

# **Division of Humanities and Social Studies**

COL Kenneth A. Inman, Jr., USMC  
Director

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# Economics Department

Professor John Eric Fredland  
Chair

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Faculty members of the Economics Department were actively engaged in research on a broad range of subjects in 2003-2004. Though every member of the department - professors and officers of varying ranks as well as Visiting Assistant professors - were involved in productive scholarly and/or creative activities, several of these publications, presentations and research areas deserve mention in this introduction.

Professor Karen E. Thierfelder, who was recognized as an "honorable mention" for the Naval Academy's Research Excellence Award, continued to develop models associated with trade and domestic agricultural supports. Associate Professor Suzanne K. McCoskey continued her association with the University of Pretoria (South Africa) where she was appointed "Honorary Professor" in August 2002. Her teaching and research there in summer 2003 was supported by a Fulbright Alumni Initiatives Award (AIA) Program grant. She coordinated a visit from a Pretoria faculty member to the Naval Academy (USNA) in fall 2003, with this visit also supported by the AIA grant. The grant will support further exchanges in the coming academic year.

Professor William R. Bowman continued his association with the Naval Postgraduate School (NPS) in Monterey, California. He gave lectures in Monterey in July 2003, did collaborative research with NPS faculty, and co-directed one Master's thesis there. In addition he co-directed three theses in the LEAD Master's program at USNA. Professor Eric Fredland also directed one officer on his thesis in the LEAD Master's program. Professor Rae Jean Goodman continued in her role as USNA's Director of Teaching and Learning. Among numerous activities in that role, she organized four workshops for the faculty on various aspects of effective college teaching, and she developed a Handbook for Teaching at the Academy. Professor Goodman served on the American Economic Association (AEA) Committee on Economic Education. She organized a poster session on active learning techniques for the annual meetings in January in San Diego, and she will organize a similar session for the annual meeting of the association in January 2005 in Philadelphia. She received a grant to run a regional active learning in economics workshop in October 2003, partially sponsored by the AEA committee.

Within the Economics Department, students majoring in Economics also distinguished themselves. For the first time in several years, the department had a student awarded with a Trident scholarship. Midshipman 1/C James J. Light worked with Assistant Professor Pamela M. Schmitt and Associate Professor Suzanne K. McCoskey on research into "An Empirical Investigation of Product Differentiation in the Retail Gasoline Industry." The Frederick L. Sawyer Prize, awarded to the best senior research paper by a graduating Economics major, was won by Midshipman 1/C Ryan A. Osgood.

## Sponsored Research

### **Mergers with Quality Differentiated Goods**

Researchers: Assistant Professor Matthew J. Baker and Assistant Professor Pamela M. Schmitt

Sponsor: Naval Academy Research Council (NARC to MB)

The impact of merger on the equilibrium price and quality of products was considered. Consumer demand for both products depends not only on own price and quality, but also on the price and quality of the other product. Cases were considered in which firms produce gross complements and gross substitutes. In both cases, it was found that merger may lower or increase both product price and quality. When firms produce complements, merger may lower price and increase quality. It was also found that there are situations under which merger between firms producing substitute products increases welfare. Finally it was found that merger may result in higher product quality but lower social welfare, or lower product quality but higher social welfare.

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### **The Regulation of Punitive Damages: Do Damage Caps Matter?**

Researcher: Assistant Professor Matthew J. Baker  
Sponsor: Naval Academy Research Council (NARC)

The object of this research is to apply the theory of litigation and settlement in understanding the incidence and amount of punitive damage verdicts. A state-by-state data set of damage verdicts by year for 1980-2000 is being developed to aid in this study.

### **Court Decisions and Equity Markets: Estimating the Value of Copyright Protection**

Researchers: Assistant Professor Brendan M. Cunningham and Assistant Professor Matthew J. Baker  
Sponsor: Naval Academy Research Council (NARC to BC)

A novel database on U.S. federal court decisions was used to measure the changes in the state of copyright protection in both statute and case law. An index of copyright breadth derived from this database was combined with a quarterly panel of firms in creative industries over the years 1986-1998. Using this data, the impact of changes in the breadth of copyright on the market valuation of firm equity was measured. It was assumed that equity markets will incorporate the value of copyright innovations into the price of equity. After controlling for a variety of fundamental determinants of firm-level excess returns to equity, it was found that a court case broadening copyright is associated with a statistically significant 23-45 basis points increase in a firm's excess return. The results obtain across both 4-5 year sub-samples and the size distribution of firms.

