

BAYLOR UNIVERSITY  
HANKAMER SCHOOL OF BUSINESS  
DEPARTMENT OF FINANCE, INSURANCE & REAL ESTATE

Finance 4366: Options, Futures, and Other Derivatives, Spring 2023  
Tuesday and Thursday, 2 - 3:15 pm in Foster 416

**Instructor:** Dr. James R. Garven  
Frank S. Groner Chair of Finance  
Professor of Finance and Insurance  
**Email:** James\_Garven@baylor.edu

**Home page:** [garven.com](http://garven.com)

**Course website:** [fin4366.garven.com](http://fin4366.garven.com)

**Campus office:** Foster 320.39

**Office Hours:** 3:30-4:30 TR, or  
by appointment

**Phone:** (254) 307-1317

## 1. Required Texts and Materials

- [John C. Hull, Options, Futures and Other Derivatives, 10th Ed, Prentice Hall.](#) Be sure to read “[Required Text Materials in Finance 4366](#)” prior to making a textbook purchase.
- [Readings](#) (assigned from sources other than the textbook) distributed from [the course website](#).

- *Wall Street Journal* (*WSJ*). If you haven't already signed up for your free *WSJ* student membership, then do so by going to <https://wsj.com/ActivateBaylor>. Once you have created your *WSJ* account, you can login [via the web](#) or if you prefer, either the [iOS](#) or [Android](#) app.

## **2. Prerequisites**

The only course prerequisite for Finance 4366 is Finance 3310. However, since Finance 4366 is a highly quantitative course, you also need to be “up to speed” in mathematics and statistics. The mathematics and statistics topics used in Finance 4366 are listed in the blog posting entitled “[Calculus and Probability & Statistics recommendations](#)” where links to Khan Academy tutorials for each of these topics are provided. [Section 1](#) of Professor Martin Osborne’s [math tutorial](#) is also a highly recommended resource for topics in mathematics which are applicable for Finance 4366.

## **3. Course Description**

During the past several decades, there has been explosive growth in the use of derivative securities such as options and futures for managing risk. Such securities are commonly referred to as “derivatives” because their values depend upon the values of other assets. This course presents a conceptual framework for understanding how to price derivatives and design risk management strategies.

## **4. Learning Objectives**

After completing this course, students should:

- Acquire a better knowledge of the specialized terminology of financial markets;
- Understand the nature of financial derivatives;
- Know how arbitrage pricing works and how prices are formed in competitive markets;
- Comprehend the concept of replicating portfolios or transactions;
- Understand how forward and futures contracts are priced in a competitive market;
- Know the different types of options and their characteristics and payoffs;
- Understand how the boundary conditions for option prices are determined;
- Know the ways the binomial and the Black-Scholes-Merton option pricing models are used to determine the fair value of a simple option;
- Be able to incorporate extensions to the basic models used to price futures and options to take account of dividends and, in the case of options, early exercise; and
- Be able to apply their knowledge of arbitrage pricing methods for options and futures to undertake simple financial engineering.

## 5. Grade Determination

The final course numeric grade is based upon the following equation:

$$\text{Final Course Numeric Grade} = .10(\text{Attendance and Participation}) + .10(\text{Quizzes}) + .20(\text{Problem Sets}) + \text{Max} \{ .20(\text{Midterm Exam 1}) + .20(\text{Midterm Exam 2}) + .20(\text{Final Exam}), .20(\text{Midterm Exam 1}) + .40(\text{Final Exam}), .20(\text{Midterm Exam 2}) + .40(\text{Final Exam}) \}$$

Since the final exam is comprehensive, this grading scheme allows students to redeem themselves on the final should they perform poorly on either of the midterms.

There will be two midterm exams. The date for the first midterm exam is February 21 (in-class), and the date for the second midterm exam is April 6 (also in-class). The dates for the two midterm exams are subject to change at the discretion of the instructor. The date and time for the Finance 4366 final exam is set according to the [official university calendar](#).

