

Quantitative vs. Fundamental Credit Research

EDF or Rating.....that is the question?

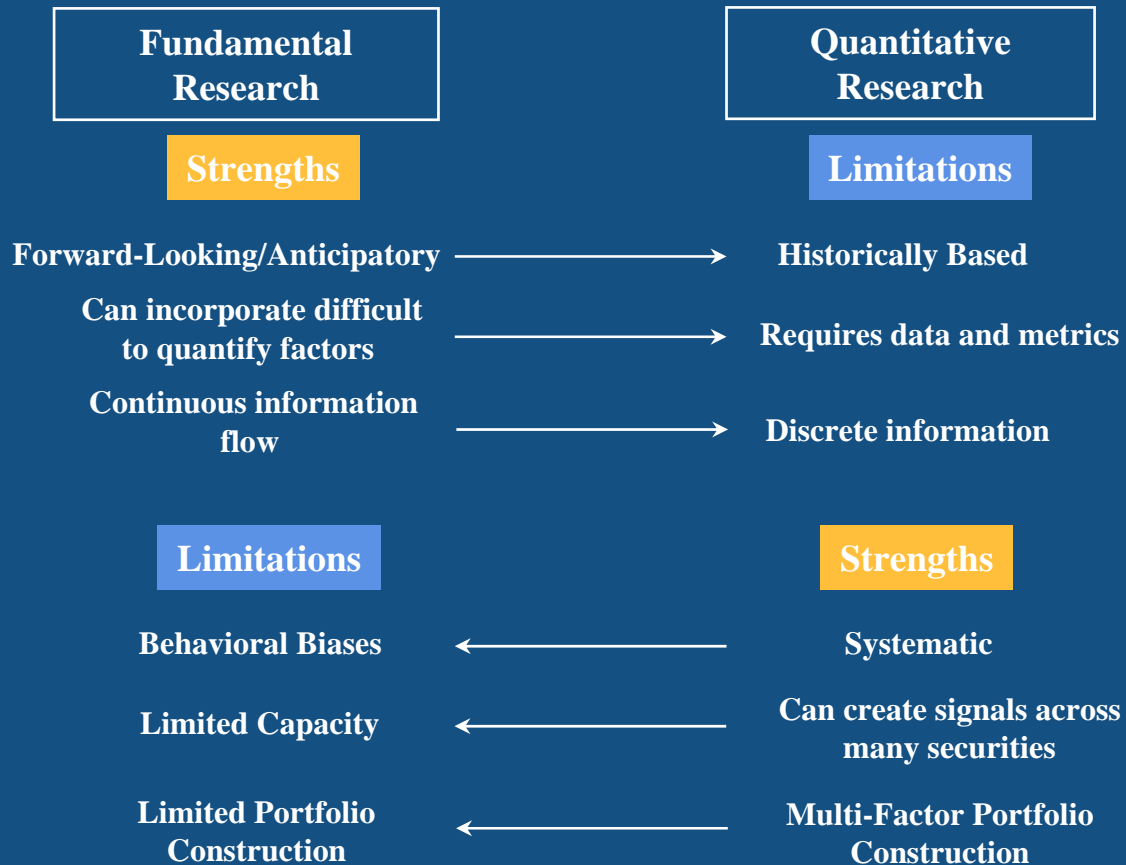
David L. Waldman
Managing Director
Director of Fixed Income
Quantitative Research

September, 2006



Quantitative vs. Fundamental Research

Different approaches can complement each other



Quantitative vs. Fundamental Research

The merger highlights common issues being faced by many players in the industry

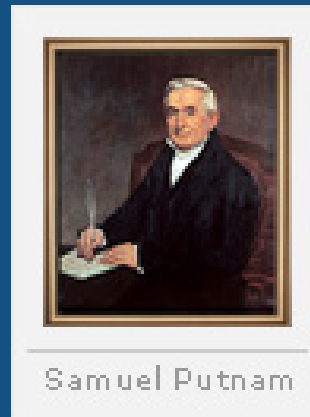


"This is a powerful combination that creates exciting opportunities for growth," said John Rutherford, Jr., President and Chief Executive Officer of Moody's Corporation. ".... This serves as an effective complement to our Moody's Investors Service ratings business, to which we remain strongly committed."



