The DJIA Crossed 652,230

In 1998.

Roger G. Clarke and Meir Statman

ROGER G. CLARKE is chairman of Analytic Investors in Los Angeles (CA 90017).

MEIR STATMAN is Glenn Klimek professor of finance at the Leavey School of Business of Santa Clara University in Santa Clara (CA 95053).

The Dow Jones Industrial Average is plagued by the equivalent of the Y2K bug. The originators of the DJIA omitted dividends from their index just as early computer programmers omitted the first two digits of the year. Quest for simplicity underlies both omissions.

The DJIA was initiated in 1896, long before calculators and computers; calculating the mean of stock prices was complicated enough. Moreover, the originators of the DJIA saw little need for dividends in their index. As John Prestbo, editor of Dow Jones Indexes, notes in an interview with Aaron Task [1999]: "Total return was not a concept that existed in 1896."

The DJIA measures capital appreciation, not total returns. It is an index of capital, not an index of wealth. The same is true for the S&P 500 index, the Russell 3000 index, the Wilshire 5000 index, and all other indexes. Capital indexes create confusion and facilitate mischief since they are regularly confused for wealth indexes.

Conversion of capital indexes into wealth indexes may not be as important as Y2K conversion of computer programs from two digits to four. After all, no airplanes will fall out of the sky because the DJIA remains a capital index. Still, we would be better off with wealth indexes.

Precision is impossible in the conversion of the DJIA from a capital index to a wealth index since the Dow Jones organization did not keep record of dividends before 1987, but an approximation of dividends for the early period is a fair price to pay for such a conversion.

CAPITAL AND WEALTH

The numerator of the DJIA is the sum of the price per share of its thirty constituent stocks. That numerator declines when stocks split and, left alone, splits lead to DJIA declines. Such declines are nonsensical. Stock splits do not reduce the wealth of DJIA investors any more than a $10 bill split into two $5 bills is less money. The DJIA people understand this, so they adjust the divisor, the denominator of the DJIA, to eliminate the effect of splits on the level of the average.

Cash dividends reduce the numerator of the DJIA just as stock splits do. And, like stock splits, cash dividends do not reduce the wealth of DJIA investors. Yet the DJIA people treat cash dividends as if the money is burned. The DJIA, like the S&P 500 index and all major stock indexes, excludes income. It is an index of capital, not an index of wealth.

The DJIA was initiated on May 26, 1896, at 40.94. It had reached 9,181.43 by the end of 1998, more than 102 years later. As you can see in Exhibit 1, a wealth DJIA, a DJIA that reflects both capital and reinvested dividends, would have reached 652,230.87, more than seventy-one times higher.

The story of the wealth S&P 500 index is less dramatic than that of the wealth DJIA only because the S&P 500 index is younger. The capital S&P 500 index was at 12.46 at the end of 1925, and it had reached 1,201.21 by the end of 1998. But the wealth S&P 500 index would have reached 26,874.63, more than twenty-one times higher (Exhibit 2).

YES, BUT WHAT ABOUT INFLATION?

Both the capital DJIA and the wealth DJIA are in nominal dollars, not adjusted for inflation. A 1998 dollar is, of course, worth less than an 1896 dollar. Many have decried the rosy picture of growth that a nominal DJIA presents. For example, Rothchild [1998] writes:

> In terms of real purchasing power, Prechter notes, owning the Dow Jones Industrials since 1966 has resulted in zero gain through 1994! The Dow itself advanced from 1,000 to 3,978 in 1994, but the cash you received from selling a share in the Dow that year bought less merchandise than the cash you got from selling a share in the Dow at 1,000 twenty-eight years earlier [pp. 4-5].

