



JACOBS LEVY EQUITY
MANAGEMENT CENTER
for Quantitative Financial Research

A Global Macroeconomic Risk Model for Momentum and Value

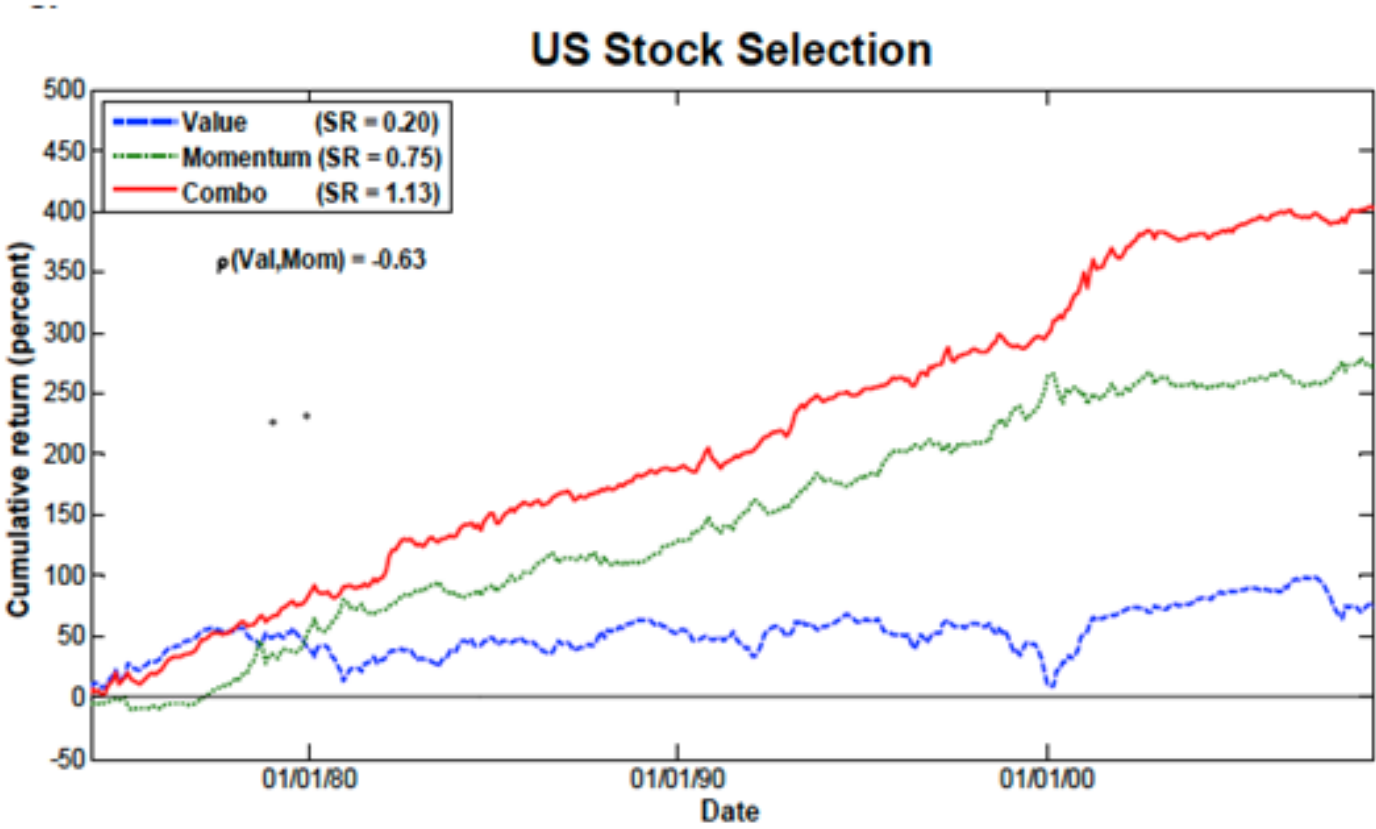
DISCUSSION

Nikolai Roussanov (Wharton and NBER)

Holy Grail of Empirical Asset Pricing

- Explain profitability of Value and Momentum strategies around the world, across asset classes
- Relate expected returns to sources of fundamental macroeconomic risk