**Final Course Letter Grade.** The final course letter grade will be based upon the following schedule of final course numeric grades:

A	93 – 100%	C	73 – 77%
A-	90 – 93%	C-	70 – 73%
B+	87 – 90%	D+	67 – 70%
B	83 – 87%	D	63 – 67%
B-	80 – 83%	D-	60 – 63%
C+	77 – 80%	F	<60%

## **6. Contact Information**

My phone number (which also supports text messaging) is (254) 307-1317. I can also be reached by email at [James\\_Garven@baylor.edu](mailto:James_Garven@baylor.edu).

## **7. Attendance and Participation**

I expect students to attend class regularly, punctually, and meaningfully take part in class discussions and Q&A. In order to earn academic credit in Finance 4366, students are required (as per the [Hankamer Attendance Policy](#)), to attend at least 75 percent of all scheduled class meetings. If you cannot attend a scheduled class meeting for health/safety reasons, then take the following steps:

- Complete the [excused health/safety absence request form](#) for the scheduled class meeting (or meetings) you will miss.
- Email appropriate documentation (e.g., such as a copy of a signed medical excuse provided by a licensed medical professional) to [fin4366@gmail.com](mailto:fin4366@gmail.com).

## **8. Other Course Policies**

### **8.1 Grade Appeals**

If you feel that a graded quiz, problem set, or exam has not been fairly evaluated, then you may submit a grade appeal. In order to be considered, your appeal must be submitted no later than one week after the date of the exam or due date for the quiz or problem set. Any appeals submitted beyond this deadline will not be considered.

If you decide to submit an appeal, email it to [fin4366@gmail.com](mailto:fin4366@gmail.com) with the following subject header: “Grade Appeal for Finance 4366”. Identify the question(s)/problem(s) that you are appealing, along with a written explanation as to *why* you think the question(s)/problem(s) merit(s) re-grading. Keep in mind that re-grading implies three possible outcomes: a higher grade, the same grade, or a lower grade.

The appeal procedure described above constitutes the “Conference with Faculty Member” requirement set forth in [Baylor’s Academic Appeals Policy and Procedure document](#).

### **8.2. Electronics Policies**

The following electronics policies will be strictly enforced: 1) laptops and tablets may not be used in class without the instructor’s permission, and 2) calling or texting during class meetings is prohibited.

### **8.3. Late Work**

Students are required to turn in paper copies of completed [problem sets](#) at the beginning of class on the date at which each assignment is due. Furthermore, no make-ups are allowed for any missed quizzes (note: these rules do not apply in cases involving medical or family emergencies).

## **9. Course Blog**

A course blog has been established for Finance 4366. This provides a convenient and timely means for distributing important announcements outside of class. The address for the course blog is <http://derivatives.garven.com>, and it is linked from the ‘[Course Blog](#)’ button on the home page of the course website.

All students enrolled in Finance 4366 are *required* to subscribe to the course blog via email. Instructions for doing so are provided at <https://wp.me/paORhh-2c1>.

## **10. Course Schedule**

My plan is to cover selected chapters from the textbook. I will also assign other readings that are available from the readings page on the course website.

Although the course schedule is subject to change, the lecture notes page on the course website effectively serves as a course calendar, since it lists the sequencing of course material for the entire semester.

## **11. Academic Honesty and Integrity**

Plagiarism, or any form of cheating, involves a breach of student-teacher trust. This means that work on quizzes, problem sets, and exams submitted under your name is expected to be your own, neither composed by anyone else as a whole or in part, nor handed over to another person for complete or partial revision. Instances of plagiarism, or any other act of academic dishonesty, will be reported to the Honor Council and may result in failure of the course or expulsion from the University.

[Baylor's honor code](#) and the [Finance 4366 honor code](#) are important resources for understanding various types of academic dishonesty, and I expect my students to be intimately familiar with both of these documents. The standards set forth in both of these honor codes will be applied to all of your work in Finance 4366.

