1 Data

The dependent variable is always the equity premium, i.e., the total rate of return on the stock market minus the prevailing short-term interest rate.

- Stock Prices: We use S&P 500 index prices from 1926 to 2013 from CRSP's month-end values. Stock Returns are the continuously compounded returns on the S&P 500 index.

  For yearly and longer data frequencies, we can go back as far as 1871, using data from Robert Shiller's website. For monthly frequency, we can only begin in the CRSP period.

- Risk-free Rate: The risk-free rate for the period 1920 to 2013 is the T-bill rate. Because there was no risk-free short-term debt prior to the 1920's, we had to estimate it. We obtained commercial paper rates for New York City from NBER's Macrohistory data base. These are available for the period 1871 to 1970. We estimated a regression for the period 1920 to 1971, which yielded

$$\text{T-bill Rate} \ = \ -0.004 \ + \ 0.886 \times \text{Commercial Paper Rate} \qquad . \qquad (1)$$

  with an R^2 of 95.7%. Therefore, we instrumented the risk-free rate for the period 1871 to 1919 with the predicted regression equation. The correlation for the period 1920 to 1971 between the equity premium computed using the T-bill rate and that computed using the predicted commercial paper rate is 99.8%.

The equity premium had a mean of 4.85%, median of 6.37%, and standard deviation of 17.95% over the entire sample period of 1872 to 2013. The equity premium is 5.97% (standard deviation of 19.86%) from 1927–2013, 6.26% (standard deviation of 16.34%) from 1947–2013, and 4.31% (standard deviation of 16.65%) from 1965–2013.

Our first set of independent variables relate primarily to characteristics of stocks:

- Dividends: Dividends are twelve-month moving sums of dividends paid on the S&P 500 index. They are from Robert Shiller's website for the period 1871 to 1970. Dividends from 1971 to 2013 are from S&P Corporation.

  The **Dividend Price Ratio** (**d/p**) is the difference between the log of dividends and the log of prices. The **Dividend Yield** (**d/y**) is the difference between the log of dividends and the log of lagged prices.

- Earnings: Earnings are twelve-month moving sums of earnings on the S&P 500 index. These are from Robert Shiller's website for the period 1871 to June 2003. Earnings from June 2003 to December 2013 are our own estimates based on interpolation of quarterly earnings provided by S&P Corporation.

  The **Earnings Price Ratio** (**e/p**) is the difference between log of earnings and log of prices. **Dividend Payout Ratio** (**d/e**) is the difference between log of dividends and log of earnings.

- Stock Variance (**svar**): Stock Variance is computed as sum of squared daily returns on S&P 500. Daily returns for 1871 to 1926 are obtained from Bill Schwert while daily returns from 1926 to 2013 are obtained from CRSP.

- <u>Cross-Sectional Premium</u> (**csp**): The cross-sectional beta premium measures the relative valuations of high- and low-beta stocks. We obtained this variable directly from Sam Thompson. This variable is available from May 1937 to December 2002.

- <u>Book Value:</u> Book values from 1920 to 2005 are from Value Line's website, specifically their *Long-Term Perspective Chart* of the Dow Jones Industrial Average. Book values from 2005 to 2013 are directly from Dow Jones Inc. The **Book to Market Ratio** (**b/m**) is the ratio of book value to market value for the Dow Jones Industrial Average. For the months of March to December, this is computed by dividing book value at the end of previous year by the price at the end of the current month. For the months of January to February, this is computed by dividing book value at the end of 2 years ago by the price at the end of the current month.

- <u>Corporate Issuing Activity:</u> We entertain two measures of corporate issuing activity. **Net Equity Expansion** (**ntis**) is the ratio of twelve-month moving sums of net issues by NYSE listed stocks divided by the total market capitalization of NYSE stocks. This dollar amount of net equity issuing activity (IPOs, SEOs, stock repurchases, less dividends) for NYSE listed stocks is computed from CRSP data as

$$\text{Net Issue}_t \;=\; \text{Mcap}_t - \text{Mcap}_{t-1} \cdot (1 + \text{vwretx}_t)\,, \tag{2}$$

where Mcap is the total market capitalization, and vwretx is the value weighted return (excluding dividends) on the NYSE index.[1] These data are available from 1926 to 2013. The second measure, **Percent Equity Issuing** (**eqis**), is the ratio of equity issuing activity as a fraction of total issuing activity. This is the variable proposed in Baker and Wurgler (2000). The authors provided us with the data, except for 2005–2013, which we added ourselves. The first equity issuing measure is relative to aggregate market cap, while the second is relative to aggregate corporate issuing.

Our next set of independent variables are interest-rate related:

- <u>Treasury Bills</u> (**tbl**): T-bill rates from 1920 to 1933 are the *U.S. Yields On Short-Term United States Securities, Three-Six Month Treasury Notes and Certificates, Three Month Treasury* series from NBER's Macrohistory data base. T-bill rates from 1934 to 2013 are the *3-Month Treasury Bill: Secondary Market Rate* from the economic research database at Federal Reserve Bank at St. Louis (FRED).

- <u>Long Term Yield</u> (**lty**): Long-term government bond yields for the period 1919 to 1925 is the *U.S. Yield On Long-Term United States Bonds* series from NBER's Macrohistory database. Yields from 1926 to 2013 are from Ibbotson's Stocks, Bonds, Bills and Inflation Yearbook.

  <u>Long Term Rate of Return</u> (**ltr**): Long-term government bond returns for the period 1926 to 2013 are from Ibbotson's Stocks, Bonds, Bills and Inflation Yearbook.

  The **Term Spread** (**tms**) is the difference between the long term yield on government bonds and the T-bill.

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[1]This calculation implicitly assumes that the delisting return is –100 percent. Using the actual delisting return, where available, or ignoring delistings altogether, has no impact on our results.

- Corporate Bond Returns: Long-term corporate bond returns for the period 1926 to 2013 are from Ibbotson's Stocks, Bonds, Bills and Inflation Yearbook.

  Corporate Bond Yields: Yields on AAA- and BAA-rated bonds for the period 1919 to 2013 are from FRED.

  The **Default Yield Spread** (**dfy**): is the difference between BAA- and AAA- rated corporate bond *yields*.

  The **Default Return Spread** (**dfr**): is the difference between the return on long-term corporate bonds and returns on the long-term government bonds.

- Inflation (**infl**): Inflation is the *Consumer Price Index (All Urban Consumers)* for the period 1919 to 2013 from the Bureau of Labor Statistics. Because inflation information is released only in the following month, in our monthly regressions, we inserted one month of waiting before use.

The next variable is related to broad macroeconomic activity

- Investment to Capital Ratio (**i/k**): Investment to Capital Ratio is the ratio of aggregate (private nonresidential fixed) investment to aggregate capital for the whole economy. This is the variable proposed in Cochrane (1991), which we obtained directly from the author.

Finally, we also entertain two methods that rely on multiple variables or models (**all** and **ms**), and two models that are themselves rolling in their independent variable construction (**cay** and **ms**).

- A "Kitchen Sink" Regression, named "**all**," which includes all the aforementioned variables. (It does not include **cay**, described below.) We do not report coefficients, just prediction statistics. Consequently, even perfect multicollinearity does not change our results—redundant variables can simply be deleted.

- A model selection approach, named "**ms**." If there are K variables, we consider 2^K models essentially consisting of all possible combinations of variables. Every period, we select one of these models that gives the minimum cumulative prediction errors up to that time period t. This method is based on Rissanen (1986) and is recommended by Bossaerts and Hillion (1999). Essentially, this method uses our criterion of minimum OOS prediction errors to choose amongst competing models *in each time period t*. This is also similar in spirit to the use of more conventional criteria (like R^2) in Pesaran and Timmerman (1995), who however do not entertain our NULL hypothesis.

- Consumption, wealth, income ratio (**cay**) is suggested in Lettau and Ludvigson (2001). Although some data are available from Martin Lettau's website, we reconstruct the data following their procedure as this allows us to expand the time-series. This allows us to have quarterly data from the first quarter of 1952 to the fourth quarter of 2013, and annual data from 1945 to 2013. Lettau-Ludvigson estimate the following equation:

$$c_t = \alpha + \beta_w \, w_t + \beta_y \, y_t + \sum_{i=-k}^{k} b_{w,i} \Delta w_{t-i} + \sum_{i=-k}^{k} b_{y,i} \Delta y_{t-i} + \epsilon_t, \quad t = k+1, \ldots, T-k, \quad (3)$$

where c is the aggregate consumption, w is the aggregate wealth, and y is the aggregate income. The estimates of the above equation provide **cay** $\equiv \widehat{cay}_t = c_t - \hat{\beta}_a\, a_t - \hat{\beta}_y\, y_t, \quad t = 1,\ldots,T$. Eight leads/lags are used in quarterly estimation ($k = 8$) while two lags are used in annual estimation ($k = 2$). (For further details, see Lettau and Ludvigson (2001).)

Because the Lettau-Ludvigson measure of **cay** is constructed using look-ahead (*in-sample* regression coefficients), we created an equivalent measure that uses only prevailing data. In other words, if the current time period is 's', then we estimated equation (3) using only the data up to 's' through

$$c_t = \alpha + \beta_w^s\, w_t + \beta_y^s\, y_t + \sum_{i=-k}^{k} b_{w,i}^s \Delta w_{t-i} + \sum_{i=-k}^{k} b_{y,i}^s \Delta y_{t-i} + \epsilon_t, \quad t = k+1,\ldots,s-k, \quad (4)$$

where the superscript on betas indicates that these are rolling estimates. This measure is called **caya** ("ante") to distinguish it from the traditional variable **cayp** constructed with look-ahead bias ("post").

The latter two models change every period, which renders an in-sample regression problematic. (We would not want to use the final models, and project them backwards as if they were static.) This is also why we did not include **caya** in the kitchen sink specification.

2   Empirical Procedure

All regressions are estimated using OLS. The in-sample significance of a regression is determined using the F-statistic, critical values of which are estimated using the bootstrap procedure described below. The OOS forecast uses only the data available up to the time at which the forecast is made. Let e_N denote the vector of rolling OOS errors from the historical mean model and e_A denote the vector of rolling OOS errors from the OLS model. Define $d_t = e_{Nt} - e_{At}$, and $\overline{d} = T^{-1} \cdot \sum_t^T d_t = \text{MSE}_N - \text{MSE}_A$ over the entire OOS period. Then, our OOS statistics are computed as

$$R^2 = 1 - \frac{\text{MSE}_A}{\text{MSE}_N}\quad,$$

$$\Delta\text{MAE} = \frac{1}{T}\sum_{t=1}^{T}\left(|e_{Nt}| - |e_{At}|\right)\quad,$$

$$\Delta\text{RMSE} = \sqrt{\text{MSE}_N} - \sqrt{\text{MSE}_A}\quad,$$

$$\text{MSE-T} = \sqrt{T + 1 - 2\cdot h + h\cdot(h-1)/T}\;\cdot\;\left[\frac{\overline{d}}{\widehat{se}\left(\overline{d}\right)}\right]\quad,$$

$$\text{MSE-F} = (T - h + 1)\times\left(\frac{\text{MSE}_N - \text{MSE}_A}{\text{MSE}_A}\right)\quad,$$

$$\text{ENC} = \frac{T - h + 1}{T}\frac{\sum_{t=1}^{T}\left(e_{Nt}^2 - e_{Nt}\cdot e_{At}\right)}{\text{MSE}_A}\quad, \qquad (5)$$

where T is the total number of forecast observations and h is the overlap degree ($h = 1$ for no overlap).

MSE-T is the Diebold and Mariano (1995) T-statistic modified by Harvey et al. (1997), and MSE-F is F-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast (i.e., ΔMSE $= 0$). ENC is the statistic proposed by Clark and McCracken (2001) for an encompassing forecast test. Clark and McCracken show that all these statistics follow non-standard distributions when testing nested models. The reason for this is that under the null, the asymptotic difference in squared forecast errors is exactly 0 with 0 variance. This renders the standard distributions asymptotically valid. Because our models are nested, we use asymptotic critical values for MSE tests provided by McCracken, and asymptotic critical values for ENC tests provided by Clark and McCracken. This does not, unfortunately, account for small-sample issues and overlapping annual-observations (for which asymptotic critical values are not available). Critical values for **ms** model are not calculated at all. The NULL hypothesis is that the unconditional forecast is not inferior to the conditional forecast, so our critical values are for a one-sided test.[2]

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[2]If the regression coefficient β is small (so that explanatory power is low or in-sample R^2 is low), it may happen that our unconditional model outperforms on OOS because of estimation error in rolling estimates of β. In this case, ΔRMSE might be negative but still significant *because these tests are ultimately tests of whether β is equal to zero.*

List of Tables

Table 1: Forecasts at Monthly Frequency

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *excluding* dividends, of S&P500. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in January 1965. Panel C uses only the sample period January 1927 to December 2013 and constructs first forecast in January 1965. The data period for **ms** model is January 1927 to December 2013. All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) t-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is F-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	187102–201312	−0.06	0.0000	−0.08	0.0000	−0.54	−0.0059	−0.0119	−0.90	−6.97
d/y	Dividend Yield	187102–201312	−0.05	0.0002	−0.03	0.0002	−0.51	−0.0158	−0.0111	−1.29	−6.52
e/p	Earning Price Ratio	187102–201312	0.01	0.0017	0.01	0.0017	−0.22	−0.0158	−0.0039	−0.57	−2.28
d/e	Dividend Payout Ratio	187112–201312	0.08	0.0034	−0.07	0.0034	−0.65	0.0007	−0.0145	−0.85	−8.41
svar	Stock Variance	188502–201312	0.07	0.0033	0.08	0.0033	−1.34	−0.0022	−0.0324	−0.67	−16.26
csp	Cross-Sectional Prem	193705–200212	0.67**	0.0185	0.37	0.0185	−1.26	−0.0596	−0.0231	−0.76	−5.82
b/m	Book to Market	192103–201312	0.11	0.0055	−0.20	0.0055	−0.85	−0.0408	−0.0154	−0.90	−6.36
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.36	0.0115	−0.56	0.0109	−0.0091	−0.58	−3.45
tbl	T-Bill Rate	192002–201312	0.17*	0.0069	0.52	0.0069	0.05	0.0080	0.0034	0.19*	1.40**
lty	Long Term Yield	191901–201312	0.03	0.0033	0.15	0.0033	−0.63	−0.0020	−0.0112	−0.53	−4.60
ltr	Long Term Return	192601–201312	0.07	0.0045	0.56	0.0045	−1.26	−0.0329	−0.0240	−1.78	−9.17
tms	Term Spread	192002–201312	0.10	0.0051	0.34	0.0051	0.07	0.0064	0.0040	0.38*	1.65**
dfy	Default Yield Spread	191901–201312	−0.09	0.0000	−0.12	0.0000	−0.35	−0.0066	−0.0053	−2.38	−2.16
dfr	Default Return Spread	192601–201312	0.15	0.0068	0.08	0.0068	−0.37	−0.0053	−0.0053	−0.43	−2.02
infl	Inflation	191902–201312	−0.03	0.0016	0.16	0.0016	−0.17	0.0025	−0.0013	−0.33	−0.53
all	Kitchen Sink	192701–201312	1.50***	0.0706	2.05	0.0706	−12.51	−0.1869	−0.2253	−3.31	−79.49
ms	Model Selection	192701–201312	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 196501

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	187102–201312	−0.06	0.0000	−0.19	0.0000	−0.41	−0.0070	−0.0053	−1.41	−1.42
d/y	Dividend Yield	187102–201312	−0.05	0.0002	−0.14	0.0002	−0.49	−0.0231	−0.0071	−0.96	−1.89
e/p	Earning Price Ratio	187102–201312	0.01	0.0017	−0.26	0.0017	−0.78	−0.0329	−0.0134	−0.85	−3.55
d/e	Dividend Payout Ratio	187112–201312	0.08	0.0034	−0.44	0.0034	−1.18	−0.0028	−0.0223	−1.29	−5.89
svar	Stock Variance	188502–201312	0.07	0.0033	0.56	0.0033	0.04	0.0012	0.0047	0.76*	1.26*
csp	Cross-Sectional Prem	193705–200212	0.67**	0.0185	0.45	0.0185	0.46	0.0059	0.0151	0.58*	3.10**
b/m	Book to Market	192103–201312	0.11	0.0055	−0.72	0.0055	−1.72	−0.0674	−0.0341	−1.54	−8.98
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.22	0.0115	−0.96	0.0075	−0.0174	−0.86	−4.61
tbl	T-Bill Rate	192002–201312	0.17*	0.0069	0.38	0.0069	0.03	0.0139	0.0043	0.17	1.15*
lty	Long Term Yield	191901–201312	0.03	0.0033	−0.01	0.0033	−0.70	0.0027	−0.0116	−0.38	−3.09
ltr	Long Term Return	192601–201312	0.07	0.0045	0.61	0.0045	−0.43	−0.0199	−0.0058	−0.38	−1.54
tms	Term Spread	192002–201312	0.10	0.0051	0.50	0.0051	0.12	0.0113	0.0063	0.41	1.69**
dfy	Default Yield Spread	191901–201312	−0.09	0.0000	−0.15	0.0000	−0.28	−0.0041	−0.0024	−1.76	−0.64
dfr	Default Return Spread	192601–201312	0.15	0.0068	0.34	0.0068	−0.07	−0.0009	0.0022	0.14	0.60
infl	Inflation	191902–201312	−0.03	0.0016	−0.09	0.0016	−0.12	0.0059	0.0011	0.21	0.29
all	Kitchen Sink	192701–201312	1.50***	0.0706	1.72	0.0706	−8.42	−0.1190	−0.1389	−1.84	−35.29
ms	Model Selection	192701–201312	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 192701, Forecasts begin in 196501

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	−0.03	0.0019	−0.17	0.0019	−0.42	−0.0344	−0.0055	−0.45	−1.45
d/y	Dividend Yield	192701–201312	0.04	0.0037	−0.18	0.0037	−0.59	−0.0487	−0.0093	−0.53	−2.45
e/p	Earning Price Ratio	192701–201312	0.13	0.0063	−0.52	0.0063	−1.59	−0.0611	−0.0313	−1.11	−8.24
d/e	Dividend Payout Ratio	192701–201312	−0.04	0.0015	−0.32	0.0015	−1.89	−0.0232	−0.0377	−2.16	−9.91
svar	Stock Variance	192701–201312	0.09	0.0051	0.62	0.0051	0.09	0.0024	0.0058	0.86**	1.55*
csp	Cross-Sectional Prem	193705–200212	0.67**	0.0185	0.45	0.0185	0.46	0.0059	0.0151	0.58*	3.10**
b/m	Book to Market	192701–201312	0.13	0.0062	−0.77	0.0062	−2.08	−0.0789	−0.0418	−1.67	−10.98
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.22	0.0115	−0.96	0.0075	−0.0174	−0.86	−4.61
tbl	T-Bill Rate	192701–201312	0.12	0.0059	0.36	0.0059	−0.07	0.0117	0.0022	0.09	0.59
lty	Long Term Yield	192701–201312	0.01	0.0030	−0.01	0.0030	−0.74	0.0019	−0.0124	−0.40	−3.30
ltr	Long Term Return	192701–201312	0.07	0.0047	0.62	0.0047	−0.40	−0.0195	−0.0050	−0.32	−1.32
tms	Term Spread	192701–201312	0.06	0.0043	0.47	0.0043	−0.01	0.0093	0.0036	0.27	0.96*
dfy	Default Yield Spread	192701–201312	−0.09	0.0001	−0.13	0.0001	−0.25	−0.0037	−0.0019	−1.15	−0.49
dfr	Default Return Spread	192701–201312	0.15	0.0067	0.34	0.0067	−0.07	−0.0009	0.0022	0.14	0.58
infl	Inflation	192701–201312	−0.00	0.0026	−0.07	0.0026	−0.11	0.0097	0.0013	0.16	0.34
all	Kitchen Sink	192701–201312	1.50***	0.0706	1.72	0.0706	−8.42	−0.1190	−0.1389	−1.84	−35.29
ms	Model Selection	192701–201312	—	—	—	—	—	—	—	—	—

Table 2: Forecasts at Monthly Frequency with Total Returns

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500 calculated using CRSP data. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in January 1965. The data period for **ms** model is January 1927 to December 2013. All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Data begin in 192701, Forecasts begin in 194701

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	0.11	0.0058	0.43	0.0058	−0.14	−0.0372	−0.0003	−0.02	−0.13
d/y	Dividend Yield	192701–201312	0.22*	0.0087	0.53	0.0087	−0.44	−0.0545	−0.0065	−0.32	−2.49
e/p	Earning Price Ratio	192701–201312	0.33**	0.0117	0.06	0.0117	−1.57	−0.0586	−0.0303	−0.96	−11.45
d/e	Dividend Payout Ratio	192701–201312	−0.06	0.0010	−0.30	0.0010	−1.64	−0.0118	−0.0318	−1.76	−12.00
svar	Stock Variance	192701–201312	0.07	0.0045	0.54	0.0045	−0.01	0.0006	0.0024	0.50**	0.93*
csp	Cross-Sectional Prem	193705–200212	0.92***	0.0245	0.36	0.0245	−0.95	−0.0554	−0.0165	−0.49	−4.17
b/m	Book to Market	192701–201312	0.35**	0.0122	−0.25	0.0122	−1.57	−0.0718	−0.0303	−1.26	−11.44
ntis	Net Equity Expansion	192701–201312	0.34**	0.0119	−0.44	0.0119	−0.75	0.0065	−0.0132	−0.79	−5.01
tbl	T-Bill Rate	192701–201312	0.13	0.0061	0.59	0.0061	−0.09	0.0068	0.0008	0.04	0.29
lty	Long Term Yield	192701–201312	0.02	0.0032	0.25	0.0032	−0.85	−0.0137	−0.0152	−0.54	−5.77
ltr	Long Term Return	192701–201312	0.07	0.0045	0.53	0.0045	−0.96	−0.0314	−0.0175	−1.33	−6.66
tms	Term Spread	192701–201312	0.05	0.0040	0.29	0.0040	−0.04	0.0049	0.0018	0.16*	0.69*
dfy	Default Yield Spread	192701–201312	−0.08	0.0004	−0.11	0.0004	−0.29	−0.0049	−0.0035	−1.33	−1.33
dfr	Default Return Spread	192701–201312	0.15	0.0067	0.16	0.0067	−0.24	−0.0059	−0.0025	−0.21	−0.96
infl	Inflation	192701–201312	−0.02	0.0021	0.02	0.0021	−0.11	0.0050	0.0004	0.06	0.14
all	Kitchen Sink	192701–201312	1.78***	0.0783	2.37	0.0783	−12.71	−0.1942	−0.2287	−3.32	−80.76
ms	Model Selection	192701–201312	—	—	—	—	—	—	—	—	—

