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The Effect of Taxes on the Relative Valuation of Dividends and Capital Gains: Evidence from Dual-Class British Investment Trusts

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ABSTRACT

We provide evidence that taxes affect equity valuation by studying British investment trusts having otherwise identical classes of cash- and stock-dividend-paying shares outstanding. We study 1969–1982, a period in which there were two dramatic changes in tax policy. We find that stock-dividend shares, which are convertible into cash-dividend shares, sell at premiums when the tax system favors capital gains and at discounts when the tax advantage of capital gains is reduced. After the 1975 elimination of the tax advantage to stock-dividend shares, we observe that investors convert virtually all stock-dividend shares into cash-dividend shares.

THE POSSIBLE EXISTENCE OF tax-related dividend clienteles remains a controversy. Long (1978), Poterba (1986), and Bailey (1988) study firms with two classes of shares, one class paying stock dividends and the other paying cash dividends, for evidence of these clienteles and their effects on equity valuation. The evidence from these studies is mixed. Long finds evidence supporting an investor preference for cash dividends over capital gains while Poterba and Bailey find no evidence of a preference for cash dividends. We provide additional evidence on tax clienteles and their effects on equity valuation by studying twelve British investment trusts having one class of shares entitled only to stock dividends (or scrip dividends, the British term) and another class entitled only to cash dividends.

Our study of dual-class British investment trusts provides unique insights into the existence of dividend clienteles for several reasons. First, we can

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observe changes in the relative prices of the two share classes around two major policy changes directly affecting the tax treatment of dividends during the period of our study, 1969 through 1982. Second, the corporate charters of the investment trusts we study require paying the stock-dividend shares (hereafter, scrip shares) dividends in equivalent value to those declared on cash-dividend shares (hereafter, cash shares). Finally, the scrip shares are costlessly convertible into cash shares on specified annual dates. Conversion is an alternative way for investors to adjust their portfolios to changes in marginal personal tax rates. Examining the pattern of conversions around changes in tax laws is a new and direct test for the existence of dividend clienteles.

Because we examine pure investment companies as opposed to operating firms, we can more effectively isolate the effects of taxes on valuation. First, the fact that dual-class British investment trusts pay out virtually 100% of earnings as dividends frees us from the complications of examining the impact of taxes on corporate payout policies. Second, we do not have to address the information content of dividends because when an investment trust changes its dividend policy there is no implied signal of a change in the firm's investment or financing policies.

Our findings suggest the existence of tax-related dividend clienteles. We observe that scrip shares sell at a premium when stock dividends are taxed preferentially relative to cash dividends. Cash shares sell at premiums over scrip shares when the tax treatment of the two types of dividends is equal, and we also observe large-scale conversion of scrip shares into cash shares.

Section I briefly describes the British tax systems in effect during the 1969-1982 period and presents our hypotheses. Section II describes the sample and Section III discusses the results. We summarize the paper and draw some conclusions in Section IV.

I. Hypotheses

Our study is concerned with the classical tax system which was in effect from 1965 to 1973 and the imputation system which has been in effect since then.[1] In this section we discuss the relative valuation of scrip shares and cash shares for the following time periods:

1) January 1969-March 1971: classical tax system;
2) April 1971-March 1973: anticipation of the imputation tax system after the Conservative electoral victory;
3) April 1973-March 1975: imputation tax system with capital gains taxation of scrip dividends and ordinary income taxation of cash dividends; and

[1]British tax systems are described in detail in King (1977) and Hammer (1975). Poterba and Summers (1984, 1985) provide a detailed description of the tax systems in operation during our study period.

4) April 1975–present; imputation system with ordinary income taxation of both scrip and cash dividends (no differential taxation).

Throughout the discussion, our implied null hypothesis is that taxes will not affect the relative valuation of the two classes of shares. Under the null hypothesis, there is no reason to expect changes in either the relative valuation of the shares or the pattern of conversions. The null hypothesis would hold if the marginal investors in the U.K. are indifferent between cash dividends and capital gains or if investors can launder dividend income, effectively rendering it tax-free.[2] The alternative hypothesis is that taxes will affect relative valuation and conversion patterns.

A. The Classical System

In 1965 the British adopted a classical tax system with a statutory tax rate of 30% on realized capital gains. This capital gains tax rate remained in force throughout our study period. The distinguishing feature of a classical tax system is separate taxation of corporate and personal income. Company profits are taxed once at the corporate level, and remaining profits distributed as dividends are taxed again as personal income to shareholders.[3] Since the statutory and effective tax rates on personal investment income are greater than the rates on capital gains under the classical system we predict that scrip shares sell at a premium to cash shares.[4] Further, there should be little incentive to convert scrip shares into cash shares under the classical tax system.