## **12. Baylor University Title IX**

Baylor University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities, and it does not tolerate discrimination or harassment on the basis of sex or gender. If you or someone you know would like help related to an experience involving sexual or gender-based harassment, sexual assault, sexual exploitation, stalking, intimate partner violence, or retaliation for reporting one of these type of prohibited conduct, please contact the Title IX Office at (254)710-8454 or report online at [www.baylor.edu/titleix](http://www.baylor.edu/titleix).

The Title IX office understands the sensitive nature of these situations and can provide



information about available on- and off-campus resources, such as counseling and psychological services, medical treatment, academic support, university housing, and other forms of assistance that may be available. Staff members at the office can also explain your rights and procedural options if you contact the Title IX Office. You will not be required to share your experience. **If you or someone you know feels unsafe or may be in imminent danger, please call the Baylor Police Department (254-710-2222) or Waco Police Department (9-1-1) immediately.** For more information on the Title IX Office, the *Sexual and Gender-Based Harassment and Interpersonal Violence policy*, reporting, and resources available, please visit [www.baylor.edu/titleix](http://www.baylor.edu/titleix).



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*Options, Futures, &  
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(FIN 4366)

Dr. James R. Garven

Financial Risk: Risk  
vs. Uncertainty

Financial Risk: Market  
Volatility (VIX)

# *Options, Futures, & Other Derivatives*

Finance 4366, Spring 2023

Dr. James R. Garven

Department of Finance, Insurance and Real Estate  
Hankamer School of Business  
Baylor University

January 17, 2023



## Risk versus Uncertainty

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Financial Risk: Risk  
vs. Uncertainty

Financial Risk: Market  
Volatility (VIX)

- Frank Knight (1921) defines risk as a quantity susceptible of measurement, and uncertainty as a form of risk that cannot be quantified.
- “Uncertainty must be taken in a sense radically distinct from the familiar notion of Risk, from which it has never been properly separated ... A measurable uncertainty, or ‘risk’ proper ... is so far different from an unmeasurable one that it is not in effect an uncertainty at all.”
- Today, “[Knightian uncertainty](#)” is commonly referred to as “ambiguity”.
- In this course, we focus primarily on *risk* as defined by Professor Knight.



## Financial Risk: Market Volatility (VIX)

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Financial Risk: Risk  
vs. Uncertainty

Financial Risk: Market  
Volatility (VIX)

- A particularly useful measure of future short-term market volatility is VIX; VIX is the ticker symbol for the Chicago Board Options Exchange (CBOE) Volatility Index.
  - VIX is intended to measure the “implied” volatility of a “synthetic” at-the-money option on the S&P 500 index, with 30 days to expiration.
  - Thus, VIX represents a short-term (30-day) forecast (market consensus) of future stock market (S&P 500) volatility.
  - VIX is commonly referred to as a “fear” gauge, in that it proxies for investor risk aversion.
  - Higher (lower) VIX → higher (lower) risk aversion → higher (lower) cost of risk!



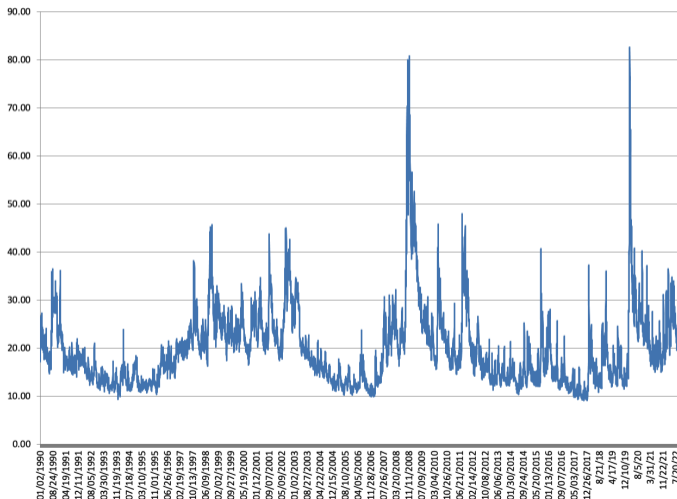
# VIX Time Series, 1/2/1990 - 12/30/2022 (n=8,215)