Quantitative vs. Fundamental Research

The perspective of an asset management firm may differ from a bank



Samuel Putnam

Similarities

- Measurement of default risk
- Internal fundamental research
- Both portfolio and security level analysis

Differences

- Horizon
- Regulatory environment
- Identification of mispricing/relative value
- Universe of securities



Quantitative vs. Fundamental Research

The application of quantitative resources to credit has “exploded”

Moody's Corporation & The Salomon Center, NYU Stern School of Business

THIRD CREDIT RISK CONFERENCE

Recent Advances in Credit Risk Research

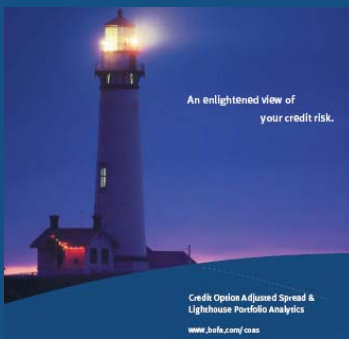


Valuing Credit Fundamentals: Rock-Bottom Spreads

LEHMAN BROTHERS

QUANTITATIVE CREDIT RESEARCH

Quantitative Credit Research



FIXED INCOME RESEARCH > FIXED INCOME PORTFOLIO STRATEGY

January 2005



An Introduction to CUSP®

(Credit Underlying Securities Pricing model)

<http://www.CUSP.com>

CreditGrades™

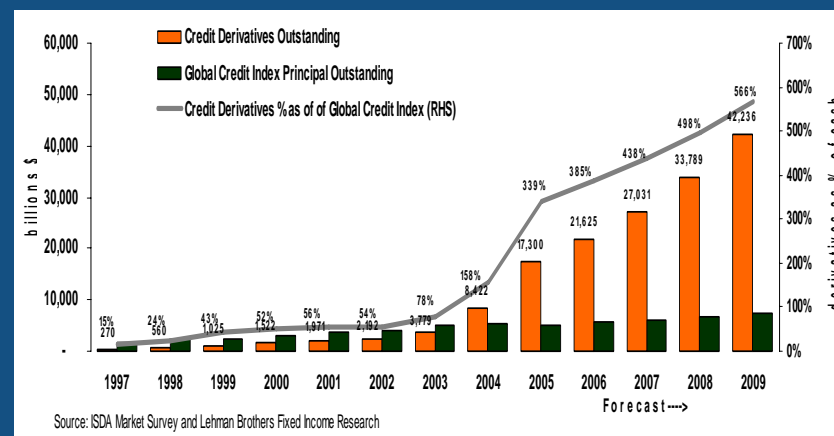
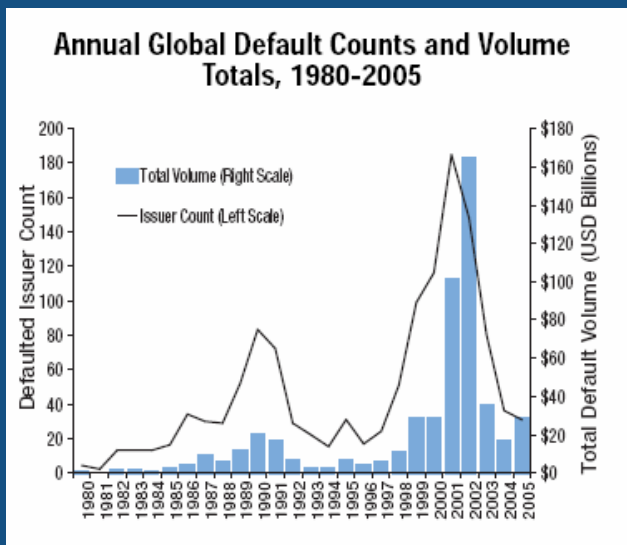
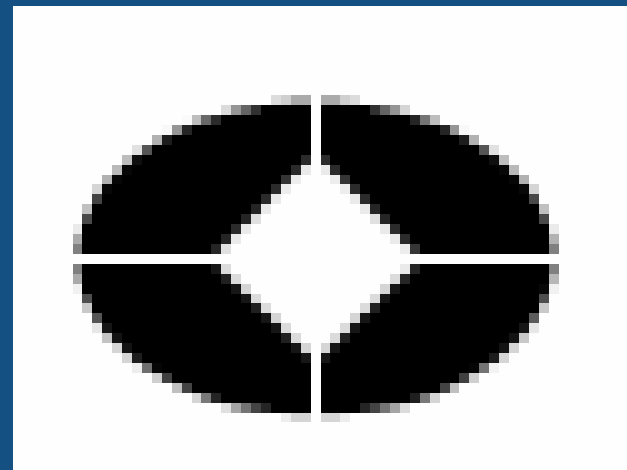
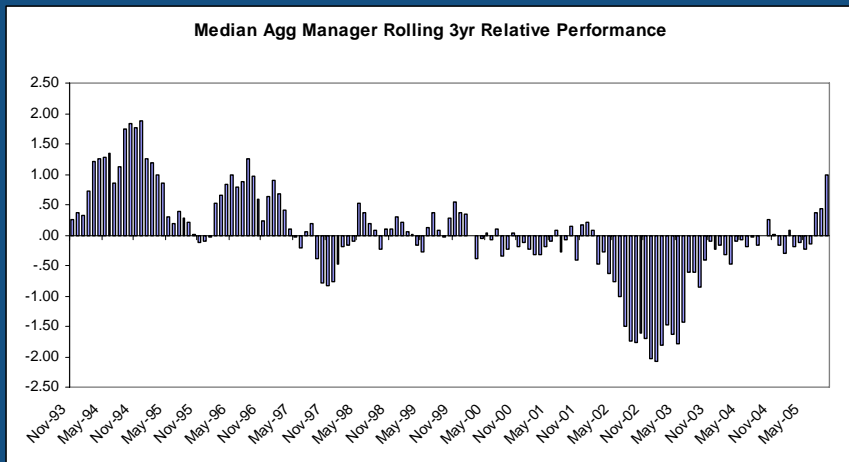
EQUITY-BASED
DEFAULT PROBABILITIES
and CREDIT SPREADS