B. The Imputation System

After the general election in October 1970 the new Conservative government announced plans to integrate personal and corporate taxation to reduce the tax discrimination against dividends inherent in a classical tax system. The imputation system, announced in April 1971 and adopted in April 1973, required firms to pay Advance Corporation Tax (ACT) on cash dividends which would then be called net-dividends. The recipient of cash dividends

[2]Miller and Scholes (1978) show how individual investors in the U.S. can launder dividend income to avoid taxation. Later in Section I we document classes of British investors who would be indifferent between cash dividends and scrip dividends. This establishes the viability of our null hypothesis.

[3]Under the classical system, corporate taxes on corporate earnings are unavoidable for individual investors, even for pension funds and others who are exempt from taxes on income received as dividends or capital gains. Only untaxed investors, however, would be indifferent to the form of their investment return. All taxable investors would prefer capital gains.

[4]The weighted average marginal cash dividend tax rates and capital gains tax rates reported in Poterba and Summers (1984, p. 1401) show that effective personal tax rates on dividend income were higher than those on capital gains during the classical tax system. Also, statutory tax rates were higher for essentially all taxable investors during this period.

would also receive a tax credit equal to the ACT rate times the gross (pretax) amount of the cash dividend. The ACT would not be required for scrip dividends, and a corporate profits tax would be levied on retained earnings.[5]

While the imputation system was not formally proposed and adopted until April 1973, the essential details were made public at the time of the first Conservative budget in April 1971. The April 1971 budget also promised immediate reductions in marginal statutory tax rates on personal investment income.[6] Poterba and Summers' (1984) calculations of weighted average marginal tax rates show that effective rates on both dividends and capital gains declined after 1971 and also that the effective rate on dividends declined relative to that on capital gains.[7]

Our discussion of the imputation system leads to several predictions about relative prices of the scrip and cash shares of our sample of investment trusts. After the April 1971 announcement of the planned switch to an imputation system, the price of scrip shares should begin to decline relative to the price of cash shares because of the relative decline in the effective tax rate on cash dividends after 1971.[8] During the 1971 through 1973 transition between the classical and imputation systems, we should observe little conversion of scrip shares into cash shares since there was still a tax advantage to capital gains. The actual adoption of the imputation system in April 1973 and the further reduction in effective tax rates on personal investment income should be associated with a further decline in the relative price of scrip shares.[9] We expect to see little change in the rate of conversion of scrip shares.

The adoption of the imputation system was expected to substantially increase corporate payout for most British companies. Feldstein (1970) shows that corporate payout increased after a similar British tax law change in 1958. Since investment trusts had always paid out virtually all of their income as dividends, their payout policies were unaffected by the new sys-

[5]Because no ACT was required, many industrial firms began paying scrip dividends instead of cash dividends during the period of April 1973 to April 1975. No major industrial corporation, however, adopted a dual-class capitalization during this period, or at any other time covered by our study period. For more details on the imputation system and the ACT see Hammer (1975), Poterba and Summers (1984), King and Fullerton (1984, Chap. 3), or Poterba and Summers (1985). Poterba and Summers (1984, p. 1401) provides an example of how dividend taxes are calculated under the imputation system.

[6]For details of the 1971 budget speech see Poterba and Summers (1985, p. 261).

[7]See Table I in Poterba and Summers (1984, p. 1401).

[8]It is easy to verify that most taxable investors would value cash dividends relatively more than scrip dividends (or capital gains) under an imputation system. The relative decline in the effective tax rate on cash dividends should cause an even greater change in the relative prices of the two classes of shares. We cannot, however, separate these two effects. Poterba and Summers (1984) examine changes in ex-dividend day behavior around the same changes in the British tax laws. Their results are consistent with an increased preference for cash dividends after 1971.

[9]Concomitant with the adoption of the imputation system in 1973 the government further reduced the marginal statutory tax rates on personal investment income and left the capital gains rate unchanged. Poterba and Summers (1984) verify that the effective tax rate on cash dividends declined relative to the capital gains rate.

tem.[10] The fraction of a given amount of corporate source income which could be passed through to investors, however, substantially increased.

C. The Imputation Tax System with Equivalent Personal Taxation of Scrip and Cash Dividends (After April 1975)

In April 1975 a new Labour government closed the scrip share loophole by ruling that scrip dividends would be taxed as ordinary income rather than as capital gains. Further, since ACT had not been withheld on scrip shares, scrip dividends imposed a cash tax liability on most investors who received them. Given equal taxation, transaction costs induced a preference for the cash shares since the recipient of the scrip dividend receives no tax credit but instead incurs a cash tax liability. No investor should have a tax-based preference for scrip shares after April 1975, and most should strongly prefer a cash dividend with its attendant tax credit to a scrip dividend on which taxes have to be paid in cash.