### **Faculty: Thy Administrator's Keeper? Theory and Evidence**

Researcher: Assistant Professor Brendan M. Cunningham  
Sponsor: Naval Academy Research Council (NARC)

This research presents a stylized principal-agent model of firms in higher education. The model incorporates information asymmetries over the actions chosen by administrators, as the agents of colleges and universities. The model predicts insufficient monitoring of administrators by trustees and, consequentially, shirking as a direct result of the non-profit status under which universities operate. It is shown that faculty will serve as "delegated monitors" given the proper incentives. This solution to the asymmetric information problem is most beneficial for the university when: 1) monitoring costs are lower and 2) administrators cannot impose significant punishment costs on faculty. The practices of organized faculty participation in governance and tenure naturally achieve such ends. Empirical evidence from a sample of colleges and universities in the United States supports the model's key prediction that features of a faculty's employment have significant effects on a university's financial outcomes.

### **Spatial Correlation of HIV-Aids Incidence in Sub-Saharan Africa**

Researcher: Associate Professor Suzanne K. McCoskey  
Sponsor: Naval Academy Research Council (NARC)

The adult incidence of HIV-AIDS in Africa has been discussed and modeled by both economists and health care professionals. Usually these models include socio-economic variables and variables which capture sexual attitudes and practices. In this research a more general, cross-section model of UN projected adult HIV-incidence in Sub-Saharan Africa was used to test for potential spatial correlation across borders. Emphasis was placed on whether spatial correlation implies that HIV-incidence has a regional impact which surpasses simple country analysis. Maximum likelihood estimation results showed that space does matter, with positive spillovers across borders. Urbanization and income growth were also shown to be significant.

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## **Multi-Period Rent-Seeking Contests with Carryover: Theory and Experimental Evidence**

Researchers: Assistant Professor Pamela M. Schmitt, Robert Shupp (Ball State University),  
Assistant Professor Kurtis J. Swope (USNA) and John Cadigan (American University)  
Sponsor: Naval Academy Research Council (NARC to PS) and Faculty Development Fund grant

The majority of theoretical and experimental research stemming from Tullock's (1980) model of rent-seeking considers static, single period contests. This study contributes to a growing body of research on rent-seeking games, by developing and experimentally testing a model in which a player's effort affects the probability of winning a contest in both the current and future periods. Theory predicts that rent-seeking effort will be shifted forward from later to earlier periods, with no change in overall rent-seeking expenditures relative to the static contest. Experimental results indicated a significant shift forward when "carry-over" was allowed and that the amount shifted was directly related to the carry-over rate. Finally, although experimental expenditures are greater than the Nash equilibrium predictions, overall rent-seeking effort in the carry-over contests were lower than in similar static contests.

## **Spatial and Quality Differentiation in a Duopoly Market**

Researcher: Assistant Professor Pamela M. Schmitt  
Sponsor: Naval Academy Research Council (NARC)

This study derives a theoretical model in which firms choose both product quality and spatial location. Firms played a three-stage game. Firms simultaneously chose location, then product quality and finally price. When firms chose different levels of product quality, the firm with the low quality good "chased" the firm with the high quality good, suggesting that minimal spatial differentiation is plausible. However, minimal spatial differentiation often led to monopolization of the market. In addition, firms differentiated their product spatially when product quality was the same. Therefore, outcomes with minimal (monopoly markets) and maximal (duopoly markets) spatial differentiation may emerge.