by RiskMetrics Group

Issuers in your portfolio			
Simulated SPRN Score - 3/31/2005			
AAA	100	100	0.00
AA+	100	100	0.00
AA	100	100	0.00
AA-	100	100	0.00
A+	100	100	0.00
A	100	100	0.00
A-	100	100	0.00
BBB+	100	100	0.00
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BBB-	100	100	0.00
BB+	100	100	0.00
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Quantitative vs. Fundamental Research

The environment has contributed to the growth in quantitative credit research

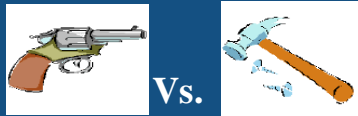


Quantitative vs. Fundamental Research

Despite a conducive environment...firm specific challenges often exist



An independent purely research oriented quantitative think tank



Quantitative research as a weapon not a tool



Complex research cannot be practical



We are building “black boxes”

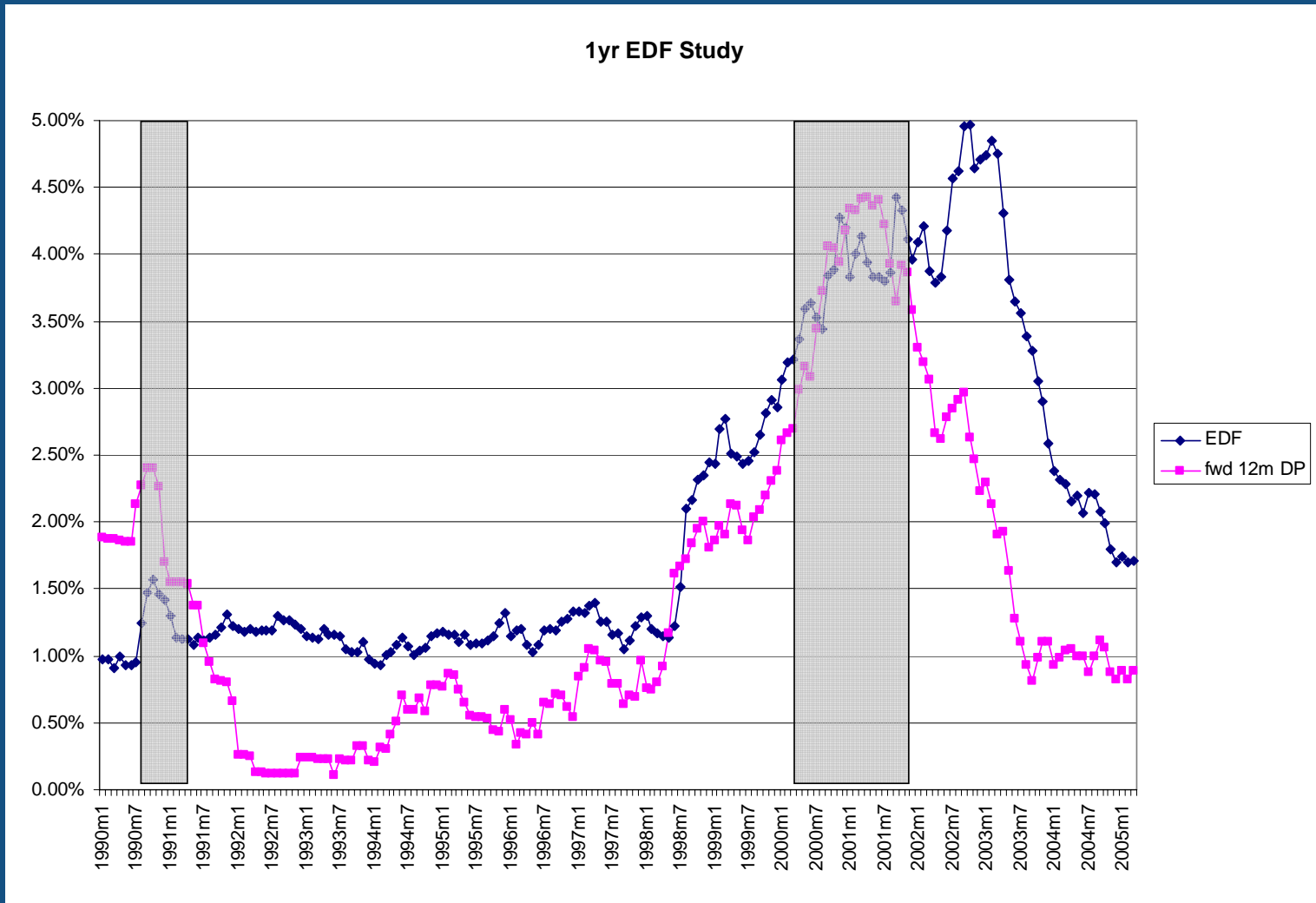


Quantitative research and risk management is about reducing risk



