Appendix 2. Data

The StockMarket spreadsheet contains all of the final calculations underlying the data shown in the paper. This spreadsheet takes as inputs raw data from the Flow of Funds and results from flow calculations.

I obtained the Flow of Funds data and the interest rate data from www.federalreserve.gov/releases. The data are for non-farm, non-financial business. I extracted the stock data from **ltabs.zip**, downloaded at http://www.federalreserve.gov/releases/z1/Current/data.htm. The Coded Tables provide more information about the codes used in the Flow of Funds accounts. A complete description is available in the Guide to the Flow of Funds Accounts.

I obtained the GDP and the investment deflator data from the NIPA downloaded from http://www.economagic.com/beana.htm.

I calculated the value of all securities as the sum of financial liabilities (144190005), equity (1031640030) less financial assets (144090005), adjusted for the difference between market and book for bonds. The subcategories unidentified miscellaneous assets (113193005) and liabilities (103193005) were omitted from all of the calculations. These are residual values that do not correspond to any financial assets or liabilities.

I made the adjustment for bonds as follows: I estimated the value of newly issued bonds and assumed that their coupons were those of a non-callable 10-year bond. In later years, I calculated the market value as the present value of the remaining coupon payments and the return of principal. To estimate the value of newly issued bonds, I started with Flow of Funds data on the net increase in the

book value of bonds (103163003 for taxable bonds). I estimated the gross increase in the book value of bonds (that is, the issuance of new bonds) by adding the principal repayments from bonds issued earlier, based on the assumptions stated above.

To value bonds in years after they were issued, I calculated an interest rate in the following way. I started with the yield to maturity for Moody's long-term corporate bonds (BAA grade). The average maturity of the corporate bonds used by Moody's is approximately 25 years. Moody's attempts to construct averages derived from bonds whose remaining lifetime is such that newly issued bonds of comparable maturity would be priced off of the 30-year Treasury benchmark. Even though callable bonds are included in the average, issues that are judged susceptible to early redemption are excluded. The way in which the average yield is constructed is described in the Corporate Yield Average Guidelines of Moody's weekly Credit Survey. Next I determined the spread between Moody's and long-term Treasury Constant Maturity Composite. Although the 30-year constant maturity yield would match Moody's more closely, it is available only starting in 1977. The series for yields on long-terms is the only one available for the entire period. The average maturity for the long-term series is not reported, but the series covers all outstanding government securities that are neither due nor callable in less than 10 years. The interest rate calculations are in interest rate.xls.

To estimate the interest rate for 10-year corporate bonds, I added the spread described above to the yield on 10-year Treasury bonds. The resulting interest rate played two roles. First, it provides the coupon rate on newly issued bonds. Second, I used it to estimate the market value of bonds issued earlier was obtained as the present value, using the current yield, of future coupon and principal payments on the outstanding imputed bond issues.

For tax-exempt securities owed (103062003), the same procedure was applied, using a different coupon rate. The yield on 20-year municipal bonds was

obtained from http://www.federalreserve.gov/releases/H15/data.htm (state and local bonds). The discount relative to the 20-year Treasury constant maturity series was then subtracted from the 10-year Treasury constant maturity series (same source). The calculations are in interest rates2.xls.

The stock of outstanding equity reported in the Flow of Funds Accounts is conceptually the market value of equity. In fact, the series tracks the S&P 500 closely.

The stock data on the market value of equity, financial liabilities and assets were obtained from **ltabs.zip**. All of the flow data were obtained from **utabs.zip** at http://www. federalreserve.gov/releases/z1/Current/data.htm. All of the interest rate data were taken from http://www.federalreserve.gov/releases/H15/data.htm.

I measured the flow of payouts as the flow of dividends (10612005) plus the interest paid on debt (obtained as explained below) less the increase in the volume of financial liabilities (10419005), which includes issues of equity (103164003).

I estimated interest paid on debt as the sum of the following:

1. Coupon payments on corporate bonds, discussed above previously.
2. Coupon payments on tax-exempt securities (103062003), discussed above previously.