## **Taxes or Fees? The Political Economy of Providing Excludable Public Goods**

Researchers: Assistant Professor Kurtis J. Swope  
and Eckhard Janeba (University of Colorado at Boulder, NBER and CESifo)  
Sponsor: Naval Academy Research Council (NARC to KS)

This research provides a positive analysis of public provision of excludable public goods financed by uniform taxes or fees. Individuals differing in preferences decided, using majority rule, the provision level and financing instrument. The decisive voter has median preferences in a tax regime, but generally has above median preferences in a fee regime. Numerical solutions indicated that populations with uniform or left-skewed distributions of preferences choose taxes while a majority coalition of high and low preference individuals prefer fees when preferences were sufficiently right-skewed. Public good provision and welfare under fees exceeded that under taxes in the latter case.

## **The Effects of Domestic Agricultural Reforms and Market Access on Trade and Production in Less Developed Countries**

Researchers: Professor Karen E. Thierfelder  
and Sherman Robinson (International Food Policy Research Institute, IFPRI)  
Sponsors: International Food Policy Research Institute and Naval Academy Recognition Grant

Developing countries assert that they cannot compete in global agricultural markets with developed countries that receive domestic agricultural support. Concerns about agricultural subsidies derailed the World Trade Organization (WTO) talks in Cancun, held in September 2003. In this study, the effects of OECD were evaluated, particularly U.S. domestic support on global trade patterns. The effects of market access were also considered, noting that developing countries maintain high tariffs in agriculture. It was found that the Organization for Cooperation and Development (OECD) domestic reforms hurt the net food importing developing countries; when developed countries remove domestic support, the world price of agricultural products increases. However, it was also discovered that when all countries remove tariffs in agriculture, in addition to domestic reform, developing countries' imports and exports of agriculture increase. This result suggests that market access is more important than domestic reforms for developing countries. Furthermore, market access among developing countries is an important source of the gains.

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### **Old and New, Theory and Practice**

Researchers: Professor Karen E. Thierfelder  
and Mary E. Burfisher (U.S. Department of Agriculture, USDA)  
and Sherman Robinson (International Food Policy Research Institute, IFPRI)  
Sponsor: International Food Policy Research Institute and Naval Academy Recognition Grant

The objective of this paper was to review the major elements of the economics debate on new regionalism. First, a brief overview of the characteristics of old and new regionalism was presented. Then recent trends in the types of RTAs being formed were provided, focusing on delineating the elements of deep integration and the links between developed and developing countries that represent the main distinctions between new and old regionalism. The practical challenges to regional integration were also discussed, particularly the inclusion of sensitive sectors like agriculture. Then the use of old trade theory to evaluate new regionalism was reviewed and empirical work in this tradition. Next, Studies using new trade theory to analyze new regionalism were considered. It was concluded that progress in analyzing current and potential RTAs must move beyond the limited framework of old trade theory. Finally, some important knowledge gaps are identified, both theoretical and empirical, that should be the focus of future work.

## **Independent Research**

### **Credible Criminal Enforcement**

Researchers: Assistant Professor Matthew J. Baker and Thomas J. Miceli (University of Connecticut)

Economic models of crime and punishment implicitly assume that the government can commit to the fines, sentences, and apprehension rates it has chosen. This paper studied the government's problem when credibility is an issue. It was found that several of the standard predictions of the economic model of crime and punishment are robust to commitment, but that credibility may in some cases result in lower apprehension rates, and hence a higher crime rate, compared to the static version of the model.

### **The Customary Gender Division of Labor**

Researchers: Assistant Professor Matthew J. Baker and Joyce Jacobsen (Wesleyan University)

A customary gender division of labor is one in which women and men are directed towards certain tasks and/or explicitly prohibited from performing others. An explanation as to why the gender division of labor is so often enforced by custom is offered, and why customary gender divisions of labor generally involve both direction and prohibition. The model in this paper considered both problems in choice of specialty and human capital acquisition. It was shown that wasteful behavior may emerge due to strategic incentives in career choice and human capital acquisition, and that both problems may be mitigated through the customary gender division of labor. It was found, however, that a gender division of labor is not Pareto-improving; one gender is made worse off. Both the distributional effects and welfare gains to a customary gender division of labor decrease as opportunities to exchange in markets increase.

