			$ 76.9	(92.0%)
Discrepancy: dividends remaining unidentified			$ 6.7	(8.0%)
Total Common Dividends Paid By U.S. Corporations in 1979			$ 83.6	(100.0%)

As shown is Table 4, fully 27.4 percent or $22.9 billion in dividends paid out in 1979 are exempted from taxation. U.S. corporations, through the 85 percent dividend exclusion, are the largest recipients ($11.8 billion) of tax exempt dividend income. The other sources of tax exempt income--$100 dividend exclusion, nontaxable distributions, tax exempt organizations and evasion--together account for $11.1 billion or 13.3 percent of total dividends paid.

Pension funds are the largest recipient of tax deferred dividend income; they receive 15.1 percent or $12.6 billion of dividends paid in 1979. Neither IRA's or whole life insurance reserves accounts for a large percentage of tax deferred dividend income because the total of IRA and Keogh accounts amounted to $24.8 billion in 1979 and only a small percentage of that was invested in equity. Still the total tax deferred dividend income of $13.4 billion represents over 40 percent of all taxable dividend income ($32.5 billion) reported by U.S. citizens.

The last part of Table 4 itemizes the taxable recipients of dividend income. Individuals receive, after the $100 dividend exclusion, $33.5 billion in taxable dividends, of which $1.0 billion represents dividends received by U.S. citizens from holdings of foreign securities. Altogether 48.6 percent of dividends paid by domestic corporations (items i., j., k. and l.) are subject to current taxation. The remainder, over one half of all dividends paid by U.S. corporations, escape current and possibly all future taxation.[13]

Marginal tax rate estimates for dividends are combined in relation to the

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[13]The discrepancy is the difference between dividends we were able to identify as paid ($76.9B) and the SOI reported dividends paid less preferred dividends and corporate dividends taxed through partnerships ($83.6B). Sources of unidentified dividends would include dividends received through reversionary trusts and dividends received by individuals not filing returns.

percentage of dividends received by each group in Table 4 to compute a weighted average marginal tax rate for dividends in Table 5. Tax exempt recipients of dividend income are assigned a zero marginal tax rate on the 27.4 percent of total dividends paid they receive. Consistent with the effective tax rate estimates for pensions, all tax deferred recipients are assumed to have a marginal tax rate of 27 percent.[14] Taxable domestic dividends (item i.) are assigned the dividend weighted marginal tax rate of 46 percent reported in Table 1. In lieu of more precise information, we also assign the 5.1 percent of dividends paid to foreign corporations and individuals (item j.) a marginal tax rate of 46 percent. U.S. Corporations are assigned a marginal tax rate of 48 percent. Applying these marginal tax rate estimates in relation to the percentage of dividends received by each group, yields a weighted average marginal tax rate on dividend income of 28.5 percent.[15]

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[14]To estimate the effective tax rate on tax deferred investments we equate the after tax value of fully taxable investments with the after tax value of tax deferred investment. The Bureau of the Census, Statistical Abstract of the United States, 1981, reports that the median age of individuals holding IRA's and pension funds is 45. Hence, if we assume a 20 year horizon, a 10 percent rate of return, and a dividend weighted marginal tax rate for the average individual of 46 percent, then the effective tax rate is found by equating the after tax terminal value of fully taxable investment at an effective tax rate T_e with the after tax terminal value of tax deferred investment taxed at 46 percent at maturity.

$$[\,1 + 0.10(1 - T_e)]^{20} = [(1+0.10)^{20} - (0.46((1+0.10)^{20} - 1))]$$

Solving for T_e yields 27 percent which is approximately one half of the individual's current tax rate and considerably above zero. Note that the high effective tax rate after 20 years challenges the conventional wisdom that 10 years of deferral is as good as avoidance.

[15]Although IRA and Keogh accounts grew to $102.3 billion in 1983 (from $24.8 billion in 1979), the percentage of the assets invested in equity remains small. Thus, a weighted average marginal tax rate for dividends for 1983 would be little changed by the growth in these assets. Further, the proportion of taxable dividends reported by individuals to total common dividends paid by U.S. corporations is nearly the same in 1983 (39 percent) as it was in 1979 ($33.5B/$83.6B= 40 percent).