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## VIX Descriptive Statistics, 1/2/1990 - 12/30/2022 (n=8,215)

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No. of Observations	8,315	Date
Mean	19.66	
Standard Deviation	7.99	
Skewness	2.12	
Kurtosis	11.09	
Minimum	9.14	11/3/17
First Decile	12.05	
First Quartile	13.88	
Median	17.82	
Third Quartile	23.17	
Ninth Decile	29.04	
Maximum	82.69	3/16/20



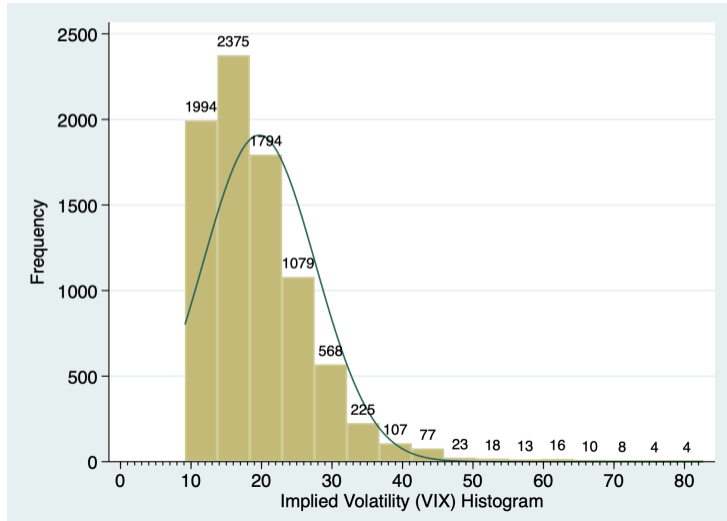
# VIX Histogram, 1/2/1990 - 12/30/2022 (n=8,215)

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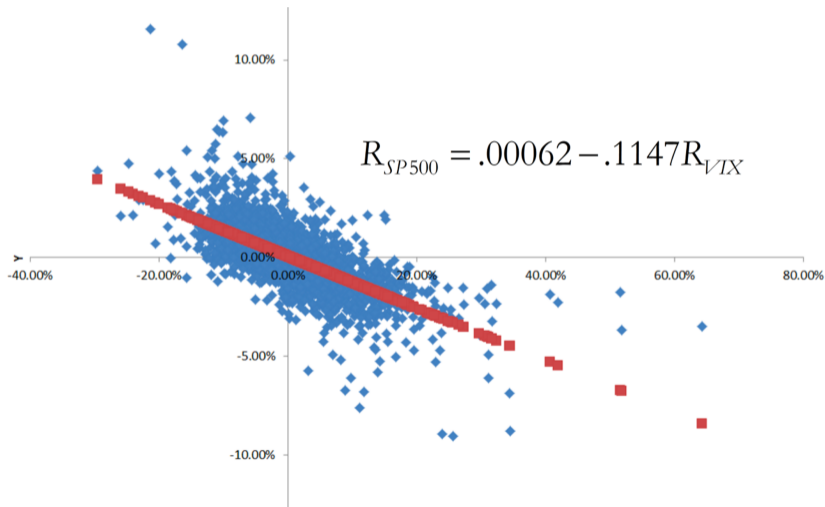
# SP500/VIX Daily Returns, 1/2/1990 - 12/30/2022 (n=8,215)

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See “On the relationship between the S&P 500 and the CBOE Volatility Index (VIX).”