3. Interest paid on commercial paper (103069100), taxes payable (103178003), trade credit (10307005), and miscellaneous liabilities (103190005). I estimated the interest rate as the 3-month commercial paper rate (historical series), which is reported starting in 1971. Before 1971, I used the interest rate on 3-month Treasuries, plus a spread of 0.7 % (the average spread between both rates after 1971).

4. Interest paid on bank loans (143169255) and other loans (143165005). Here, I used the prime bank loan rate. Before 1949,I used the rate on 3-month Treasuries plus a spread of 2.0%.

5. Mortgage interest payments. I applied the mortgage interest rate to the mortgage series (123065005). Before 1971, I used the average corporate bond yield.

Details:

BONDS_BIS.M applies the procedure outlined above to calculate coupon payments on corporate securities. The coupon payments are stored in INT_BOND.TXT. The value of all bonds outstanding is stored in VAL_BOND.

BONDS_EX.TXT applies the procedure outlined above to calculate coupon payments on tax-exempt securities owed. The coupon payments are stored in INT_BOND_EX.TXT. The value of all securities outstanding is stored in VAL_BOND_EX.

Commercial paper interest paid: Net issuance is series 103169700. This is stored in OPENMC.TXT. Matlab program COMM.M cumulates to get the stock outstanding, applies the interest rate, and stores the resulting interest payment flow in INTCOMML. The interest rate is the 3-month tbill rate through February 1971 (TBSM3M.TXT) and the 3-month commercial paper rate thereafter (HCP3M.TXT).

Interest earned on liquid assets: Matlab program LIQUID.M calculates the same interest rate as above. It applies it to liquid assets held (series FL104001005, contains open market paper, treasury securities, tax-exempt securities, money market mutual fund shares, checkable deposits and foreign deposits, see A guide to the Flow of Funds, Federal Reserve Board of Governors, p. 169). Tax-exempt securities were not included because a different interest rate is imputed to those securities (see below). The data are stored in LIQASSET.TXT. The result is stored as INT_LIQA.

Interest earned on consumer credit: Matlab program CONSCR.M applies the Federal Reserve series on the terms of consumer credit (123066005) from

TERMSCR.TXT starting in June 1971. Prior to that date, the rate is approximated as the 3-month tbill rate plus 5.07 percent. The volume of outstanding consumer credit is calculated by cumulating acquisitions (103066005). The result is stored as INT_CONSCR.

Interest paid on bank loans: Matlab program LOANS.M applies the prime rate (bank prime loan rate available from http://www.federalreserve.gov/releases/H15/data.htm) from PRIME.TXT. Before 1949, the prime rate is approximated as the 3-month tbill rate plus 2.09 percent. The volume of new borrowing on loans is in LOANS.TXT (codes 103168005 and 103169255). The result is stored as INT_LOANS.

Mortgages owed: Matlab program MORT.M applies the mortgage interest from CM.TXT (conventional mortgage rate at http://www.federalreserve.gov/releases/H15/data.htm) to cumulated flows of new mortgages (103165005) and stores the result as INT_MORT. Prior to April 1971, the interest rate is Moody's BAA corporate bond rate from BAA.TXT (see above).

Mortgages held: Matlab program MORTA.M applies the mortgage interest from CM.TXT, above, to cumulated flows of new mortgages (103065003) and stores) e result as INT_MORTA. Prior to April 1971, the interest rate is Moody's BAA corporate bond rate from BAA.TXT (see above).

Tax exempt securities held: Matlab program MUNI.M applies the municipal interest from BAA.TXT and TAXEX.TXT to cumulated flows of net new debt acquired from MUNIA.TXT (103062003) and stores the result as INT_MUNI.TXT.

Net Foreign Investment: FOREIGN.M imputes the S&P500 return to the market value of net foreign investments (103092005 less 103192005) and stores the result in INT_FORASSET.TXT.

Mutual funds held: Matlab program MUTUALF.M applies the S&P 500 return from SPRETURN.TXT (downloaded from

http://www.econ.yale.edu/~shiller/data/ie_data.xls) to the market value of mutual fund holdings in MUTUALF.TXT (103064203) and holdings of equity in financial corporations in FINEQUITY.TXT (123092003 and 103094005) and stores the result as INT_MUTUALF. The calculation of the returns is in shiller2.xls.