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An international test of the Fed model

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Abstract

In a way similar to Asness, this paper examines the effectiveness of earnings yields, as well as of their difference with long-term government bond yields (the so-called Fed model), to forecast real stock returns of various horizons in nine countries. Moreover, the same tests are repeated with dividend yields in place of earnings yields. Forecasting power is measured by using regression analysis. The results show that the traditional model is somewhat successful at forecasting long-term stock returns, whereas the Fed model is a failure.

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Notes

1. It should be stressed that this model is neither endorsed nor discussed by the Federal Reserve.

2. Note that W.T. Ziemba already discussed such a relative valuation model for Japan in the early 1990s in his book with S.L. Schwartz *Invest Japan: The Structure, Performance and Opportunities of Japan's Stock, Bond and Fund Markets* (Probus Publishing Company, Chicago).

3. In this way, we also avoid possible problems related to particularly high $(E/P) \div Y$ ratios due to low government bond yields with respect to earnings yields.

4. As mentioned in Asness (2003), empirical evidence also supports this theory.

5. For simplicity, any mention of R^2 should be interpreted as *adjusted* R^2.

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Appendix

Regression analyses of the same type as above have also been performed with Germany, France, Belgium, Switzerland, and Sweden. We include the relevant results in Tables A1, A2, A3, A4 and A5. The spans of data are in general shorter than those of the previous sections, so that the results for both *E/P* and *D/P* are inserted in the same table and that the great bull market alone may be included in the one-year horizon case. Although we will not attempt to interpret the results as we have done before, we will recall some principal features to look for, and the kind of conclusions that can be drawn from them.

Table a1 Forecasting Germany's real CDAX stock returns of different horizons

Table a2 Forecasting France's real SBF-250 stock returns of different horizons

Table a3 Forecasting Belgium's real stock returns of different horizons

Table a4 Forecasting Switzerland's real stock returns of different horizons

Table a5 Forecasting Sweden's real OMX Stockholm stock returns of different horizons

First, in terms of the first or second form of regression, forecasting power should translate into a high R^2 value and a positive coefficient of the explanatory variable, that is, β for the traditional model or β' for the Fed model, and a corresponding t-statistic that is sufficiently different from zero. Secondly, the third form of regression can be used to distinguish between the extent to which variations in real returns can be associated with variations in either E/P (D/P) or Y. The sensitivity in each type of variation can then be measured via the magnitude of the relevant coefficient, that is, b for E/P (D/P) and c for Y. Thirdly, if a model is to have reliable forecasting effectiveness, then while its R^2 should be high, it should also be close to the R^2 of the bivariate regression. Furthermore, its coefficient should coincide as much as possible with the one(s) of the bivariate regression, that is, $\beta \simeq b$ for the traditional model and $\beta' \simeq b \simeq -c$ for the Fed model. Hence decent results for the Fed model can further be tested against the third regression; where an abrupt change in R^2, a significant difference between β' and $-c$, a positive c value, etc are signs of a deceptive Fed model that owes its success to its containing E/P (D/P).

With such ideas in mind, a more cautious examination of the following tables can be done. Despite the fewer data, the regressions on E/P (D/P) alone yield better

fits than those on $E/P-Y$ ($D/P-Y$). Namely, the traditional model is relatively successful, whereas the Fed model appears to be a failure. Finally, a general pattern is given by poor results with one-year real returns in the modern period (or whichever closest period), and by considering dividend yields.

Germany

See Table A1.

France

See Table A2.

Belgium

See Table A3.

Switzerland

See Table A4.

Sweden

See Table A5.

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