Panel B: Data begin in 192701, Forecasts begin in 196501

	Variable	Data	In-Sample $\overline{R}^2$	ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	ΔRMSE	Relative OOS Performance $\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	0.11	0.0058	−0.08	0.0058	−0.22	−0.0427	−0.0010	−0.06	−0.27
d/y	Dividend Yield	192701–201312	0.22*	0.0087	−0.06	0.0087	−0.40	−0.0585	−0.0050	−0.22	−1.34
e/p	Earning Price Ratio	192701–201312	0.33**	0.0117	−0.55	0.0117	−1.63	−0.0679	−0.0320	−0.93	−8.44
d/e	Dividend Payout Ratio	192701–201312	−0.06	0.0010	−0.28	0.0010	−2.03	−0.0275	−0.0407	−2.49	−10.70
svar	Stock Variance	192701–201312	0.07	0.0045	0.59	0.0045	0.02	0.0017	0.0043	0.68*	1.14*
csp	Cross-Sectional Prem	193705–200212	0.92***	0.0245	0.46	0.0245	0.71	0.0090	0.0208	0.72**	4.27***
b/m	Book to Market	192701–201312	0.35**	0.0122	−0.87	0.0122	−2.12	−0.0927	−0.0427	−1.43	−11.22
ntis	Net Equity Expansion	192701–201312	0.34**	0.0119	−0.25	0.0119	−1.22	0.0011	−0.0230	−1.07	−6.08
tbl	T-Bill Rate	192701–201312	0.13	0.0061	0.17	0.0061	−0.11	0.0144	0.0013	0.05	0.36
lty	Long Term Yield	192701–201312	0.02	0.0032	−0.14	0.0032	−0.87	0.0027	−0.0154	−0.44	−4.09
ltr	Long Term Return	192701–201312	0.07	0.0045	0.61	0.0045	−0.40	−0.0220	−0.0049	−0.32	−1.32
tms	Term Spread	192701–201312	0.05	0.0040	0.41	0.0040	−0.02	0.0081	0.0032	0.22	0.86*
dfy	Default Yield Spread	192701–201312	−0.08	0.0004	−0.08	0.0004	−0.20	−0.0031	−0.0007	−0.30	−0.19
dfr	Default Return Spread	192701–201312	0.15	0.0067	0.37	0.0067	−0.04	−0.0019	0.0029	0.19	0.77*
infl	Inflation	192701–201312	−0.02	0.0021	−0.12	0.0021	−0.13	0.0082	0.0008	0.11	0.22
all	Kitchen Sink	192701–201312	1.78***	0.0783	1.74	0.0783	−8.65	−0.1337	−0.1435	−1.88	−36.49
ms	Model Selection	192701–201312	—	—	—	—	—	—	—	—	—

Table 3: Forecasts at Quarterly Frequency

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the quarterly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return in price changes, *excluding* dividends, of S&P500. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in the first quarter of 1965 (or 20 years after the first data observation, whichever comes later). Panel C uses only the sample period first quarter of 1927 to fourth quarter of 2009 and constructs first forecast in the first quarter of 1965 (or 20 years after the first data observation, whichever comes later). The data period for **ms** model is first quarter of 1927 to fourth quarter of 2013. All numbers, except $\overline{R}^2$, are in percent per quarter. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) t-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is F-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	18712–20134	−0.16	0.0009	−0.12	0.0009	−1.90	−0.0794	−0.0821	−1.06	−8.19
d/y	Dividend Yield	18712–20134	−0.15	0.0012	−0.11	0.0012	−1.26	−0.0771	−0.0511	−1.66	−5.12
e/p	Earning Price Ratio	18712–20134	0.09	0.0123	0.07	0.0123	−0.69	−0.0746	−0.0235	−0.52	−2.36
d/e	Dividend Payout Ratio	18712–20134	0.01	0.0087	−0.28	0.0087	−1.97	−0.0077	−0.0853	−0.96	−8.51
svar	Stock Variance	18851–20134	−0.19	0.0000	−0.23	0.0000	−5.36	−0.0473	−0.2525	−1.21	−21.21
b/m	Book to Market	19211–20134	0.98**	0.0654	−0.97	0.0654	−4.22	−0.2171	−0.1512	−1.24	−10.86
ntis	Net Equity Expansion	19271–20134	1.94***	0.1193	−1.96	0.1193	−3.32	0.0922	−0.1148	−0.93	−7.63
tbl	T-Bill Rate	19201–20134	0.24	0.0262	0.98	0.0262	−0.39	−0.0255	−0.0021	−0.02	−0.15
lty	Long Term Yield	19191–20134	−0.05	0.0112	0.18	0.0112	−2.20	−0.0803	−0.0746	−0.67	−5.48
ltr	Long Term Return	19261–20134	0.04	0.0172	0.43	0.0172	−0.89	0.0372	−0.0205	−0.31	−1.40
tms	Term Spread	19201–20134	0.17	0.0225	0.78	0.0225	−0.04	0.0447	0.0120	0.21*	0.89*
dfy	Default Yield Spread	19191–20134	−0.19	0.0038	−0.43	0.0038	−1.83	−0.0775	−0.0598	−2.38	−4.41
dfr	Default Return Spread	19261–20134	−0.21	0.0042	0.55	0.0042	−6.27	−0.1448	−0.2300	−3.04	−15.11
infl	Inflation	19192–20134	−0.15	0.0060	0.22	0.0060	−0.34	−0.0067	0.0000	0.00	0.00
i/k	Invstmnt Capital Ratio	19471–20134	2.99***	0.1330	1.46	0.1330	0.98	0.0406	0.0643	0.49*	2.89**
cayp	Cnsmptn, Wlth, Incme	19521–20134	3.24***	0.1476	2.28	0.1476	1.20	0.1415	0.0767	0.52*	3.06**
caya	Cnsmptn, Wlth, Incme	19521–20134	—	—	—	—	−11.65	−0.2862	−0.4556	−1.67	−16.62
all	Kitchen Sink	19271–20134	3.13**	0.3360	0.40	0.3360	−44.84	−1.1066	−1.4074	−4.27	−75.02
ms	Model Selection	19271–20134	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 19651

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	18712–20134	−0.16	0.0009	−0.42	0.0009	−1.30	−0.0984	−0.0324	−0.94	−1.52
d/y	Dividend Yield	18712–20134	−0.15	0.0012	−0.35	0.0012	−1.31	−0.1085	−0.0328	−0.89	−1.53
e/p	Earning Price Ratio	18712–20134	0.09	0.0123	−0.92	0.0123	−2.95	−0.1354	−0.1002	−0.93	−4.63
d/e	Dividend Payout Ratio	18712–20134	0.01	0.0087	−1.18	0.0087	−3.02	−0.0075	−0.1033	−1.31	−4.77
svar	Stock Variance	18851–20134	−0.19	0.0000	−0.51	0.0000	−0.81	−0.0073	−0.0122	−1.19	−0.57
b/m	Book to Market	19211–20134	0.98**	0.0654	−2.88	0.0654	−7.14	−0.3516	−0.2709	−1.73	−12.11
ntis	Net Equity Expansion	19271–20134	1.94***	0.1193	−1.21	0.1193	−4.61	0.0772	−0.1682	−1.07	−7.66
tbl	T-Bill Rate	19201–20134	0.24	0.0262	0.49	0.0262	−0.71	−0.0256	−0.0080	−0.06	−0.37
lty	Long Term Yield	19191–20134	−0.05	0.0112	−0.31	0.0112	−2.57	−0.0941	−0.0848	−0.53	−3.92
ltr	Long Term Return	19261–20134	0.04	0.0172	0.50	0.0172	−0.94	0.0479	−0.0176	−0.21	−0.82
tms	Term Spread	19201–20134	0.17	0.0225	1.02	0.0225	−0.08	0.0726	0.0182	0.22	0.86*
dfy	Default Yield Spread	19191–20134	−0.19	0.0038	−0.29	0.0038	−0.49	−0.0204	0.0011	0.06	0.05
dfr	Default Return Spread	19261–20134	−0.21	0.0042	0.52	0.0042	−5.12	−0.0893	−0.1893	−2.25	−8.59
infl	Inflation	19192–20134	−0.15	0.0060	−0.18	0.0060	−0.39	−0.0026	0.0051	0.24	0.24
i/k	Invstmnt Capital Ratio	19471–20134	2.99***	0.1330	1.46	0.1330	0.98	0.0406	0.0643	0.49*	2.89**
cayp	Cnsmptn, Wlth, Incme	19521–20134	3.24***	0.1476	2.28	0.1476	1.20	0.1415	0.0767	0.52*	3.06**
caya	Cnsmptn, Wlth, Incme	19521–20134	—	—	—	—	−11.65	−0.2862	−0.4556	−1.67	−16.62
all	Kitchen Sink	19271–20134	3.13**	0.3360	−2.97	0.3360	−36.21	−0.9591	−1.1165	−3.07	−43.50
ms	Model Selection	19271–20134	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 19271, Forecasts begin in 19651

	Variable	Data	In-Sample $\overline{R}^2$	In-Sample ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	In-Sample for OOS Period ΔRMSE	Relative OOS Performance $\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	19271–20134	0.07	0.0194	−0.46	0.0194	−1.58	−0.2115	−0.0442	−0.49	−2.06
d/y	Dividend Yield	19271–20134	−0.01	0.0151	−0.21	0.0151	−1.02	−0.1762	−0.0211	−0.27	−0.99
e/p	Earning Price Ratio	19271–20134	0.41	0.0371	−1.73	0.0371	−5.77	−0.2306	−0.2156	−1.21	−9.74
d/e	Dividend Payout Ratio	19271–20134	−0.24	0.0028	−0.83	0.0028	−4.86	−0.1054	−0.1785	−2.11	−8.12
svar	Stock Variance	19271–20134	−0.29	0.0000	−0.52	0.0000	−0.88	−0.0111	−0.0150	−1.71	−0.70
b/m	Book to Market	19271–20134	1.04**	0.0710	−2.99	0.0710	−8.55	−0.4286	−0.3273	−1.93	−14.50
ntis	Net Equity Expansion	19271–20134	1.94***	0.1193	−1.21	0.1193	−4.61	0.0772	−0.1682	−1.07	−7.66
tbl	T-Bill Rate	19271–20134	0.11	0.0215	0.46	0.0215	−0.92	−0.0357	−0.0170	−0.14	−0.79
lty	Long Term Yield	19271–20134	−0.11	0.0096	−0.30	0.0096	−2.74	−0.0959	−0.0921	−0.58	−4.25
ltr	Long Term Return	19271–20134	0.03	0.0171	0.50	0.0171	−0.94	0.0463	−0.0178	−0.22	−0.83
tms	Term Spread	19271–20134	0.06	0.0184	0.96	0.0184	−0.39	0.0487	0.0054	0.07	0.25
dfy	Default Yield Spread	19271–20134	−0.18	0.0056	−0.24	0.0056	−0.46	−0.0178	0.0024	0.12	0.11
dfr	Default Return Spread	19271–20134	−0.21	0.0044	0.54	0.0044	−5.04	−0.0886	−0.1858	−2.24	−8.44
infl	Inflation	19271–20134	−0.16	0.0068	−0.12	0.0068	−0.44	−0.0036	0.0033	0.12	0.15
i/k	Invstmnt Capital Ratio	19471–20134	2.99***	0.1330	1.46	0.1330	0.98	0.0406	0.0643	0.49*	2.89**
cayp	Cnsmptn, Wlth, Incme	19521–20134	3.24***	0.1476	2.28	0.1476	1.20	0.1415	0.0767	0.52*	3.06**
caya	Cnsmptn, Wlth, Incme	19521–20134	—	—	—	—	−11.65	−0.2862	−0.4556	−1.67	−16.62
all	Kitchen Sink	19271–20134	3.13**	0.3360	−2.97	0.3360	−36.21	−0.9591	−1.1165	−3.07	−43.50
ms	Model Selection	19271–20134	—	—	—	—	—	—	—	—	—

Table 4: Forecasts at Annual Frequency

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the annual frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). Panel C uses only the sample period 1927 to 2013 and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). The data period for **ms** model is 1927 to 2013. All numbers, except $\overline{R}^2$, are in percent per year. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–2013	0.37	0.0972	1.15	0.0972	−2.16	−0.2255	−0.1222	−0.56	−1.58
d/y	Dividend Yield	1872–2013	0.50	0.1087	1.17	0.1087	−2.36	−0.2615	−0.1413	−0.40	−1.82
e/p	Earning Price Ratio	1872–2013	0.45	0.1049	0.51	0.1049	−2.50	−0.2851	−0.1537	−0.68	−1.98
d/e	Dividend Payout Ratio	1872–2013	−0.70	0.0015	−0.70	0.0015	−4.17	−0.2805	−0.3065	−2.38	−3.91
svar	Stock Variance	1885–2013	−0.22	0.0516	−0.54	0.0516	−23.61	−0.8081	−2.0508	−1.34	−20.00
b/m	Book to Market	1921–2013	2.92*	0.3795	1.16	0.3795	−1.67	0.1219	−0.0211	−0.04	−0.19
ntis	Net Equity Expansion	1927–2013	5.90**	0.6822	−6.75	0.6822	−11.19	0.2821	−0.7633	−0.86	−5.81
eqis	Pct Equity Issuing	1927–2013	5.74**	0.6666	−1.17	0.6666	−2.61	−0.0728	−0.0864	−0.14	−0.70
tbl	T-Bill Rate	1920–2013	0.66	0.1639	1.75	0.1639	−2.03	−0.2402	−0.0520	−0.10	−0.47
lty	Long Term Yield	1919–2013	−0.43	0.0618	−0.09	0.0618	−6.20	−0.7468	−0.3844	−0.54	−3.41
ltr	Long Term Return	1926–2013	0.77	0.1850	−0.02	0.1850	−9.63	−0.6116	−0.6419	−0.91	−5.03
tms	Term Spread	1920–2013	0.50	0.1485	0.95	0.1485	−1.22	0.0352	0.0134	0.04	0.12
dfy	Default Yield Spread	1919–2013	−0.90	0.0170	−1.03	0.0170	−2.64	−0.0950	−0.1019	−1.25	−0.93
dfr	Default Return Spread	1926–2013	−0.91	0.0257	−1.45	0.0257	−5.79	0.0370	−0.3412	−0.78	−2.75
infl	Inflation	1919–2013	−0.73	0.0333	−1.17	0.0333	−3.13	−0.1983	−0.1415	−1.15	−1.28
i/k	Invstmnt Capital Ratio	1947–2013	8.65***	0.8431	4.13	0.8431	2.69	−0.3702	0.4153	0.48*	2.37**
cayp	Cnsmptn, Wlth, Incme	1945–2013	6.37**	0.6414	6.31	0.6414	5.13	0.2695	0.6159	0.92**	3.75**
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	−4.17	−0.5588	−0.1694	−0.22	−0.96
all	Kitchen Sink	1927–2013	9.84*	2.2955	−4.35	2.2955	−142.42	−5.4050	−6.7121	−3.31	−33.22
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–2013	0.37	0.0972	0.13	0.0972	−3.83	−0.6351	−0.1377	−0.25	−0.80
d/y	Dividend Yield	1872–2013	0.50	0.1087	−0.29	0.1087	−7.05	−0.8348	−0.3946	−0.49	−2.25
e/p	Earning Price Ratio	1872–2013	0.45	0.1049	−1.41	0.1049	−3.78	−0.3519	−0.1338	−0.23	−0.78
d/e	Dividend Payout Ratio	1872–2013	−0.70	0.0015	−1.93	0.0015	−4.44	−0.1269	−0.1867	−2.25	−1.09
svar	Stock Variance	1885–2013	−0.22	0.0516	−0.19	0.0516	−0.86	0.1466	0.1034	1.27**	0.62
b/m	Book to Market	1921–2013	2.92*	0.3795	−5.58	0.3795	−9.94	−0.5851	−0.6348	−0.80	−3.48
ntis	Net Equity Expansion	1927–2013	5.90**	0.6822	−3.81	0.6822	−14.96	0.4108	−1.0221	−0.87	−5.47
eqis	Pct Equity Issuing	1927–2013	5.74**	0.6666	−1.22	0.6666	−6.43	−0.2586	−0.3494	−0.43	−1.98
tbl	T-Bill Rate	1920–2013	0.66	0.1639	−1.34	0.1639	−2.60	−0.3091	−0.0389	−0.05	−0.22
lty	Long Term Yield	1919–2013	−0.43	0.0618	−3.26	0.0618	−9.06	−1.0451	−0.5612	−0.54	−3.11
ltr	Long Term Return	1926–2013	0.77	0.1850	−0.00	0.1850	−14.06	−0.8973	−0.9550	−1.13	−5.13
tms	Term Spread	1920–2013	0.50	0.1485	2.61	0.1485	−1.22	0.0837	0.0755	0.16	0.44
dfy	Default Yield Spread	1919–2013	−0.90	0.0170	−0.76	0.0170	−2.93	−0.0455	−0.0658	−1.15	−0.38
dfr	Default Return Spread	1926–2013	−0.91	0.0257	−2.22	0.0257	−7.53	0.0119	−0.4391	−0.78	−2.46
infl	Inflation	1919–2013	−0.73	0.0333	−1.59	0.0333	−2.38	−0.1113	−0.0211	−0.17	−0.12
i/k	Invstmnt Capital Ratio	1947–2013	8.65***	0.8431	4.13	0.8431	2.69	−0.3702	0.4153	0.48*	2.37**
cayp	Cnsmptn, Wlth, Incme	1945–2013	6.37**	0.6414	6.31	0.6414	5.13	0.2695	0.6159	0.92**	3.75**
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	−4.17	−0.5588	−0.1694	−0.22	−0.96
all	Kitchen Sink	1927–2013	9.84*	2.2955	−23.44	2.2955	−157.28	−5.3309	−6.5224	−3.02	−23.61
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 1927, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1927–2013	1.55	0.2608	0.31	0.2608	−1.85	−0.6397	0.0225	0.03	0.13
d/y	Dividend Yield	1927–2013	1.97	0.3013	−0.67	0.3013	−6.72	−0.9131	−0.3726	−0.34	−2.11
e/p	Earning Price Ratio	1927–2013	1.67	0.2724	−2.55	0.2724	−6.61	−0.5853	−0.3641	−0.41	−2.06
d/e	Dividend Payout Ratio	1927–2013	−1.15	0.0042	−1.82	0.0042	−8.35	−0.2646	−0.5033	−2.32	−2.81
svar	Stock Variance	1927–2013	−0.86	0.0309	−0.76	0.0309	−1.86	0.0323	0.0217	0.50*	0.13
b/m	Book to Market	1927–2013	3.54**	0.4523	−6.28	0.4523	−15.48	−1.0844	−1.0622	−1.13	−5.67
ntis	Net Equity Expansion	1927–2013	5.90**	0.6822	−3.81	0.6822	−14.96	0.4108	−1.0221	−0.87	−5.47
eqis	Pct Equity Issuing	1927–2013	5.74**	0.6666	−1.22	0.6666	−6.43	−0.2586	−0.3494	−0.43	−1.98
tbl	T-Bill Rate	1927–2013	0.58	0.1682	−1.32	0.1682	−6.41	−0.7502	−0.3482	−0.34	−1.97
lty	Long Term Yield	1927–2013	−0.71	0.0458	−2.96	0.0458	−11.73	−1.3674	−0.7705	−0.68	−4.21
ltr	Long Term Return	1927–2013	0.72	0.1814	0.02	0.1814	−12.40	−0.7697	−0.8232	−1.05	−4.48
tms	Term Spread	1927–2013	1.32	0.2385	2.85	0.2385	−0.58	0.1281	0.1274	0.21	0.75*
dfy	Default Yield Spread	1927–2013	−0.99	0.0194	−0.68	0.0194	−2.71	−0.0404	−0.0479	−0.96	−0.28
dfr	Default Return Spread	1927–2013	−0.94	0.0240	−2.19	0.0240	−7.34	−0.0231	−0.4228	−0.78	−2.38
infl	Inflation	1927–2013	−1.08	0.0102	−2.65	0.0102	−6.35	−0.1170	−0.3429	−1.51	−1.94
i/k	Invstmnt Capital Ratio	1947–2013	8.65***	0.8431	4.13	0.8431	2.69	−0.3702	0.4153	0.48*	2.37**
cayp	Cnsmptn, Wlth, Incme	1945–2013	6.37**	0.6414	6.31	0.6414	5.13	0.2695	0.6159	0.92**	3.75**
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	−4.17	−0.5588	−0.1694	−0.22	−0.96
all	Kitchen Sink	1927–2013	9.84*	2.2955	−23.44	2.2955	−157.28	−5.3309	−6.5224	−3.02	−23.61
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Table 5: Forecasts at 3-year Frequency

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the 3-year frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). Panel C uses only the sample period 1927 to 2013 and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). The data period for **ms** model is 1927 to 2013. All numbers, except $\overline{R}^2$, are in percent per 3-year. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is F-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