Combining value and momentum

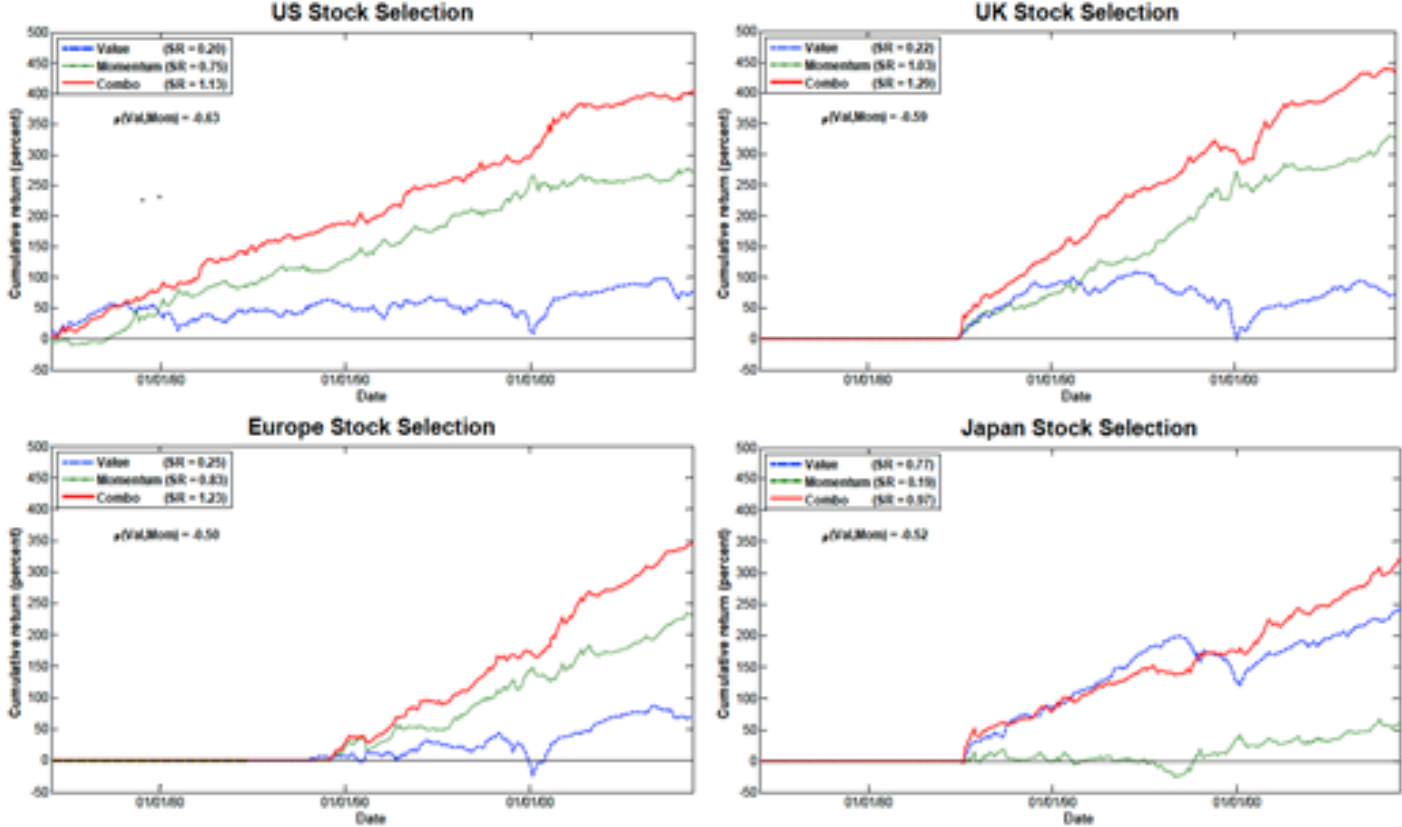


Asness, Moskowitz, and Pedersen (2013)

