Efficient Capital Markets: II

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Efficient Capital Markets: II (Fama, 1991)

Structure of the Article

I) The Theme
II) The Main Areas of Research
III) Return Predictability
IV) Cross-Sectional Return Predictability
V) Event Studies
VI) Tests for Private Information
VII) Conclusions

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I. The Theme

MARKET EFFICIENCY HYPOTHESIS

" Security prices fully reflect all available information"

STRONG version : The costs of getting prices to reflect information are ZERO.

WEAKER version : The marginal benefits of action on info do NOT exceed the marginal costs.

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I. The Theme

The extreme version of the MEH is FALSE

BUT

It is a **CLEAN BENCHMARK**
in deciding
what are *reasonable* information and trading costs.

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I. The Theme

Market efficiency *per se* is NOT TESTABLE.
It needs an asset-pricing model.

JOINT-HYPOTHESIS PROBLEM

It is not possible to measure 'abnormal' returns
without expected returns predicted by pricing models.

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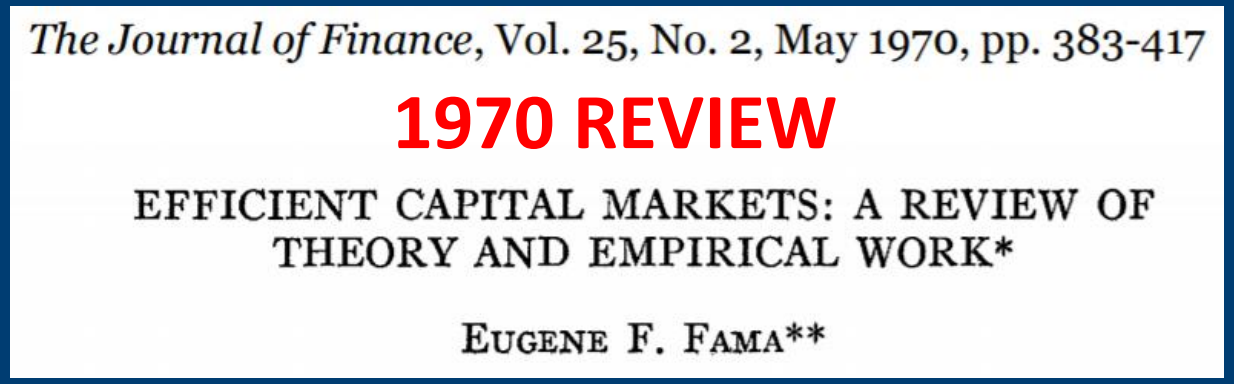
II. The Main Areas of Research



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1970 REVIEW

EFFICIENT CAPITAL MARKETS: A REVIEW OF THEORY AND EMPIRICAL WORK*

EUGENE F. FAMA**

The 1970 review categorized Market Efficiency into 3-groups:

(1) Weak-Form Tests
(2) Semi-Strong-Form Tests
(3) Strong-Form Tests

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1970 REVIEW

ASSUMPTION:

Security prices at any time '**fully reflect**' all available information.

A market in which prices always fully reflect available information is called '**efficient**.'

Successive price changes are *independent*.
Successive changes are *identically distributed*.

} ***RANDOM WALK***

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1970 REVIEW

EVIDENCE:

"*like any other extreme null hypothesis, we do not expect it to be literally true*"

Empirical work concerned the adjusment of security prices to '**three relevant information subsets**'