	Variable	Data	In-Sample $\overline{R}^2$	In-Sample ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	In-Sample for OOS Period ΔRMSE	Relative OOS Performance $\overline{R}^2$	Relative OOS Performance ΔMAE	Relative OOS Performance ΔRMSE	Relative OOS Performance MSE-T	Relative OOS Performance MSE-F
d/p	Dividend Price Ratio	1872–2013	3.72**	0.6553	6.25	0.6553	−2.22	−0.8376	−0.2094	−0.18	−1.63
d/y	Dividend Yield	1872–2013	2.43*	0.4640	4.37	0.4640	−5.08	−1.5383	−0.6367	−0.56	−4.85
e/p	Earning Price Ratio	1872–2013	3.24*	0.5848	3.92	0.5848	−1.36	−0.6785	−0.0797	−0.10	−0.62
d/e	Dividend Payout Ratio	1872–2013	−0.52	0.0312	−0.14	0.0312	−5.28	−0.5825	−0.6668	−3.35	−5.07
svar	Stock Variance	1885–2013	0.77	0.2310	0.35	0.2310	−83.46	−3.3390	−10.9469	−1.30	−48.13
b/m	Book to Market	1921–2013	8.07**	1.5062	1.29	1.5062	−14.11	−1.9173	−1.6653	−0.59	−7.90
ntis	Net Equity Expansion	1927–2013	12.25**	2.2102	−14.59	2.2102	−19.21	−1.9191	−2.2583	−1.51	−9.63
eqis	Pct Equity Issuing	1927–2013	8.33	1.5504	−13.64	1.5504	−23.69	−2.4672	−2.8039	−1.45	−11.64
tbl	T-Bill Rate	1920–2013	1.88*	0.4819	5.09	0.4819	−7.81	−1.3550	−0.8478	−0.56	−4.29
lty	Long Term Yield	1919–2013	−0.41	0.1118	0.83	0.1118	−22.16	−2.7863	−2.6689	−1.20	−12.43
ltr	Long Term Return	1926–2013	−0.84	0.0576	−1.52	0.0576	−10.52	−1.1560	−1.1722	−2.26	−5.38
tms	Term Spread	1920–2013	3.27*	0.7063	1.82	0.7063	−10.67	−0.2277	−1.2171	−0.87	−6.04
dfy	Default Yield Spread	1919–2013	1.00	0.3362	−3.25	0.3362	−18.40	−1.5151	−2.2041	−1.68	−10.50
dfr	Default Return Spread	1926–2013	−1.20	0.0009	−1.58	0.0009	−2.76	−0.0270	−0.1655	−1.15	−0.80
infl	Inflation	1919–2013	−1.08	0.0055	−1.60	0.0055	−5.75	−0.3084	−0.5832	−1.28	−3.02
i/k	Invstmnt Capital Ratio	1947–2013	19.97***	2.9432	12.24	2.9432	16.63	2.4524	2.8703	1.41***	10.17***
cayp	Cnsmptn, Wlth, Incme	1945–2013	26.80***	3.9050	26.18	3.9050	26.75	3.5957	4.4235	1.66***	18.53***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	−1.54	−1.9192	0.0839	0.03	0.27
all	Kitchen Sink	1927–2013	35.21***	8.1934	8.66	8.1934	−188.89	−11.2361	−14.5329	−1.96	−37.50
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 1965

	Variable	Data	In-Sample $\overline{R}^2$	In-Sample ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	In-Sample for OOS Period ΔRMSE	Relative OOS Performance $\overline{R}^2$	Relative OOS Performance ΔMAE	Relative OOS Performance ΔRMSE	Relative OOS Performance MSE-T	Relative OOS Performance MSE-F
d/p	Dividend Price Ratio	1872–2013	3.72**	0.6553	3.83	0.6553	−12.79	−1.2371	−1.3151	−0.41	−4.44
d/y	Dividend Yield	1872–2013	2.43*	0.4640	1.20	0.4640	−18.07	−2.2610	−1.9426	−0.69	−6.34
e/p	Earning Price Ratio	1872–2013	3.24*	0.5848	−3.62	0.5848	−9.72	−1.5843	−0.9434	−0.47	−3.25
d/e	Dividend Payout Ratio	1872–2013	−0.52	0.0312	−0.61	0.0312	−7.37	−0.4433	−0.6552	−1.60	−2.30
svar	Stock Variance	1885–2013	0.77	0.2310	0.32	0.2310	0.08	0.3861	0.2826	0.77*	1.04*
b/m	Book to Market	1921–2013	8.07**	1.5062	−19.68	1.5062	−43.20	−5.7605	−5.0902	−1.45	−13.48
ntis	Net Equity Expansion	1927–2013	12.25**	2.2102	−6.65	2.2102	−31.12	−2.8973	−3.5539	−1.89	−10.39
eqis	Pct Equity Issuing	1927–2013	8.33	1.5504	−11.83	1.5504	−31.94	−2.9494	−3.6488	−1.40	−10.62
tbl	T-Bill Rate	1920–2013	1.88*	0.4819	−6.24	0.4819	−5.61	−1.5617	−0.4684	−0.23	−1.55
lty	Long Term Yield	1919–2013	−0.41	0.1118	−7.07	0.1118	−17.74	−3.2597	−2.0310	−0.77	−6.23
ltr	Long Term Return	1926–2013	−0.84	0.0576	0.18	0.0576	−6.49	−0.6040	−0.5676	−1.18	−1.93
tms	Term Spread	1920–2013	3.27*	0.7063	8.19	0.7063	1.60	1.3990	0.5101	0.49*	1.78**
dfy	Default Yield Spread	1919–2013	1.00	0.3362	0.62	0.3362	1.24	0.6768	0.4582	0.93**	1.60**
dfr	Default Return Spread	1926–2013	−1.20	0.0009	−2.17	0.0009	−3.50	0.0002	−0.1802	−0.90	−0.62
infl	Inflation	1919–2013	−1.08	0.0055	−2.13	0.0055	−4.18	−0.2987	−0.2750	−2.11	−0.92
i/k	Invstmnt Capital Ratio	1947–2013	19.97***	2.9432	12.24	2.9432	16.63	2.4524	2.8703	1.41***	10.17***
cayp	Cnsmptn, Wlth, Incme	1945–2013	26.80***	3.9050	26.18	3.9050	26.75	3.5957	4.4235	1.66***	18.53***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	−1.54	−1.9192	0.0839	0.03	0.27
all	Kitchen Sink	1927–2013	35.21***	8.1934	−15.81	8.1934	−316.16	−17.0266	−20.4750	−2.34	−31.94
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 1927, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1927–2013	9.15***	1.6868	2.24	1.6868	–17.20	–1.8901	–1.9023	–0.40	–6.04
d/y	Dividend Yield	1927–2013	6.49**	1.2452	–0.95	1.2452	–29.78	–3.4097	–3.3988	–0.80	–10.01
e/p	Earning Price Ratio	1927–2013	5.43**	1.0717	–6.72	1.0717	–19.91	–3.4330	–2.2323	–0.77	–6.97
d/e	Dividend Payout Ratio	1927–2013	0.45	0.2648	1.09	0.2648	–4.23	–0.1572	–0.2734	–0.50	–0.95
svar	Stock Variance	1927–2013	0.26	0.2351	0.13	0.2351	0.09	0.2366	0.2913	0.79**	1.04*
b/m	Book to Market	1927–2013	11.13**	2.0193	–23.99	2.0193	–76.88	–8.8551	–8.4394	–1.88	–19.86
ntis	Net Equity Expansion	1927–2013	12.25**	2.2102	–6.65	2.2102	–31.12	–2.8973	–3.5539	–1.89	–10.39
eqis	Pct Equity Issuing	1927–2013	8.33	1.5504	–11.83	1.5504	–31.94	–2.9494	–3.6488	–1.40	–10.62
tbl	T-Bill Rate	1927–2013	1.91	0.5001	–6.07	0.5001	–36.49	–4.7673	–4.1671	–1.23	–11.83
lty	Long Term Yield	1927–2013	–0.91	0.0491	–5.12	0.0491	–35.35	–4.5849	–4.0388	–1.18	–11.54
ltr	Long Term Return	1927–2013	–0.88	0.0538	0.12	0.0538	–7.17	–0.7425	–0.6509	–1.34	–2.21
tms	Term Spread	1927–2013	6.51**	1.2491	7.26	1.2491	–3.17	0.7385	–0.1360	–0.09	–0.47
dfy	Default Yield Spread	1927–2013	0.20	0.2264	0.33	0.2264	–0.23	0.3755	0.2490	0.67*	0.89*
dfr	Default Return Spread	1927–2013	–1.22	0.0005	–2.18	0.0005	–3.51	–0.0429	–0.1802	–0.98	–0.63
infl	Inflation	1927–2013	–0.91	0.0490	–2.84	0.0490	–8.55	–1.0193	–0.8275	–2.45	–2.78
i/k	Invstmnt Capital Ratio	1947–2013	19.97***	2.9432	12.24	2.9432	16.63	2.4524	2.8703	1.41***	10.17***
cayp	Cnsmptn, Wlth, Incme	1945–2013	26.80***	3.9050	26.18	3.9050	26.75	3.5957	4.4235	1.66***	18.53***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	–1.54	–1.9192	0.0839	0.03	0.27
all	Kitchen Sink	1927–2013	35.21***	8.1934	–15.81	8.1934	–316.16	–17.0266	–20.4750	–2.34	–31.94
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Table 6: Forecasts at 5-year Frequency

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the 5-year frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500. Panel A uses the full sample period for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period for each variable and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). Panel C uses only the sample period 1927 to 2013 and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). The data period for **ms** model is 1927 to 2013. All numbers, except $\overline{R}^2$, are in percent per 5-years. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) t-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is F-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–2013	10.23***	2.0435	14.50	2.0435	−0.87	0.2278	−0.0075	−0.00	−0.05
d/y	Dividend Yield	1872–2013	4.89**	1.0340	7.62	1.0340	−5.07	0.0350	−0.8041	−0.36	−4.76
e/p	Earning Price Ratio	1872–2013	3.44	0.7647	3.59	0.7647	−3.55	−0.1587	−0.5169	−0.35	−3.09
d/e	Dividend Payout Ratio	1872–2013	3.22**	0.7234	6.10	0.7234	−2.51	−0.1148	−0.3203	−0.26	−1.93
svar	Stock Variance	1885–2013	2.17**	0.5529	1.33	0.5529	−88.77	−4.7602	−14.5020	−1.15	−48.86
b/m	Book to Market	1921–2013	11.81**	2.6355	5.13	2.6355	−8.78	−0.7411	−1.3084	−0.28	−4.68
ntis	Net Equity Expansion	1927–2013	6.65**	1.5294	−8.29	1.5294	−6.27	−1.0656	−0.8730	−0.60	−2.81
eqis	Pct Equity Issuing	1927–2013	3.88	0.9854	−7.95	0.9854	−10.86	−1.5123	−1.7020	−0.79	−5.30
tbl	T-Bill Rate	1920–2013	2.65	0.7539	8.26	0.7539	−19.57	−3.3859	−3.1230	−0.60	−10.64
lty	Long Term Yield	1919–2013	−0.25	0.1743	2.23	0.1743	−112.12	−14.1517	−16.1639	−2.10	−37.07
ltr	Long Term Return	1926–2013	−1.07	0.0310	−1.09	0.0310	−7.22	−2.5837	−1.0841	−0.82	−3.40
tms	Term Spread	1920–2013	4.65*	1.1571	5.30	1.1571	−28.97	−2.5528	−4.6438	−0.95	−14.97
dfy	Default Yield Spread	1919–2013	6.22**	1.4655	−0.87	1.4655	−48.22	−5.4548	−7.5721	−1.44	−22.44
dfr	Default Return Spread	1926–2013	−0.21	0.1974	0.65	0.1974	−3.86	−0.1354	−0.4504	−0.92	−1.45
infl	Inflation	1919–2013	−1.07	0.0129	−1.67	0.0129	−9.92	−1.1434	−1.4960	−1.74	−5.52
i/k	Invstmnt Capital Ratio	1947–2013	30.80***	6.0432	21.80	6.0432	16.34	3.9879	3.9431	1.14**	9.54***
cayp	Cnsmptn, Wlth, Incme	1945–2013	35.47***	6.9818	38.42	6.9818	32.54	7.7298	7.7731	1.91***	23.12***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	4.22	2.4358	1.3118	0.36*	2.98**
all	Kitchen Sink	1927–2013	43.65***	11.8041	46.06	11.8041	−290.82	−25.3849	−29.8684	−2.66	−43.30
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–2013	10.23***	2.0435	10.34	2.0435	−21.13	0.7943	−2.9209	−0.45	−7.06
d/y	Dividend Yield	1872–2013	4.89**	1.0340	4.23	1.0340	−16.94	1.2654	−2.2971	−0.41	−5.70
e/p	Earning Price Ratio	1872–2013	3.44	0.7647	−5.99	0.7647	−11.39	−0.4669	−1.4541	−0.43	−3.74
d/e	Dividend Payout Ratio	1872–2013	3.22**	0.7234	10.34	0.7234	6.63	1.0391	1.4379	1.06**	4.22***
svar	Stock Variance	1885–2013	2.17**	0.5529	3.16	0.5529	2.26	0.9123	0.7209	0.81*	2.02**
b/m	Book to Market	1921–2013	11.81**	2.6355	−18.33	2.6355	−33.98	−4.6105	−5.3548	−0.89	−10.70
ntis	Net Equity Expansion	1927–2013	6.65**	1.5294	0.32	1.5294	−18.49	−2.8049	−2.7778	−1.97	−6.21
eqis	Pct Equity Issuing	1927–2013	3.88	0.9854	−4.87	0.9854	−18.22	−2.5870	−2.7334	−0.93	−6.12
tbl	T-Bill Rate	1920–2013	2.65	0.7539	−10.48	0.7539	−30.56	−4.9761	−4.8462	−0.63	−9.80
lty	Long Term Yield	1919–2013	−0.25	0.1743	−10.70	0.1743	−65.60	−9.4424	−10.1011	−1.05	−17.25
ltr	Long Term Return	1926–2013	−1.07	0.0310	0.55	0.0310	−16.34	−2.9567	−2.3836	−1.76	−5.50
tms	Term Spread	1920–2013	4.65*	1.1571	13.93	1.1571	0.44	0.9433	0.4689	0.17	1.16*
dfy	Default Yield Spread	1919–2013	6.22**	1.4655	10.00	1.4655	9.72	2.1486	2.2090	1.60***	5.90***
dfr	Default Return Spread	1926–2013	−0.21	0.1974	1.78	0.1974	−1.14	0.3270	0.1717	0.40*	0.44
infl	Inflation	1919–2013	−1.07	0.0129	−2.33	0.0129	−6.10	−0.5435	−0.7113	−1.47	−1.68
i/k	Invstmnt Capital Ratio	1947–2013	30.80***	6.0432	21.80	6.0432	16.34	3.9879	3.9431	1.14**	9.54***
cayp	Cnsmptn, Wlth, Incme	1945–2013	35.47***	6.9818	38.42	6.9818	32.54	7.7298	7.7731	1.91***	23.12***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	4.22	2.4358	1.3118	0.36*	2.98**
all	Kitchen Sink	1927–2013	43.65***	11.8041	29.56	11.8041	−332.32	−22.6135	−28.8407	−1.87	−31.12
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 1927, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1927–2013	21.53***	4.5986	7.51	4.5986	−8.74	1.2773	−1.1479	−0.15	−2.74
d/y	Dividend Yield	1927–2013	12.41***	2.6865	1.42	2.6865	−11.60	1.6548	−1.6328	−0.23	−3.82
e/p	Earning Price Ratio	1927–2013	8.15*	1.8271	−12.24	1.8271	−22.96	−2.3645	−3.5031	−0.62	−7.62
d/e	Dividend Payout Ratio	1927–2013	6.82***	1.5631	13.22	1.5631	7.66	1.7403	1.7686	1.15**	4.77***
svar	Stock Variance	1927–2013	1.19*	0.4664	2.28	0.4664	0.25	0.5264	0.4216	0.68*	1.07*
b/m	Book to Market	1927–2013	14.43**	3.1015	−19.68	3.1015	−46.68	−5.7023	−7.1471	−1.03	−13.67
ntis	Net Equity Expansion	1927–2013	6.65**	1.5294	0.32	1.5294	−18.49	−2.8049	−2.7778	−1.97	−6.21
eqis	Pct Equity Issuing	1927–2013	3.88	0.9854	−4.87	0.9854	−18.22	−2.5870	−2.7334	−0.93	−6.12
tbl	T-Bill Rate	1927–2013	3.56	0.9249	−11.14	0.9249	−61.29	−6.0131	−9.2470	−0.73	−16.51
lty	Long Term Yield	1927–2013	−0.41	0.1601	−9.85	0.1601	−112.11	−11.9275	−15.8901	−1.14	−23.33
ltr	Long Term Return	1927–2013	−1.05	0.0379	0.78	0.0379	−11.87	−2.2997	−1.6787	−1.65	−3.92
tms	Term Spread	1927–2013	8.20**	1.8371	14.05	1.8371	0.58	1.4201	0.4816	0.12	1.23*
dfy	Default Yield Spread	1927–2013	3.35*	0.8827	8.00	0.8827	4.65	1.1630	1.2165	1.40***	3.20**
dfr	Default Return Spread	1927–2013	−0.13	0.2132	1.84	0.2132	−1.12	0.3988	0.1774	0.37	0.45
infl	Inflation	1927–2013	−1.13	0.0232	−2.46	0.0232	−10.96	−1.5388	−1.5246	−1.48	−3.58
i/k	Invstmnt Capital Ratio	1947–2013	30.80***	6.0432	21.80	6.0432	16.34	3.9879	3.9431	1.14**	9.54***
cayp	Cnsmptn, Wlth, Incme	1945–2013	35.47***	6.9818	38.42	6.9818	32.54	7.7298	7.7731	1.91***	23.12***
caya	Cnsmptn, Wlth, Incme	1945–2013	—	—	—	—	4.22	2.4358	1.3118	0.36*	2.98**
all	Kitchen Sink	1927–2013	43.65***	11.8041	29.56	11.8041	−332.32	−22.6135	−28.8407	−1.87	−31.12
ms	Model Selection	1927–2013	—	—	—	—	—	—	—	—	—

Table 7: Forecasts Using Various **d/p**, **e/p**, and **d/e** Ratios

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at various frequencies. Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500 (monthly panel uses CRSP data for calculation of stock returns). All numbers, except $\overline{R}^2$, are in percent per frequency corresponding to the panel. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Forecasting monthly return with total returns

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	192701–201312	0.33**	0.0117	−0.55	0.0117	−1.63	−0.0679	−0.0320	−0.93	−8.44
e/p	Earning(3Y) Price Ratio	192701–201312	0.19*	0.0080	−0.27	0.0080	−0.43	−0.0416	−0.0058	−0.32	−1.54
e/p	Earning(5Y) Price Ratio	192701–201312	0.28**	0.0105	−0.31	0.0105	−0.57	−0.0551	−0.0087	−0.42	−2.32
e/p	Earning(10Y) Price Ratio	192701–201312	0.48**	0.0158	−0.17	0.0158	−0.66	−0.0668	−0.0107	−0.41	−2.84
d/p	Dividend(1Y) Price Ratio	192701–201312	0.11	0.0058	−0.08	0.0058	−0.22	−0.0427	−0.0010	−0.06	−0.27
d/p	Dividend(3Y) Price Ratio	192701–201312	0.19*	0.0079	−0.06	0.0079	−0.16	−0.0457	0.0001	0.01	0.04
d/p	Dividend(5Y) Price Ratio	192701–201312	0.28**	0.0105	−0.01	0.0105	−0.22	−0.0532	−0.0010	−0.05	−0.27
d/p	Dividend(10Y) Price Ratio	192701–201312	0.23*	0.0091	−0.02	0.0091	−0.17	−0.0489	−0.0000	−0.00	−0.00
d/e	Dividend(1Y) Earning(1Y) Ratio	192701–201312	−0.06	0.0010	−0.28	0.0010	−2.03	−0.0275	−0.0407	−2.49	−10.70
d/e	Dividend(1Y) Earning(3Y) Ratio	192701–201312	−0.10	0.0000	−0.17	0.0000	−1.09	−0.0160	−0.0201	−2.29	−5.32
d/e	Dividend(1Y) Earning(5Y) Ratio	192701–201312	−0.08	0.0004	−0.25	0.0004	−1.30	−0.0158	−0.0247	−2.46	−6.53
d/e	Dividend(1Y) Earning(10Y) Ratio	192701–201312	0.06	0.0042	−0.24	0.0042	−1.20	−0.0056	−0.0226	−1.81	−5.97
d/e	Dividend(3Y) Earning(3Y) Ratio	192701–201312	−0.05	0.0012	−0.09	0.0012	−0.30	−0.0122	−0.0030	−0.59	−0.79
d/e	Dividend(5Y) Earning(5Y) Ratio	192701–201312	−0.01	0.0025	0.01	0.0025	−0.16	−0.0121	0.0002	0.03	0.06
d/e	Dividend(10Y) Earning(10Y) Ratio	192701–201312	−0.10	0.0000	−0.17	0.0000	−0.84	−0.0116	−0.0147	−2.95	−3.91