Value and momentum in global equities

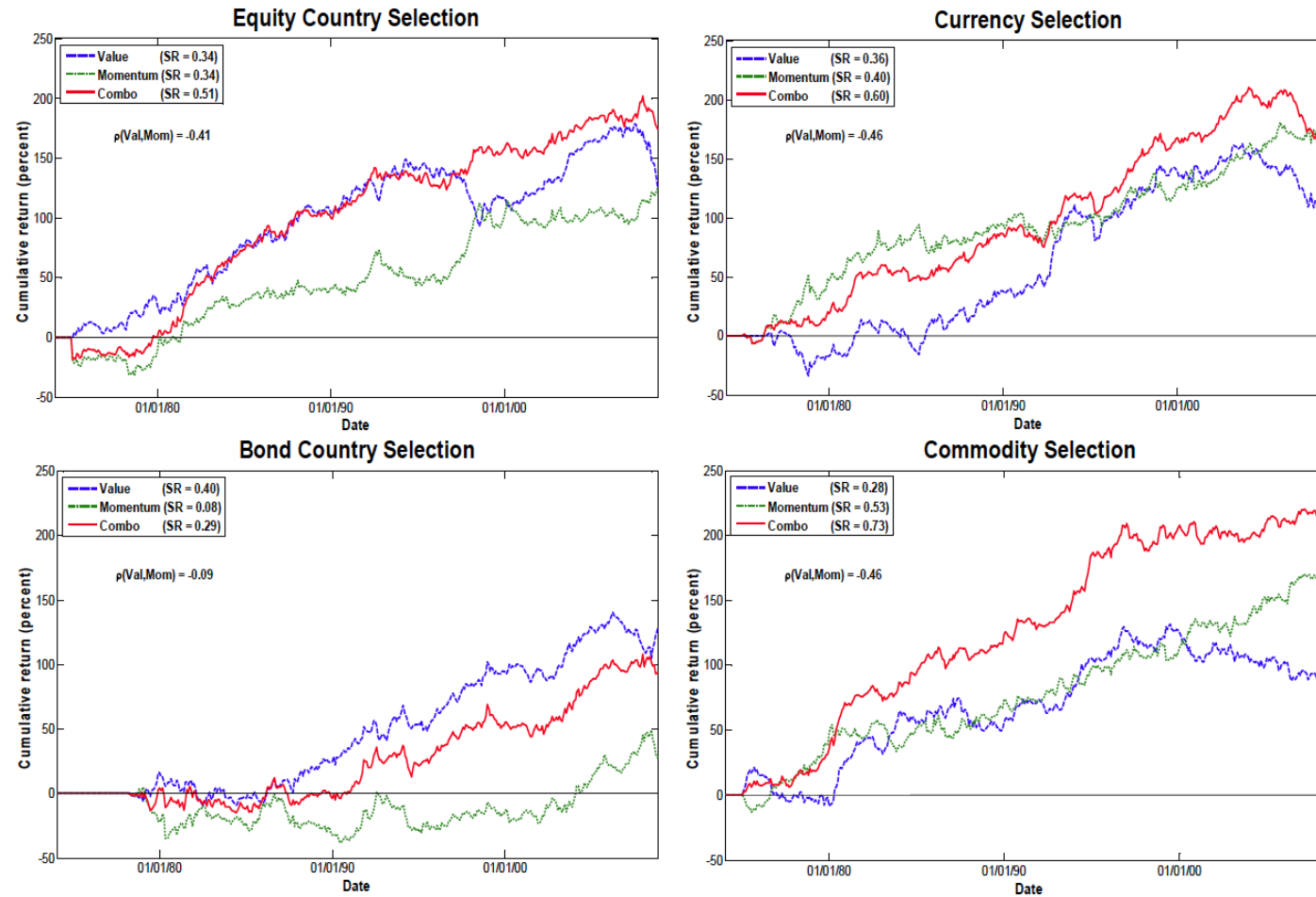
Figure 1: Performance of value and momentum strategies

Plotted are the cumulative returns to value, momentum, and a 50/50 combination of value and momentum strategies among individual stocks in four markets: U.S., U.K., Japan, and Continental Europe, in four different asset classes: Country equity index futures, country bonds, currencies, and commodities, and for the equal-weighted combination of all stock selection strategies, all non-stock selection strategies, and an equal-weighted combination of both. Also reported on each figure are the annualized Sharpe ratios of each strategy and the correlation between value and momentum in each market.



Asness, Moskowitz, and Pedersen (2013)

Value and momentum “everywhere”



Asness, Moskowitz, and Pedersen (2013)

This Paper

- Consider value and momentum across asset classes, globally
- Relate average returns to macro factors of Chen, Roll, and Ross (1986)
- Use factor-mimicking portfolios composed using 6 “global” portfolios formed on value and momentum across assets

Steve Ross and APT: Origins of Factor Investing

- Systematic sources of risk cannot be diversified away
- Hence investors need to be compensated for exposures to them
- Covariances with common factors should explain risk premia