It is during this tax regime that the one-way conversion feature is expected to have its greatest value and achieve its greatest impact on the relative valuation of scrip and cash shares. Investors will increase their use of the conversion feature and it will become the margin against which relative prices are determined. We predict that after April 1975 cash shares will sell at large premiums over scrip shares. As the premium for cash shares increases there should be a dramatic increase in the conversion of scrip shares into cash shares.

D. Tax-Neutral Investors in Great Britain

To establish that the null hypothesis of no tax effect is not merely a straw man, we must document the existence of at least one significant class of investors in Great Britain for whom dividend taxes do not affect the relative valuation of claims to equal pre-personal-tax corporate distributions.[11] There are several types of British investors who would be indifferent between equal pretax amounts of dividend and capital gains income. The most important of these tax-neutral investors are pension funds, including those under the

[10]Investment trusts were legally required to pay out at least 85% of their income as dividends. On April 21, 1975 The Economist reported dividend payouts for dual-class British investment trusts in an article "Scrips Scrapped?," p. 128. The investment trusts typically pay out at least 95% of their income as dividends. For a detailed description of the legal requirements for qualifying as an investment trust in Great Britain see Chapter 16 of Revell (1973).

[11]We should point out that no class of investor, taxed or untaxed, would have been indifferent to the various dividend tax changes in our study. The adoption of the imputation system, for example, should increase investor preference for corporate equity in general and corporate dividend payments in particular, since the combined corporate and personal tax burden on distributed corporate source income declined. Adoption of the imputation system would not, however, affect the relative valuation of dividend and capital gains income for untaxed investors, although it would for investors subject to personal taxation. By focusing on relative pricing of the two shares classes and on conversion patterns we are therefore able to test directly whether the marginal British investor is sensitive to dividend taxation.

management of insurance companies. In general, the income received by these funds is nontaxable, and in special cases where share income is subject to taxes there is no distinction between dividends and capital gains.

Other classes of tax-exempt investors include charities, the self-employed (for their retirement funds), and certain nonresident investors.[12] While we cannot say definitely whether these investors have an important impact on share valuation, King and Fullerton (1984) document that during the period we study their share ownership was nontrivial and increasing. Tax-exempt shareholders owned 12.6% of outstanding British common equity in 1969, and by 1980 their ownership had increased to 26%.

II. The Sample

The sample consists of twelve British investment trusts meeting the following criteria for selection:

1) They have two classes of shares outstanding, differing only with respect to dividend and conversion rights;[13]
2) The two share classes receive dividends of equal value, but one share class receives cash dividends and the other class receives stock (scrip) dividends;
3) The scrip shares can be converted, at the holder's option, into cash shares;
4) Both share classes are listed and traded on the London Stock Exchange and are registered limited companies in the United Kingdom;
5) Prices of both share classes are listed, daily, in the (London) *Times* for at least 12 continuous months; and
6) Sufficient information about each company is available in annual editions of the *Stock Exchange Official Yearbook*.

The resulting sample is described in Table I. Eight of the twelve scrip share classes were created through cash rights issues, two were created by large stock dividends, and the final two were created through recapitalizations. The size of these scrip share issues, relative to the existing ordinary share class, ranged from 10% to 100%, although nine of twelve issues were 25% or less. Four of the scrip share classes were created in December 1967,

[12]The annual tax acts for most of this study period are presented and discussed in Roberts (1977). Upon request, we will provide an Appendix describing the full range of investor categories who would be almost or completely indifferent (on the basis of taxes) between dividend and capital gains income. In that Appendix, we also document several opportunities for investors to launder dividends in a manner similar to that described by Miller and Scholes (1978).

[13]Approximately one dozen other dual class companies were also identified and screened for inclusion in the final sample. These were eliminated either because there was insufficient price data or, more commonly, because they were not constrained to pay cash and scrip dividends of equal value. Without such a constraint, direct comparison of prices of the two share classes would be ambiguous.

Table I

Summary of Scrip Dividend Share Issuance and Status as of December 1982

This table describes the designation (name) of the scrip-dividend shares issued by each firm in our sample of twelve British investment trusts during the period 1967 to 1982. The table also details the date, relative size, and method of issue of each scrip-dividend share class, and, finally, describes the share class' status as of December 1982.