Panel B: Forecasting 1 year return - Forecast begins 1902

Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
		$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p Earning(1Y) Price Ratio	1882–2013	0.56	0.1208	0.43	0.1208	–4.01	–0.3512	–0.2927	–1.02	–3.34
e/p Earning(3Y) Price Ratio	1882–2013	2.35**	0.2837	2.45	0.2837	–0.98	0.1588	–0.0067	–0.02	–0.08
e/p Earning(5Y) Price Ratio	1882–2013	2.60**	0.3072	2.87	0.3072	–0.60	–0.0273	0.0295	0.08*	0.34*
e/p Earning(10Y) Price Ratio	1882–2013	4.82***	0.5111	5.80	0.5111	2.19	0.0377	0.2969	0.56**	3.55**
d/p Dividend(1Y) Price Ratio	1882–2013	1.08	0.1685	1.54	0.1685	–1.89	–0.2075	–0.0930	–0.26	–1.08
d/p Dividend(3Y) Price Ratio	1882–2013	1.53*	0.2087	2.22	0.2087	–1.78	–0.2738	–0.0829	–0.19	–0.96
d/p Dividend(5Y) Price Ratio	1882–2013	2.15*	0.2653	2.96	0.2653	–0.83	–0.3767	0.0080	0.02	0.09*
d/p Dividend(10Y) Price Ratio	1882–2013	1.84*	0.2372	2.88	0.2372	–1.28	–0.5166	–0.0355	–0.07	–0.41
d/e Dividend(1Y) Earning(1Y) Ratio	1882–2013	–0.58	0.0174	–0.43	0.0174	–3.34	–0.3027	–0.2304	–1.02	–2.64
d/e Dividend(1Y) Earning(3Y) Ratio	1882–2013	–0.74	0.0028	–0.98	0.0028	–4.70	–0.1179	–0.3577	–2.09	–4.06
d/e Dividend(1Y) Earning(5Y) Ratio	1882–2013	–0.69	0.0080	–0.96	0.0080	–5.78	–0.3774	–0.4577	–1.67	–5.15
d/e Dividend(1Y) Earning(10Y) Ratio	1882–2013	1.21	0.1800	1.13	0.1800	–1.79	0.0327	–0.0832	–0.15	–0.96
d/e Dividend(3Y) Earning(3Y) Ratio	1882–2013	–0.74	0.0034	–0.73	0.0034	–4.39	–0.3822	–0.3287	–3.28	–3.74
d/e Dividend(5Y) Earning(5Y) Ratio	1882–2013	–0.44	0.0306	–0.11	0.0306	–4.06	–0.4449	–0.2979	–1.29	–3.40
d/e Dividend(10Y) Earning(10Y) Ratio	1882–2013	–0.65	0.0117	–0.96	0.0117	–5.91	–0.2799	–0.4699	–2.10	–5.29

Panel C: Forecasting 1 year return - Forecast begins 1965

Variable		Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	0.56	0.1208	−1.48	0.1208	−3.72	−0.3376	−0.1290	−0.22	−0.75
e/p	Earning(3Y) Price Ratio	1882–2013	2.35**	0.2837	−0.60	0.2837	−2.75	−0.4105	−0.0507	−0.08	−0.30
e/p	Earning(5Y) Price Ratio	1882–2013	2.60**	0.3072	−1.02	0.3072	−4.35	−0.5832	−0.1793	−0.26	−1.04
e/p	Earning(10Y) Price Ratio	1882–2013	4.82***	0.5111	0.62	0.5111	−8.16	−0.9496	−0.4824	−0.48	−2.73
d/p	Dividend(1Y) Price Ratio	1882–2013	1.08	0.1685	0.33	0.1685	−5.11	−0.8952	−0.2401	−0.32	−1.39
d/p	Dividend(3Y) Price Ratio	1882–2013	1.53*	0.2087	0.32	0.2087	−6.43	−1.0207	−0.3456	−0.41	−1.98
d/p	Dividend(5Y) Price Ratio	1882–2013	2.15*	0.2653	0.62	0.2653	−8.02	−1.2417	−0.4715	−0.51	−2.67
d/p	Dividend(10Y) Price Ratio	1882–2013	1.84*	0.2372	0.62	0.2372	−7.62	−1.2652	−0.4404	−0.51	−2.50
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.58	0.0174	−1.61	0.0174	−3.43	−0.1848	−0.1058	−0.66	−0.62
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.74	0.0028	−2.37	0.0028	−8.65	−0.1039	−0.5213	−1.76	−2.94
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.69	0.0080	−2.79	0.0080	−11.31	−0.1218	−0.7293	−1.81	−4.04
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	1.21	0.1800	−3.62	0.1800	−13.37	0.1436	−0.8887	−1.33	−4.86
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	−0.74	0.0034	−1.97	0.0034	−4.69	−0.2127	−0.2071	−2.21	−1.20
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	−0.44	0.0306	−1.24	0.0306	−3.64	−0.3040	−0.1223	−0.56	−0.71
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.65	0.0117	−2.13	0.0117	−8.79	−0.1306	−0.5326	−1.89	−3.00

Panel D: Forecasting 3 year return - Forecast begins 1902

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	4.22*	0.7318	4.28	0.7318	−0.90	−0.7731	0.0018	0.00	0.01
e/p	Earning(3Y) Price Ratio	1882–2013	6.10**	1.0126	6.80	1.0126	1.45	−0.4568	0.3665	0.32*	2.64**
e/p	Earning(5Y) Price Ratio	1882–2013	9.68***	1.5539	10.97	1.5539	4.58	−0.0571	0.8579	0.58**	6.33***
e/p	Earning(10Y) Price Ratio	1882–2013	12.51***	1.9882	14.94	1.9882	3.38	−0.4452	0.6692	0.32*	4.89***
d/p	Dividend(1Y) Price Ratio	1882–2013	5.67**	0.9477	7.50	0.9477	−0.96	−0.9562	−0.0081	−0.01	−0.06
d/p	Dividend(3Y) Price Ratio	1882–2013	7.01***	1.1481	9.24	1.1481	−0.24	−0.9970	0.1036	0.06*	0.74*
d/p	Dividend(5Y) Price Ratio	1882–2013	8.06***	1.3068	10.67	1.3068	−0.60	−0.8660	0.0482	0.03*	0.34*
d/p	Dividend(10Y) Price Ratio	1882–2013	6.31**	1.0439	9.26	1.0439	−5.75	−1.9324	−0.7372	−0.38	−5.03
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.32	0.0670	0.25	0.0670	−6.85	−0.6756	−0.9027	−2.26	−6.12
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.30	0.0702	0.33	0.0702	−11.99	−0.8533	−1.6642	−1.47	−10.89
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.72	0.0103	−1.07	0.0103	−7.01	−0.7434	−0.9273	−1.37	−6.28
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	0.77	0.2259	0.29	0.2259	−6.74	−0.6530	−0.8861	−0.58	−6.01
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	0.59	0.1992	1.84	0.1992	−9.73	−1.0282	−1.3313	−1.56	−8.84
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.04	0.1197	0.98	0.1197	−6.77	−0.9546	−0.8909	−1.59	−6.04
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.73	0.0076	−1.10	0.0076	−7.05	−0.6226	−0.9327	−2.03	−6.31

Panel E: Forecasting 3 year return - Forecast begins 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	4.22*	0.7318	−4.46	0.7318	−10.38	−1.8174	−1.0286	−0.49	−3.51
e/p	Earning(3Y) Price Ratio	1882–2013	6.10**	1.0126	−2.99	1.0126	−10.88	−1.7841	−1.0898	−0.41	−3.71
e/p	Earning(5Y) Price Ratio	1882–2013	9.68***	1.5539	−0.47	1.5539	−12.67	−1.6522	−1.3073	−0.38	−4.40
e/p	Earning(10Y) Price Ratio	1882–2013	12.51***	1.9882	2.24	1.9882	−21.50	−2.0511	−2.3552	−0.53	−7.49
d/p	Dividend(1Y) Price Ratio	1882–2013	5.67**	0.9477	3.65	0.9477	−16.45	−1.5355	−1.7606	−0.46	−5.78
d/p	Dividend(3Y) Price Ratio	1882–2013	7.01***	1.1481	4.69	1.1481	−17.48	−1.7273	−1.8831	−0.48	−6.14
d/p	Dividend(5Y) Price Ratio	1882–2013	8.06***	1.3068	5.66	1.3068	−19.04	−1.8945	−2.0665	−0.52	−6.68
d/p	Dividend(10Y) Price Ratio	1882–2013	6.31**	1.0439	4.29	1.0439	−17.11	−2.0539	−1.8389	−0.52	−6.01
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.32	0.0670	−0.06	0.0670	−6.02	−0.3396	−0.4900	−1.45	−1.73
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.30	0.0702	0.90	0.0702	−10.15	−0.7600	−1.0005	−1.82	−3.42
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.72	0.0103	−3.03	0.0103	−25.13	−1.8026	−2.7744	−1.92	−8.64
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	0.77	0.2259	−4.63	0.2259	−22.25	−1.0370	−2.4417	−1.53	−7.73
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	0.59	0.1992	2.44	0.1992	−1.47	−0.0135	0.0837	0.21	0.30
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.04	0.1197	0.45	0.1197	−3.69	−0.3578	−0.1973	−0.51	−0.71
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.73	0.0076	−2.32	0.0076	−18.30	−1.4440	−1.9793	−2.12	−6.42

Panel F: Forecasting 5 year return - Forecast begins 1902

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	4.22*	0.9269	4.34	0.9269	−0.88	−0.1307	0.0058	0.00	0.03
e/p	Earning(3Y) Price Ratio	1882–2013	12.14***	2.4407	13.65	2.4407	4.81	0.9627	1.1363	0.53**	6.49***
e/p	Earning(5Y) Price Ratio	1882–2013	17.11***	3.4259	19.46	3.4259	6.28	1.6153	1.4354	0.53**	8.29***
e/p	Earning(10Y) Price Ratio	1882–2013	17.06***	3.4147	21.02	3.4147	−1.46	0.2649	−0.1084	−0.03	−0.59
d/p	Dividend(1Y) Price Ratio	1882–2013	12.21***	2.4546	15.46	2.4546	−0.51	−0.2271	0.0785	0.03*	0.43*
d/p	Dividend(3Y) Price Ratio	1882–2013	13.04***	2.6165	17.14	2.6165	−1.71	−0.1086	−0.1557	−0.05	−0.85
d/p	Dividend(5Y) Price Ratio	1882–2013	13.53***	2.7136	18.06	2.7136	−3.52	−0.0670	−0.5074	−0.15	−2.72
d/p	Dividend(10Y) Price Ratio	1882–2013	9.62***	1.9515	14.35	1.9515	−15.02	−1.5493	−2.6735	−0.71	−13.25
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	3.40**	0.7746	6.26	0.7746	−6.64	−0.8407	−1.1078	−0.75	−5.81
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	0.52	0.2422	1.86	0.2422	−20.92	−2.9853	−3.7441	−1.46	−17.88
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.78	0.0029	−0.80	0.0029	−9.20	−1.1684	−1.5929	−1.39	−8.20
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.80	0.0001	−0.95	0.0001	−11.60	−1.0662	−2.0421	−1.39	−10.35
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	1.22	0.3702	3.26	0.3702	−12.42	−1.6614	−2.1936	−1.32	−11.05
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.07	0.1598	1.37	0.1598	−11.99	−1.8828	−2.1152	−2.15	−10.69
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.80	0.0000	−0.93	0.0000	−17.32	−2.6846	−3.0946	−3.00	−15.11

Panel G: Forecasting 5 year return - Forecast begins 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	4.22*	0.9269	−6.94	0.9269	−12.06	−0.5985	−1.5693	−0.44	−3.99
e/p	Earning(3Y) Price Ratio	1882–2013	12.14***	2.4407	2.05	2.4407	−5.37	1.2474	−0.5202	−0.11	−1.38
e/p	Earning(5Y) Price Ratio	1882–2013	17.11***	3.4259	3.37	3.4259	−11.71	1.8084	−1.5158	−0.25	−3.86
e/p	Earning(10Y) Price Ratio	1882–2013	17.06***	3.4147	7.47	3.4147	−17.85	0.9658	−2.4530	−0.35	−6.00
d/p	Dividend(1Y) Price Ratio	1882–2013	12.21***	2.4546	10.05	2.4546	−24.41	0.2220	−3.4266	−0.49	−8.06
d/p	Dividend(3Y) Price Ratio	1882–2013	13.04***	2.6165	10.97	2.6165	−23.19	0.0920	−3.2476	−0.48	−7.69
d/p	Dividend(5Y) Price Ratio	1882–2013	13.53***	2.7136	10.59	2.7136	−25.75	−0.5186	−3.6225	−0.54	−8.45
d/p	Dividend(10Y) Price Ratio	1882–2013	9.62***	1.9515	7.81	1.9515	−17.55	0.6370	−2.4078	−0.39	−5.90
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	3.40**	0.7746	10.55	0.7746	6.85	1.0872	1.4859	1.14**	4.34***
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	0.52	0.2422	2.49	0.2422	−4.90	−0.3864	−0.4449	−0.80	−1.19
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.78	0.0029	−1.82	0.0029	−27.43	−3.0391	−3.8672	−1.98	−8.94
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.80	0.0001	−2.40	0.0001	−13.08	−1.0571	−1.7267	−1.68	−4.36
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	1.22	0.3702	2.72	0.3702	0.65	0.3247	0.4519	0.57	1.26*
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.07	0.1598	0.12	0.1598	−6.46	−0.6528	−0.6930	−1.46	−1.83
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.80	0.0000	−2.33	0.0000	−20.79	−2.3642	−2.8931	−2.24	−6.95

Panel H: Forecasting 10 year return - Forecast begins 1902

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	21.46***	5.6015	24.04	5.6015	−9.06	−1.9260	−2.1729	−0.41	−7.70
e/p	Earning(3Y) Price Ratio	1882–2013	21.42***	5.5906	24.86	5.5906	−6.71	−1.0453	−1.5552	−0.29	−5.60
e/p	Earning(5Y) Price Ratio	1882–2013	20.52***	5.3519	24.44	5.3519	−1.98	−0.0437	−0.2915	−0.06	−1.09
e/p	Earning(10Y) Price Ratio	1882–2013	18.68***	4.8629	23.80	4.8629	1.73	0.3234	0.7223	0.20*	2.77**
d/p	Dividend(1Y) Price Ratio	1882–2013	15.70***	4.0867	21.33	4.0867	−1.12	−1.1936	−0.0567	−0.01	−0.21
d/p	Dividend(3Y) Price Ratio	1882–2013	13.92***	3.6272	20.02	3.6272	−0.32	−0.5362	0.1603	0.04*	0.60*
d/p	Dividend(5Y) Price Ratio	1882–2013	13.09***	3.4146	19.39	3.4146	0.78	−0.4302	0.4600	0.12*	1.75**
d/p	Dividend(10Y) Price Ratio	1882–2013	11.91***	3.1165	18.68	3.1165	−6.24	−1.7549	−1.4324	−0.29	−5.17
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.62	0.0506	−1.37	0.0506	−10.28	−2.1040	−2.4918	−2.16	−8.75
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.80	0.0072	−1.22	0.0072	−18.90	−5.0673	−4.6915	−2.04	−15.58
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.82	0.0041	−0.78	0.0041	−13.35	−2.5450	−3.2862	−1.59	−11.31
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.68	0.0369	−0.53	0.0369	−4.53	0.2996	−0.9765	−0.79	−3.57
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	−0.73	0.0244	−1.38	0.0244	−13.84	−3.4566	−3.4109	−2.35	−11.70
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	−0.82	0.0032	−1.18	0.0032	−17.95	−4.0049	−4.4545	−3.53	−14.88
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.81	0.0060	−0.67	0.0060	−74.23	−15.9674	−17.2337	−1.80	−43.34

Panel I: Forecasting 10 year return - Forecast begins 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
e/p	Earning(1Y) Price Ratio	1882–2013	21.46***	5.6015	15.98	5.6015	19.73	1.8730	5.3797	0.86*	10.89***
e/p	Earning(3Y) Price Ratio	1882–2013	21.42***	5.5906	18.67	5.5906	21.07	2.8998	5.7337	0.76*	11.76***
e/p	Earning(5Y) Price Ratio	1882–2013	20.52***	5.3519	21.67	5.3519	21.45	3.4896	5.8317	0.69*	12.00***
e/p	Earning(10Y) Price Ratio	1882–2013	18.68***	4.8629	25.77	4.8629	18.44	3.1810	5.0439	0.52	10.09***
d/p	Dividend(1Y) Price Ratio	1882–2013	15.70***	4.0867	19.31	4.0867	−1.71	−1.5597	0.0981	0.01	0.17
d/p	Dividend(3Y) Price Ratio	1882–2013	13.92***	3.6272	17.52	3.6272	2.25	−0.5895	1.0270	0.09	1.79**
d/p	Dividend(5Y) Price Ratio	1882–2013	13.09***	3.4146	16.51	3.4146	2.03	−0.8875	0.9747	0.09	1.70**
d/p	Dividend(10Y) Price Ratio	1882–2013	11.91***	3.1165	13.94	3.1165	−7.53	−3.4507	−1.2380	−0.10	−2.01
d/e	Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.62	0.0506	−2.83	0.0506	−20.23	−3.3686	−4.0312	−1.44	−6.02
d/e	Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.80	0.0072	−2.84	0.0072	−33.91	−6.3303	−6.8802	−1.56	−9.49
d/e	Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.82	0.0041	−2.50	0.0041	−23.83	−4.6357	−4.7966	−1.61	−7.01
d/e	Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.68	0.0369	−3.00	0.0369	−5.61	−0.7439	−0.8024	−2.00	−1.32
d/e	Dividend(3Y) Earning(3Y) Ratio	1882–2013	−0.73	0.0244	−2.58	0.0244	−24.02	−4.2940	−4.8359	−1.52	−7.06
d/e	Dividend(5Y) Earning(5Y) Ratio	1882–2013	−0.82	0.0032	−2.49	0.0032	−24.14	−4.5153	−4.8606	−1.82	−7.09
d/e	Dividend(10Y) Earning(10Y) Ratio	1882–2013	−0.81	0.0060	−3.43	0.0060	−29.26	−6.5515	−5.9297	−2.74	−8.40

Table 8: Forecasts at Monthly Frequency with Alternative Procedures

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *excluding* dividends, of S&P500. Panel A uses the unadjusted betas (and is the same as Panel A of Table 1), Panel B corrects betas following Stambaugh (1999), and Panel C corrects betas following Lewellen (2004). All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Unadjusted betas

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	187102–201312	−0.06	0.0000	−0.08	0.0000	−0.55	−0.0061	−0.0119	−0.90	−7.01
d/y	Dividend Yield	187102–201312	−0.05	0.0002	−0.03	0.0002	−0.51	−0.0159	−0.0112	−1.30	−6.56
e/p	Earning Price Ratio	187102–201312	0.01	0.0017	0.01	0.0017	−0.23	−0.0160	−0.0039	−0.58	−2.32
d/e	Dividend Payout Ratio	187112–201312	0.08	0.0034	−0.07	0.0034	−0.65	0.0004	−0.0145	−0.85	−8.46
svar	Stock Variance	188502–201312	0.07	0.0033	0.08	0.0033	−1.34	−0.0026	−0.0325	−0.67	−16.29
csp	Cross-Sectional Prem	193705–200212	0.67**	0.0185	0.37	0.0185	−1.26	−0.0595	−0.0232	−0.77	−5.85
b/m	Book to Market	192103–201312	0.11	0.0055	−0.20	0.0055	−0.84	−0.0403	−0.0153	−0.89	−6.29
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.36	0.0115	−0.55	0.0113	−0.0089	−0.56	−3.40
tbl	T-Bill Rate	192002–201312	0.17*	0.0069	0.52	0.0069	0.07	0.0095	0.0039	0.23*	1.61**
lty	Long Term Yield	191901–201312	0.03	0.0033	0.15	0.0033	−0.62	−0.0019	−0.0112	−0.52	−4.58
ltr	Long Term Return	192601–201312	0.07	0.0045	0.56	0.0045	−1.26	−0.0332	−0.0241	−1.79	−9.20
tms	Term Spread	192002–201312	0.10	0.0051	0.34	0.0051	0.10	0.0080	0.0045	0.43*	1.85**
dfy	Default Yield Spread	191901–201312	−0.09	0.0000	−0.12	0.0000	−0.35	−0.0064	−0.0052	−2.38	−2.15
dfr	Default Return Spread	192601–201312	0.15	0.0068	0.08	0.0068	−0.38	−0.0056	−0.0053	−0.44	−2.05
infl	Inflation	191902–201312	−0.03	0.0016	0.16	0.0016	−0.17	0.0025	−0.0013	−0.33	−0.54

Panel B: Betas adjusted for Stambaugh correction

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	187102–201312	−0.10	−0.0009	−0.18	−0.0009	−0.88	−0.0061	−0.0202	−1.12	−11.85
d/y	Dividend Yield	187102–201312	−0.05	0.0002	−0.04	0.0002	−0.57	−0.0158	−0.0125	−1.34	−7.34
e/p	Earning Price Ratio	187102–201312	−0.00	0.0014	−0.01	0.0014	−0.25	−0.0118	−0.0046	−0.93	−2.70
d/e	Dividend Payout Ratio	187112–201312	0.08	0.0034	−0.07	0.0034	−0.75	−0.0020	−0.0171	−0.94	−9.95
svar	Stock Variance	188502–201312	0.07	0.0033	0.08	0.0033	−1.36	−0.0024	−0.0329	−0.67	−16.53
csp	Cross-Sectional Prem	193705–200212	0.67**	0.0185	0.36	0.0185	−1.21	−0.0579	−0.0221	−0.74	−5.57
b/m	Book to Market	192103–201312	0.08	0.0047	−0.10	0.0047	−0.54	−0.0280	−0.0089	−0.72	−3.68
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.36	0.0115	−0.56	0.0111	−0.0092	−0.58	−3.51
tbl	T-Bill Rate	192002–201312	0.17*	0.0069	0.53	0.0069	−0.00	0.0085	0.0024	0.13*	0.97*
lty	Long Term Yield	191901–201312	0.03	0.0032	0.15	0.0032	−0.93	−0.0044	−0.0178	−0.73	−7.27
ltr	Long Term Return	192601–201312	0.07	0.0045	0.56	0.0045	−1.26	−0.0331	−0.0239	−1.78	−9.14
tms	Term Spread	192002–201312	0.10	0.0051	0.34	0.0051	0.07	0.0072	0.0040	0.38*	1.64**
dfy	Default Yield Spread	191901–201312	−0.09	−0.0000	−0.11	−0.0000	−0.25	−0.0022	−0.0029	−1.22	−1.21
dfr	Default Return Spread	192601–201312	0.15	0.0068	0.08	0.0068	−0.38	−0.0056	−0.0053	−0.44	−2.05
infl	Inflation	191902–201312	−0.03	0.0016	0.16	0.0016	−0.17	0.0025	−0.0013	−0.32	−0.52