WEAK-FORM **SEMI-STRONG-FORM** **STRONG-FORM**

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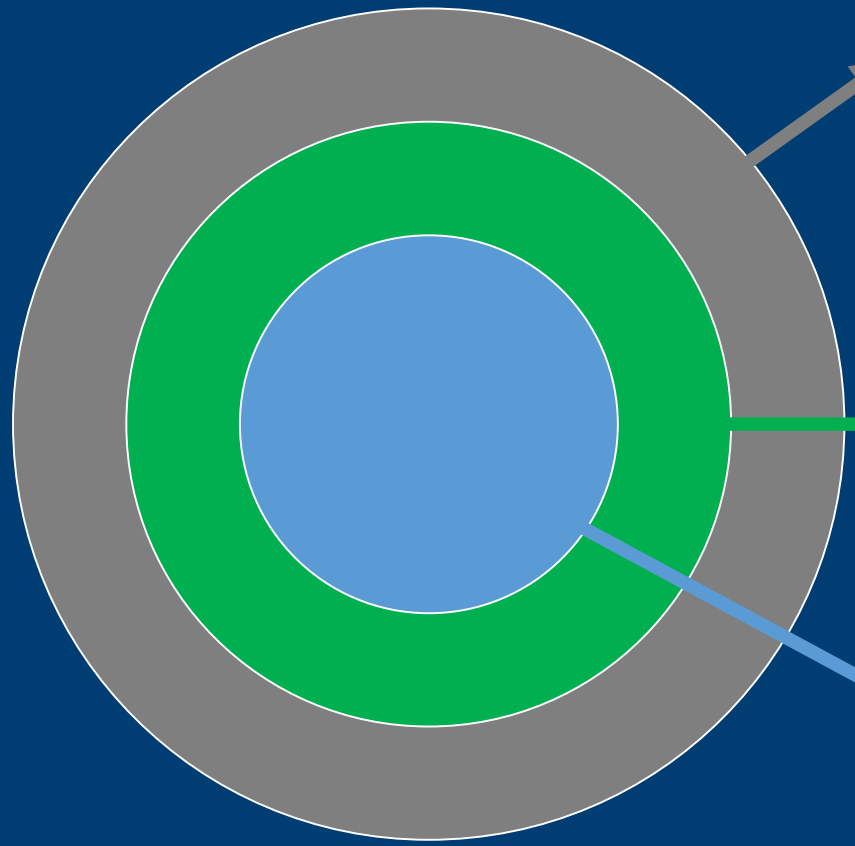
1970 REVIEW



STRONG-FORM TESTS

Private (+public) information..?

SEMI-STRONG-FORM TESTS

Public announcements..?

WEAK-FORM TESTS

Past returns..?

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II. The Main Areas of Research

The efficiency categories are changed in 1991:

Weak-form tests ➔ Tests for return predictability
(dividend yields & interest rates)

Semi-strong-form tests ➔ Event studies

Strong-form tests ➔ Tests for private information

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II. The Main Areas of Research

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III. Return Predictability: Time-Varying Expected Returns

Since 1970 the vast bulk of the research on market efficiency has examined the validity of the weak-form efficiency:
Whether asset prices reflect all historical information
(time-series predictability of stock returns)

Recent tests consider the forecast power of variables;

- **Dividend Yields (D/P),**
- **Earnings/Price Ratio (E/P),**
- **Term-Structure Variables**

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III. Return Predictability: Time-Varying Expected Returns

Fama refers these studies as Tests for Return Predictability

Classfying these tests into:

A. Past Returns
- A.1. Short-Horizon Returns
- A.2. Long-Horizon Returns
- A.3. The Contrarians

B. Other Forecasting Variables

C. Volatility Tests and Seasonals in Returns

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

Pre-1970 Literature: Expected returns are constant through time Market efficiency implies that returns are unpredictable from past returns or other past variables and the best forecast of a return is its historical mean.

Recent Works including *daily* data find that *weekly* returns on portfolios grouped according to size show reliable positive autocorrelation. ➔ reject the RANDOM WALK..!!

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Short-Horizon Returns"

With the CRSP (the Center for Research in Security Prices) daily data back to 1962, recent research is able to show confidently that **daily and weekly returns are predictable from past returns**. The work thus rejects the old market *efficiency-constant expected returns model* on a statistical basis.

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Long-Horizon Returns"

Autocorrelations of returns for the 1926-1985 period have the pattern predicted by the *Shiller-Summers (1986)* model which points out the market is highly inefficient. *(Fama & French 1988)*

When Fama&French (1988) delete the 1926-1940 period from the tests, the negative autocorrelation in 3-5 years disappears!!

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Long-Horizon Returns"

(1) Rational pricing implies an expected return that is highly auto-correlated but mean-reverting

(2) Shocks to expected returns are uncorrelated with shocks to expected dividends

Irrational bubbles in stock prices are **indistinguishable** from rational time-varying expected returns.