Table 5

Weighted Average Marginal Tax Rate Estimate for Total Dividends Paid By U.S. Corporations in 1979

TYPE OF DIVIDEND INCOME: LIABILITY	(1) AMOUNT[a] ($)	(2) PERCENTAGE OF DIVIDENDS PAID[b] (%)	(3) PERCENTAGE OF DIVIDENDS IDENTIFIED[b] (%)	(4) APPLICABLE TAX RATE	(5) PRO RATA TAX (3) X (4)
Tax Exempt	$ 22.9	27.4%	29.8%	0.0%	0.0%
Tax Deferred	13.4	15.1%	17.4%	27.0%	4.7%
Taxable					
- Individual & Foreign	37.6	45.0%	48.9%	46.0%	22.3%
- U.S. Corporations	2.1	2.1%	2.7%	48.0%	1.3%
- As Capital Gains	0.9	1.1%	1.2%	18.0%	0.2%
Total Dividends Identified	$ 76.9	92.0%	100.0%		
WEIGHTED AVERAGE TAX RATE ON DIVIDENDS PAID					28.5%

[a]The dollar amounts reported are in billions of dollars.

bThe percentage of dividends paid are computed relative to total U.S. dividends paid. The percentage of dividends identified as paid are percentages determined relative to the $76.9 B in dividends identified as paid from Table 4. The percentages in column (3) are obtained by dividing the percentages in column (2) by 0.92. This assures that the discrepancy receives the average marginal tax rate estimates for the recipient groups rather than assuming a marginal tax rate of zero for the discrepancy.

When all means of tax avoidance are used, the aggregate tax burden of dividends is lower by an additional one third over estimates which fail to consider the sizeable fraction of dividends paid to tax exempt and tax deferred recipients. Nevertheless, a substantial tax penalty remains, on average, for individuals receiving dividend income. The tax penalty of dividends means that firms should consider the tax burden of dividends relative to long term capital gains in determining dividend policy. For individual firms the split between taxable and nontaxable shareholders can differ substantially and, hence, must also affect the firm's choice of dividend policy.

6. Conclusions.

In this paper we provide evidence that individuals care about taxation and attempt to reduce their tax liability through the realization of investment income as dividends or long term capital gains. We compare three groups of individuals for whom the objective to reduce taxes necessitates a different choice between dividends and long term capital gains. Consistent with rationality, we find a strong reduction in the relative portion of investment income received as dividends as tax rate increases for members of the investing public. Also supporting rationality, potentially constrained investors receive proportionally larger amounts of dividend income as their tax rates rise. For individuals receiving less than $100 in total dividends and long term capital gains, the dividend exclusion sample, tax rate does not play a significant role in their choice of investment income. Overall, all three samples confirm that individuals choose to receive dividends and long term capital gains in a manner consistent with tax reduction or rationality.

If individuals are concerned about taxation, then firms paying dividends

must also be concerned with their dividend policy. Our results imply that changes in dividend policy are likely to alter an investor's portfolio. As a result, firms should consider the tax consequences of changes in dividend policy to their shareholders. The tax consequences of dividend policy must take into account the fact that the firm's taxable and nontaxable shareholders have conflicting preferences for dividends and long term capital gains. In this sense, our results concur with the oft cited managerial prescription that the 'best dividend policy is a stable dividend policy.'

Finally, previous investigators of the 'dividend puzzle' [e.g. Black (1976), Miller and Scholes (1978) and Miller (1985)] have been motivated by the weak evidence for rationality in the dividend clientele literature to seek 'other rational' explanations for the continued supply of and demand for dividends by firms and individuals. In contrast, our findings provide strong evidence that individuals rationally choose to receive investment income as dividends or long term capital gains. While other factors undoubtedly influence the choice between dividends and long term capital gains, our results establish that taxes play a prominent role in the decision. Thus, the strong support for rationality presented in this paper helps make the dividend puzzle a little less puzzling.