Quantitative vs. Fundamental Research

EDF's provide a unique element in the absolute measure of default risk



Quantitative vs. Fundamental Research

Objective assessment of any credit rating system is critical

	EDF Credit Measure			Ratings	Z-Score	Merton
	EDF (Rated Sample)	EDF (Z-Score Sample)	EDF (Merton Sample)			
1996-2004, Size > 30 Million*	0.86	0.81	0.81	0.75	0.60	0.66
1996-1999, Size > 30 Million*	0.88	0.82	0.82	0.77	0.59	0.72
2000-2004, Size > 30 Million*	0.84	0.77	0.77	0.72	0.58	0.60
1996-2004, Size 30- 300 Million	NA	0.74	0.75	NA	0.60	0.62
1996-2004, Size > 300 Million	NA	0.88	0.88	NA	0.58	0.71

Challenges to credit system assessment

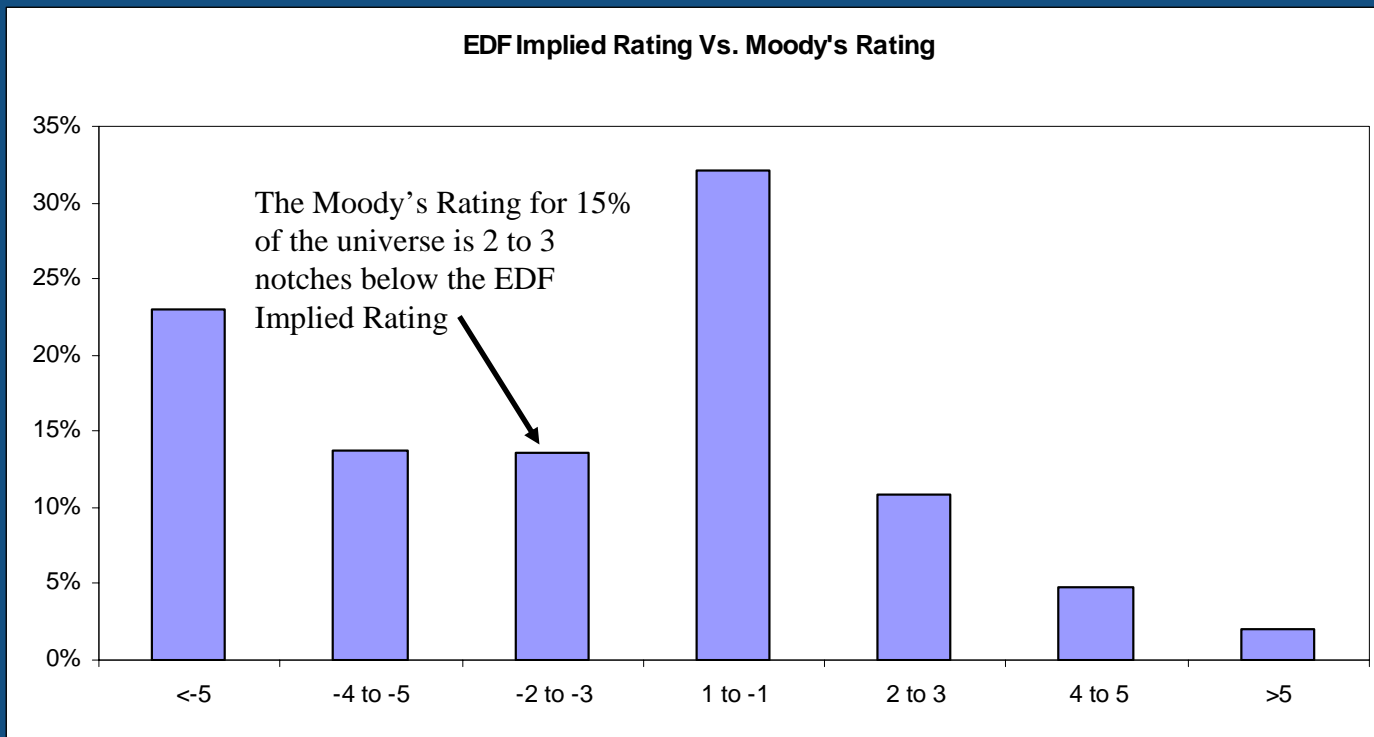
- Availability of data
- Lack of motivation/incentive
- Unstable rating systems
- Limited universe of defaults

Source: Moodys/KMV



Quantitative vs. Fundamental Research

What happens when signals provide different information?