### **An Economic Theory of Mortgage Redemption**

Researchers: Assistant Professor Matthew J. Baker,  
Thomas Miceli (University of Connecticut) and C. F. Sirmans (University of Connecticut)

Redemption laws give mortgagors the right to redeem their property following default for a statutorily set period of time. This paper developed a theory that explains redemption periods as protecting landowners against the loss of non-transferable values associated with their land. A longer redemption period reduced the risk that this value will be lost but it also increased the likelihood of default. The optimal redemption period balanced these effects. Empirical analysis of cross-state data from 1920 provided evidence for these factors, in combination with political considerations, in explaining the passage of redemption laws.

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### **Human Capital and Hold-ups in Indigenous Societies: The Role of Customs and the Market**

Researcher: Assistant Professor Matthew J. Baker

This paper discusses the application of some simple models of contracting, bargaining, and human capital acquisition which can be employed to understand cross cultural variation in the form and nature of institutions governing land inheritance, marital residence, and the gender division of labor.

### **Output-sharing in Hunter-Gatherer Society and Optimal Resource Use Incentives**

Researchers: Assistant Professor Matthew J. Baker and Assistant Professor Kurtis J. Swope

This paper evaluated major theories of sharing in Hunter-Gatherer Societies, and concluded that no existing theory of sharing explains the nature of sharing very well. A theory was developed based on the idea that sharing, by manipulating individual production incentives, functions as a resource management device when access to resources is unrestricted. It was shown that our theory of sharing is able to explain several aspects of sharing in hunter-gatherer societies that are not well-explained by existing theory.

### **Post-marital Residence in Indigenous Society**

Researchers: Assistant Professor Matthew J. Baker and Joyce Jacobsen (Wesleyan University)

In pre-modern societies the residence of a newly-wedded couple is often decided by custom. While researchers have analyzed factors leading to particular post-marital residence patterns, no one has explained why a society should have a customary rule in the first place. The theory brought forth in this paper stems from contracting problems created by the nature of pre-marriage human capital investments. It is argued that a fixed post-marital residence rule may solve a hold-up problem by specifying marriage terms and limiting possibilities for renegotiation; the trade-off is the rule may prohibit beneficial renegotiation of post-marital location. Alternative residence rules (or lack thereof) are compared under different degrees of location specificity of human capital and environmental uncertainty. The theoretical results are applied to Murdock's (1967) 862-society data set, augmented with climate data. There was found some predictive ability in variables related to outside options, control over the environment, and potential degree of social control.

### **A Thought for Your Pennies: Optimal Coinage**

Researcher: Assistant Professor Brendan M. Cunningham

Recent research has emphasized the principle of least effort as a technique for determining the effectiveness and / or optimality of currency designs. This work presents a formalization of the principle of least effort in which coin usage and issuance is presented in an optimizing framework. Numerical techniques were used to find the optimal denominations in currency systems which employ four, five and six coins. The existing denominations in the United States, Canada, and the Euro area do not perfectly adhere to these optimal denominations, perhaps due to the influence of additional objectives pursued by currency issuers. The analytical framework established in this study was also applied to a scenario in which the one cent coin is eliminated from current coin systems and transaction values are rounded. The benefit associated with this alteration to the U.S. and Canadian currency systems, as measured by the average number of coins per transaction, was relatively large.

### **Product Variety in Broadcast Television News: Theory and Evidence**

Researchers: Assistant Professor Brendan M. Cunningham  
and Peter Alexander (Federal Communications Commission, FCC)

In recent years, the role of product variety, or diversity, in media industries has garnered increasing attention. This paper presents a positive model in which consumers derive uncertain utility from media output. It was demonstrated that consumer welfare was enhanced by the existence of variety in media output and that such variety was potentially driven

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by market structure. Two novel databases were employed measuring broadcast news content at the local and national levels in order to quantify media diversity. Mixed evidence was found showing that market structure is a statistically significant determinant of variety, conditional upon a variety of demographic and economic determinants. In contrast, it was found that media substitutability displays a positive, significant and robust relationship with variety.

