

WILEY FINANCE

# INSIDE THE BLACK BOX

The  
Simple Truth  
About  
Quantitative Trading

rishi k narang

<b>Preface</b>	<b>xii</b>
----------------	------------

<b>Acknowledgments</b>	<b>xv</b>
------------------------	-----------

## **PART ONE**

### **The Quant Universe**

#### **CHAPTER 1**

<b>Why Does Quant Trading Matter?</b>	<b>3</b>
The Benefit of Deep Thought	7
The Measurement and Mismeasurement of Risk	8
Disciplined Implementation	10
Summary	10

#### **CHAPTER 2**

<b>An Introduction to Quantitative Trading</b>	<b>11</b>
What Is a Quant?	12
What Is the Typical Structure of a Quantitative Trading System?	14
Summary	17

## **PART TWO**

### **Inside the Black Box**

#### **CHAPTER 3**

<b>Alpha Models: How Quants Make Money</b>	<b>21</b>
Types of Alpha Models: Theory Driven and Data Driven	22
Theory-Driven Alpha Models	24
Data-Driven Alpha Models	37
Implementing the Strategies	38

Blending Alpha Models	48
Summary	53
<b>CHAPTER 4</b>	
<b>Risk Models</b>	<b>55</b>
Limiting the Amount of Risk	57
Limiting the Types of Risk	60
Summary	64
<b>CHAPTER 5</b>	
<b>Transaction Cost Models</b>	<b>67</b>
Defining Transaction Costs	68
Types of Transaction Cost Models	72
Summary	77
<b>CHAPTER 6</b>	
<b>Portfolio Construction Models</b>	<b>79</b>
Rule-Based Portfolio Construction Models	80
Portfolio Optimizers	85
Output of Portfolio Construction Models	95
How Quants Choose a Portfolio Construction Model	96
Summary	96
<b>CHAPTER 7</b>	
<b>Execution</b>	<b>99</b>
Order Execution Algorithms	100
High-Frequency Trading: Blurring the Line between Alpha and Execution	105
Trading Infrastructure	107
Summary	108
<b>CHAPTER 8</b>	
<b>Data</b>	<b>111</b>
The Importance of Data	111
Types of Data	113
Sources of Data	115
Cleaning Data	117
Storing Data	122
Summary	124

<b>CHAPTER 9</b>	
<b>Research</b>	<b>125</b>
Blueprint for Research: The Scientific Method	125
Idea Generation	127
Testing	129
Summary	145

## **PART THREE**

### **A Practical Guide for Investors in Quantitative Strategies**

<b>CHAPTER 10</b>	
<b>Risks Inherent to Quant Strategies</b>	<b>149</b>
Model Risk	150
Regime Change Risk	154
Exogenous Shock Risk	158
Contagion, or Common Investor, Risk	159
How Quants Monitor Risk	166
Summary	168
<b>CHAPTER 11</b>	
<b>Criticisms of Quant Trading: Setting the Record Straight</b>	<b>169</b>
Trading Is an Art, Not a Science	169
Quants Cause More Market Volatility by	
Underestimating Risk	171
Quants Cannot Handle Unusual Events or Rapid	
Changes in Market Conditions	174
Quants Are All the Same	176
Only a Few Large Quants Can Thrive in the Long Run	178
Quants Are Guilty of Data Mining	179
Summary	182
<b>CHAPTER 12</b>	
<b>Evaluating Quants and Quant Strategies</b>	<b>185</b>
Gathering Information	186
Evaluating a Quantitative Trading Strategy	188
Evaluating the Acumen of Quantitative Traders	191
The Edge	193
Evaluating Integrity	196
How Quants Fit into a Portfolio	198
Summary	201

<b>CHAPTER 13</b>	
<b>Looking to the Future of Quant Trading</b>	<b>203</b>
<b>Notes</b>	<b>207</b>
<b>About the Author</b>	<b>212</b>
<b>Index</b>	<b>213</b>