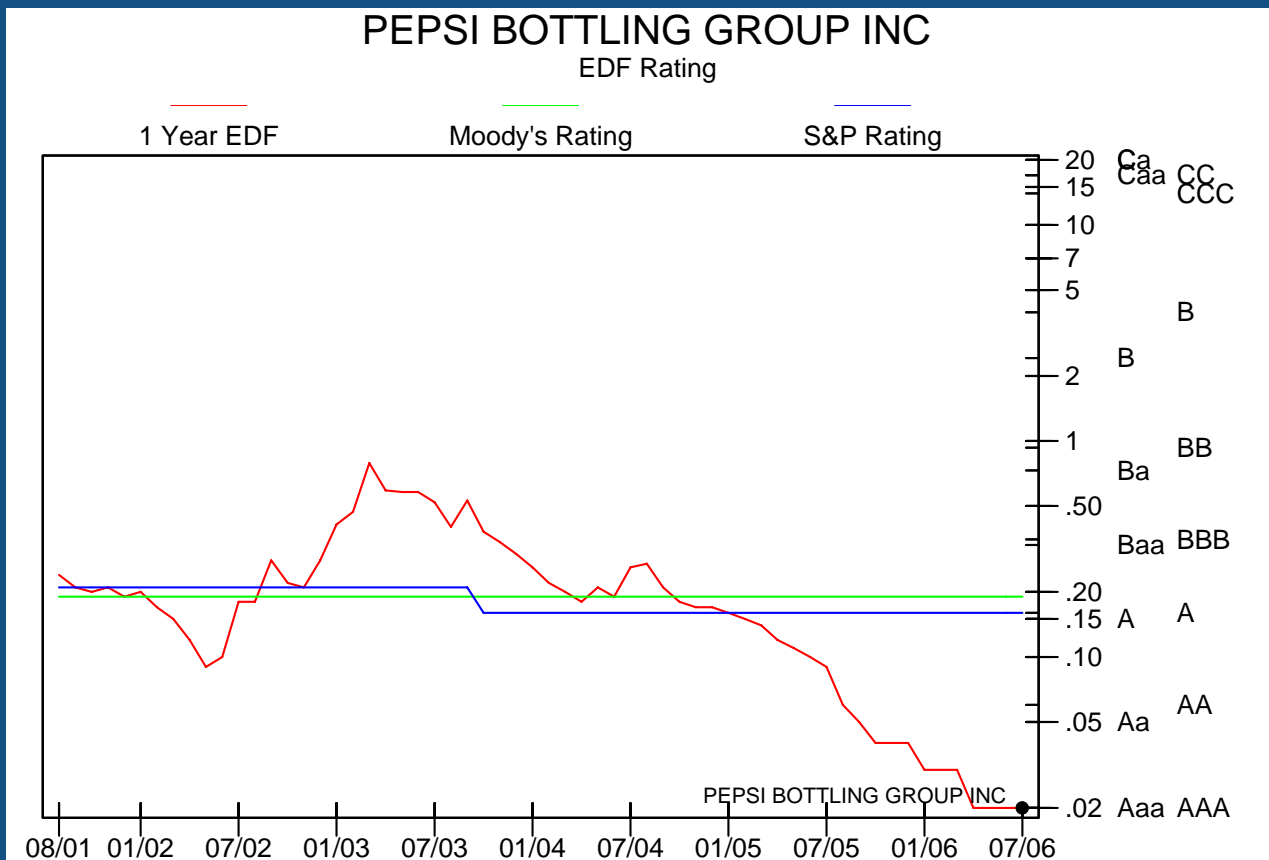


Source: Moodys/KMV



Quantitative vs. Fundamental Research

What happens when signals provide different information?



Source: Moodys/KMV



Quantitative vs. Fundamental Research

The practical incorporation of both EDFs and Ratings is more difficult

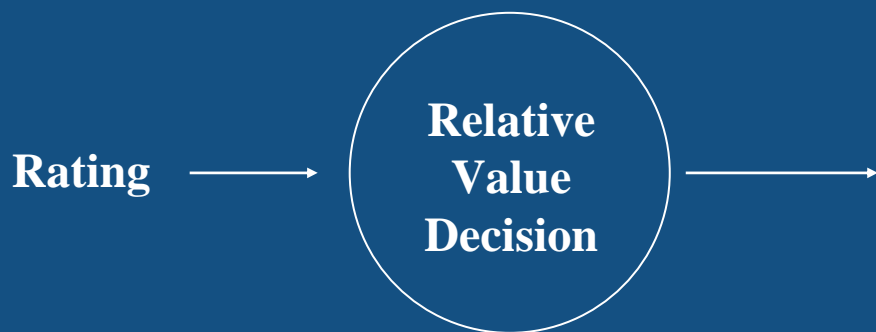


Quantitative vs. Fundamental Research

EDF's for risk and Ratings for Alpha?