EXHIBIT 1
DJIA — CAPITAL AND WEALTH, 1896-1998

Date	Capital DJIA	Wealth DJIA	Real Capital DJIA	Real Wealth DJIA	Real Wealth DJIA After 20% Tax	Real Wealth DJIA After 50% Tax
May 26, 1896	40.94	40.94	40.94	40.94	40.94	40.94
Dec 31, 1900	70.71	81.05	64.40	73.81	65.02	58.31
Dec 31, 1910	81.36	133.00	61.05	99.80	84.14	67.20
Dec 31, 1920	71.95	182.68	26.71	67.81	56.80	42.75
Dec 31, 1930	164.58	643.65	81.34	318.13	217.68	115.76
Dec 31, 1940	131.13	945.05	74.17	534.54	369.83	183.77
Dec 31, 1950	235.41	3,000.80	74.99	955.85	535.16	190.32
Dec 31, 1960	615.89	11,913.64	164.51	3,182.32	1,395.30	334.88
Dec 31, 1970	838.92	22,346.65	168.03	4,475.91	1,759.01	352.96
Dec 31, 1980	963.99	39,275.73	88.97	3,625.10	1,308.04	225.26
Dec 31, 1990	2,633.66	157,199.59	156.61	9,348.06	2,620.80	302.50
Dec 31, 1998	9,181.43	652,230.87	442.87	31,460.30	6,792.86	519.30
Geometric Mean Annual Growth	5.42%	9.89%	2.35%	6.69%	5.11%	2.51%

Source: DJIA levels are from Dow Jones Indexes. DJIA dividend yield for 1896-1925 calculated by Kenneth Fisher from "Dow Jones Averages 1885-1970," Dow Jones & Company Inc., 1972. DJIA dividend yields for 1926-1998 assumed to be equal to the dividend yields of the S&P 500 are from Ibbotson Associates, as are inflation figures for 1926-1998. Inflation figures for 1896-1925 are from Friedman and Schwartz [1982].

EXHIBIT 2
S&P 500 INDEX AND LONG-TERM GOVERNMENT BOND INDEX, 1925-1998

	Capital Indexes		Wealth Indexes		Real Capital Indexes		Real Wealth Indexes	
Date	S&P 500	LTG Bonds	S&P 500	LTG Bonds	S&P 500	LTG Bonds	S&P 500	LTG Bonds
Dec 3 , 1925	12.46	12.46	12.46	12.46	12.46	12.46	12.46	12.46
Dec 3 , 1930	14.98	13.36	18.86	15.83	16.65	14.86	20.96	17.59
Dec 3 , 1940	10.34	16.45	23.91	25.73	13.16	20.93	30.42	32.73
Dec 3 , 1950	19.95	17.05	81.35	33.35	14.29	12.22	58.29	23.90
Dec 3 , 1960	56.79	14.03	350.37	37.88	34.13	8.43	210.55	22.76
Dec 3 , 1970	90.04	9.87	761.30	43.84	40.57	4.45	343.02	19.75
Dec 3 , 1980	132.57	6.61	1,694.97	66.60	27.52	1.37	351.93	13.83
Dec 3 , 1990	322.55	8.72	6,064.34	236.98	43.14	1.17	811.18	31.70
Dec 3 , 1998	.,201.21	12.08	26,874.63	559.90	130.32	1.31	2,915.74	60.75
Geometric Mean Annual Growth	6.46%	−0.04%	11.09%	5.35%	3.27%	−3.04%	7.76%	2.19%

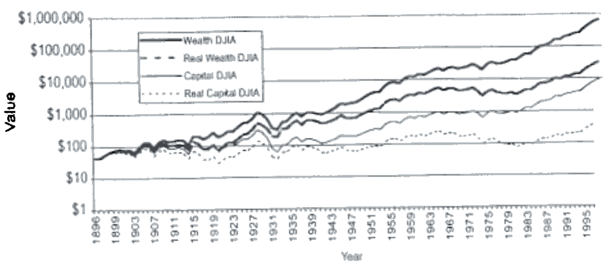
Data from Ibbotson Associates.

Twenty-eight years in the wilderness waiting for the real capital DJIA to get back to 1,000 can be scary indeed, but it is worth noting that dividends provided some comfort to investors during those years, dividends that are nowhere to be found in Rothchild and Prechter's stories.