### **An Empirical Investigation of Fiscal and Trade Balances in South Africa**

Researchers: Associate Professor Suzanne K. McCoskey,  
and René Koekemoer (Department of Economics, University of Pretoria)

In recent years there has been a wide-ranging debate on the potential relationship between fiscal and trade balances. In this paper the historical relationship between fiscal policy (the budget deficit) and the trade balance (current account) in South Africa was investigated. Utilizing annual data within a national accounting framework, in order to test the hypothesis that a link between fiscal and trade balances occurred through the Mundell-Fleming transmission mechanism. The results showed strong causal relationships within the Mundell-Fleming system although in several cases, most notably the impact of the interest rate on the exchange rate, the direction of the impact did not follow a priori expectations. Direct evidence on the twin deficits hypothesis was mixed. For the period 1979-1999 evidence was found that the fiscal balance impacts the current account although not the reverse. Finally, when correcting for non-stationarity, it was found that the current account to be a significant series to both the interest rate and exchange rate.

### **Industrial Concentration in South Africa**

Researchers: Associate Professor Suzanne K. McCoskey,  
Clifford Naudé (CSIR, South Africa) and René Koekemoer (Department of Economics, University of Pretoria)

This paper examines the determinants of manufacturing industry concentration in South Africa. The identification of factors influencing the concentration of industry in South Africa is particularly complex and interesting given that socio-political objectives have played a significant role in industrial strategy between 1946 and 1994, the era of apartheid and the policy of industrial decentralisation. Provincial specific data were used to explain the extent to which industries have been dispersed or clustered. It was concluded that the manufacturing industry in South Africa is heavily concentrated and while much of this pattern can be attributed to the individual characteristics of the provinces, there remains unexplained variation due, perhaps, to past distortions of the industrial core and periphery.

### **U.S.-based NGOs in the Aid Community: Friends or Foils in the Promotion of the ‘Washington Consensus’**

Researcher: Associate Professor Suzanne K. McCoskey

Non-governmental organizations (NGOs) have played an increasingly important role in the humanitarian aid and economic development community. From the perspective of financial donation, when compared to other players in the aid community, NGOs have two potential advantages: (1) they can be more efficient than government or multinational funding sources; and (2) they can provide a specific expression for private individuals and corporations who do not find their preferences reflected in governmental donation patterns. In this paper, data on NGO activity and funding was considered to ask whether NGOs engage in a conditional aid policy and whether public funding of NGOs has an impact on their activities.

### **Price Effects of Product Differentiation in the Minneapolis Retail Gasoline Industry**

Researchers: Assistant Professor Pamela M. Schmitt  
and Melanie J. Stock (U.S. Naval Academy, Class of 2002)

Using daily price data for Minneapolis retail gas stations, the effect of spatial and quality differentiation on price is empirically investigated. The further away the closest competitor, the lower the station's price. The further away the second closest competitor, the higher the station's price. In addition, when a retail gasoline station has a food mart, a service station, pay at the pump, full service, or more pumps it charges a higher price. A car wash lowers the station's price. Most quality factors for a firm's competitor do not significantly affect the station's price.

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## **Costly External Financing and Firm Financing Patterns in an Equilibrium Model of the Business Cycle**

Researcher: Assistant Professor Katherine A. Smith

Can costly external financing explain aggregate financing and investment patterns over the business cycle? This paper proposes an answer to this question by examining quantitative implications of a model where liquidity constraints and transaction costs make financing choices relevant to investment decisions. By creating a wedge between the three main sources of financing (retained earnings, external equity, and debt), these financial frictions generate a firm financing hierarchy. As the economy responds to technology shocks, the form and cost of financing fluctuates. The changing cost of capital, in turn, impacts the quantity of investment and the return on capital. In this manner, the model produces an endogenous pecking order of financing instruments that explains observed aggregate financing and investment patterns. In addition, the model partially explains observed asset returns.