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Appendix

The purpose of this appendix is to provide detailed references to the sources of tax exempt, tax deferred and taxable dividends, items a. - k., in Table 4. We found no direct source which reports the amount of taxable and nontaxable dividends received by individuals or paid by U.S. corporations so the information in the table is compiled from a number of government, institutional and private sources. Wherever possible, information for the table is taken from the U.S. Internal Revenue Service Statistics of Income Corporate Returns and Individual Income Tax Returns for 1979. Below is a description of the computation of each item appearing in the table:

Tax Exempt Dividends:

a. $100 dividend exclusion ($200 for married filing jointly) -- The amount of dividend income exempted by the $100/$200 dividend exclusion is estimated by totaling the amount of excluded dividends from the 1979 IRS Model data.

b. Nontaxable Distributions -- Nontaxable dividends are dividends paid by firms who have negative income for tax purposes. This value is estimated from the 1979 IRS Model Data by summing the amounts reported as nontaxable dividends. The total of nontaxable distributions and the $100/$200 dividend exclusion, or $4 billion, is also reported in SOI Selected Statistical Series.

c. Dividends paid to U.S. Corporations from domestic corporations -- Dividends paid to U.S. Corporations from domestic corporations is from SOI Corporate Returns, 1979.

d. Tax Exempt Organizations -- The IRS estimates in "Private Foundations, 1982," (SOI Bulletin, vol. 5, No. 1, Summer 1985), that private foundations received $1.2 B in dividends on 93 percent of total private foundation assets in 1979.

The Internal Revenue Service, in a supplemental report entitled Nonprofit Organizations, 1975-1978, provides data on the total assets of all tax exempt organizations except private foundations with receipts of $10,000 or more. In 1978, the total assets of "other" tax exempt organizations equaled $174.7 B. Total assets grew approximately 25 percent in each of the previous two years; thus, $217.6 B in total assets is estimated for 1979. Not all assets of tax exempt organizations are held in equity, but we could find no direct source of information on the composition of

their assets. As an approximation, Institutional Investor reports the portfolio mix of the 300 largest money fund managers who invest a large percentage of the aggregate tax exempt assets. The average ratio of equity/total assets for the 300 funds in 1983 is 38 percent. Thirty-eight percent of the $217.6 B in total assets is estimated as equity. A 5.0 percent dividend yield, reported as the median dividend yield in the NYSE Factbook for 1979, is applied to $82.7 B in equity to estimate $4.1 B in dividends.

e. Evasion -- Clotfelter (1983) estimates that the compliance rate for dividends is 97.5 percent, and other studies support his result. A compliance rate of 97 percent (or 3 percent evasion) is applied to the $86.7 B in total dividends paid in 1979. This amount of evasion is a lower bound estimate as the compliance rate on dividends is based on a comparison of audited to filed returns. Thus, those individuals not filing are not measured in the compliance rate at all. When individuals not filing are included, the compliance rates drop to between 84 and 92 percent. See U.S. Internal Revenue Service, "Estimates of Income Unreported on Individual Income Tax Returns," 1979.

Tax Deferred Dividends

f. IRA/Keogh Individual Holdings -- This value is estimated from information in Table 4, Outstanding Amounts in IRAs and Keogh Plans with Selected Financial Institutions, in Pension Facts, 1980, p. 14. Individuals are assumed to hold the $3.2 billion of IRA and Keogh assets held in Mutual Funds in 1979. Approximately 60 percent of the $3.2 billion in assets is held in equity and it is assumed to earn an average dividend yield of 5.0 percent. Individual holdings of IRA's and Keogh assets do not include IRA and Keogh's held through insurance or private pension funds as these are included in pension funds.

g. Whole Life Insurance Reserves -- Whole Life Insurance Reserves are estimated from information provided in the Life Insurance Factbook (LIFB), 1980, a publication of the American Council Of Life Insurance. The LIFB reports that whole life plans make up 61 percent of ordinary life insurance, less than 1 percent of group life insurance and 91 percent of industrial life insurance plans. Life Insurance companies have approximately $166.1 billion in reserves backing ordinary insurance plans and $13 billion backing industrial plans. Thus, 61 percent of the $166.1 B and 91 percent of the $13 B is assumed held for whole life policies. The LIFB reports that 6.5 percent of total assets of insurance companies are held in common equity and this percentage is applied to the $113.2 B in whole life reserves to estimate the equity portion of these reserves. The 5.0 percent dividend yield estimate is applied to $7.4 B in equity to estimate $0.4 B in dividends.