Company Name	Designation		Date of Scrip Share Issue	Method of Issue	Amount of Issue	Issue Size Relative to Existing Ord. %	Status of Scrip Shares as of December 1982
	Cash-Dividend Shares	Scrip-Dividend Shares					
Hume Holdings	A Ordinary	B Ordinary	Feb. 1968	Cash	650,000	25.0	Both share classes acquired November 1979
Caledonian Trust	Ordinary	B Ordinary	Dec. 1967	Cash	743,111	20.0	Outstanding
Capital & National	Ordinary	B Ordinary	Jan. 1969	Cash	240,000	20.0	Outstanding
Clydesdale	Ordinary	B Ordinary	Dec. 1967	Cash	1,195,680	20.0	Outstanding
English & Scottish	Ordinary	B Ordinary	Feb. 1969	Cash	200,000	10.0	Outstanding
Glenmurrary	Ordinary	B Ordinary	Feb. 1969	Cash	247,680	20.0	Company liquidated February 1981
Hambros Trust	A Ordinary	B Ordinary	Oct. 1968	Stock	2,000,000	100.0	A&B converted to Ordinary July 1976
London Merchant Securities	Ordinary	Capital	Mar. 1969	Stock	1,625,000	16.7	All Capital Shares converted by January 1980
Scottish Western	Ordinary	B Ordinary	Dec. 1967	Cash	950,400	20.0	Outstanding
Second Great Northern	Ordinary	B Ordinary	Dec. 1967	Cash	374,959	20.0	Outstanding
Witan Investments	Ordinary	B Ordinary	Aug. 1971	Conversion of Ordinary	7,199,122	35.0	All B Shares remaining were converted December 1979
Centrovincial Properties	Ordinary	Capital	Jan. 1970	Stock Dividend	1,000,000	100.0	All remaining Capital Shares converted July 1979

two in 1968, four in 1969, and one each in 1970 and 1971. Scrip shares did not actually begin trading, however, until 1969. Thus, all twelve scrip share issues were created under the classical tax system (1965–1973).

The dividend and conversion rights of the scrip shares at the time of issuance are very similar for all firms in the sample. In all cases, the scrip shares are guaranteed an annual stock distribution with a market value equal to that of the cash dividend payments. In all but one case (Hambros Trust), scrip shares can be converted into an equivalent number of cash shares, usually on only one date per year. Hambros Trust restricts conversion to 10% of an investor's holdings each year.

During the imputation system, the scrip shares should receive stock distributions equal to the net cash dividend plus the corresponding tax credit (reflecting the ACT paid by the firm) since this most closely corresponds to the gross dividends defined in the corporate charters of these investment companies. This is not, however, how eight of our sample firms adapted to the imputation system. Rather, they prescribed that scrip shares receive stock distributions equal to *net* cash dividends paid on cash shares. Since such an interpretation obviously lowers the value of scrip shares and promotes conversion into cash shares, all of the companies which modified scrip share rights also made a special stock distribution to the scrip shareholders as compensation for variation of their rights.

The eight companies which modified their dividend rights after April 1973 and which allowed unrestricted conversion of scrip shares into ordinary are hereafter referred to as "net-dividend companies." Three of the remaining firms (Hume Holdings, London Merchant Securities, and Centrovincial Properties) continued to pay scrip dividends equal in value to the effective gross dividends and also allowed unrestricted conversion after April 1973. These three companies are referred to hereafter as "gross-dividend companies." The final company, Hambros Trust, modified its dividend rights in the same way as the net-dividend companies, but it also restricted conversion rights after 1973, although it increased the amount which could be converted each year to 20% of an investor's holdings from the earlier 10%.

III. Results

In this section we first test whether the value of scrip dividends paid equals the amount of cash dividends declared. We then test for differences between the prices of scrip shares and cash shares over the periods described in Section II. Next, we look for a distinct pattern of conversions of scrip shares into cash shares. We conduct these analyses for the three subsamples described in Section II: net-dividend companies, gross-dividend companies, and Hambros Trust.[14]

[14]All of the firms in the sample paid gross (pretax) dividends to scrip shareholders under the classical tax system. The dividend rights of the net-dividend companies were not altered until the imputation system. To facilitate comparisons across time, however, we report separate results for the classical system and the transition period for each of the three subsamples.

A. The Relative Amount of Scrip Dividends and Cash Dividends

In Table II we test whether the value of scrip dividends paid equals the value of cash dividends paid. The value of a scrip dividend is the percentage scrip dividend times the price per share on the closest trading day prior to the ex-dividend date. We assume that scrip shareholders can convert their scrip dividends to cash by selling the additional shares. The dividend on a cash share is the sum of all cash dividends for the given fiscal year.[15] Table II reports the ratio of scrip dividends to cash dividends. We will refer to this ratio as the dividend ratio. The *t*-statistics in Table II test the null hypothesis that the mean difference between the value of scrip dividends and cash dividends equals zero.[16]