## **Inflation, Interest Rates, and the Precautionary Demand for Money When Firms Face Liquidity Constraints**

Researcher: Assistant Professor Katherine A. Smith

When firms have limited access to capital, they have an incentive to build-up retained earnings in order to self-finance rather than pay external financing fees or become liquidity constrained in the future. I would like to develop a model where firms accumulate retained earnings by increasing investment in fixed capital and money holdings. Since money balances depreciate with the rate of inflation, how much firms invest in fixed capital versus money, depends crucially on inflation. Through its impact on demand for fixed capital, in a general equilibrium set-up, the inflation rate also alters the interest rate, consumption and consumer welfare, creating real effects. This precautionary motive for holding money leads to two important questions. First, if firms are holding money for precautionary reasons what is the optimal inflation rate? Second, in this environment how does monetary policy uncertainty (policy shocks) impact the business cycle? To answer these questions this paper will employ numerical methods to solve a decentralized dynamic general equilibrium model in which firms are able to hold cash and face external financing costs and constraints.

## **Margin Calls, Trading Costs, and Asset Prices in Emerging Markets: The Financial Mechanics of the ‘Sudden Stop’ Phenomenon**

Researchers: Assistant Professor Katherine A. Smith  
and Enrique Mendoza (University of Maryland)

“Sudden Stops” experienced during emerging markets crises are characterized by large reversals of capital inflows and the current account, deep recessions, and collapses in asset prices. This paper proposes an open-economy equilibrium asset-pricing model in which financial frictions cause Sudden Stops. Margin requirements impose a collateral constraint on foreign borrowing by domestic agents and trading costs distort asset trading by foreign securities firms. At equilibrium, margin constraints may or may not bind depending on portfolio decisions and equilibrium asset prices. If margin constraints do not bind, productivity shocks cause a moderate fall in consumption and a widening current account deficit. If debt is high relative to asset holdings, the same productivity shocks trigger margin calls forcing domestic agents to fire-sell equity to foreign traders. This sets off a Fisherian asset-price deflation and subsequent rounds of margin calls. A current account reversal and a collapse in consumption occur when equity sales cannot prevent a sharp rise in net foreign assets.

## **Demand for the Washington, D.C. Metro**

Researchers: Assistant Professor Kurtis J. Swope  
and Robert Franklin (U.S. Naval Academy, Class of 2003)

This paper uses station-by-station panel data from 1977-2001 to estimate the demand for passenger boardings on the Metrorail in Washington, D.C. The estimation results were compared using fixed effects regression, random effects generalized least squares, random effects maximum-likelihood, and generalized estimating equations. The results were invariant to the estimation method, but were sensitive to inclusion of an explanatory variable that measures level of roadway

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congestion. The estimated price elasticity when roadway congestion was excluded was approximately -0.22, slightly lower than the 0.3 elasticity estimate for public transit commonly found in the literature. However, if one accounts for roadway congestion, the price elasticity increased significantly to 0.9. This suggested a potential downward bias in previous estimates that do not include a measure of roadway congestion. One also finds a statistically significant positive, but inelastic short-run cross-price elasticity of demand between gasoline and the Metrorail of approximately 0.3 without, and 0.2 with, the roadway congestion variable. This suggested that the choice of transportation mode may be sensitive even to short-run fluctuations in motor fuel prices. Finally, although the results indicated a trend away from Metro use over time, Metro ridership was shown to be positively correlated with roadway congestion and per capita income in the Washington, D.C. area.

### **On the Role of the Hostage in Ultimatum Games**

Researchers: Assistant Professor Kurtis J. Swope  
Assistant Professor Pamela M. Schmitt (USNA) and Robert Shupp (Ball State University)

This paper examines offers and responses in a simple ultimatum bargaining experiment that includes a third, non-decision-making subject, or hostage, whose payoff is affected by the bargaining outcome. The payoff to the hostage when the offer is accepted was separate from the primary bargaining pie and varied from one-third to the entire pie (\$5, \$10, or \$15). All parties, including the hostage, received no payoff for a rejection. The results demonstrated that while responders may behave altruistically towards a third, non-decision-making player, they were more concerned with their payoff relative to that of the proposer. It was also found that responders were more likely to reject an offer if the offer left them with an inequitable payoff relative to the hostage. Finally it was discovered that once one controls for personality type, as measured by the Myers-Briggs test indicator (MBTI), offers appeared to be unaffected by the presence of a hostage. One explanation for the unresponsiveness of offers is that the incentive to provide higher offers to counter the increased probability of rejection is offset by the proposer's own concern for equity vis-à-vis the hostage. Though not a direct test of the Fehr and Schmidt (1999) and Bolton and Ockenfels (2000) models, the results were qualitatively consistent with their predictions (to the extent that responders are more likely to reject).