- **Portfolio Expected Loss**
- **Market Tracking Error**
- **Issuer Concentration**
- **Industry Concentration**

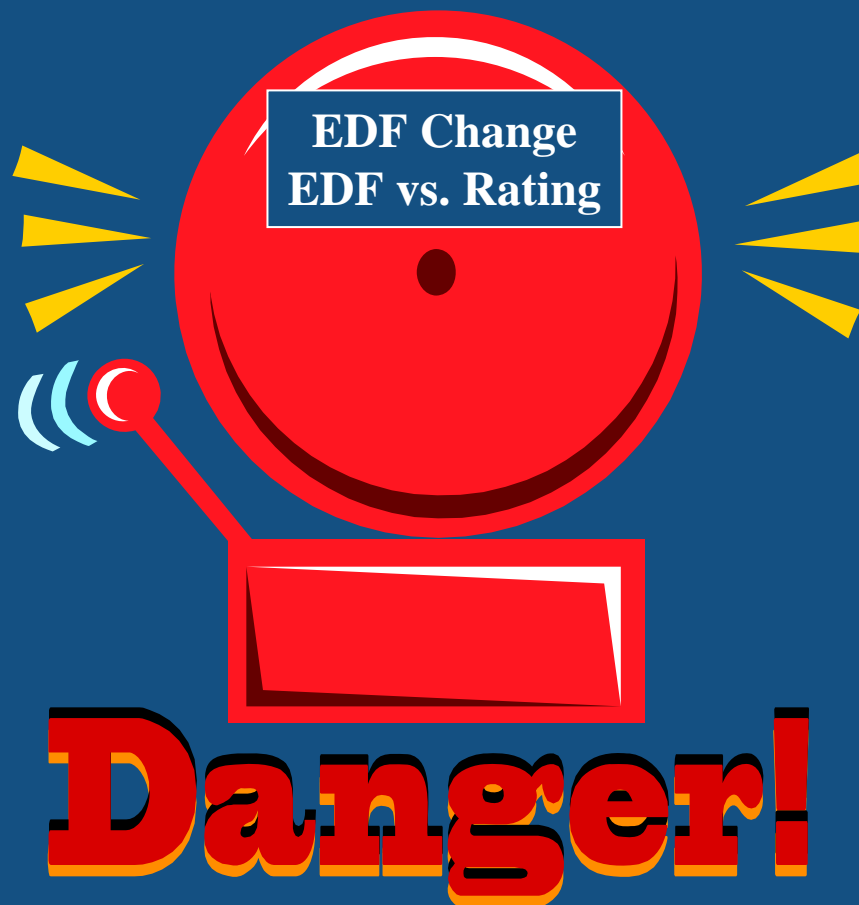


- **Identifying mispricings**
- **Fundamental research for forecasts**
- **Information filtering**



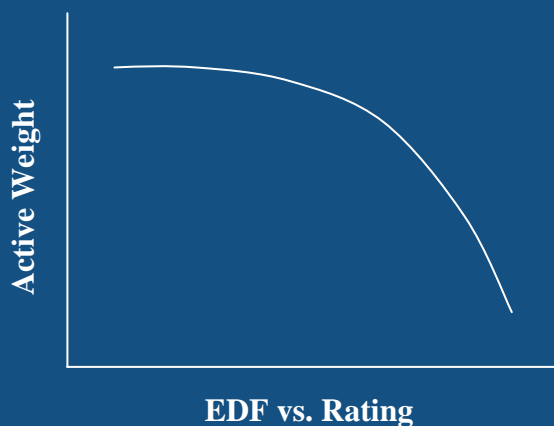
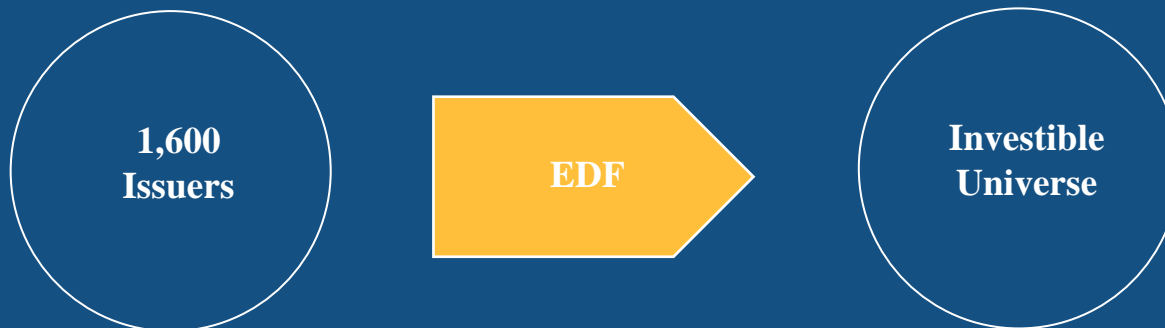
Quantitative vs. Fundamental Research