During the first two subperiods the mean difference between scrip and cash dividends is not statistically different from zero, suggesting that the typical holder of the scrip shares receives scrip dividends equal in pretax value to the cash dividends declared. During the third and fourth subperiods the average value of the dividend ratio falls below one for the eight net-dividend companies because these companies pay dividends to the scrip shareholders equal in value to the net dividends of the cash shares (net of the ACT). The three gross-dividend companies, on the other hand, pay dividends to scrip shareholders equal in value to the gross dividends of the cash shares. The mean difference between scrip and cash dividends for the gross-dividend companies is not statistically different from zero in any of the subperiods. The dividend ratio is substantially less than one for Hambros Trust in all four subperiods, but the small number of observations precludes a formal test of significance. Our evidence confirms that the gross-dividend companies paid scrip dividends equal in value to cash dividends throughout the study period.[17]

[15]In all cases cash dividends are paid semi-annually while scrip dividends are paid on an annual basis.

[16]We used several other statistical tests to investigate differences between scrip dividends and cash dividends. Following Bailey (1988), we used Wilcoxon signed-rank tests. Following Lease, McConnell, and Mikkelson (1983), we used a *t*-statistic to test the null hypothesis that the mean of the logarithm of the ratio of scrip dividends to cash dividends equals zero. We used the same techniques later in the paper to test for price differences between the two classes of shares. None of the paper's results are materially affected by the choice of statistical test. Strictly speaking, using ratios or even logarithms of ratios to test for price differences is incorrect, because the distribution of a ratio of two random variables may be bimodal. Further, the distribution of such a variable is known to follow a Cauchy distribution, which has no moments. To avoid these problems, we elect to test the price and dividend differences rather than ratios. We report ratios in Table II, However, for expository convenience. For further details see Geary (1930) and Marsaglia (1965).

[17]We also test whether the difference between scrip and tax dividends across subperiods is significant using *t*-statistics. The only case in which the difference between scrip and cash dividends declines significantly is for the net-dividend companies between the second and third subperiods. This result makes sense given the modification of dividends rights adopted by the net-dividend companies after the imputation system.

Table II

Dividend and Price Ratios during the Three Taxation Regimes

Average ratio of the value of scrip dividends to the value of cash dividends, average ratios of scrip-dividend share price to cash-dividend share price (P_s/P_c), and tests of significance of the differences between the value of scrip dividends and cash dividends and between prices of the two classes for our sample of British investment trusts. The dividend ratio is the ratio of the value of scrip dividends paid to the value of cash dividends paid. The dividend on scrip shares is the percentage stock dividend (in decimal form) times the price of the scrip share immediately prior to the ex-dividend date. The dividend on cash shares is the sum of all cash dividends for the given fiscal year. Sample size for dividend ratios equals the number of ex-dividend dates in the subsample. Sample sizes vary because not every firm's scrip shares traded in the month prior to the ex-dividend date. In these cases we could not reliably calculate the value of the stock dividend. Price ratios are formed when both classes of shares trade on the same day. Results are presented separately for the three taxation regimes and for the transition period between the classical and imputation taxation regimes.

Statistics	Net-Dividend Companies	Gross-Dividend Companies	Hambros Trust
September 1969–March 1971: Classical Tax System			
Mean of Dividend Ratios	1.073	0.911	0.657
t-statistic	1.100	−2.602	–[a]
Sample Size	12	4	1
Mean of Price Ratios	1.085	1.014	1.043
t-statistic	30.553[b]	9.177[b]	8.653[b]
Number of Price Ratios	301	217	89
Number of Firms	8	3	1
April 1971–March 1973: Transition Period			
Mean of Dividend Ratios	1.011	1.039	0.760
t-statistic	−0.361	0.676	−1.108
Sample Size	15	6	2

Table II—*Continued*

Statistics	Net-Dividend Companies	Gross-Dividend Companies	Hambros Trust
Mean of Price Ratios	1.026[c]	0.987[c]	0.946[c]
t-statistic	16.064[b]	−10.078[b]	−21.386[b]
Number of Price Ratios	435	395	137
Number of Firms	8	3	1
April 1973–March 1975: Imputation System with Different Taxation of Cash and Scrip Dividends			
Mean of Dividend Ratios	0.760[d]	1.372	0.656
t-statistic	−5.258[b]	2.503	−1.858
Sample Size	16	4	2
Mean of Price Ratios	0.986[c]	0.992[c]	0.838[c]
t-statistic	−5.936[b]	−8.313[b]	−34.634[b]
Number of Price Ratios	462	325	154
Number of Firms	8	3	1
April 1975–December 1982: Imputation System with Equal Taxation of Cash and Scrip Dividends			
Mean of Dividend Ratios	0.714	1.270	0.471
t-statistic	−9.104[b]	1.273	−37.366
Sample Size	41	8	2
Mean of Price Ratios	0.955[c]	0.895[c]	0.781[c]
t-statistic	−82.349[b]	−25.680[b]	−39.749[b]
Number of Price Ratios	1538	1040	100
Number of Firms	7	3	1

[a] Insufficient observations to calculate *t*-statistic.