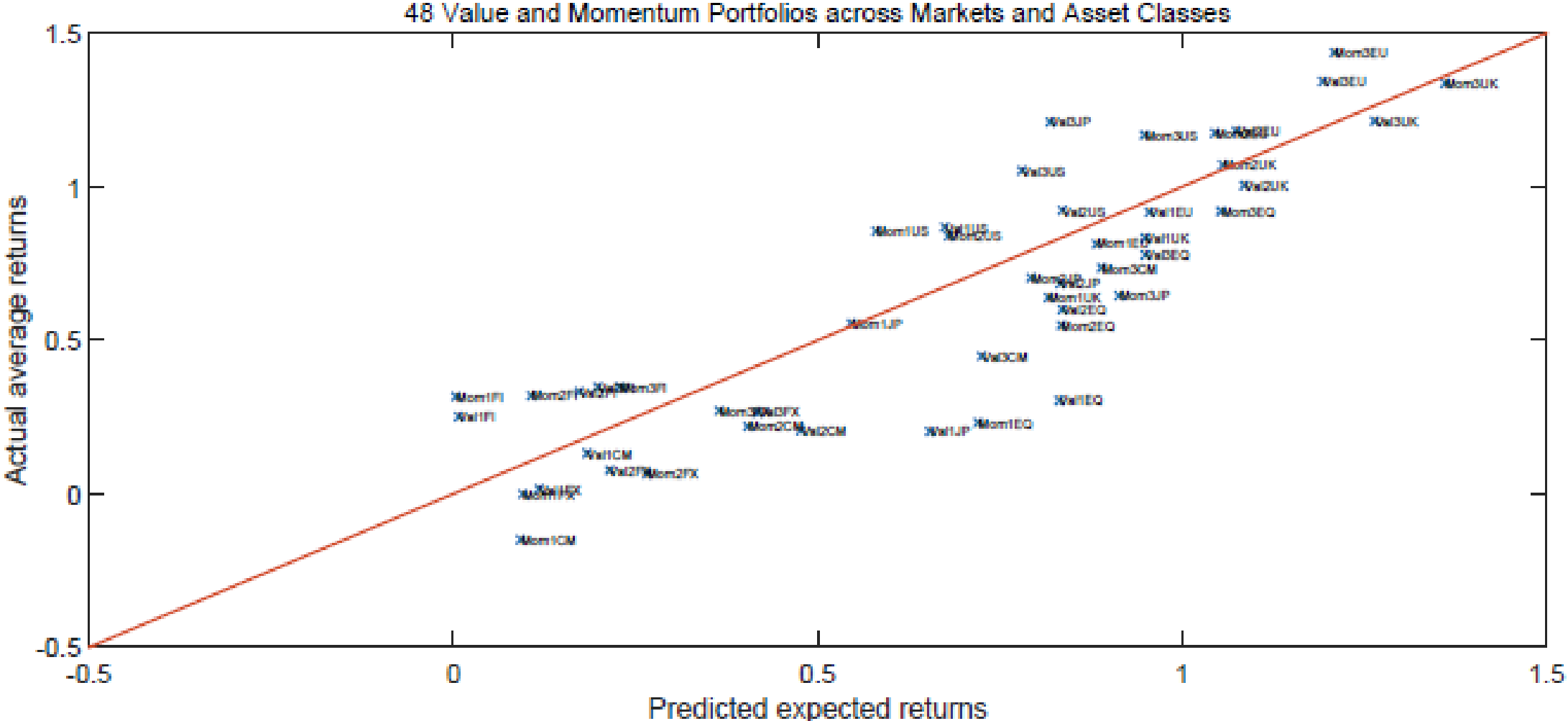
Common Factors Within Asset Classes

- Bonds
Litterman and Scheinkman (1991)
- Stocks
Fama and French (1992), Carhart (1997)
- FX
Lustig, Roussanov, and Verdelhan (2011)
- Commodities
Szymanowska, De Roon, Nijman, and Goorbergh (2014)

Chen, Roll, and Ross: Interpretable Factors

- Industrial Production Growth (*MP*)
- Change in Expected Inflation (*DEI*)
- Unexpected Inflation (*UI*)
- Default Premium (*UPR*)
- Term Premium (*UTS*)

CRR Factors Work Across Asset Classes!



Success?

Models	N factors	GRS - stat
Rm	1	4.08
Rm+VAL+MOM (Asness, Moskowitz, and Pedersen)	3	2.84
Five global macro factors (this paper)	5	2.78

Dark Side of APT

- Common factor structure can be a gift...
- ... but also a curse (e.g., Lewellen, Nagel, and Shanken (2010))

Do we need all five macro factors?