The *real capital* DJIA, the capital DJIA adjusted for inflation, was at 40.94 in May 1896, and it increased by 2.35% per year to 442.87 by the end of 1998. But the real wealth DJIA, a real DJIA that includes reinvested dividends, increased by 6.69% per year to 31,460.30. Exhibit 3 reveals the patterns.

If you insist on hearing scary stories, let us tell you the story of bonds. The real capital S&P 500 index increased from 12.46 at the end of 1925 to 130.32 at the end of 1998. But a real capital index of long-term government bonds would have *dropped* from that 12.46 to 1.31 over the same period. What about the interest coupons clipped off the bonds over the years, you ask? Indeed, and what about the dividends received from stocks over the same years?

EXHIBIT 3
DJIA GROWTH



Real capital indexes are scary but meaningless stories. You should pay attention instead to *real wealth* indexes.

The real wealth S&P 500 index increased from 12.46 at the end of 1925 to 2,915.74 at the end of 1998. The real wealth index of long-term government bonds increased from 12.46 to 60.75. These patterns are graphed in Exhibits 4 and 5.

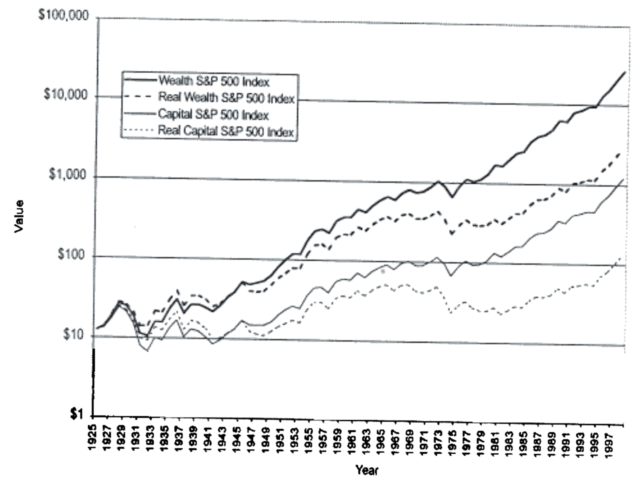
The real wealth story may not be great, but surely it is not scary.

WHAT ABOUT TAXES?

Taxes cut into wealth. In the absence of taxes, the real wealth DJIA would have increased at 6.69% per year from 40.94 in 1896 to 31,460.30 by the end of 1998. The after-tax real wealth DJIA would have increased at 5.11% per year to 6,792.86 by the end of 1998, assuming that a 20% tax were paid on dividends and capital gains, realized or not, at the end of each year. The after-tax real wealth DJIA would have increased at 2.51% per year to only 519.30 if a 50% tax were paid.

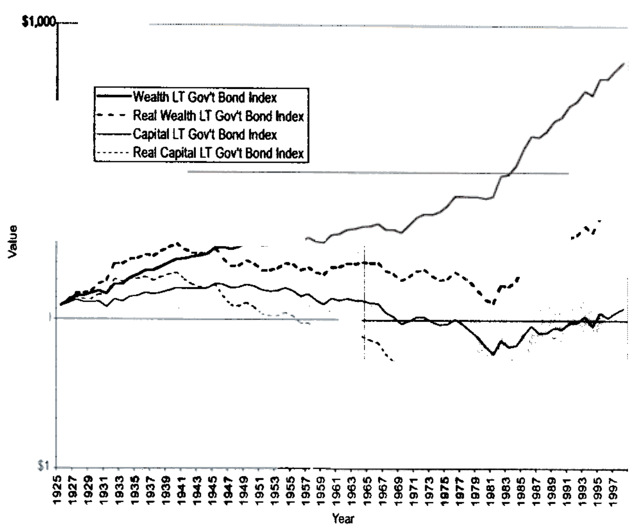
It seems only fair to note that an adjustment for taxes is different from an adjustment for inflation. Wealth is measured by the quantity of goods and services. That quantity does not change just because prices of goods and services have changed, so a wealth index must be adjusted for price changes.