Panel C: Betas adjusted for Lewellen correction

	Variable	Data	In-Sample $\overline{R}^2$	ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	ΔRMSE	Relative OOS Performance $\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	187102–201312	−0.29	−0.0056	−0.45	−0.0056	−1.69	−0.0071	−0.0404	−1.82	−23.56
d/y	Dividend Yield	187102–201312	−0.05	0.0001	−0.05	0.0001	−0.49	−0.0117	−0.0107	−1.17	−6.26
e/p	Earning Price Ratio	187102–201312	−0.33	−0.0066	−0.35	−0.0066	−0.82	−0.0093	−0.0188	−3.16	−11.03
d/e	Dividend Payout Ratio	187112–201312	0.08	0.0033	−0.08	0.0033	−0.60	0.0025	−0.0132	−0.77	−7.69
svar	Stock Variance	188502–201312	−1.91	−0.0451	−1.90	−0.0451	−4.97	−0.0264	−0.1247	−1.20	−60.93
csp	Cross-Sectional Prem	193705–200212	0.66**	0.0185	0.36	0.0185	−1.01	−0.0520	−0.0178	−0.63	−4.49
b/m	Book to Market	192103–201312	−0.36	−0.0073	−0.32	−0.0073	−0.37	0.0051	−0.0053	−1.00	−2.18
ntis	Net Equity Expansion	192701–201312	0.32**	0.0115	−0.40	0.0115	−0.63	0.0105	−0.0107	−0.64	−4.07
tbl	T-Bill Rate	192002–201312	0.17*	0.0069	0.53	0.0069	−0.00	0.0087	0.0023	0.13*	0.97*
lty	Long Term Yield	191901–201312	0.03	0.0032	0.15	0.0032	−0.58	−0.0031	−0.0102	−0.50	−4.17
ltr	Long Term Return	192601–201312	−0.62	−0.0143	−0.15	−0.0143	−4.09	−0.1040	−0.0832	−1.71	−31.11
tms	Term Spread	192002–201312	0.10	0.0051	0.34	0.0051	0.05	0.0065	0.0036	0.33*	1.47**
dfy	Default Yield Spread	191901–201312	−0.17	−0.0023	−0.13	−0.0023	−0.20	0.0031	−0.0019	−0.30	−0.77
dfr	Default Return Spread	192601–201312	−2.51	−0.0660	−5.10	−0.0660	−3.95	−0.0608	−0.0802	−1.54	−30.02
infl	Inflation	191902–201312	−0.07	0.0004	0.31	0.0004	−0.09	0.0060	0.0004	0.08	0.18

Table 9: Forecasts at Monthly Frequency with Alternative Procedures and Total Returns

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500 calculated using CRSP data. Panel A uses the unadjusted betas (and is the same as Panel A of Table 2), Panel B corrects betas following Stambaugh (1999), and Panel C corrects betas following Lewellen (2004). The sample period is January 1927 to December 2013 and the first forecast is constructed in January 1965. All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Unadjusted betas

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	0.11	0.0058	−0.08	0.0058	−0.22	−0.0427	−0.0011	−0.06	−0.29
d/y	Dividend Yield	192701–201312	0.22*	0.0087	−0.06	0.0087	−0.40	−0.0585	−0.0051	−0.22	−1.36
e/p	Earning Price Ratio	192701–201312	0.33**	0.0117	−0.55	0.0117	−1.63	−0.0679	−0.0321	−0.93	−8.46
d/e	Dividend Payout Ratio	192701–201312	−0.06	0.0010	−0.28	0.0010	−2.03	−0.0275	−0.0407	−2.49	−10.72
svar	Stock Variance	192701–201312	0.07	0.0045	0.59	0.0045	0.02	0.0017	0.0042	0.67*	1.12*
csp	Cross-Sectional Prem	193705–200212	0.92***	0.0245	0.46	0.0245	0.70	0.0089	0.0206	0.71**	4.23***
b/m	Book to Market	192701–201312	0.35**	0.0122	−0.87	0.0122	−2.12	−0.0927	−0.0428	−1.43	−11.24
ntis	Net Equity Expansion	192701–201312	0.34**	0.0119	−0.25	0.0119	−1.22	0.0011	−0.0230	−1.07	−6.10
tbl	T-Bill Rate	192701–201312	0.13	0.0061	0.17	0.0061	−0.11	0.0144	0.0013	0.05	0.34
lty	Long Term Yield	192701–201312	0.02	0.0032	−0.14	0.0032	−0.88	0.0028	−0.0155	−0.45	−4.11
ltr	Long Term Return	192701–201312	0.07	0.0045	0.61	0.0045	−0.40	−0.0220	−0.0050	−0.32	−1.34
tms	Term Spread	192701–201312	0.05	0.0040	0.41	0.0040	−0.03	0.0081	0.0032	0.22	0.84*
dfy	Default Yield Spread	192701–201312	−0.08	0.0004	−0.08	0.0004	−0.21	−0.0031	−0.0008	−0.33	−0.21
dfr	Default Return Spread	192701–201312	0.15	0.0067	0.37	0.0067	−0.04	−0.0019	0.0028	0.18	0.75*
infl	Inflation	192701–201312	−0.02	0.0021	−0.12	0.0021	−0.14	0.0082	0.0008	0.10	0.20

Panel B: Betas adjusted for Stambaugh correction

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	0.02	0.0033	−0.08	0.0033	−0.27	−0.0225	−0.0022	−0.27	−0.59
d/y	Dividend Yield	192701–201312	0.22*	0.0087	−0.04	0.0087	−0.36	−0.0561	−0.0042	−0.19	−1.12
e/p	Earning Price Ratio	192701–201312	0.30**	0.0108	−0.29	0.0108	−0.85	−0.0437	−0.0149	−0.60	−3.97
d/e	Dividend Payout Ratio	192701–201312	−0.06	0.0010	−0.30	0.0010	−2.14	−0.0294	−0.0430	−2.51	−11.32
svar	Stock Variance	192701–201312	0.07	0.0045	0.61	0.0045	0.04	0.0017	0.0046	0.73**	1.24*
csp	Cross-Sectional Prem	193705–200212	0.92***	0.0245	0.46	0.0245	0.70	0.0091	0.0207	0.72**	4.25***
b/m	Book to Market	192701–201312	0.31**	0.0113	−0.53	0.0113	−1.39	−0.0672	−0.0267	−1.14	−7.06
ntis	Net Equity Expansion	192701–201312	0.34**	0.0119	−0.25	0.0119	−1.24	0.0007	−0.0235	−1.08	−6.21
tbl	T-Bill Rate	192701–201312	0.13	0.0061	0.17	0.0061	−0.24	0.0129	−0.0014	−0.05	−0.38
lty	Long Term Yield	192701–201312	0.02	0.0032	−0.16	0.0032	−1.33	−0.0041	−0.0254	−0.66	−6.72
ltr	Long Term Return	192701–201312	0.07	0.0045	0.62	0.0045	−0.40	−0.0220	−0.0050	−0.32	−1.33
tms	Term Spread	192701–201312	0.05	0.0040	0.41	0.0040	−0.05	0.0075	0.0027	0.19	0.73
dfy	Default Yield Spread	192701–201312	−0.08	0.0004	−0.11	0.0004	−0.34	−0.0051	−0.0037	−2.18	−0.98
dfr	Default Return Spread	192701–201312	0.15	0.0067	0.37	0.0067	−0.04	−0.0019	0.0028	0.18	0.75*
infl	Inflation	192701–201312	−0.02	0.0021	−0.12	0.0021	−0.14	0.0082	0.0008	0.10	0.20

Panel C: Betas adjusted for Lewellen correction

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	192701–201312	−0.19	−0.0027	−0.26	−0.0027	−0.83	−0.0057	−0.0145	−1.99	−3.86
d/y	Dividend Yield	192701–201312	0.22*	0.0086	−0.03	0.0086	−0.27	−0.0516	−0.0022	−0.10	−0.60
e/p	Earning Price Ratio	192701–201312	−0.07	0.0008	−0.16	0.0008	−1.16	−0.0190	−0.0217	−1.13	−5.76
d/e	Dividend Payout Ratio	192701–201312	−0.06	0.0009	−0.32	0.0009	−1.88	−0.0248	−0.0374	−2.44	−9.86
svar	Stock Variance	192701–201312	−1.58	−0.0407	0.90	−0.0407	0.79	0.0085	0.0213	0.61*	5.72***
csp	Cross-Sectional Prem	193705–200212	0.92***	0.0245	0.45	0.0245	0.71	0.0094	0.0209	0.75**	4.28***
b/m	Book to Market	192701–201312	−0.13	−0.0010	−0.17	−0.0010	−0.26	−0.0000	−0.0020	−0.79	−0.54
ntis	Net Equity Expansion	192701–201312	0.33**	0.0119	−0.27	0.0119	−1.34	−0.0010	−0.0256	−1.13	−6.76
tbl	T-Bill Rate	192701–201312	0.13	0.0061	0.17	0.0061	−0.19	0.0141	−0.0005	−0.02	−0.12
lty	Long Term Yield	192701–201312	0.02	0.0032	−0.16	0.0032	−0.79	0.0011	−0.0135	−0.42	−3.59
ltr	Long Term Return	192701–201312	−0.63	−0.0147	−0.33	−0.0147	−5.88	−0.1629	−0.1240	−1.90	−31.73
tms	Term Spread	192701–201312	0.05	0.0040	0.41	0.0040	−0.05	0.0067	0.0027	0.18	0.71
dfy	Default Yield Spread	192701–201312	−0.17	−0.0021	−0.34	−0.0021	−0.59	−0.0076	−0.0092	−2.61	−2.45
dfr	Default Return Spread	192701–201312	−2.58	−0.0682	−4.58	−0.0682	−2.99	−0.0556	−0.0616	−0.90	−16.10
infl	Inflation	192701–201312	−0.04	0.0016	−0.13	0.0016	−0.18	0.0101	−0.0003	−0.03	−0.07

Table 10: Forecasts at Monthly Frequency with Alternative Procedures and Total Returns 1946–2013

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500 calculated using CRSP data. Panel A uses the unadjusted betas (and is the same as Panel A of Table 2), Panel B corrects betas following Stambaugh (1999), and Panel C corrects betas following Lewellen (2004). The sample period is January 1946 to December 2013 and the first forecast is constructed in January 1965. All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Unadjusted betas

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–201312	0.42**	0.0114	–0.15	0.0114	–0.32	–0.0519	–0.0032	–0.14	–0.86
d/y	Dividend Yield	194601–201312	0.49**	0.0130	–0.10	0.0130	–0.26	–0.0560	–0.0019	–0.08	–0.51
e/p	Earning Price Ratio	194601–201312	0.24*	0.0076	–0.25	0.0076	–0.61	–0.0373	–0.0097	–0.41	–2.59
d/e	Dividend Payout Ratio	194601–201312	–0.09	0.0006	–0.16	0.0006	–0.98	–0.0164	–0.0178	–1.43	–4.70
svar	Stock Variance	194601–201312	1.02***	0.0242	1.16	0.0242	0.07	–0.0037	0.0053	0.22	1.41*
csp	Cross-Sectional Prem	194601–200212	0.90***	0.0222	0.47	0.0222	0.77	0.0106	0.0221	1.01**	4.54***
b/m	Book to Market	194601–201312	–0.02	0.0021	–0.27	0.0021	–1.14	–0.0368	–0.0214	–1.31	–5.66
ntis	Net Equity Expansion	194601–201312	–0.10	0.0004	–0.12	0.0004	–1.21	–0.0152	–0.0229	–1.18	–6.05
tbl	T-Bill Rate	194601–201312	0.49**	0.0130	0.14	0.0130	–0.24	0.0213	–0.0015	–0.04	–0.41
lty	Long Term Yield	194601–201312	0.17	0.0061	–0.17	0.0061	–0.56	0.0172	–0.0085	–0.24	–2.26
ltr	Long Term Return	194601–201312	0.61**	0.0156	0.70	0.0156	0.01	–0.0262	0.0039	0.12	1.04*
tms	Term Spread	194601–201312	0.29*	0.0088	0.46	0.0088	–0.47	–0.0047	–0.0066	–0.21	–1.76
dfy	Default Yield Spread	194601–201312	–0.08	0.0009	–0.00	0.0009	–0.86	–0.0103	–0.0151	–1.06	–4.00
dfr	Default Return Spread	194601–201312	0.15	0.0057	0.34	0.0057	–0.61	0.0005	–0.0097	–0.60	–2.59
infl	Inflation	194601–201312	0.58**	0.0148	–0.27	0.0148	–0.35	0.0220	–0.0040	–0.19	–1.06

Panel B: Betas adjusted for Stambaugh correction

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–201312	0.18	0.0064	−0.06	0.0064	−0.33	−0.0281	−0.0036	−0.33	−0.96
d/y	Dividend Yield	194601–201312	0.49**	0.0130	−0.08	0.0130	−0.24	−0.0549	−0.0014	−0.06	−0.39
e/p	Earning Price Ratio	194601–201312	0.19	0.0065	−0.14	0.0065	−0.52	−0.0180	−0.0078	−0.65	−2.06
d/e	Dividend Payout Ratio	194601–201312	−0.10	0.0006	−0.15	0.0006	−1.01	−0.0171	−0.0186	−1.36	−4.91
svar	Stock Variance	194601–201312	1.02***	0.0242	1.16	0.0242	0.09	−0.0038	0.0057	0.23*	1.53**
csp	Cross-Sectional Prem	194601–200212	0.90***	0.0222	0.46	0.0222	0.76	0.0106	0.0220	1.01**	4.52***
b/m	Book to Market	194601–201312	−0.13	−0.0001	−0.17	−0.0001	−0.89	−0.0109	−0.0157	−1.88	−4.17
ntis	Net Equity Expansion	194601–201312	−0.11	0.0004	−0.11	0.0004	−1.34	−0.0177	−0.0257	−1.25	−6.79
tbl	T-Bill Rate	194601–201312	0.49**	0.0129	0.12	0.0129	−0.55	0.0180	−0.0084	−0.20	−2.23
lty	Long Term Yield	194601–201312	0.16	0.0060	−0.21	0.0060	−1.10	0.0109	−0.0204	−0.53	−5.41
ltr	Long Term Return	194601–201312	0.61**	0.0156	0.70	0.0156	−0.00	−0.0264	0.0037	0.11	0.99*
tms	Term Spread	194601–201312	0.29*	0.0088	0.46	0.0088	−0.54	−0.0066	−0.0081	−0.26	−2.16
dfy	Default Yield Spread	194601–201312	−0.08	0.0009	−0.01	0.0009	−0.85	−0.0106	−0.0150	−1.05	−3.99
dfr	Default Return Spread	194601–201312	0.15	0.0057	0.34	0.0057	−0.61	0.0005	−0.0097	−0.60	−2.57
infl	Inflation	194601–201312	0.58**	0.0148	−0.28	0.0148	−0.35	0.0221	−0.0040	−0.19	−1.08

Panel C: Betas adjusted for Lewellen correction

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–201312	0.26*	0.0081	−0.05	0.0081	0.44	−0.0140	0.0134	0.85**	3.60**
d/y	Dividend Yield	194601–201312	0.49**	0.0130	−0.09	0.0130	−0.23	−0.0547	−0.0013	−0.05	−0.34
e/p	Earning Price Ratio	194601–201312	0.06	0.0038	−0.12	0.0038	−0.96	−0.0205	−0.0175	−0.77	−4.62
d/e	Dividend Payout Ratio	194601–201312	−0.10	0.0005	−0.15	0.0005	−0.69	−0.0124	−0.0114	−1.03	−3.03
svar	Stock Variance	194601–201312	−2.55	−0.0509	−3.22	−0.0509	−4.79	−0.0883	−0.1006	−1.14	−25.90
csp	Cross-Sectional Prem	194601–200212	0.90***	0.0222	0.46	0.0222	0.77	0.0108	0.0221	1.03**	4.53***
b/m	Book to Market	194601–201312	−0.17	−0.0010	−0.18	−0.0010	−0.24	0.0024	−0.0015	−0.20	−0.39
ntis	Net Equity Expansion	194601–201312	−0.11	0.0002	−0.10	0.0002	−1.83	−0.0274	−0.0364	−1.47	−9.58
tbl	T-Bill Rate	194601–201312	0.49**	0.0128	0.10	0.0128	−0.43	0.0215	−0.0058	−0.15	−1.54
lty	Long Term Yield	194601–201312	0.16	0.0060	−0.21	0.0060	−0.57	0.0160	−0.0088	−0.26	−2.33
ltr	Long Term Return	194601–201312	−0.27	−0.0030	−0.37	−0.0030	−7.44	−0.1962	−0.1574	−2.21	−39.78
tms	Term Spread	194601–201312	0.29*	0.0087	0.47	0.0087	−0.79	−0.0142	−0.0137	−0.39	−3.64
dfy	Default Yield Spread	194601–201312	−0.09	0.0008	−0.05	0.0008	−0.87	−0.0111	−0.0154	−1.08	−4.09
dfr	Default Return Spread	194601–201312	−4.50	−0.0912	−4.09	−0.0912	−1.20	−0.0259	−0.0227	−0.39	−6.01
infl	Inflation	194601–201312	0.36**	0.0102	−0.67	0.0102	−0.88	0.0198	−0.0156	−0.52	−4.13

Table 11: Forecasts at Monthly Frequency with Alternative Procedures and Total Returns 1946–1990

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500 calculated using CRSP data. Panel A uses the unadjusted betas (and is the same as Panel A of Table 2), Panel B corrects betas following Stambaugh (1999), and Panel C corrects betas following Lewellen (2004). The sample period is January 1946 to December 1990 and the first forecast is constructed in January 1965. All numbers, except $\overline{R}^2$, are in percent per month. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Unadjusted betas

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–199012	1.70***	0.0397	0.98	0.0397	1.44	0.0218	0.0402	1.40***	5.58***
d/y	Dividend Yield	194601–199012	1.88***	0.0436	1.19	0.0436	1.66	0.0197	0.0452	1.51***	6.30***
e/p	Earning Price Ratio	194601–199012	0.62**	0.0170	−0.01	0.0170	−0.27	−0.0089	0.0011	0.05	0.16
d/e	Dividend Payout Ratio	194601–199012	−0.02	0.0034	−0.10	0.0034	−0.77	−0.0060	−0.0101	−0.62	−1.38
svar	Stock Variance	194601–199012	0.41*	0.0125	0.46	0.0125	−1.07	−0.0104	−0.0170	−1.20	−2.31
csp	Cross-Sectional Prem	194601–199012	0.81**	0.0209	0.04	0.0209	0.61	0.0194	0.0211	0.73**	2.92**
b/m	Book to Market	194601–199012	0.18	0.0076	−0.00	0.0076	−1.46	−0.0258	−0.0257	−0.91	−3.49
ntis	Net Equity Expansion	194601–199012	0.53**	0.0151	1.26	0.0151	−0.79	−0.0143	−0.0107	−0.33	−1.46
tbl	T-Bill Rate	194601–199012	1.02**	0.0253	0.17	0.0253	0.05	0.0245	0.0084	0.12	1.16*
lty	Long Term Yield	194601–199012	0.28	0.0097	−0.61	0.0097	−0.94	0.0268	−0.0140	−0.22	−1.92
ltr	Long Term Return	194601–199012	1.34***	0.0323	1.84	0.0323	0.80	−0.0193	0.0256	0.49*	3.54**
tms	Term Spread	194601–199012	1.16***	0.0284	1.43	0.0284	0.39	−0.0014	0.0162	0.31	2.24**
dfy	Default Yield Spread	194601–199012	0.18	0.0077	1.13	0.0077	−0.80	−0.0044	−0.0107	−0.43	−1.46
dfr	Default Return Spread	194601–199012	−0.14	0.0009	−0.13	0.0009	−0.92	0.0072	−0.0136	−0.57	−1.85
infl	Inflation	194601–199012	1.53***	0.0361	−0.09	0.0361	0.44	0.0260	0.0174	0.54*	2.40**