Models	N factors	GRS - stat
Rm	1	4.08
Rm+VAL+MOM (AsnessMoskowitzPedersen)	3	2.84
Five global macro factors (CooperMitrachePristley)	5	2.78
Four global macro factors (minus Ind prod)	4	3.05
Four global macro factors (minus Unexp Inflation)	4	2.84
Four global macro factors (minus Exp Inflation)	4	3.08
Four global macro factors (minus Global Term Prem)	4	4.23
Four global macro factors (minus US default spread)	4	2.82
Three global macro factors (IP, Unexp+Exp inflation)	3	4.22
Three global macro factors (IP, Unexp inflation + UTS)	3	2.90

What if we only use base assets as factors?

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High, mid, low, val and mom, global	6	2.71
High, low, val and mom, global	4	2.73

Alternative Factors?

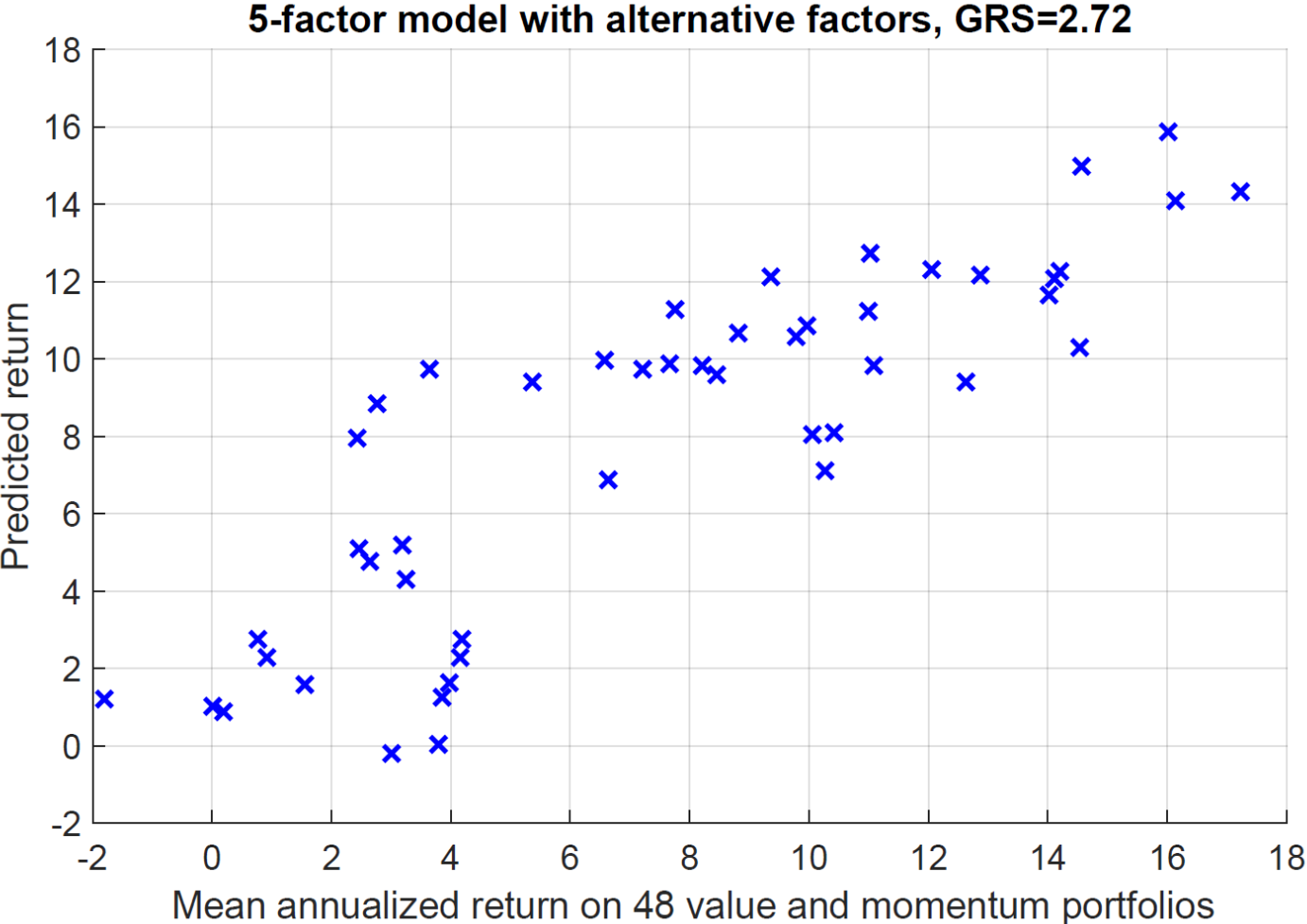
How About the Following (all growth rates):