EXHIBIT 4
S&P 500 INDEX GROWTH



Taxes are different. In a world without waste, taxes do not diminish wealth. Taxes simply replace one kind of goods and services, such as houses, with another, such as a military. It is true that the world of taxes is not free of waste, and it is surely not free of transfer of wealth from worthy people like us to much less worthy people. But even libertarians agree that we receive some goods and services in exchange for our taxes.

EXHIBIT 5
LONG-TERM GOVERNMENT BONDS INDEX GROWTH



WHAT ABOUT INCOME?

The DJIA is constructed as if capital goes into the pockets of DJIA investors, while dividends go into other people's pockets. This, indeed, is the case in trusts established for income beneficiaries and remaindermen. All the income of the trust goes into the pockets of the income beneficiaries, while all the capital goes into the pockets of the remaindermen. Income beneficiaries want an income index; remaindermen want a capital index. The latter group gets its wish in the usual DJIA.

The wishes of remaindermen extend beyond a capital index. They want to maximize capital, and a sure way to maximize capital is to minimize income. Foundations are much like remaindermen. Foundations provide grants to "income beneficiaries," and they are concerned, like remaindermen, that payments to income beneficiaries might deplete the foundation's capital. This is why bear markets come as blessings to foundations. As Arnott and Bernstein [1997] note, bear markets are good for foundations because 5% of a small capital base is less than 5% of a large one. Bear markets reduce the amounts that foundations are forced to distribute to their income beneficiaries.

Income beneficiaries and remaindermen share the same pot of money, but they live in separate bodies. It is little wonder that they fight. Indeed, the fight between income beneficiaries and remaindermen rages on even when the two live in the same body. The income beneficiaries in us, like children, want to spend the entire pot of wealth and enjoy it today. The remaindermen in us, like parents, want to keep the entire pot for the future.

Shefrin and Statman [1984] describe the self-control rules of the fight between our internal income beneficiaries and remaindermen. "Don't dip into capital" is one prominent self-control rule that the remainderman in us tries to impose on the income beneficiaries.

A clear distinction between capital and income is crucial for the enforcement of this rule. Capital indexes must be the indexes of our internal remaindermen.

CONCLUSION

"If, in fact, all investors had reinvested and compounded all their incomes," writes Bernstein [1988]: "Then we would all be rich!" Indeed. But there is more than one way to be rich. You could have been $40.94 rich in 1896 when you were eighteen years old and spent it on a great night on the town. Or you could have invested the money in the DJIA, reinvested all the dividends, be 120 years old and $652,230 rich in 1998, and spent it all on hospital bills. Or you could have invested the money in the DJIA, enjoyed the dividends you spent as they came, and be only $9,181 rich in 1998. These are just three of the infinite number of ways you could be rich if you had had $40.94 in 1896.

A good index displays the range of feasible patterns of consumption available to investors as they spend their riches. It does not discriminate in favor of or against any portfolio consumption pattern. By this criterion, capital indexes, such as the current DJIA or the S&P 500 index, are poor indexes.

Capital indexes are useful for investors whose portfolio consumption pattern is identical to the pattern of portfolio income. Such investors have been content to consume more than the 8% in 1950, when the dividend yield was high, and to consume less than 2% in 1998, when the dividend yield was low.

But today's investors no longer take dividend yields as guides for consumption. Almost all of today's mutual fund investors reinvest their dividends, and they draw money for consumption, mingling capital and income, as they please.

A real wealth index, an index that combines capital and reinvested dividends adjusted for inflation is the best display of the range of feasible patterns of consumption, but, given that inflation numbers are not available minute by minute, a nominal wealth index will do. The wealth DJIA crossed 652,230 in December 31, 1998. Will the wealth DJIA cross 700,000 by the end of the century? Will it cross one million?

We do not know the answer now, as we write, but you know the answer now, as you read.

ENDNOTE

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