Panel B: Betas adjusted for Stambaugh correction

	Variable	Data	In-Sample $\overline{R}^2$	ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	ΔRMSE	Relative OOS Performance $\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–199012	1.51***	0.0357	0.81	0.0357	0.58	0.0119	0.0204	1.32**	2.82**
d/y	Dividend Yield	194601–199012	1.88***	0.0436	1.19	0.0436	1.64	0.0198	0.0448	1.52***	6.24***
e/p	Earning Price Ratio	194601–199012	0.37*	0.0117	−0.04	0.0117	−0.39	−0.0022	−0.0014	−0.22	−0.20
d/e	Dividend Payout Ratio	194601–199012	−0.03	0.0033	−0.08	0.0033	−0.73	−0.0037	−0.0091	−0.51	−1.25
svar	Stock Variance	194601–199012	0.41*	0.0124	0.46	0.0124	−1.04	−0.0105	−0.0162	−1.10	−2.21
csp	Cross-Sectional Prem	194601–199012	0.81**	0.0209	0.05	0.0209	0.60	0.0193	0.0211	0.73**	2.91**
b/m	Book to Market	194601–199012	0.05	0.0049	−0.09	0.0049	−1.13	−0.0097	−0.0183	−1.35	−2.50
ntis	Net Equity Expansion	194601–199012	0.53**	0.0151	1.29	0.0151	−0.93	−0.0179	−0.0137	−0.40	−1.87
tbl	T-Bill Rate	194601–199012	1.01**	0.0252	0.15	0.0252	−0.45	0.0174	−0.0028	−0.04	−0.39
lty	Long Term Yield	194601–199012	0.23	0.0088	−0.80	0.0088	−1.85	0.0146	−0.0345	−0.49	−4.68
ltr	Long Term Return	194601–199012	1.34***	0.0323	1.84	0.0323	0.80	−0.0196	0.0254	0.48*	3.52**
tms	Term Spread	194601–199012	1.16***	0.0284	1.43	0.0284	0.29	−0.0047	0.0138	0.25	1.90**
dfy	Default Yield Spread	194601–199012	0.18	0.0077	1.16	0.0077	−0.79	−0.0047	−0.0106	−0.42	−1.45
dfr	Default Return Spread	194601–199012	−0.14	0.0009	−0.13	0.0009	−0.92	0.0073	−0.0135	−0.57	−1.85
infl	Inflation	194601–199012	1.53***	0.0361	−0.09	0.0361	0.44	0.0260	0.0174	0.54*	2.40**

Panel C: Betas adjusted for Lewellen correction

	Variable	Data	In-Sample $\overline{R}^2$	ΔRMSE	In-Sample for OOS Period $\overline{R}^2$	ΔRMSE	Relative OOS Performance $\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	194601–199012	1.06***	0.0262	0.50	0.0262	1.11	0.0253	0.0325	1.95***	4.51***
d/y	Dividend Yield	194601–199012	1.88***	0.0436	1.19	0.0436	1.66	0.0199	0.0451	1.53***	6.28***
e/p	Earning Price Ratio	194601–199012	0.08	0.0057	−0.17	0.0057	−0.11	0.0061	0.0048	0.37	0.66
d/e	Dividend Payout Ratio	194601–199012	−0.03	0.0032	−0.08	0.0032	−0.74	−0.0042	−0.0096	−0.55	−1.31
svar	Stock Variance	194601–199012	−6.74	−0.1354	−9.23	−0.1354	−4.02	−0.0841	−0.0832	−0.94	−11.10
csp	Cross-Sectional Prem	194601–199012	0.80**	0.0209	0.05	0.0209	0.61	0.0195	0.0213	0.75**	2.94**
b/m	Book to Market	194601–199012	−0.30	−0.0023	−0.44	−0.0023	−0.26	0.0062	0.0014	0.11	0.19
ntis	Net Equity Expansion	194601–199012	0.52*	0.0148	1.35	0.0148	−1.61	−0.0341	−0.0290	−0.69	−3.94
tbl	T-Bill Rate	194601–199012	1.00**	0.0249	0.13	0.0249	−0.18	0.0237	0.0033	0.05	0.46
lty	Long Term Yield	194601–199012	0.26	0.0093	−0.73	0.0093	−0.92	0.0237	−0.0136	−0.22	−1.85
ltr	Long Term Return	194601–199012	−3.26	−0.0640	−4.23	−0.0640	−6.74	−0.2059	−0.1434	−1.32	−18.77
tms	Term Spread	194601–199012	1.16***	0.0283	1.41	0.0283	−0.06	−0.0171	0.0060	0.10	0.82*
dfy	Default Yield Spread	194601–199012	0.18	0.0077	1.21	0.0077	−0.78	−0.0045	−0.0104	−0.42	−1.42
dfr	Default Return Spread	194601–199012	−0.86	−0.0141	−0.40	−0.0141	−0.29	−0.0143	0.0007	0.03	0.10
infl	Inflation	194601–199012	1.21***	0.0295	−0.42	0.0295	0.20	0.0238	0.0118	0.27	1.63**

Table 12: Forecasts at Annual Frequency (ending 1990)

This table presents statistics on forecast errors (*in-sample* and *out-of-sample*) for excess stock return forecasts at the annual frequency (both in the forecasting equation and forecast) *as of 1990*. Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500. Panel A uses the full sample period (but ending in 1990) for each variable and constructs first forecast 20 years after the first data observation. Panel B uses the full sample period (but ending in 1990) for each variable and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). Panel C uses only the sample period 1927 to 1990 and constructs first forecast in 1965 (or 20 years after the first data observation, whichever comes later). The data period for **ms** model is 1927 to 1990. All numbers, except $\overline{R}^2$, are in percent per year. A star next to IS-$\overline{R}^2$ denotes significance of the in-sample regression. RMSE is the root mean square error and MAE is the mean absolute error. ΔRMSE (ΔMAE) is the RMSE (MAE) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior *out-of-sample* conditional forecast). OOS-R^2 is calculated as one minus the ratio of the variance of conditional forecast errors and the variance of the unconditional forecast errors. MSE-T is the Diebold and Mariano (1995) *t*-statistic modified by Harvey, Leybourne, and Newbold (1998) and MSE-F is *F*-statistic by McCracken (2004). Both the MSE-T and MSE-F statistics test for equal MSE of the unconditional forecast and the conditional forecast. One-sided critical values of MSE statistics are obtained from McCracken (2004) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Full data, Forecasts begin 20 years after the first sample date

			In-Sample		In-Sample for OOS Period		Relative OOS Performance				
	Variable	Data	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–1990	1.73*	0.2319	3.47	0.2319	−0.28	0.1018	0.0699	0.40**	0.74*
d/y	Dividend Yield	1872–1990	2.60**	0.3108	4.30	0.3108	0.53	0.1334	0.1464	0.46**	1.56**
e/p	Earning Price Ratio	1872–1990	1.18	0.1827	1.08	0.1827	−1.63	−0.1081	−0.0561	−0.37	−0.59
d/e	Dividend Payout Ratio	1872–1990	−0.86	0.0002	−0.98	0.0002	−4.72	−0.3316	−0.3412	−2.21	−3.49
svar	Stock Variance	1885–1990	−0.58	0.0355	−0.97	0.0355	−29.29	−1.0728	−2.5487	−1.35	−18.69
b/m	Book to Market	1921–1990	5.68**	0.6893	4.36	0.6893	3.47	0.8568	0.4326	0.67**	2.88**
ntis	Net Equity Expansion	1927–1990	12.93***	1.4570	−3.11	1.4570	−3.69	0.4490	−0.0994	−0.18	−0.56
eqis	Pct Equity Issuing	1927–1990	11.08***	1.2658	6.56	1.2658	5.11	0.1311	0.5805	0.83**	3.47**
tbl	T-Bill Rate	1920–1990	0.83	0.2171	3.18	0.2171	−2.73	−0.3841	−0.0532	−0.07	−0.34
lty	Long Term Yield	1919–1990	−0.55	0.0852	0.11	0.0852	−9.37	−1.0712	−0.5532	−0.52	−3.51
ltr	Long Term Return	1926–1990	1.70	0.3224	0.56	0.3224	−13.27	−0.9277	−0.8082	−0.76	−4.35
tms	Term Spread	1920–1990	1.08	0.2411	2.86	0.2411	0.20	0.2752	0.1733	0.46*	1.14*
dfy	Default Yield Spread	1919–1990	−1.36	0.0085	−1.90	0.0085	−4.03	−0.1410	−0.1545	−1.30	−1.02
dfr	Default Return Spread	1926–1990	0.62	0.2170	1.41	0.2170	−0.81	0.2818	0.1150	0.32*	0.68*
infl	Inflation	1919–1990	−1.13	0.0304	−1.96	0.0304	−5.05	−0.2977	−0.2309	−1.26	−1.51
i/k	Invstmnt Capital Ratio	1947–1990	9.92**	0.9653	−3.32	0.9653	−0.23	−0.5883	0.3373	0.21	1.03*
cayp	Cnsmptn, Wlth, Incme	1945–1990	8.58**	0.8388	8.07	0.8388	8.34	0.4111	0.9992	0.94**	3.55**
caya	Cnsmptn, Wlth, Incme	1945–1990	—	—	—	—	−14.34	−0.1692	−0.7692	−0.87	−2.31
all	Kitchen Sink	1927–1990	16.70**	3.5297	−0.79	3.5297	−214.51	−6.5190	−7.8817	−2.80	−24.59
ms	Model Selection	1927–1990	—	—	—	—	—	—	—	—	—

Panel B: Full data, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1872–1990	1.73*	0.2319	6.11	0.2319	6.15	0.2486	0.7722	1.43**	2.86***
d/y	Dividend Yield	1872–1990	2.60**	0.3108	5.18	0.3108	5.25	0.1617	0.7030	0.72	2.58***
e/p	Earning Price Ratio	1872–1990	1.18	0.1827	2.51	0.1827	0.62	0.2627	0.3532	0.82*	1.25**
d/e	Dividend Payout Ratio	1872–1990	−0.86	0.0002	−4.15	0.0002	−7.29	−0.1854	−0.2264	−2.49	−0.76
svar	Stock Variance	1885–1990	−0.58	0.0355	−2.67	0.0355	−2.59	0.1159	0.1164	1.91***	0.40
b/m	Book to Market	1921–1990	5.68**	0.6893	1.04	0.6893	−9.71	0.2028	−0.4186	−0.40	−1.31
ntis	Net Equity Expansion	1927–1990	12.93***	1.4570	9.92	1.4570	−6.57	0.8069	−0.1795	−0.20	−0.59
eqis	Pct Equity Issuing	1927–1990	11.08***	1.2658	2.55	1.2658	2.27	−0.0781	0.4903	0.43	1.71**
tbl	T-Bill Rate	1920–1990	0.83	0.2171	−6.77	0.2171	−4.53	−0.6521	−0.0280	−0.02	−0.09
lty	Long Term Yield	1919–1990	−0.55	0.0852	−9.82	0.0852	−18.66	−1.9580	−1.0613	−0.51	−3.18
ltr	Long Term Return	1926–1990	1.70	0.3224	1.02	0.3224	−25.46	−1.6972	−1.5352	−0.98	−4.41
tms	Term Spread	1920–1990	1.08	0.2411	5.46	0.2411	1.63	0.5976	0.4502	0.64*	1.53**
dfy	Default Yield Spread	1919–1990	−1.36	0.0085	−2.42	0.0085	−5.93	−0.0937	−0.1331	−1.38	−0.43
dfr	Default Return Spread	1926–1990	0.62	0.2170	1.34	0.2170	−1.02	0.4135	0.2394	0.48	0.81*
infl	Inflation	1919–1990	−1.13	0.0304	−4.75	0.0304	−5.19	−0.2332	−0.0771	−0.32	−0.25
i/k	Invstmnt Capital Ratio	1947–1990	9.92**	0.9653	−3.32	0.9653	−0.23	−0.5883	0.3373	0.21	1.03*
cayp	Cnsmptn, Wlth, Incme	1945–1990	8.58**	0.8388	8.07	0.8388	8.34	0.4111	0.9992	0.94**	3.55**
caya	Cnsmptn, Wlth, Incme	1945–1990	—	—	—	—	−14.34	−0.1692	−0.7692	−0.87	−2.31
all	Kitchen Sink	1927–1990	16.70**	3.5297	−61.41	3.5297	−350.85	−7.1507	−8.3013	−2.43	−14.91
ms	Model Selection	1927–1990	—	—	—	—	—	—	—	—	—

Panel C: Data begin in 1927, Forecasts begin in 1965

	Variable	Data	In-Sample		In-Sample for OOS Period		Relative OOS Performance				
			$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔRMSE	$\overline{R}^2$	ΔMAE	ΔRMSE	MSE-T	MSE-F
d/p	Dividend Price Ratio	1927–1990	4.25*	0.5759	9.94	0.5759	11.89	0.5241	1.2551	1.83***	4.74***
d/y	Dividend Yield	1927–1990	6.74**	0.8243	6.53	0.8243	10.24	0.3205	1.1213	0.81*	4.17***
e/p	Earning Price Ratio	1927–1990	3.88*	0.5384	3.52	0.5384	−1.20	0.2442	0.2243	0.25	0.76
d/e	Dividend Payout Ratio	1927–1990	−1.61	0.0026	−4.23	0.0026	−14.94	−0.4786	−0.7881	−2.18	−2.44
svar	Stock Variance	1927–1990	−1.48	0.0157	−3.31	0.0157	−4.07	−0.0087	0.0070	0.19	0.02
b/m	Book to Market	1927–1990	9.23***	1.0757	−1.51	1.0757	−10.82	−0.0546	−0.4917	−0.40	−1.56
ntis	Net Equity Expansion	1927–1990	12.93***	1.4570	9.92	1.4570	−6.57	0.8069	−0.1795	−0.20	−0.59
eqis	Pct Equity Issuing	1927–1990	11.08***	1.2658	2.55	1.2658	2.27	−0.0781	0.4903	0.43	1.71**
tbl	T-Bill Rate	1927–1990	0.62	0.2183	−6.61	0.2183	−13.30	−1.5679	−0.6709	−0.33	−2.10
lty	Long Term Yield	1927–1990	−0.96	0.0651	−8.74	0.0651	−24.78	−2.5667	−1.4764	−0.66	−4.29
ltr	Long Term Return	1927–1990	1.52	0.3069	1.19	0.3069	−22.51	−1.4819	−1.3201	−0.92	−3.89
tms	Term Spread	1927–1990	2.16	0.3690	5.55	0.3690	3.23	0.6577	0.5652	0.56*	1.99**
dfy	Default Yield Spread	1927–1990	−1.53	0.0104	−2.26	0.0104	−5.44	−0.0866	−0.0955	−1.18	−0.31
dfr	Default Return Spread	1927–1990	0.47	0.2044	1.29	0.2044	−1.06	0.3472	0.2348	0.49	0.80*
infl	Inflation	1927–1990	−1.36	0.0272	−4.04	0.0272	−12.79	−0.1769	−0.6342	−1.41	−1.99
i/k	Invstmnt Capital Ratio	1947–1990	9.92**	0.9653	−3.32	0.9653	−0.23	−0.5883	0.3373	0.21	1.03*
cayp	Cnsmptn, Wlth, Incme	1945–1990	8.58**	0.8388	8.07	0.8388	8.34	0.4111	0.9992	0.94**	3.55**
caya	Cnsmptn, Wlth, Incme	1945–1990	—	—	—	—	−14.34	−0.1692	−0.7692	−0.87	−2.31
all	Kitchen Sink	1927–1990	16.70**	3.5297	−61.41	3.5297	−350.85	−7.1507	−8.3013	−2.43	−14.91
ms	Model Selection	1927–1990	—	—	—	—	—	—	—	—	—

Table 13: Encompassing Tests

This table presents statistics on encompassing tests for excess stock return forecasts at various frequencies. Variables are explained in Section 1. All numbers are in percent per frequency corresponding to the panel. λ gives the ex-post weight on the conditional forecast for the optimal forecast that minimizes the MSE. ENC is the test statistic proposed by Clark and McCracken (2001) for a test of forecast encompassing. One-sided critical values of ENC statistic are obtained from Clark and McCracken (2001) (critical values for **ms** model are not calculated). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively. ΔRMSE* is the RMSE difference between the unconditional forecast and the optimal forecast for the same sample/forecast period. ΔRMSE^{*r} is the RMSE difference between the unconditional forecast and the optimal forecast for the same sample/forecast period using rolling estimates of λ.

Panel A: Monthly Data

| | Estimation: | All Data After 20 years | | | | | All Data After 196501 | | | | After 192701 After 196501 | | | | |
| | OOS Forecast: | | | | | | | | | | | | | | |
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	187102–201312	−0.06	−0.64	−1.95	0.0021	−0.0110	−2.59	−0.60	0.0058	−0.0116	−0.03	0.23	0.63	0.0006	−0.0142
d/y	Dividend Yield	187102–201312	−0.05	−1.07	−2.22	0.0041	−0.0109	−0.45	−0.45	0.0008	−0.0139	0.04	0.27	1.48*	0.0015	−0.0120
e/p	Earning Price Ratio	187102–201312	0.01	0.19	0.71	0.0002	−0.0073	−0.15	−0.41	0.0002	−0.0203	0.13	0.05	0.43	0.0001	−0.0193
d/e	Dividend Payout Ratio	187112–201312	0.08	0.12	1.29	0.0003	−0.0087	−0.24	−0.96	0.0009	−0.0172	−0.04	−0.88	−3.16	0.0106	−0.0049
svar	Stock Variance	188502–201312	0.07	−0.28	−2.93	0.0017	−0.2001	2.72	0.77	0.0079	−0.0536	0.09	2.75	0.95	0.0098	−0.0301
csp	Cross-Sectional Prem	193705–200212	0.67**	0.29	3.96**	0.0045	−0.0196	0.79	4.24***	0.0163	−0.0076	0.67**	0.79	4.24***	0.0163	−0.0076
b/m	Book to Market	192103–201312	0.11	0.19	2.02*	0.0010	−0.0164	−0.13	−0.92	0.0004	−0.0235	0.13	−0.10	−0.88	0.0003	−0.0213
ntis	Net Equity Expansion	192701–201312	0.32**	0.25	1.79*	0.0012	−0.0203	0.12	0.75	0.0003	−0.0214	0.32**	0.12	0.75	0.0003	−0.0214
tbl	T-Bill Rate	192002–201312	0.17*	0.57	5.42***	0.0076	−0.0397	0.57	4.99***	0.0106	−0.0173	0.12	0.54	4.04***	0.0082	−0.0270
lty	Long Term Yield	191901–201312	0.03	0.33	4.37**	0.0035	−0.0399	0.37	4.52***	0.0064	−0.0191	0.01	0.36	4.19***	0.0057	−0.0179
ltr	Long Term Return	192601–201312	0.07	−0.26	−1.57	0.0011	−0.0225	0.30	1.15*	0.0013	−0.0201	0.07	0.33	1.31*	0.0016	−0.0196
tms	Term Spread	192002–201312	0.10	0.69	2.97**	0.0050	−0.1005	0.71	2.88**	0.0076	−0.0228	0.06	0.66	1.98**	0.0049	−0.0267
dfy	Default Yield Spread	191901–201312	−0.09	−3.53	−0.95	0.0082	−0.0222	−6.30	−0.30	0.0070	−0.0003	−0.09	−3.96	−0.22	0.0033	−0.0076
dfr	Default Return Spread	192601–201312	0.15	0.05	0.12	0.0000	−0.0357	0.69	1.09*	0.0028	−0.0344	0.15	0.69	1.05	0.0027	−0.0354
infl	Inflation	191902–201312	−0.03	−0.18	−0.07	0.0000	−0.2193	1.00	0.29	0.0011	−0.0398	−0.00	0.77	0.50	0.0014	−0.0382
all	Kitchen Sink	192701–201312	1.50***	0.06	5.90*	0.0011	−0.0166	0.16	8.08**	0.0051	−0.0256	1.50***	0.16	8.08**	0.0051	−0.0256

Panel B: Monthly Data with Total Returns

| | OOS Forecast: | After 194701 | | | | | After 196501 | | | |
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	192701–201312	0.11	0.49	4.15**	0.0053	−0.0121	0.48	2.73**	0.0049	−0.0097
d/y	Dividend Yield	192701–201312	0.22*	0.42	6.69***	0.0074	−0.0100	0.43	4.13***	0.0067	−0.0071
e/p	Earning Price Ratio	192701–201312	0.33**	0.30	8.64***	0.0069	−0.0141	0.19	2.64**	0.0019	−0.0180
d/e	Dividend Payout Ratio	192701–201312	−0.06	−0.09	−0.94	0.0002	−0.0131	−1.08	−3.65	0.0151	0.0007
svar	Stock Variance	192701–201312	0.07	1.91	0.63	0.0032	−0.0420	2.47	0.72	0.0066	−0.0487
csp	Cross-Sectional Prem	193705–200212	0.92***	0.37	6.21***	0.0092	−0.0138	0.82	5.51***	0.0219	−0.0007
b/m	Book to Market	192701–201312	0.35**	0.18	3.09**	0.0014	−0.0361	0.07	0.99	0.0003	−0.0218
ntis	Net Equity Expansion	192701–201312	0.34**	0.18	1.44	0.0007	−0.0199	0.06	0.38	0.0001	−0.0215
tbl	T-Bill Rate	192701–201312	0.13	0.51	5.59***	0.0075	−0.0185	0.52	5.02***	0.0098	−0.0173
lty	Long Term Yield	192701–201312	0.02	0.36	7.57***	0.0072	−0.0069	0.37	5.56***	0.0077	−0.0129
ltr	Long Term Return	192701–201312	0.07	−0.08	−0.44	0.0001	−0.0120	0.33	1.30*	0.0016	−0.0198
tms	Term Spread	192701–201312	0.05	0.59	2.33*	0.0036	−0.0292	0.62	2.22**	0.0052	−0.0480
dfy	Default Yield Spread	192701–201312	−0.08	−2.00	−0.53	0.0028	−0.0045	−0.43	−0.04	0.0001	−0.0183
dfr	Default Return Spread	192701–201312	0.15	0.26	0.53	0.0004	−0.0237	0.76	1.13*	0.0032	−0.0366
infl	Inflation	192701–201312	−0.02	0.59	0.46	0.0007	−0.0120	0.70	0.40	0.0010	−0.0395
all	Kitchen Sink	192701–201312	1.78***	0.07	7.01*	0.0015	−0.0156	0.15	7.97**	0.0048	−0.0377