- Assets of commercial banks
- Civilian labor force
- Passenger car registrations
- Loans and leases in bank credit
- New housing permits

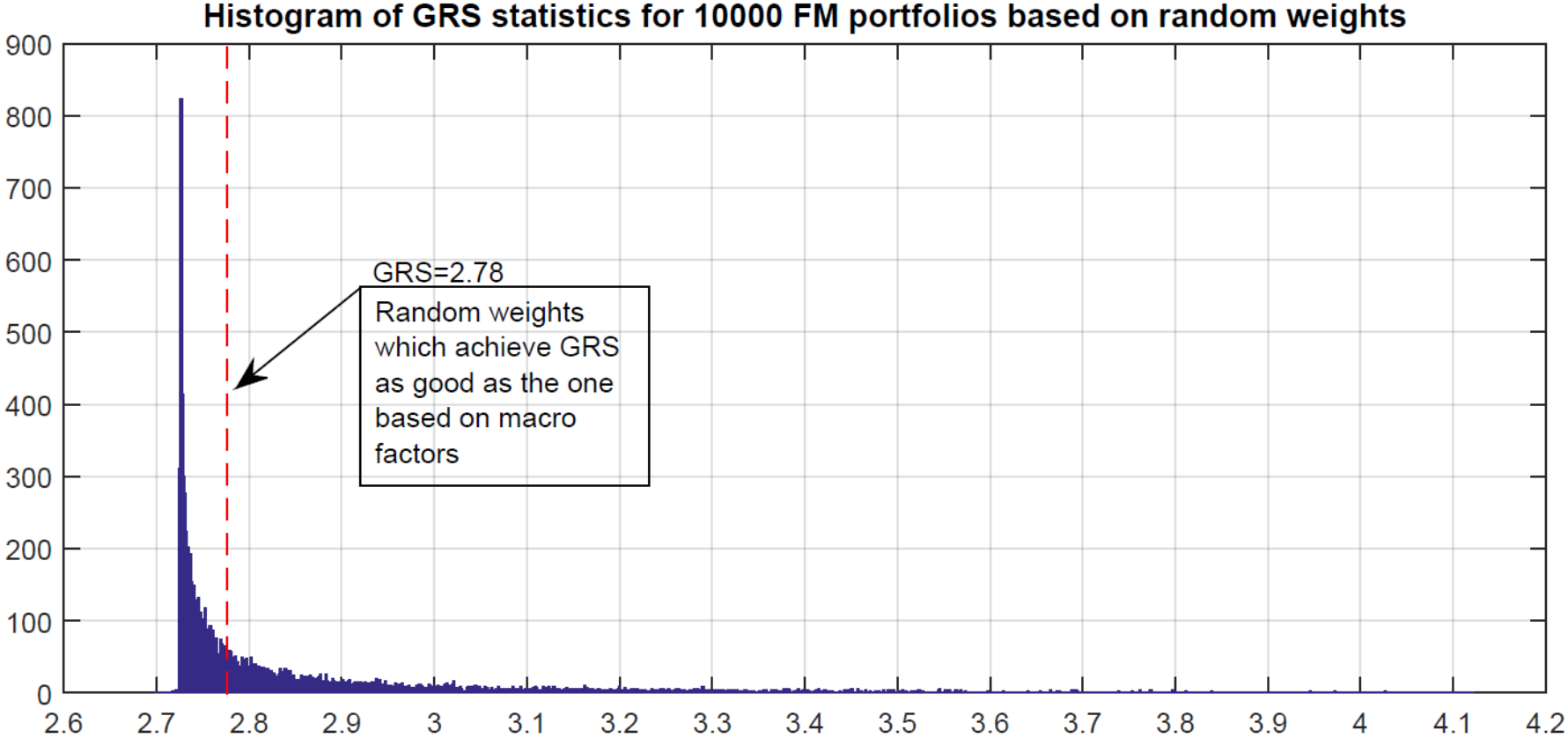
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Alternative US macro factors	5	2.72

Alternative Factors Work Too!



Random Factor-Mimicking Portfolios



Concluding Thoughts

- Key result: global macro factors related to global value and momentum returns!
- Too many degrees of freedom?
- Which factors most important? Why?