### **Personality Preferences and Pre-commitment: Behavioral Explanations in Ultimatum Games**

Researchers: Assistant Professor Kurtis J. Swope, Assistant Professor Pamela M. Schmitt (USNA),  
Robert Shupp (Ball State University) and Justin Mayer (U.S. Naval Academy, Class of 2003)

This paper used responder pre-commitment and the Jungian theory of mental activity and psychological type, as measured by the widely-used Myers-Briggs Type Indicator (MBTI), to gain insight into subject behavior in a laboratory ultimatum bargaining experiment. Three experiment design details are noteworthy: (1) one design requires responders to make a *nonbinding* pre-commitment rejection level prior to seeing the offer, (2) one design requires responders to make a *binding* pre-commitment rejection level, and (3) one design includes a third person (or "hostage") who makes no decision, but whose payment depends on the proposal being accepted. In general, it was found behavior in the experiment to be consistent with hypotheses based on theoretical underpinnings of the MBTI and its descriptions of psychological type.

### **An Analysis of South Africa's Value Added Tax**

Researchers: Professor Karen E. Thierfelder, Delfin Go (World Bank), Marna Kearney (University of Pretoria),  
and Sherman Robinson (International Food Policy Research Institute, IFPRI)

A value added tax (VAT) was introduced in South Africa in 1991 to replace the general sales tax (GST). Initially there were some questions on the ability of VAT to replace GST as a revenue source for the government. However, the overall performance of the VAT, as a revenue generator seems satisfactory; in 2002 the government stated that the VAT is a dependable and broad-based revenue source. The VAT in South Africa is administered with a rebate for intermediate input use. Retail sellers pay the statutory rate times the value of output minus the VAT payments paid by the intermediate inputs used in production. In this paper, the effect South Africa's VAT has on welfare was evaluated. A computable general equilibrium (CGE) model with detailed specifications of South Africa's tax system was used. First, the effects of removing the VAT and replacing the revenue by a proportional increase in direct taxes were described. Then the effect alternative statutory rates have on the regressiveness of the VAT was considered.

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## **Deriving a Global Social Accounting Matrix from GTAP version 5 Data**

Researchers: Professor Karen E. Thierfelder and Scott McDonald (Sheffield University, UK)

This paper reports a method for converting version 5 of the GTAP database into a global SAM that is stored in GAMS data exchange (GDX) format. The focus of attention was on the generation of a SAM representation of the GTAP database that was fully consistent with the GTAP model, as such the resultant SAM can be readily used to calibrate a version of the GTAP model that has been coded in GAMS. This was supplemented with a brief discussion of how a variety of alternative SAM representations can be derived from the SAM representation of the GTAP global SAM and some comments on possible developments of the database that may enrich the representation of global economic transactions captured by the GTAP database.

## **Midshipman Research Course Projects**

### **Job Auctioning in the Navy:**

#### **Experiments Designed to Test Equilibrium Outcomes in Job Market Auctions**

Researcher: Midshipman 1/C Cody Lutke, USN

Adviser: Assistant Professor Kurtis J. Swope

The military is currently seeking to use auctions to improve its market. The United States Navy has conducted first-price, sealed bid-auctions to assign unwanted jobs in distant locations. Sailors are the “sellers of labor” and they bid on wage bonuses. This research used laboratory economic experiments to determine how changes in the number of bidders, and knowledge of the number of bidders, impacted equilibrium bids and the efficiency of the auction mechanism.