Panel C: Quarterly Data

| | | Estimation: All Data | | | | | Estimation: All Data | | | | Estimation: After 19271 | | | | |
| | | OOS Forecast: After 20 years | | | | | OOS Forecast: After 19651 | | | | OOS Forecast: After 19651 | | | | |
		Data $\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	18712–20134 −0.16	−1.47	−3.06	0.0454	−0.0969	−0.53	−0.39	0.0045	−0.0662	0.07	0.29	1.44*	0.0090	−0.0492
d/y	Dividend Yield	18712–20134 −0.15	−1.58	−1.94	0.0308	−0.0266	−0.50	−0.38	0.0041	−0.0872	−0.01	0.35	1.14*	0.0085	−0.0692
e/p	Earning Price Ratio	18712–20134 0.09	0.27	1.38	0.0037	−0.0386	−0.08	−0.33	0.0006	−0.0951	0.41	0.06	0.67	0.0009	−0.0905
d/e	Dividend Payout Ratio	18712–20134 0.01	−0.14	−0.93	0.0013	−0.0594	−0.47	−1.16	0.0119	−0.0825	−0.24	−1.14	−2.82	0.0718	−0.0040
svar	Stock Variance	18851–20134 −0.19	−3.78	−9.37	0.4365	−0.8509	−6.88	−0.27	0.0392	−0.4459	−0.29	−10.29	−0.34	0.0740	0.0103
b/m	Book to Market	19211–20134 0.98**	0.21	4.00**	0.0119	−0.0709	0.02	0.21	0.0001	−0.1140	1.04**	0.02	0.32	0.0002	−0.0948
ntis	Net Equity Expansion	19271–20134 1.94***	0.18	2.19*	0.0061	−0.0753	0.12	1.23*	0.0033	−0.1179	1.94***	0.12	1.23*	0.0033	−0.1179
tbl	T-Bill Rate	19201–20134 0.24	0.49	3.85**	0.0254	−0.1370	0.47	3.29**	0.0333	−0.1302	0.11	0.43	2.45**	0.0226	−0.2014
lty	Long Term Yield	19191–20134 −0.05	0.25	2.68**	0.0090	−0.0820	0.29	2.62**	0.0163	−0.1393	−0.11	0.26	2.26**	0.0127	−0.1300
ltr	Long Term Return	19261–20134 0.04	0.31	1.18	0.0055	−0.1251	0.37	1.22*	0.0098	−0.4216	0.03	0.37	1.13*	0.0088	−0.4604
tms	Term Spread	19201–20134 0.17	0.62	2.23*	0.0187	−0.1134	0.63	2.05**	0.0275	−0.1617	0.06	0.55	1.28*	0.0152	−0.2387
dfy	Default Yield Spread	19191–20134 −0.19	−1.44	−1.64	0.0322	−0.1523	0.68	0.10	0.0014	−0.1633	−0.18	0.79	0.15	0.0026	−0.1415
dfr	Default Return Spread	19261–20134 −0.21	−0.77	−4.57	0.0543	0.0015	−1.27	−3.09	0.0881	−0.0110	−0.21	−1.28	−3.03	0.0866	−0.0105
infl	Inflation	19192–20134 −0.15	0.51	0.10	0.0007	−0.1853	1.20	0.21	0.0053	−0.3588	−0.16	0.79	0.21	0.0035	−0.4457
i/k	Invstmnt Capital Ratio	19471–20134 2.99***	0.68	5.50***	0.0832	−0.0275	0.68	5.50***	0.0832	−0.0275	2.99***	0.68	5.50***	0.0832	−0.0275
cayp	Cnsmptn, Wlth, Incme	19521–20134 3.24***	0.65	6.79***	0.1100	0.0261	0.65	6.79***	0.1100	0.0261	3.24***	0.65	6.79***	0.1100	0.0261
caya	Cnsmptn, Wlth, Incme	19521–20134 —	0.09	1.90*	0.0050	−0.4608	0.09	1.90*	0.0050	−0.4608	—	0.09	1.90*	0.0050	−0.4608
all	Kitchen Sink	19271–20134 3.13**	−0.09	−5.83	0.0110	−0.0264	−0.12	−4.33	0.0147	−0.2487	3.13**	−0.12	−4.33	0.0147	−0.2487

Panel D: Annual Data

		Estimation: OOS Forecast: Data	All Data After 20 years					All Data After 1965				After 1927 After 1965				
			$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*r	λ	ENC	ΔRMSE*	ΔRMSE*r	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*r
d/p	Dividend Price Ratio	1872–2013	0.37	0.19	0.49	0.0074	−0.2501	0.33	0.77*	0.0435	−0.4497	1.55	0.52	2.16**	0.1909	−0.3126
d/y	Dividend Yield	1872–2013	0.50	0.33	1.78*	0.0457	−0.5396	0.23	0.94*	0.0380	−0.4801	1.97	0.37	2.90**	0.1912	−0.2673
e/p	Earning Price Ratio	1872–2013	0.45	0.04	0.08	0.0002	−0.2440	0.31	0.64	0.0340	−0.6204	1.67	0.31	1.68*	0.0931	−0.5235
d/e	Dividend Payout Ratio	1872–2013	−0.70	−1.82	−1.53	0.2219	0.1114	−7.32	−0.51	0.6565	0.3015	−1.15	−4.92	−1.28	1.1826	0.8257
svar	Stock Variance	1885–2013	−0.22	−0.40	−4.42	0.1903	−0.5420	4.16	0.35	0.2457	−0.2064	−0.86	3.16	0.08	0.0408	−0.4869
b/m	Book to Market	1921–2013	2.92*	0.49	4.02**	0.2231	−0.0596	0.21	1.31*	0.0520	−0.6490	3.54**	0.18	1.60*	0.0560	−0.4089
ntis	Net Equity Expansion	1927–2013	5.90**	−0.00	−0.01	0.0000	−0.6038	−0.04	−0.18	0.0012	−1.0616	5.90**	−0.04	−0.18	0.0012	−1.0616
eqis	Pct Equity Issuing	1927–2013	5.74**	0.44	2.81**	0.1555	−0.2512	0.31	1.61*	0.0890	−0.7538	5.74**	0.31	1.61*	0.0890	−0.7538
tbl	T-Bill Rate	1920–2013	0.66	0.46	2.39*	0.1218	−0.9366	0.48	2.34**	0.1947	−1.0121	0.58	0.37	2.96**	0.1988	−0.3784
lty	Long Term Yield	1919–2013	−0.43	0.30	2.62**	0.0910	−0.5898	0.30	2.32**	0.1279	−0.7562	−0.71	0.26	2.35**	0.1165	−0.4436
ltr	Long Term Return	1926–2013	0.77	0.32	4.36**	0.1807	−0.1124	0.24	2.32**	0.1063	−6.9019	0.72	0.25	2.30**	0.1103	−7.1292
tms	Term Spread	1920–2013	0.50	0.53	1.26	0.0735	−0.8513	0.60	1.33*	0.1369	−0.6187	1.32	0.60	2.32**	0.2346	−0.3038
dfy	Default Yield Spread	1919–2013	−0.90	−2.32	−0.38	0.0978	−0.8644	−5.64	−0.18	0.1715	0.0457	−0.99	−5.16	−0.13	0.1132	−0.0507
dfr	Default Return Spread	1926–2013	−0.91	−0.10	−0.22	0.0027	−0.3970	−0.14	−0.28	0.0072	−0.4908	−0.94	−0.17	−0.30	0.0092	−0.4976
infl	Inflation	1919–2013	−0.73	−1.85	−0.51	0.1039	−0.4683	−0.10	−0.01	0.0002	−11.7385	−1.08	−3.69	−0.86	0.5734	−0.1889
i/k	Invstmnt Capital Ratio	1947–2013	8.65***	0.68	4.45***	0.5328	0.1126	0.68	4.45***	0.5328	0.1126	8.65***	0.68	4.45***	0.5328	0.1126
cayp	Cnsmptn, Wlth, Incme	1945–2013	6.37**	1.00	3.74**	0.6159	−0.0903	1.00	3.74**	0.6159	−0.0903	6.37**	1.00	3.74**	0.6159	−0.0903
caya	Cnsmptn, Wlth, Incme	1945–2013	—	0.43	3.03**	0.2333	−0.2588	0.43	3.03**	0.2333	−0.2588	—	0.43	3.03**	0.2333	−0.2588
all	Kitchen Sink	1927–2013	9.84*	0.08	3.31	0.0671	−0.0585	−0.15	−2.67	0.1297	−0.2818	9.84*	−0.15	−2.67	0.1297	−0.2818

Panel E: 3-year Data

		Estimation: OOS Forecast: Data	All Data After 20 years $\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	All Data After 1965 λ	ENC	ΔRMSE*	ΔRMSE*^{r}	After 1927 After 1965 $\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	1872–2013	3.72**	0.43	5.00**	0.2789	−0.9952	0.29	3.03***	0.2664	−0.5812	9.15***	0.36	7.97***	0.9594	0.1612
d/y	Dividend Yield	1872–2013	2.43*	0.31	3.98**	0.1646	−0.2300	0.18	1.82**	0.1060	−0.5641	6.49**	0.28	6.30***	0.6421	0.0461
e/p	Earning Price Ratio	1872–2013	3.24*	0.46	3.61**	0.2131	−0.4451	0.29	2.24**	0.1922	−0.6164	5.43**	0.27	4.06***	0.3666	−0.4565
d/e	Dividend Payout Ratio	1872–2013	−0.52	−7.01	−2.37	2.2903	1.6640	−7.85	−1.08	2.5785	1.7877	0.45	−0.09	−0.07	0.0019	−1.2176
svar	Stock Variance	1885–2013	0.77	−0.50	−12.00	1.6367	−0.3871	1.86	0.71	0.3605	−0.6495	0.26	2.23	0.67	0.4192	−0.4292
b/m	Book to Market	1921–2013	8.07**	0.32	7.11***	0.5007	−0.4635	0.02	0.21	0.0014	−1.2536	11.13**	0.01	0.31	0.0023	−0.7327
ntis	Net Equity Expansion	1927–2013	12.25**	0.04	0.47	0.0051	−0.6703	−0.06	−0.56	0.0121	−0.4875	12.25**	−0.06	−0.56	0.0121	−0.4875
eqis	Pct Equity Issuing	1927–2013	8.33	−0.09	−0.92	0.0221	−0.5965	−0.15	−1.20	0.0640	−0.6844	8.33	−0.15	−1.20	0.0640	−0.6844
tbl	T-Bill Rate	1920–2013	1.88*	0.37	5.93***	0.4407	−0.4786	0.45	6.44***	0.8896	−0.6294	1.91	0.29	7.87***	0.8667	0.4672
lty	Long Term Yield	1919–2013	−0.41	0.19	3.94**	0.1725	−0.8893	0.31	4.98***	0.5226	−2.2528	−0.91	0.29	7.68***	0.8384	0.2631
ltr	Long Term Return	1926–2013	−0.84	−2.25	−2.20	1.1271	0.9190	−1.50	−0.72	0.3244	−6.5397	−0.88	−1.22	−0.78	0.2868	−4.3329
tms	Term Spread	1920–2013	3.27*	0.15	1.36	0.0433	−0.6104	0.66	3.76***	0.7078	−0.1463	6.51**	0.48	6.45***	0.9084	0.5486
dfy	Default Yield Spread	1919–2013	1.00	−0.68	−3.02	0.4502	−0.5546	1.96	1.08*	0.6048	−0.0786	0.20	1.81	0.61	0.3120	−0.2136
dfr	Default Return Spread	1926–2013	−1.20	−1.68	−0.31	0.1074	−0.9769	−1.23	−0.22	0.0795	−3.2777	−1.22	−1.65	−0.24	0.1145	−3.6701
infl	Inflation	1919–2013	−1.08	−2.99	−1.29	0.7652	−0.0863	−10.46	−0.44	1.4159	0.3024	−0.91	−1.76	−1.08	0.5830	−0.7193
i/k	Invstmnt Capital Ratio	1947–2013	19.97***	1.08	9.49***	2.8862	1.5998	1.08	9.49***	2.8862	1.5998	19.97***	1.08	9.49***	2.8862	1.5998
cayp	Cnsmptn, Wlth, Incme	1945–2013	26.80***	1.16	16.30***	4.5163	3.4394	1.16	16.30***	4.5163	3.4394	26.80***	1.16	16.30***	4.5163	3.4394
caya	Cnsmptn, Wlth, Incme	1945–2013	—	0.51	8.91***	1.4178	0.0778	0.51	8.91***	1.4178	0.0778	—	0.51	8.91***	1.4178	0.0778
all	Kitchen Sink	1927–2013	35.21***	−0.07	−2.16	0.0693	−0.8209	−0.20	−4.61	0.8446	0.0442	35.21***	−0.20	−4.61	0.8446	0.0442

Panel F: 5-year Data

		Estimation: OOS Forecast: Data	All Data After 20 years					All Data After 1965				After 1927 After 1965				
			$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	1872–2013	10.23***	0.50	16.66***	1.3886	0.6340	0.37	9.94***	1.6259	0.6408	21.53***	0.47	20.43***	4.3417	3.5212
d/y	Dividend Yield	1872–2013	4.89**	0.38	7.56***	0.4936	−0.7518	0.35	6.87***	1.0281	−0.0587	12.41***	0.45	16.25***	3.3346	2.3995
e/p	Earning Price Ratio	1872–2013	3.44	0.33	3.03**	0.1693	−0.7628	0.28	2.33**	0.2586	−0.7395	8.15*	0.30	5.71***	0.8346	−0.2006
d/e	Dividend Payout Ratio	1872–2013	3.22**	0.27	1.11	0.0496	−0.7294	1.71	2.99***	1.7438	−0.5656	6.82***	1.55	3.52***	2.0293	−0.4399
svar	Stock Variance	1885–2013	2.17**	0.15	9.99***	0.5124	−2.0601	2.18	1.31*	1.0248	−0.0974	1.19*	2.61	0.66	0.6831	−1.4650
b/m	Book to Market	1921–2013	11.81**	0.40	9.49***	1.1005	−0.4363	0.16	2.50**	0.2146	−2.1987	14.43**	0.16	3.32**	0.3133	−1.3256
ntis	Net Equity Expansion	1927–2013	6.65**	0.26	1.47	0.1181	−1.2896	−0.14	−0.70	0.0466	−0.8084	6.65**	−0.14	−0.70	0.0466	−0.8084
eqis	Pct Equity Issuing	1927–2013	3.88	−0.00	−0.00	0.0000	−2.3630	−0.16	−0.75	0.0567	−1.7572	3.88	−0.16	−0.75	0.0567	−1.7572
tbl	T-Bill Rate	1920–2013	2.65	0.29	7.51***	0.6787	−0.7320	0.26	5.28***	0.7279	−3.3574	3.56	0.27	10.03***	1.7829	0.4003
lty	Long Term Yield	1919–2013	−0.25	0.01	0.46	0.0030	−0.4765	0.14	3.44***	0.3283	−5.3269	−0.41	0.23	9.83***	1.9198	0.9943
ltr	Long Term Return	1926–2013	−1.07	0.09	0.36	0.0102	−4.5135	−0.53	−1.41	0.3350	−0.1258	−1.05	−0.60	−1.06	0.2789	−0.1694
tms	Term Spread	1920–2013	4.65*	0.02	0.36	0.0027	−0.8102	0.57	4.90***	1.1342	−1.4129	8.20**	0.54	8.36***	1.8022	0.2279
dfy	Default Yield Spread	1919–2013	6.22**	−0.31	−4.27	0.4909	−0.5084	2.39	3.73***	3.3918	2.4481	3.35*	2.99	1.92**	2.2177	0.9305
dfr	Default Return Spread	1926–2013	−0.21	−1.34	−0.53	0.2220	−1.0634	1.24	0.37	0.1784	−2.0987	−0.13	1.08	0.42	0.1784	−1.7273
infl	Inflation	1919–2013	−1.07	−3.52	−2.42	2.4354	−3.1963	−13.34	−0.81	4.9497	2.1523	−1.13	−4.21	−1.60	3.0568	−0.0595
i/k	Invstmnt Capital Ratio	1947–2013	30.80***	0.93	10.28***	3.9648	−4.7986	0.93	10.28***	3.9648	−4.7986	30.80***	0.93	10.28***	3.9648	−4.7986
cayp	Cnsmptn, Wlth, Incme	1945–2013	35.47***	1.29	18.86***	8.2411	4.4468	1.29	18.86***	8.2411	4.4468	35.47***	1.29	18.86***	8.2411	4.4468
caya	Cnsmptn, Wlth, Incme	1945–2013	—	0.59	9.49***	2.5105	−0.1551	0.59	9.49***	2.5105	−0.1551	—	0.59	9.49***	2.5105	−0.1551
all	Kitchen Sink	1927–2013	43.65***	0.06	3.19	0.1976	−0.1657	0.07	2.47	0.2198	−0.2843	43.65***	0.07	2.47	0.2198	−0.2843

Panel G: Price Ratios Data forecasting monthly return

		OOS Forecast: Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
					After 196501		
e/p	Earning(1Y) Price Ratio	192701–201312	0.33**	0.19	2.64**	0.0019	−0.0180
e/p	Earning(3Y) Price Ratio	192701–201312	0.19*	0.38	2.39**	0.0034	−0.0098
e/p	Earning(5Y) Price Ratio	192701–201312	0.28**	0.36	2.96**	0.0040	−0.0082
e/p	Earning(10Y) Price Ratio	192701–201312	0.48**	0.39	4.93***	0.0072	−0.0046
d/p	Dividend(1Y) Price Ratio	192701–201312	0.11	0.48	2.73**	0.0049	−0.0097
d/p	Dividend(3Y) Price Ratio	192701–201312	0.19*	0.50	3.19**	0.0060	−0.0082
d/p	Dividend(5Y) Price Ratio	192701–201312	0.28**	0.48	4.01***	0.0073	−0.0062
d/p	Dividend(10Y) Price Ratio	192701–201312	0.23*	0.50	3.48**	0.0065	−0.0067
d/e	Dividend(1Y) Earning(1Y) Ratio	192701–201312	−0.06	−1.08	−3.65	0.0151	0.0007
d/e	Dividend(1Y) Earning(3Y) Ratio	192701–201312	−0.10	−1.55	−2.01	0.0118	−0.0147
d/e	Dividend(1Y) Earning(5Y) Ratio	192701–201312	−0.08	−1.41	−2.41	0.0129	−0.0078
d/e	Dividend(1Y) Earning(10Y) Ratio	192701–201312	0.06	−0.75	−1.79	0.0050	−0.0254
d/e	Dividend(3Y) Earning(3Y) Ratio	192701–201312	−0.05	−0.85	−0.25	0.0008	−0.0274
d/e	Dividend(5Y) Earning(5Y) Ratio	192701–201312	−0.01	0.54	0.39	0.0008	−0.0519

Panel H: Price Ratios Data forecasting 1-year return

	OOS Forecast:		After 1902				After 1965			
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
e/p Earning(1Y) Price Ratio	1882–2013	0.56	−0.18	−0.45	0.0072	−1.1956	0.33	0.71	0.0402	−0.6449
e/p Earning(3Y) Price Ratio	1882–2013	2.35**	0.49	2.67*	0.1132	−0.5233	0.46	1.92**	0.1525	−0.2069
e/p Earning(5Y) Price Ratio	1882–2013	2.60**	0.53	3.09**	0.1405	−0.8213	0.39	1.83**	0.1236	−0.2113
e/p Earning(10Y) Price Ratio	1882–2013	4.82***	0.65	7.64***	0.4180	−0.0791	0.35	3.05***	0.1899	−0.1189
d/p Dividend(1Y) Price Ratio	1882–2013	1.08	0.40	2.13*	0.0737	−0.9857	0.34	1.53**	0.0920	−0.3595
d/p Dividend(3Y) Price Ratio	1882–2013	1.53*	0.43	3.14**	0.1180	−0.5462	0.32	1.76**	0.0997	−0.3343
d/p Dividend(5Y) Price Ratio	1882–2013	2.15*	0.50	4.78**	0.2078	−0.3812	0.30	2.04**	0.1105	−0.2784
d/p Dividend(10Y) Price Ratio	1882–2013	1.84*	0.48	4.53**	0.1874	−0.3568	0.30	1.86**	0.0996	−0.2387
d/e Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.58	−0.52	−0.68	0.0311	−0.8199	−0.73	−0.18	0.0231	−5.1655
d/e Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.74	−1.89	−1.61	0.2724	−0.2007	−2.03	−1.18	0.4383	−0.0459
d/e Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.69	−0.76	−1.55	0.1065	−1.3404	−1.43	−1.50	0.4011	−0.2883
d/e Dividend(1Y) Earning(10Y) Ratio	1882–2013	1.21	0.43	3.12**	0.1174	−1.4263	−0.44	−1.13	0.0934	−1.0671
d/e Dividend(3Y) Earning(3Y) Ratio	1882–2013	−0.74	−5.61	−1.72	0.8728	0.3821	−6.86	−0.56	0.6798	0.4105
d/e Dividend(5Y) Earning(5Y) Ratio	1882–2013	−0.44	−0.86	−1.07	0.0817	−0.3038	−0.41	−0.16	0.0113	−2.3022

Panel I: Price Ratios Data forecasting 3-year return

	OOS Forecast:		After 1902				After 1965			
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
e/p Earning(1Y) Price Ratio	1882–2013	4.22*	0.50	4.47**	0.3182	−0.2546	0.30	2.60**	0.2323	−0.6260
e/p Earning(3Y) Price Ratio	1882–2013	6.10**	0.62	6.63***	0.5767	−0.2330	0.31	3.03***	0.2829	−0.4222
e/p Earning(5Y) Price Ratio	1882–2013	9.68***	0.70	11.09***	1.0551	−0.0293	0.34	4.57***	0.4741	−0.2193
e/p Earning(10Y) Price Ratio	1882–2013	12.51***	0.59	16.05***	1.3093	0.4299	0.32	6.53***	0.6909	−0.0546
d/p Dividend(1Y) Price Ratio	1882–2013	5.67**	0.50	8.89***	0.6333	−0.3092	0.31	4.65***	0.4557	−0.4073
d/p Dividend(3Y) Price Ratio	1882–2013	7.01***	0.52	10.92***	0.8040	0.0583	0.32	5.23***	0.5292	−0.2740
d/p Dividend(5Y) Price Ratio	1882–2013	8.06***	0.51	12.65***	0.9174	0.2580	0.32	5.83***	0.6035	−0.1450
d/p Dividend(10Y) Price Ratio	1882–2013	6.31**	0.39	9.43***	0.5565	−0.0397	0.30	4.57***	0.4408	−0.1899
d/e Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.32	−2.40	−2.53	0.9252	0.6081	−5.16	−0.79	1.1896	−0.0335
d/e Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.30	−0.63	−3.03	0.3001	0.2341	−5.60	−1.57	2.7710	2.2325
d/e Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.72	−0.23	−1.00	0.0347	−1.1470	−1.77	−3.37	2.1051	1.2132
d/e Dividend(1Y) Earning(10Y) Ratio	1882–2013	0.77	0.25	3.01**	0.1130	−2.5824	−0.87	−2.45	0.7136	−1.0058
d/e Dividend(3Y) Earning(3Y) Ratio	1882–2013	0.59	−0.61	−2.43	0.2279	0.1319	0.87	0.36	0.0857	−5.1371
d/e Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.04	−0.44	−1.42	0.0940	−0.0208	−0.33	−0.14	0.0133	−0.8344