Utilize EDFs as an input into the fundamental credit process



Quantitative vs. Fundamental Research

Investment construction rules based upon EDF and Ratings



Quantitative vs. Fundamental Research

A portfolio manager incorporates both metrics based on personal judgment

EDF

Rating



Portfolio



Quantitative vs. Fundamental Research

Two independent, diversifying investment processes based off of both metrics

EDF



**EDF Based
Portfolio**

Rating

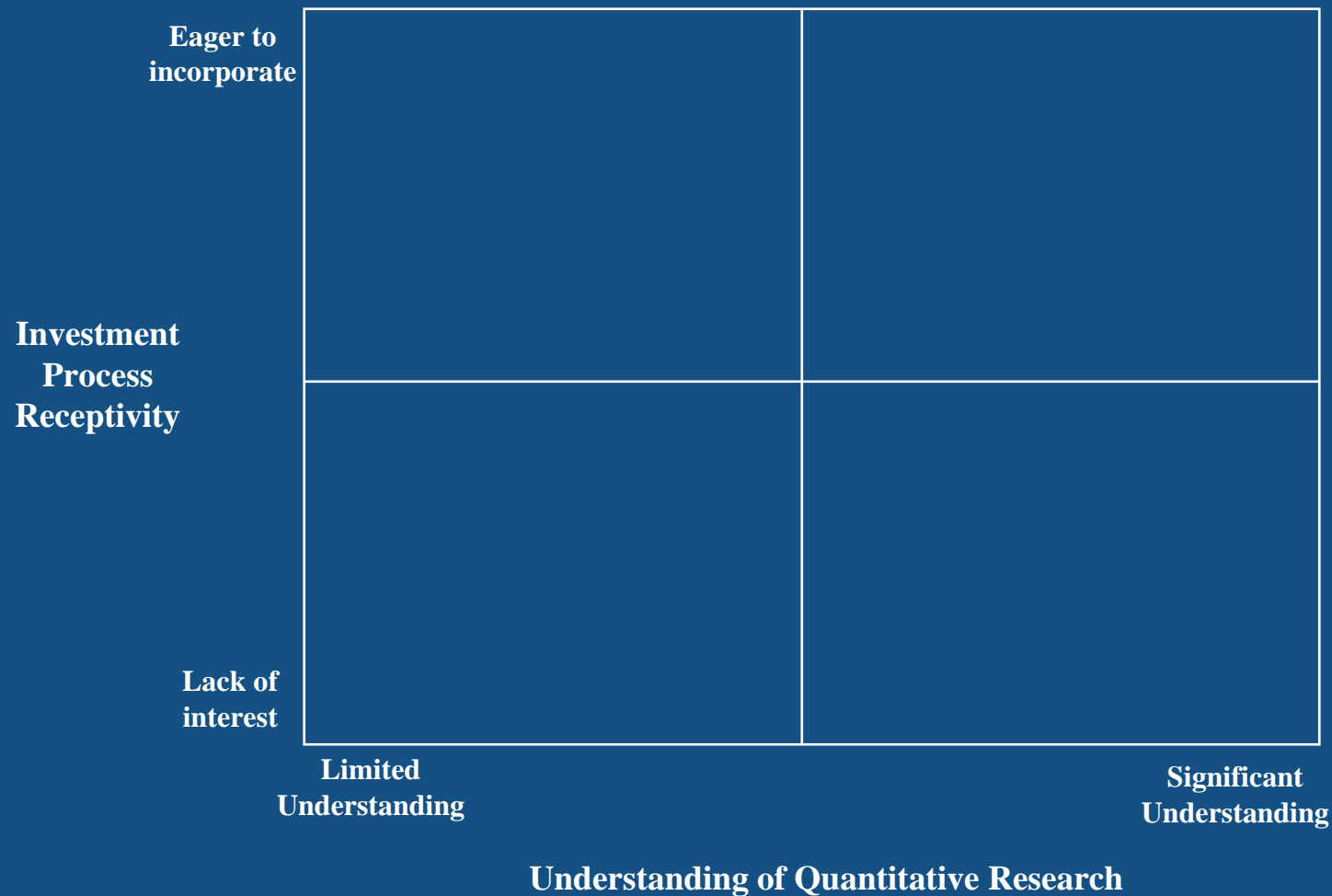


**Rating Based
Portfolio**



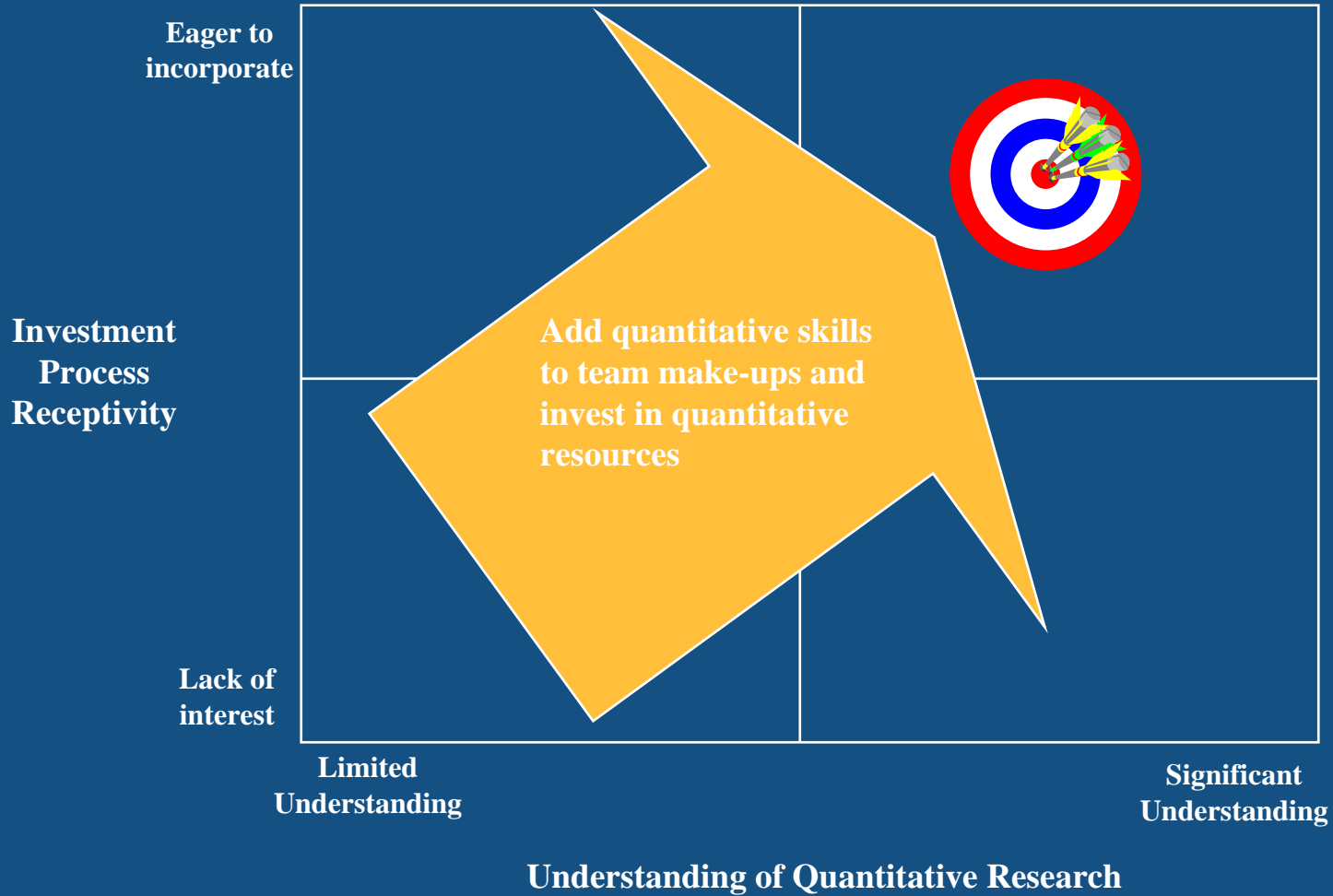
Quantitative vs. Fundamental Research

The background and skills of the investment team can have significant impact



Quantitative vs. Fundamental Research

Putnam's experience

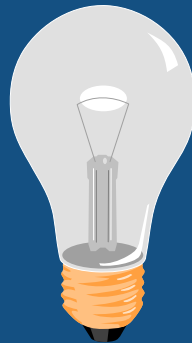


Quantitative vs. Fundamental Research

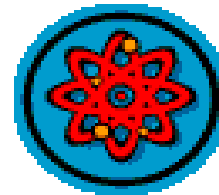
Putnam's experience



Candle



Incandescent
Light



Nuclear Fusion



Quantitative vs. Fundamental Research

Putnam's experience

- **The estimation of corporate risk**
- **Portfolio and credit tranche valuation**
- **An independent input into the investment team**
- **Actively researching the use of EDF for relative value**



Quantitative vs. Fundamental Research

Conclusions

- **The incorporation of a quantitative credit metrics into an investment process is heavily influenced by an organization's culture**
- **The application of quantitative resources to credit risk will continue into the future**
- **The methods to accommodate differences in quantitative and fundamental perspectives on default risk are varied and will continue to evolve over time**
- **Moody's partnership with KMV may provide one window into the industry's current challenges of how to blend somewhat competing perspectives/tools on measuring default risk**



Quantitative vs. Fundamental Research

Conclusions: What is the market saying???