[b] Significant at the 1% level. The null hypothesis is that the mean of the difference in value between scrip dividends and cash dividends equals zero or that the mean difference in price between scrip shares and cash shares equals zero.

[c] The mean price difference is significantly lower than in the previous subperiod at the 1% significance level.

[d] The mean difference in value between scrip dividends and cash dividends is significantly lower than in the previous subperiod at the 1% significance level.

B. Relative Prices under the Classical System

Table II contains *t*-statistics for the mean difference between scrip share price and cash share price for days that both classes of shares trade. The table also reports average ratios of scrip share price to cash share price. The mean price ratios and *t*-statistics suggest a statistically significant premium for scrip-dividend shares under the classical tax system. The average price ratios exceed 1.0 for all three subsamples, while the average value of scrip dividends is not statistically different from the average value of cash dividends. This evidence suggests that marginal investors prefer capital gains when they are favorably taxed.[18]

C. Relative Prices in the Transition Period

During the transition period between the classical system and the imputation system as Table II shows, the price ratios decline for all three subsamples. We conduct *t*-tests on the price differences to determine whether the decline in the premium for scrip shares is statistically significant. The scrip shares of the gross-dividend companies and Hambros Trust begin selling at discounts during the transition period, and the price differences are significantly below those in the previous subperiod. The scrip shares of the net-dividend companies continue selling at a premium during the transition period, although the premium is significantly lower than under the classical system.[19]

D. Relative Prices under the Imputation System with Different Taxation of Cash and Scrip Dividends

It is difficult to interpret the premium for scrip shares of the net-dividend companies under the imputation system because these firms did not continue to pay equal pretax dividends to both share classes. Price differences between the share classes for net-dividend companies, therefore, will not only reflect changes in the tax system but will also reflect the difference in the amount of dividends. Thus, the most meaningful price comparisons under the imputation system are for the gross-dividend companies who continued to pay equal pretax dividends to both share classes.

[18]Although not reported in Table II, summary statistics for the entire sample of 12 firms for the classical tax system were also calculated. Recall that during this period there is no real difference between net- and gross-dividend companies since both pay scrip dividends equal in value to pretax cash dividends prior to 1973. The average dividend ratio equals 1.01, and the average price ratio equals 1.066 during the classical tax regime. The mean difference between scrip dividends and cash dividends is not significantly different from zero ($t = 0.041$). The mean price difference is significantly different from zero ($t = 26.194$), implying a significant market premium for scrip-dividend shares.

[19]We also examine monthly and quarterly average price ratios to observe the market's anticipation of the imputation system after it was announced but before it was formally adopted. After the March 1971 announcement that the imputation system would be adopted in April 1973, average price ratios for the entire sample and for the three subsamples decline monotonically.

During the imputation system with different taxation of cash and scrip dividends average price ratios fall below 1.0 for all three subsamples. For the net-dividend companies and Hambros Trust, the price ratios are significantly lower than in the transition period, a result consistent with the eroding tax advantage of scrip shares. The *t*-statistics also suggest that the scrip shares of the gross-dividend companies continue to sell at statistically significant discounts. Notice, further, that the price ratio is substantially less than the dividend ratio. These results for the gross-dividend companies suggest a market preference for cash dividends over equal amounts of stock dividends.[20]

E. Relative Prices under the Imputation System with Equal Taxation of Cash and Scrip Dividends

After April 1975 the tax treatment of cash dividends and scrip dividends is identical, and investors receiving pretax scrip dividends have to incur transaction costs to realize the cash value of their dividends and then have to pay taxes on the gross dividend value. Table II shows that the price ratios decline even further below one after April 1975 for both net-dividend and gross-dividend companies and also for Hambros Trust. The mean price difference is significantly lower in the last subperiod than in the earlier subperiod for all three subsamples. The price ratios from the two imputation-system subperiods is consistent with our hypothesis of taxes affecting the relative valuation of the share classes.[21]

F. Conversion History of Scrip Shares

The unique conversion data for this sample allows us to examine empirically the dividend clientele effect in another way. A change in tax law not

[20]Notice that the average price ratio exceeds the average scrip-to-cash dividend ratio for the net-dividend companies. This result is almost certainly a pricing artifact of the one-way conversion feature and not a tax effect. The conversion feature effectively limits price differences between scrip shares and cash shares by permitting costless arbitrage. The average price ratio for net-dividend companies would likely fall closer to the dividend ratio in the absence of the conversion feature, as the case of Hambros Trust (which restricts conversions) makes clear. We investigated the market's valuation of the conversion feature by examining the behavior of the price ratios around the conversion dates for each company. We analyzed daily price ratios over a window from 20 days prior to the conversion date to 20 days after the conversion date. We also looked at average monthly price ratios from 6 months before to 6 months after the conversion dates. We detect no pattern of movements in the price ratios around the conversion dates using either monthly or daily data.