However, the above does not fully measure all of the assets held as reserves for whole life policies and, thus, $0.4 B is a low estimate of the dividends received through whole life plans. Another estimate of the tax deferred dividends received through whole life insurance can be obtained by determining the total equity held in all non pension assets of insurance companies or 6.5 percent of $293.1 B. This represents some $19 B in equity

which is assumed to yield 5.0 percent or $1.0 B in dividends. This is an upperbound estimate because many of the $293.1 B in assets are reserves for term insurance which has no cash value or deferral features. In Table 6 we report the average of the two estimates.

h. Pension Funds -- The SEC Monthly Statistical Review (Vol. 39, August 1980) reports that private and public pension fund assets totalled $609.3 B in 1979 with $139.2 B held in insured funds, $223.5 B in private non-insured funds and $246.6 B in public funds. The distribution of funds by type is important because the proportion of equity varies significantly by type of fund. The SEC reports that 14 percent of insured pension fund reserves are held as equity while private pension funds hold over 50 percent of their assets as equity. Kotlikoff and Smith (1983) estimate that equity makes up 54 percent of private pension fund assets in 1979. They also report that public pension funds which include state and local and U.S. Federal pensions hold 16 percent of their assets in equity which is a lower estimate than the 25 percent reported by the SEC; we use the average. Both sources agree that U.S. Federal pensions hold virtually no equity.

Assets held by private pension funds exceed the $223.5 B reported above by the SEC because these estimates are derived from historical series which do not include private pension funds started after 1967. Kotlikoff and Smith estimate that the assets in private pension funds are understated by $156 B in 1980. This figure is reduced by 15 percent to $136 B for 1979 on the assumption of a 15 percent growth rate and added to $223.5 B to estimate total private pension fund assets at $359.5 B. The $251.2 B in equity is assumed to earn the 5.0 dividend yield, resulting in $12.6 B in estimated tax deferred dividends.

The numbers following serve as a basis to determine the equity proportion of pension assets:

	Assets	% Equity	Equity
Insured Pensions	$139.2	14.0	$ 19.5
Private Pensions	359.5	54.0	194.1
State & Local Pensions	178.9	21.0	37.6
Total Equity			$251.2

Taxable Dividends

i. Taxable Dividends reported by individuals on Form 1040 -- This value is reported in the SOI Individual Tax Returns for 1979. Foreign dividends received by U.S. citizens are estimated from the $32.1 B in market value of equity of common shares of foreign corporations reported in the NYSE Factbook for 1979. Roughly half of this stock is held by U.S. citizens. Thus, 5.0 percent of $16 B is estimated as dividends received from foreign corporations.

j. Dividends received by foreigners -- The dividends received by foreigners through direct investment, defined as investment involving the purchase of more than 10 percent equity control, is estimated from data reported in Brundage and Starchild (1982).

Total direct investment by foreigners in the U.S. amounted to $54.5 B in 1979. A similar estimate for the total of foreign direct investment ($52.3 B) is reported in the Survey of Current Business (vol. 60, August 1980) but total dividends of incorporated affiliates are reported there as $1 B. In addition to direct investment foreigners hold $48.3 B in equity securities (from Table 1-3 in Brundage and Starchild). The total of $54.5 in direct investment and $48.3 in securities is assumed to pay 5 percent in dividends.

k. Taxable portion of Corporate Dividends -- This represents 15 percent of the dividends paid to U.S. corporation from domestic corporation, see item c.

l. Dividends taxed as capital gains are reported in the SOI Individual Income Tax Returns for 1979.