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"The Contrarians"

DeBondt and Thaler (1985, 1987): **MARKET OVERREACTION**

unmasking irrational bubbles

"*to extreme bad or good news about firms*"

III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Other Forecasting Variables"

Power in tests for return predictability can be enhanced if one can identify forecasting variables that are **less noisy proxies** for expected returns that past returns.

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Other Forecasting Variables"

- Fama and French (1988b) use **D/P** to forecast returns for horizons from 1 month to 5 years. *D/P explains small fractions of monthly and quarterly return variances.*

- Campbell and Shiller (1988b) find that **E/P** ratios have *reliable forecast power that also increases with the return horizon.*

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Other Forecasting Variables"

- There is no evidence that low D/P signals bursting bubbles, that is, negative expected stock returns.(Fama&French-1988)

- Deciding whether return predictability is the result of rational variation in exp. returns or irrational bubbles is never clearcut.

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III. Return Predictability: Time-Varying Expected Returns

PAST RETURNS

"Volatility Tests and Seasonals in Returns"

- Expected stock and bond returns vary with expected inflation rates, interest rates, and other term-structure variables.

- **Seasonals** to be explained in terms of market micro-structure in the probabilities that measured prices are at ask or bid *(Monday returns, January effect, end-of-month returns etc.)*

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IV. Cross-Sectional Return Predictability

The Sharpe-Lintner-Black (SLB) Model

- The SLB model is just a model and so surely false.
- **The proxies used for the market portfolio do not come close to the portfolio.**
- Estimates of market β's are noisy.
- The anomalies variables are correlated with true β's.
- The SLB model gave a summary measure of risk, market β, interpreted as market sensitivity.

IV. Cross-Sectional Return Predictability

Multifactor Models

- The multifactor model leaves an unexplained SIZE EFFECT much like the SLB model; that is, expected returns are too high for small stocks and too low for large stocks.
- There is the danger that measured relations between returns and economic factors are spurious.

IV. Cross-Sectional Return Predictability

Consumption-Based Asset-Pricing Models

- The consumption-based model is the most elegant of the intertemporal asset pricing models.
- The tests use versions of the model that make strong assumptions about **tastes** and the **joint distribution of consumption growth and returns**.
- The consumption model sometimes fail the test of usefulness.

IV. Cross-Sectional Return Predictability

Where Do We Stand?

- The consumption-based model fares worse than the SLB.
- The multifactor model seems to do better.
- BUT the estimating way the β's of economic factors is vague.
- Because these models are NOT mutually exclusive, we have some freedom to lean on one model or another.

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V. Event Studies

- The typical result in event studies on daily data is that stock prices seem to adjust within a day to event announcements.

- Event studies are the **cleanest evidence** we have on efficiency (the least encumbered by the joint-hypothesis problem). With few exceptions, the evidence is supportive.

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VI. Tests for Private Information

- Jaffe's (1974) study of insider trading is one of the first, finding that for insiders the stock market is NOT EFFICIENT; insiders have information that is not reflected in prices.
- Seyhun (1986) offers an explanation, arguing that Jaffe's outsider profits arise because of usage the SLB model.
- Highly constrained asset pricing models have systematic problems explaining the cross-section of expected returns that can look like market inefficiencies.

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VII. Conclusions

- Prices adjust efficiently to firm-specific information.
- The tests thus run head-on into the joint-hypothesis problem: measured abnormal returns can result from market inefficiency, a bad model of market equilibrium, or problems in the way the model is implemented.
- Returns for short and long horizons are predictable from D/P, E/P, and default spreads of low- over high-grade bond yields.

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VII. Conclusions

- Term spreads (LT-ST interest rates) and the level of short rates also forecast returns out to about a year.
- The forecast power of D/P, E/P, and the term-structure variables is reliable for periods after the Great Depression.
- Rational variation in expected returns is caused either by shocks to tastes for current versus future consumption or by technology shocks.

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VII. Conclusions

In the end, I think we can hope for a coherent story that (1) relates the cross-section properties of expected returns to the variation of expected returns through time, and (2) relates the behavior of expected returns to the real economy in a rather detailed way. Or we can hope to convince ourselves that no such story is possible.

THANKS
FOR LISTENING