[21]We also examine average price ratios for the years 1983–1987 for the companies still having outstanding scrip shares. The average annual price ratios varies between 0.96 and 0.98, and the proportion of total capitalization accounted for by the scrip shares declines monotonically. The data for these years reveal no new insights. Finally, we examine relative trading frequency of the two share classes to determine whether the price differences could be explained by differences in liquidity. We find that the scrip shares have a less active secondary market than the cash shares in all subperiods. Also, as scrip shares are converted to cash shares we obviously detect an increase in the relative liquidity of the cash shares. The fact that scrip shares sell at a premium under the classical tax system even though they are less liquid reinforces our conclusion that there was a tax-induced preference for scrip shares in this tax regime.

only changes the effective tax rates of investors and the marginal tax rate setting prices it also causes some investors to change the composition of their portfolios because of the change in their marginal tax rate. Holders of scrip shares can rebalance their portfolios by converting scrip shares into cash shares. Systematic changes in conversion patterns after tax law changes would suggest a tax effect in equity valuation and constitute new and direct evidence of the existence of tax clienteles.

Table III shows the fraction of the total ordinary share capital represented by the scrip share class for all twelve companies during fiscal years 1969–70 through 1979–80. By fiscal year 1973–74 scrip shares represented a substantial fraction of the capital of all firms, ranging from 13.1% to 51.5% of total capital. Table III also shows the temporal pattern of conversions of scrip shares into cash shares. Very little share conversion is observed under the classical system, as expected. Further, there is little conversion into cash shares during the April 1971–March 1973 transition period between the classical system and the official introduction of the imputation system.

After the formal adoption of the imputation system in April 1973 the results become less uniform due to the differing interpretation given to scrip share dividend rights by the net-dividend and gross-dividend companies. Conversions for the net-dividend companies increase substantially during the 1973–74 and 1974–75 fiscal years. Gross-dividend companies experience less pronounced, but nonetheless substantial, conversions into cash dividend shares after April 1973 in spite of the fact that the average dividend ratio is consistently greater than one for these companies. Hambros Trust naturally experiences less conversion during the early imputation period because it restricts conversion of scrip shares into cash shares.

The truly dramatic results are observed after the law is changed in April 1975 to tax both scrip and cash dividends as ordinary income. All firms in the sample experience large increases in conversions after this change in the tax laws. By the end of the 1979–80 fiscal year the scrip shares of Hambros Trust, and of all the gross-dividend companies, cease to exist, either through acquisition or through voluntary conversion of scrip into ordinary shares.[22] The evidence on conversions is consistent with the hypothesis that relative share prices are determined by investors who are sensitive to dividend taxation.

IV. Summary and Conclusions

We provide unique evidence that taxes affect the relative valuation of dividends and capital gains by examining the price and conversion history of

[22]A remaining puzzle is the continued existence of scrip shares of net-dividend companies. These shares are relatively penalized as to dividend rights after 1973, and after April 1975 the tax treatment of scrip shares can only be called punitive. Furthermore, they are freely convertible into ordinary shares. In spite of all of these factors, scrip shares of six of the eight net-dividend companies remain outstanding through December 1982, and scrip shares of four companies remain outstanding through December 1987, although these represent a small (less than 2%) fraction of the equity capital of these companies.

Table III

Scrip Dividend Share Capital as a Fraction of Total Ordinary Share Capital, and Cumulative Fraction of Scrip Dividend Share Capital Converted Into Cash Dividend Shares, for April 1–March 30 Fiscal Years 1969–70 to 1979–80

