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**Abstracts of the Colloquium Talks Summer 2011**  
**Department of Mathematics**

<b>Date</b>	<b>Speaker and Title</b>	<b>Time/Location</b>
Thursday, Jun 16	Shandi Zhao, University of Dayton Mutual Fund Performance: Does Corporate Governance Matter?	<b>3:00 PM, SC 323</b>
Thursday, Jun 16	Wenyi Zhao, University of Dayton Political Connection and the Cross Sectional Stock Returns	<b>3:30 PM, SC 323</b>
Thursday, Jul 28	Andrea Toney, University of Dayton The Relationships of Three Grouping Methods on Student Achievement in a High School Geometry Classroom	<b>2:00 PM, SC 323</b>
Thursday, Jul 28	Terry Calvert, University of Dayton Mini Math Review Course: Will it Raise Math Placement Scores of Community College Students?	<b>2:30 PM, SC 323</b>
Tuesday, Aug 2	Abdulmalik Al Twaty, University of Dayton An Extension of Avery Type Fixed Point Theorems and the Role of Concavity in Applications	3:00 PM, SC 323
Thursday, Aug 4	Benjamin Stewart, University of Dayton Using a Linear Regression Analysis to show the predictive ability of the California Mathematics Diagnostic Testing Program's Calculus Readiness test regarding student achievement in an AP <sup>®</sup> Calculus AB course and on the AP <sup>®</sup> Calculus AB exam	<b>2:00 PM, SC 323</b>
Thursday, Aug 4	Jessica Westfall, University of Dayton Measuring the Impact of Open Note Quizzes on Chapter Test Scores in Algebra II while Controlling for Previous Ability, Gender, Attendance, and Grade Level	<b>2:30 PM, SC 323</b>

**Mutual Fund Performance: Does Corporate Governance Matter?**

Shandi Zhao

**Abstract:** This study examines the relationship between mutual fund performance and governance effectiveness on 5186 mutual funds between 2006 and 2010 using Morningstar's fiduciary grade. Ordinary Least Square models and Multinomial Logistic Regression analysis are employed in this research. Mutual fund performances are measured by Sharp Ratio and Morningstar's Star Rating, while mutual fund governance measures, which include Stewardship Grade and its five components are taken from the Morningstar's Principia database. Morningstar's Stewardship Grade takes into account managerial incentives, board quality, corporate culture, regulatory history, and fee structure. Both OLS and multinomial logistic models find that Stewardship Grade, corporate culture, and fee structure explain contemporaneous fund performance. These governance factors also help predicting future fund performance. Important corporate governance variables such as managerial incentives and board quality, however, fail to explain fund performance.

**Keywords:** Corporate governance, Mutual fund performance, Ordinary Least Square analysis, multinomial logistic analysis

### **Political Connection and the Cross Sectional Stock Returns**

Wenyi Zhao

**Abstract:** This research is to examine how the political connection impacts the listed companies' cross-section of stock returns. Previous studies provide mixed evidence on the effect of political connection on firm market value and performance. We provide fresh evidence on this issue based on a large sample of firms listed in China where a relationship-based economy dominates. Additionally, we construct a unique political index to measure the degree of firm political connection. Principal component analysis (PCA) and portfolio sorts are two main methods used in this research. We first use the PCA method to construct a political connection index for each firm from 2004 to 2009. This index incorporates various channels through which a firm's executives and board members are connected with a hierarchy of government officers. Further, we sort all the samples into decile portfolios based on political connection index to examine the relationship between political connection and the cross sectional stock returns. Our findings show that firms with high political connection earn lower stock returns than those with low connection, supporting rent seeking hypothesis. Our findings are also important for investors to better understand the political connection effects on the U.S. stock market, particularly in light of the government bailout of several large financial institutions during the recent credit crisis.

### **The Relationships of Three Grouping Methods on Student Achievement in a High School Geometry Classroom**

Andrea Toney

**ABSTRACT:** This study investigates the relationship between a grouping method used to place students into cooperative groups and achievement level in a high school geometry classroom. Three grouping methods were studied, teacher-selected, student-selected and randomly-assigned groups, using a counterbalance design with a simple crossover. Over the course of six chapters, that took sixteen weeks to accomplish, 58 students participated in all three grouping methods. Results revealed significant differences between the teacher-selected and student-selected groups and the teacher-selected and randomly-assigned groups. Furthermore, there was a significant difference between gender, ability-level, and class section.

### **Mini Math Review Course: Will it Raise Math Placement Scores of Community College Students?**

Terry Calvert

**ABSTRACT:** This study investigates the relationship between attending a math review course and scores on the COMPASS math placement test. Twenty-three students who had previously taken the COMPASS math placement test attended a week long math review course that concluded with the students retaking the math placement test. A control group consisted of twenty-four students who had taken the COMPASS test twice with no interventions. There was a statistically significant increase in the mean pre and post test scores for both the control and experimental groups. In addition there was significant difference in the mean gain scores between the experimental and control groups.

### **An Extension of Avery Type Fixed Point Theorems and the Role of Concavity in Applications**

Abdulmalik Al Twaty

**Abstract.** In this study we apply a recent Avery type fixed point theorem, which is an extension of the Leggett-Williams fixed point theorem. It has been demonstrated previously that applications to the

second order right focal boundary value problem are fruitful. We extend these applications to second order conjugate boundary value problems and higher order boundary value problems. We also prove an extension of the Avery type theorem and apply this extension to a boundary value problem with impulse.

**Using a Linear Regression Analysis to show the predictive ability of the California Mathematics Diagnostic Testing Program's Calculus Readiness test regarding student achievement in an AP® Calculus AB course and on the AP® Calculus AB exam.**

Benjamin W. Stewart, Rebecca J. Krakowski, C. Jayne Brahler

**Abstract:** A study was conducted at Wayne High School in Huber Heights, OH to compare student scores on the California Mathematics Diagnostic Testing Program's Calculus Readiness Test (CMDTP-CR), students' quarter grades in the AP® Calculus AB course, and students' scores on the AP® Calculus AB exam. The goal was to determine the predictive ability of the CMDTP-CR regarding the students' quarter grades in the course and on the AP® exam. The students took the CMDTP-CR at the beginning of the school year, completed the course, and took the AP® exam the first week of May. Correlation tests showed a statistically significant relationship between the CMDTP-CR and the students' quarter grades. The results showed there was a statistically significant difference between the groups of student AP® scores, and there was a statistically significant difference in performance based on gender. We concluded that we could accurately predict student performance in the AP® course and performance in the AP® exam.

**Measuring the Impact of Open Note Quizzes on Chapter Test Scores in Algebra II while Controlling for Previous Ability, Gender, Attendance, and Grade Level**

Jessica Westfall, Rebecca J. Krakowski, C. Jayne Brahler

**Abstract** This study analyzed the effectiveness of students using notes during quizzes on student achievement on chapter tests in an Algebra II class. The study was conducted with a convenience sample using a three period cross over design. Students were permitted to use self-generated notes during quizzes for two chapters and were not permitted to use notes on quizzes during one chapter. All students took all chapter tests without notes. Repeated measures multivariate general linear model (RM GLM) tests revealed that student use of notes did not have a significant effect on student achievement but gender and prior ability as determined by OAA scores did ( $p < .05$ ).

**Keywords:** open note, open book/open text, cheat sheets, math anxiety