DEPARTMENT OF STATISTICAL & ACTUARIAL SCIENCES

July 28, 2022

18th

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Schedule of Events

Location: Physics & Astronomy Building (PAB) Atrium

9:00 a.m.   Student and Faculty coffee and mingle

Titles and Abstracts

Samira Alipour, Financial Modelling, supervised by Dr. Cristiàn Bravo Roman

Sanghyun Jung, Statistics, supervised by Dr. Cristiàn Bravo Roman

The Impact of Publicly-Funded Business Advisory Services on Growth and Financial Wellness of Small and Medium-Sized Enterprises.

In this work, we present a causal analysis for the impact of business advisory services against training services from government programs that support small businesses on new entrepreneurs in Chile. The Chilean institution SERCOTEC provides two programs, differing in reach and cost. The first is a program focused on training entrepreneurs in different business skills. In contrast, the second assigns a direct advisor to each entrepreneur and offers personalized support during a set period. Comparing with the course service, we measure the impact the personalized support had one year after the support took place in terms of new contracts, new businesses, an increase in sales, and financial inclusion effects (new current accounts, new debt, and positive and negative financial events). We found that there is a positive average treatment effect (ATE) of the advisory services on investment value, while advisory services do not affect contract value. Also, the advisory services have positive ATE on debt, which can be explained by the increased investment

Anbang Liang, Financial Modelling, supervised by Dr. Marcos Escobar-Anel

A comparison of existing Affine GARCH models

Option pricing models continue to evolve due to the increased complexity of data. Researchers have to reduce the gap between model assumptions and reality in the search for better models. 20 years after the seminal work of Black-Scholes (1973) based on a Geometric Brownian Motion, Heston (1993) proposed a continuous-time stochastic volatility model closer to reality. The main drawback of this model is that it is difficult to estimate. To solve this problem, Heston and Nandi (2000) developed a closed-form option pricing model, known as the HN-GARCH model. Christoffersen and Jacobs (2006) extended the model to allow for non-Gaussian innovations, using the Inverse-

Yihui Lin, Financial Modelling, supervised by Dr. Marcos Escobar-Anel

Review and improvement of hedging approaches

Hedging is a way to reduce business risk while still making a profit on an investment. This project focuses on comparing the actual hedging effects of various delta hedging approaches. We use the a dataset of options on APPL (Apple Inc) to compare the hedging effectiveness of the various approaches. We consider a total of seven scenarios: the traditional Black Scholes approach, the minimum variance delta hedging approximation, the upper and lower bounds of the delta band of the Whalley-Wilmott approach, and the upper, median, and lower bounds of the delta band of the Zakamouline approach. In our sample dataset, the Whalley-Wilmott and Zakamouline approaches have better performance over other approaches.

Aichen Liu, Financial Modelling, supervised by Dr. Shu Li

The Impact of Investment Behaviors o

In Canada, most portfolio management is done by financial advisors or dealers. Compared to institutional investors, retail investors face disadvantages such as weak purchasing power and

Yixuan Liu, Financial Modelling, supervised by Dr. Reg Kulperger & Dr. Hao Yu

A Comparison Study on Traditional versus Robust Portfolio Optimization on Risky Assets.

Market volatility is inevitable. When making investments, investors either want a higher return or a lower risk. Under the traditional portfolio optimization theory, we assume the portfolio's volatility follows a multivariate normal distribution. This report introduces another model called Robust optimization, which considers the model-level uncertainty with semi-G-normal. The model displays the volatility as a varied number fluctuates within an interval. The Robust model generates a portfolio with the minimum variance center and fluctuating range. This report discusses two risky assets and uses two ten-year stock movements (2010 to 2020) as training set. The risk profile investigates that Robust optimization leads to a smaller variance uncertainty which illustrates that robust optimization performs better than traditional optimization. By observing two additional years' stock (2020 to 2022) as testing set and considering a half-year rebalancing, Robust optimization significantly overcomes the traditional method in terms of ROI, volatility center and volatility ambiguity.

Braedan Walker, Statistics, supervised by Dr. Simon Bonner