Description	1969–70	1970–71	1971–72	1972–73	1973–74	1974–75	1975–76	1976–77	1977–78	1978–79	1979–80
I. Net-Dividend Companies											
Scrip shares as a fraction of total ordinary capital[a]	0.1489	0.1543	0.1767	0.1849	0.1809	0.1732	0.0944	0.0438	0.0340	0.0291	0.0255
Cumulative fraction of scrip shares converted into cash shares	0.0548	0.0613	0.0679	0.0981	0.1363	0.1881	0.5385	0.7758	0.8241	0.8502	0.8530
Number of companies with dual share classes outstanding	7	7	8	8	8	8	8	8	8	8	7
II. Gross-Dividend Companies											
Scrip shares as a fraction of total ordinary capital	0.2373	0.2445	0.2709	0.2615	0.2568	0.2793	0.1833	0.1679	0.1583	0.0309	0
Cumulative fraction of scrip shares converted into cash shares	0.0085	0.0344	0.0494	0.1040	0.1377	0.1550	0.4848	0.5544	0.5683	0.9086	1.000
Number of companies with dual share classes outstanding	3	3	3	3	3	3	3	3	3	2	0
III. Hambros Trust											
Scrip shares as a fraction of total ordinary capital	0.5038	0.5093	0.5152	0.5209	0.5152	0.4864	0.4351	–[b]	–	–	–
Cumulative fraction of scrip shares converted into cash shares	0	0	0	0	0.0175	0.1016	0.2098	1.0000	1.0000	0.0000	1.0000

[a] This is calculated as the book value of scrip-dividend share capital dividend by the sum of scrip- and cash-dividend share capital.
[b] All shares converted July 1976.

British investment trusts having two classes of shares, one class paying only stock dividends and the other paying only cash dividends. While our sample is similar to those studied by Long (1978) and Bailey (1988), we can provide more direct evidence on tax clienteles for several reasons. First, there were two major tax law changes during our study period directly affecting the British dual-class shares. Second, the British investment trusts paid the same amount of dividends to both classes of shares. Third, the scrip shares are costlessly convertible into cash shares, and the conversion patterns around tax law changes provide new and direct evidence on clienteles. Finally, investment trusts pay out virtually 100% of their earnings as dividends, and we are therefore freed from the complications of considering either the effect of taxes on payout policy or the signalling aspects of changes in dividend policy.

Under the classical tax system (1969–1971), when scrip dividends received favorable capital-gains tax treatment, we find that shares paying scrip dividends sell at a premium above shares paying cash dividends of equal pre-personal-tax value. This result is consistent with a tax-based preference for scrip dividends. Also, we observe very little conversion of scrip shares into cash shares during this period.

Under the imputation system (1973–1975) cash shares sell at a slight premium over scrip shares, and conversions of scrip shares to cash shares also increase during this period. Our results for the final period (1975–1982) are the most dramatic and conclusive, because during this period scrip dividends are taxed as ordinary income, just like cash dividends. Further, investors receiving scrip dividends receive no cash, yet they must pay taxes in cash. Thus, transaction costs should cause investors to favor cash dividends over scrip dividends. During this period, cash shares begin selling at large, statistically significant premiums, and we observe virtually complete conversion of scrip shares into cash shares.

REFERENCES

Bailey, Warren, 1988, Canada's dual class shares: Further evidence on the market value of cash dividends, *Journal of Finance* 43, 1143–1160.

Feldstein, Martin, 1970, Corporate taxation and dividend behavior, *Review of Economic Studies* 37, 57–72.

Geary, R. C., 1930, The frequency distribution of the quotient of two normal variates, *Journal of the Royal Statistical Society* 93, 442–450.

Hammer, Richard M., 1975, The taxation of income from corporate shareholders: Review of present systems in Canada, France, Germany, Japan, and the U.K., *National Tax Journal* 28, 315–334.

King, Mervyn A., 1977, *Public Policy and the Corporation* (Chapman Hall, London).

—— and Donald Fullerton, eds., 1984, *The Taxation of Income From Capital: A Comparative Study of the United States, the United Kingdom, Sweden and West Germany* (The University of Chicago Press, Chicago).

Lease, Ronald, John McConnell, and Wayne Mikkelson, 1983, The market value of control in publicly-traded corporations, *Journal of Financial Economics* 11, 439–471.

Long, John, 1978, The market valuation of cash dividends: A case to consider, *Journal of Financial Economics* 6, 235–264.

Marsaglia, George, 1965, Ratios of normal variables and ratios of sums of uniform variables, *Journal of the American Statistical Association* 60, 193-204.

Miller, Merton and Myron Scholes, 1978, Dividends and taxes, *Journal of Financial Economics* 6, 333-364.

Poterba, James, 1986, The market valuation of cash dividends: The Citizens Utilities case reconsidered, *Journal of Financial Economics* 15, 395-406.

—— and Lawrence Summers, 1984, New Evidence that taxes affect the valuation of dividends, *Journal of Finance* 39, 1397-1415.

—— and Lawrence Summers, 1985, The economic effects of dividend taxation, in Edward Altman and Martin Subrahmanyan, eds.: *Recent Advance in Corporate Finance* (Dow-Jones Irwin, Homewood, IL).

Revell, Jack, 1973, *The British Financial System* (Harper & Row, New York).

Roberts, David, ed., 1977, *Butterworths Yellow-Tax Handbook* (Butterworths & Company, London).