Panel J: Price Ratios Data forecasting 5-year return

	OOS Forecast:			After 1902				After 1965		
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
e/p Earning(1Y) Price Ratio	1882–2013	4.22*	0.50	4.57**	0.4220	−0.6441	0.29	2.67***	0.3086	−0.7103
e/p Earning(3Y) Price Ratio	1882–2013	12.14***	0.69	11.75***	1.4270	0.3049	0.46	7.34***	1.2963	0.4221
e/p Earning(5Y) Price Ratio	1882–2013	17.11***	0.65	17.93***	2.0351	0.5513	0.42	10.05***	1.7393	0.8886
e/p Earning(10Y) Price Ratio	1882–2013	17.06***	0.49	16.92***	1.5616	0.2842	0.40	11.52***	1.9972	1.0264
d/p Dividend(1Y) Price Ratio	1882–2013	12.21***	0.51	18.68***	1.7617	0.3179	0.37	11.54***	1.9715	0.9941
d/p Dividend(3Y) Price Ratio	1882–2013	13.04***	0.49	18.27***	1.6834	0.4288	0.38	11.64***	1.9968	1.0435
d/p Dividend(5Y) Price Ratio	1882–2013	13.53***	0.47	19.25***	1.7263	0.6607	0.36	11.32***	1.9179	1.0106
d/p Dividend(10Y) Price Ratio	1882–2013	9.62***	0.31	10.43***	0.6708	−0.2391	0.37	8.52***	1.3650	0.5151
d/e Dividend(1Y) Earning(1Y) Ratio	1882–2013	3.40**	−0.17	−0.72	0.0233	−0.5328	1.86	2.96***	1.9033	−0.8415
d/e Dividend(1Y) Earning(3Y) Ratio	1882–2013	0.52	−0.32	−3.51	0.2495	0.1229	−1.27	−0.43	0.2055	−1.0391
d/e Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.78	−0.56	−2.17	0.2415	−0.2695	−1.90	−3.53	3.2270	2.3499
d/e Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.80	−0.21	−1.52	0.0636	−9.9856	−2.34	−1.80	1.7529	0.8790
d/e Dividend(3Y) Earning(3Y) Ratio	1882–2013	1.22	−0.43	−2.55	0.2239	−0.1904	1.17	1.10*	0.4615	−4.5340
d/e Dividend(5Y) Earning(5Y) Ratio	1882–2013	0.07	−0.74	−3.19	0.4845	−5.8334	−2.57	−0.77	0.7608	−0.4471

Panel K: Price Ratios Data forecasting 10-year return

	OOS Forecast:			After 1902				After 1965		
	Data	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
e/p Earning(1Y) Price Ratio	1882–2013	21.46***	0.42	19.10***	2.3389	2.1050	0.74	16.92***	6.2209	2.2960
e/p Earning(3Y) Price Ratio	1882–2013	21.42***	0.38	9.37***	1.0254	0.1981	0.74	18.14***	6.6081	5.2646
e/p Earning(5Y) Price Ratio	1882–2013	20.52***	0.48	10.47***	1.3567	−0.2345	0.75	17.97***	6.6129	5.1512
e/p Earning(10Y) Price Ratio	1882–2013	18.68***	0.56	13.14***	1.9394	−5.7602	0.69	18.59***	6.4822	4.5205
d/p Dividend(1Y) Price Ratio	1882–2013	15.70***	0.50	15.20***	2.0538	0.0193	0.50	16.70***	5.2450	3.2257
d/p Dividend(3Y) Price Ratio	1882–2013	13.92***	0.51	12.40***	1.7102	−0.5188	0.53	13.79***	4.3852	2.2549
d/p Dividend(5Y) Price Ratio	1882–2013	13.09***	0.54	12.04***	1.7276	−2.2162	0.54	12.13***	3.8672	1.6945
d/p Dividend(10Y) Price Ratio	1882–2013	11.91***	0.40	10.13***	1.1432	−0.7680	0.45	9.88***	2.8871	0.8373
d/e Dividend(1Y) Earning(1Y) Ratio	1882–2013	−0.62	−1.75	−3.40	1.7564	1.4542	−2.53	−2.51	4.6683	1.9688
d/e Dividend(1Y) Earning(3Y) Ratio	1882–2013	−0.80	−0.57	−4.14	0.7414	−1.2926	−1.61	−3.62	4.7660	2.4165
d/e Dividend(1Y) Earning(5Y) Ratio	1882–2013	−0.82	−0.57	−3.02	0.5216	−0.6115	−2.05	−2.82	4.3547	2.3151
d/e Dividend(1Y) Earning(10Y) Ratio	1882–2013	−0.68	−0.25	−0.59	0.0399	−0.9521	−7.45	−0.62	2.9127	1.0560
d/e Dividend(3Y) Earning(3Y) Ratio	1882–2013	−0.73	−0.95	−3.84	1.1118	−1.5611	−2.58	−2.96	5.8504	3.3282
d/e Dividend(5Y) Earning(5Y) Ratio	1882–2013	−0.82	−2.17	−6.05	4.2494	3.8377	−3.68	−3.12	9.1647	7.9217

Panel L: Adjusted Betas

			Unadjusted betas					Stambaugh correction					Lewellen correction				
		Data	Forecast	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	187102–201312	189102–	−0.06	−0.65	−1.98	0.0075	−0.0375	−0.10	−0.25	−1.99	0.0030	−0.0321	−0.29	−0.09	−1.76	0.0009	−0.0459
d/y	Dividend Yield	187102–201312	189102–	−0.05	−1.08	−2.24	0.0143	−0.0375	−0.05	−1.02	−2.46	0.0148	−0.0243	−0.05	−1.23	−2.22	0.0161	−0.0240
e/p	Earning Price Ratio	187102–201312	189102–	0.01	0.19	0.70	0.0008	−0.0254	−0.00	−0.14	−0.29	0.0002	−0.0262	−0.33	−1.60	−4.20	0.0400	0.0086
d/e	Dividend Payout Ratio	187112–201312	189112–	0.08	0.11	1.24	0.0008	−0.0296	0.08	0.11	1.48	0.0010	−0.0281	0.08	0.16	1.75*	0.0016	−0.0293
svar	Stock Variance	188502–201312	190502–	0.07	−0.28	−2.93	0.0057	−0.5630	0.07	−0.27	−2.87	0.0053	−0.4993	−1.91	0.18	16.72***	0.0213	−0.0813
csp	Cross-Sectional Prem	193705–200212	195705–	0.67**	0.29	3.89**	0.0153	−0.0713	0.67**	0.29	3.81**	0.0152	−0.0713	0.66**	0.31	3.60**	0.0152	−0.0720
b/m	Book to Market	192103–201312	194103–	0.11	0.20	2.06*	0.0034	−0.0589	0.08	0.15	0.82	0.0011	−0.0659	−0.36	−0.67	−0.63	0.0035	−0.0627
ntis	Net Equity Expansion	192701–201312	194701–	0.32**	0.26	1.85*	0.0044	−0.0728	0.32**	0.26	1.86*	0.0044	−0.0727	0.32**	0.24	1.91*	0.0042	−0.0736
tbl	T-Bill Rate	192002–201312	194002–	0.17*	0.59	5.40***	0.0266	−0.1325	0.17*	0.55	5.42***	0.0250	−0.1461	0.17*	0.55	5.16***	0.0240	−0.1412
lty	Long Term Yield	191901–201312	193901–	0.03	0.33	4.36**	0.0121	−0.1440	0.03	0.30	5.24***	0.0131	−0.1454	0.03	0.33	3.94**	0.0109	−0.1414
ltr	Long Term Return	192601–201312	194601–	0.07	−0.26	−1.59	0.0038	−0.0867	0.07	−0.26	−1.56	0.0036	−0.0870	−0.62	0.26	17.40***	0.0430	−0.1013
tms	Term Spread	192002–201312	194001–	0.10	0.71	3.11**	0.0186	−0.6275	0.10	0.69	3.01**	0.0174	−0.2918	0.10	0.66	2.98**	0.0166	−0.2648
dfy	Default Yield Spread	191901–201312	193901–	−0.09	−3.54	−0.94	0.0282	−0.0743	−0.09	−1.23	−0.43	0.0045	−0.1113	−0.17	0.30	0.57	0.0014	−0.1314
dfr	Default Return Spread	192601–201312	194601–	0.15	0.05	0.11	0.0000	−0.1290	0.15	0.05	0.11	0.0000	−0.1290	−2.51	0.15	6.68***	0.0096	−0.1338

Panel M: Adjusted Betas with Total Returns

			Unadjusted betas					Stambaugh correction					Lewellen correction				
		Data	Forecast	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}	$\overline{R}^2$	λ	ENC	ΔRMSE*	ΔRMSE*^{r}
d/p	Dividend Price Ratio	192701–201312	196501–	0.11	0.47	2.70**	0.0167	−0.0343	0.02	0.26	0.33	0.0011	−0.0795	−0.19	−1.20	−1.36	0.0215	−0.0053
d/y	Dividend Yield	192701–201312	196501–	0.22*	0.43	4.10***	0.0229	−0.0255	0.22*	0.44	3.90***	0.0222	−0.0266	0.22*	0.46	3.73***	0.0224	−0.0274
e/p	Earning Price Ratio	192701–201312	196501–	0.33**	0.19	2.62**	0.0066	−0.0634	0.30**	0.21	1.43*	0.0039	−0.0674	−0.07	−0.63	−1.60	0.0132	−0.1951
d/e	Dividend Payout Ratio	192701–201312	196501–	−0.06	−1.07	−3.65	0.0518	0.0015	−0.06	−1.03	−3.81	0.0523	0.0018	−0.06	−0.99	−3.28	0.0430	−0.0051
svar	Stock Variance	192701–201312	196501–	0.07	2.44	0.71	0.0223	−0.1592	0.07	2.53	0.77	0.0254	−0.1455	−1.58	0.77	8.25***	0.0814	−0.1981
csp	Cross-Sectional Prem	193705–200212	196501–	0.92***	0.82	5.47***	0.0753	−0.0037	0.92***	0.82	5.39***	0.0751	−0.0049	0.92***	0.85	5.17***	0.0745	−0.0071
b/m	Book to Market	192701–201312	196501–	0.35**	0.07	0.97	0.0009	−0.0763	0.31**	0.07	0.54	0.0005	−0.0768	−0.13	−2.63	−0.23	0.0078	−0.0709
ntis	Net Equity Expansion	192701–201312	196501–	0.34**	0.06	0.38	0.0003	−0.0751	0.34**	0.05	0.38	0.0003	−0.0752	0.33**	0.05	0.37	0.0002	−0.0758
tbl	T-Bill Rate	192701–201312	196501–	0.13	0.52	4.99***	0.0336	−0.0607	0.13	0.48	5.00***	0.0313	−0.0692	0.13	0.49	4.80***	0.0308	−0.0681
lty	Long Term Yield	192701–201312	196501–	0.02	0.36	5.52***	0.0264	−0.0453	0.02	0.32	6.05***	0.0256	−0.0470	0.02	0.36	4.79***	0.0228	−0.0454
ltr	Long Term Return	192701–201312	196501–	0.07	0.33	1.29*	0.0055	−0.0716	0.07	0.33	1.31*	0.0057	−0.0717	−0.63	0.24	14.32***	0.0467	−0.0793
tms	Term Spread	192701–201312	196501–	0.05	0.62	2.21**	0.0177	−0.1636	0.05	0.60	2.16**	0.0169	−0.1166	0.05	0.59	2.23**	0.0172	−0.0973
dfy	Default Yield Spread	192701–201312	196501–	−0.08	−0.54	−0.05	0.0004	−0.0613	−0.08	−6.67	−0.46	0.0396	0.0171	−0.17	−5.49	−1.12	0.0806	0.0550
dfr	Default Return Spread	192701–201312	196501–	0.15	0.75	1.12*	0.0109	−0.1262	0.15	0.75	1.12*	0.0109	−0.1261	−2.58	0.27	9.50***	0.0343	−0.0709

Table 14: Forecasts at Monthly Frequency using Campbell and Thompson (2008) procedure

This table presents statistics on forecast errors in-sample (IS) and out-of-sample (OOS) for excess stock return forecasts at the monthly frequency (both in the forecasting equation and forecast) using the procedure of Campbell and Thompson (2008) (henceforth, CT). Variables are explained in Section 1. Stock return is price changes, *including* dividends, of S&P500. Panel A uses the log returns (as in the rest of the tables) while Panel B uses simple returns (as in CT). The data period is December 1927 to December 2009, except for **csp** (May 1937 to December 2002) and **cay**3 (March 1952 to December 2009). A star next to $\overline{R}^2$ (in percent) denotes significance of the in-sample regression. Variables are sorted in increasing order of in-sample significance. ΔRMSE is the RMSE (root mean square error) difference between the unconditional forecast and the conditional forecast for the same sample/forecast period (positive numbers signify superior out-of-sample conditional forecast). $\Delta U^{\gamma=3}$ is the utility difference for mean variance utility optimizer with risk aversion coefficient $\gamma = 3$ who trades based on unconditional forecast and conditional forecast. Portfolio weights are denoted by w (a cap $w_{\max} = 150\%$ is imposed on all portfolio weights). ΔRMSE and ΔU are in percent per month while w is in percent. Subscript U is for unconditional forecast, PN is for plain conditional forecast, and CT is the CT conditional forecast. The panel header gives the utility of investing based on unconditional forecast (U_0), buy-and hold market (U_{mkt}), and the riskfree asset (U_{rf}). The column titled $\Delta U_{\mathrm{CT}}^{\gamma=x}$ gives the utility based on risk aversion coefficient $\gamma = x$, where x equalizes the U_{mkt} and U_{rf}. Critical values of all statistics are obtained from McCracken (2004). Significance levels at 90%, 95%, and 99% are denoted by one, two, and three stars, respectively.

Panel A: Log Return $U_{\mathbf{U}} = 0.5526\%, U_{\mathbf{mkt}} = 0.6393\%, U_{\mathbf{rf}} = 0.3635\%$

	Variable	IS $\overline{R}^2$	IS $\Delta U_{\mathrm{PN}}^{\gamma=3}$	OOS $\Delta\mathrm{RMSE}_{\mathrm{PN}}$	$\Delta\mathrm{RMSE}_{\mathrm{CT}}$	$\Delta U_{\mathrm{CT}}^{\gamma=3}$	$\Delta U_{\mathrm{CT}}^{\gamma=6.13}$	Frcst= 0	Frcst= U	$w_{\mathrm{CT}}=w_{\max}$	$\Delta w_{\mathrm{CT}}-\Delta w_{\mathrm{U}}$
csp	Cross-Sectional Prem	0.92***	0.1869	−0.0165	0.0097**	0.0971	0.0872	51.3	0.0	9.1	4.0
eqis	Pct Equity Issuing	0.59***	0.1578	−0.0018	0.0008	0.1544	0.0317	9.1	0.0	37.7	1.8
ntis	Net Equity Expansion	0.46**	0.0624	−0.0160	−0.0155	0.0475	−0.0392	3.7	0.0	41.4	4.8
e/p	Earning(10Y) Price Ratio	0.45**	0.0074	−0.0261	−0.0055	−0.0870	−0.0139	52.8	0.0	5.7	3.4
b/m	Book to Market	0.38**	−0.0137	−0.0402	−0.0236	−0.0808	−0.0857	48.5	0.0	17.8	3.3
e/p	Earning Price Ratio	0.30**	0.0641	−0.0268	−0.0065	0.0550	0.0284	35.6	0.0	23.6	2.8
d/y	Dividend Yield	0.19*	0.0904	−0.0095	0.0029*	0.0019	0.0601	53.6	0.0	8.3	2.7
dfr	Default Return Spread	0.15	0.0090	−0.0026	−0.0055	0.0150	0.0056	2.4	2.6	21.8	23.6
tbl	T-Bill Rate	0.12	0.1596	−0.0028	0.0028*	0.0719	0.0186	23.6	0.0	6.1	2.4
d/p	Dividend Price Ratio	0.09	0.0698	−0.0022	0.0016*	−0.0096	0.0390	21.7	0.0	3.7	2.3
tms	Term Spread	0.09	0.1365	0.0029*	0.0024*	0.0920	−0.0105	4.0	10.1	26.6	5.5
ltr	Long Term Return	0.07	0.1492	−0.0175	0.0022*	0.0373	0.0026	5.2	34.3	29.0	26.7
svar	Stock Variance	0.06	0.1562	0.0011*	−0.0032	−0.0221	−0.0125	0.0	48.0	22.4	0.2
lty	Long Term Yield	0.00	0.0773	−0.0199	0.0054**	0.0694	0.0400	43.1	0.0	9.2	1.2
infl	Inflation	−0.02	0.0282	−0.0002	0.0005	0.0211	0.0050	1.5	0.0	22.4	9.2
d/e	Dividend Payout Ratio	−0.05	−0.0255	−0.0259	−0.0198	0.0094	−0.0920	1.1	0.0	54.4	−0.1
dfy	Default Yield Spread	−0.08	−0.0038	−0.0054	−0.0042	−0.0389	−0.0334	2.8	20.6	21.4	0.8
cay3	Cnsmptn, Wlth, Incme	1.15***	0.2692	−0.0492	−0.0164	0.1344	0.0676	47.5	0.0	17.8	4.3

Panel B: Simple Return $U_{\mathbf{U}} = 0.6869\%, U_{\mathbf{mkt}} = 0.7329\%, U_{\mathbf{rf}} = 0.3635\%$

	Variable	IS $\overline{R}^2$	IS $\Delta U_{\mathrm{PN}}^{\gamma=3}$	OOS $\Delta\mathrm{RMSE}_{\mathrm{PN}}$	$\Delta\mathrm{RMSE}_{\mathrm{CT}}$	$\Delta U_{\mathrm{CT}}^{\gamma=3}$	$\Delta U_{\mathrm{CT}}^{\gamma=7.22}$	Frcst= 0	Frcst= U	$w_{\mathrm{CT}}=w_{\max}$	$\Delta w_{\mathrm{CT}}-\Delta w_{\mathrm{U}}$
csp	Cross-Sectional Prem	0.99***	0.1630	−0.0165	0.0072**	0.0603	0.0751	44.9	0.0	13.5	4.7
e/p	Earning(10Y) Price Ratio	0.83***	−0.0998	−0.0365	−0.0051	−0.1103	−0.0067	49.4	0.0	14.1	4.7
b/m	Book to Market	0.70***	−0.0579	−0.0593	−0.0394	−0.1483	−0.1082	43.5	0.0	27.4	3.1
eqis	Pct Equity Issuing	0.56***	0.1339	−0.0046	−0.0016	0.1380	0.0452	6.2	0.0	53.5	1.4
ntis	Net Equity Expansion	0.50**	0.0417	−0.0210	−0.0209	0.0618	−0.0451	0.3	0.0	55.2	3.9
d/y	Dividend Yield	0.41**	0.0125	−0.0193	0.0005	−0.0956	0.0695	53.3	0.0	14.1	3.2
e/p	Earning Price Ratio	0.32**	0.0009	−0.0273	−0.0107	0.0459	0.0379	18.3	0.0	29.9	4.1
d/p	Dividend Price Ratio	0.28**	0.0002	−0.0050	0.0039**	−0.0927	0.0637	28.9	0.0	14.1	3.7
tbl	T-Bill Rate	0.21*	0.1565	0.0016*	0.0076**	0.1152	0.0489	20.4	0.0	17.4	2.7
dfy	Default Yield Spread	0.19*	0.0055	−0.0115	−0.0101	−0.0586	−0.0848	3.7	0.0	26.5	2.5
tms	Term Spread	0.14	0.1372	0.0042**	0.0040**	0.1370	0.0244	3.4	0.0	55.7	4.4
infl	Inflation	0.11	0.0492	0.0004	0.0012*	0.0364	0.0104	1.8	0.0	41.4	11.1
ltr	Long Term Return	0.10	0.1206	−0.0087	0.0037**	0.0676	0.0080	3.3	33.5	48.5	26.3
dfr	Default Return Spread	0.06	0.0831	−0.0024	−0.0022	0.0510	0.0198	0.8	18.3	42.5	10.0
lty	Long Term Yield	0.05	0.0781	−0.0107	0.0085**	0.0688	0.0618	30.1	0.0	20.6	1.9
svar	Stock Variance	−0.09	0.0259	−0.0157	−0.0156	−0.0333	−0.0658	0.0	7.7	33.5	1.9
d/e	Dividend Payout Ratio	−0.10	0.0068	−0.0129	−0.0111	−0.0079	−0.0546	0.3	15.3	53.7	0.1
cay3	Cnsmptn, Wlth, Incme	1.16***	0.2263	−0.0499	−0.0225	0.0773	0.0488	44.2	0.0	20.6	4.1