### **Employee Equity Ownership and its Effects on Firm Output**

Researcher: Midshipman 1/C Christopher Miller, USN

Adviser: Assistant Professor Brendan M. Cunningham

In recent years, there have been significant changes in the compensation structures of American firms. Changes in technology have facilitated the upward trend in equity ownership per American. The modern employee incentive package emphasizes bonuses, threat of dismissal and pay reduction, renegotiated contracts, options ownership plans, equity based pension plans, and threat of hostile takeover. By aligning ownership motives with employee (manager) goals, a more efficient production process may be created. These changes help to minimize the principal-agent costs in order to improve firm output. Increases in firm output lead to direct increases in firm profitability. Moreover, economic theory suggests that there should be an optimal level of each employee compensation feature. Specifically, there should be an optimal level of employee equity ownership for firms that minimize principal-agent costs. However, there is strong evidence that firm compensation structure is mostly influenced by individual firm characteristics, such as firm size. This paper tested empirically whether ownership of equity via employee equity contributions to employer pension plans has a positive effect on firm output. A basic Cobb-Douglas production function was used to measure the effect of employee equity contributions on firm output for a new panel dataset spanning the 1996-2000 time period. The results showed that there is a positive relationship between employee equity contribution and firm output. Furthermore, the results showed that employee equity contributions, like capital and labor inputs, are ruled by the Law of Diminishing Returns to Scale; this is due to entrenchment of employees over time.

### **Bilateral Trade Flows and Regional Trade Agreements: Evidence from the EU**

Researcher: Midshipman 1/C Douglas Nassif, USN

Adviser: Professor Karen E. Thierfelder

This paper discusses regional trade agreements and their effects on trading patterns. Specifically, it deals with the expansion of the European Union (EU). The goal of the study was to anticipate the effect when ten new members joined the EU. This was done by examining Spain and Greece before and after joining the EU, using the gravity model. Spain and Greece were chosen as the test nations because they were similar to nations joining this year at the time they joined.

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The gravity model was used to determine bilateral trade between Spain, Greece, and other members of the EU from the period 1969-200. In this equation, a dummy variable representing whether or not Spain or Greece was a member of the EU at the time was the key in determining how membership affected trade. The results showed that being a member of the EU does increase trade with other members of the EU. These results are consistent with previous articles containing similar studies.

**Voluntary Water Restrictions:  
A Field Test of the Rational Choice Theory of Collective Action**

Researcher: Midshipman 1/C Christopher Robinette, USN

Adviser: Assistant Professor Kurtis J. Swope

The rational choice theory of collective action suggests that self-interested behavior may mitigate the effectiveness of agreements designed to improve group outcomes in social dilemma situations. Laboratory economic experiments show that repetition and the ability of parties to communicate and monitor individual action is important for sustaining voluntary collective action. This paper provides a field test of the rational choice theory by examining the response of residents of Baltimore City, Maryland to water restrictions implemented in periods of drought. Results using monthly water-use data and generalized least squares regression demonstrated a significant consumer response even to voluntary water restrictions. Voluntary reductions, however, were slightly below stated target levels. Their response was greater in emergency situations when mandatory restrictions were imposed.

## Trident Scholar Project

**An Empirical Investigation of Product Differentiation in the Retail Gasoline Industry  
(Trident Report # 323)**

Researcher: Midshipman 1/C James J. Light, USN

Advisers: Assistant Professor Pamela M. Schmitt and Associate Professor Suzanne K. McCoskey

This Trident project constructed and estimated a model of product differentiation in the retail gasoline industry. Retail gasoline stations product differentiate by choosing location and offering amenities such as pay at the pump, full service, car washes, service stations and food markets. Using daily price data from the Minneapolis retail gasoline market, the effect for spatial and quality differentiation was empirically investigated. Spatial differentiation was measured by creating three degrees of neighbors (competing stations) around each individual gasoline station. Each successive neighborhood had an area of increasing size around the station; this differentiated between closer directly competitive neighbors and indirectly competitive neighbors that were away from a station. Quality differentiation was measured by a binary variable when gasoline stations offer additional amenities. The estimation procedure accounted for spatial autocorrelation and market characteristics specific to the retail gasoline industry.

The results indicated that spatial location of firms had the largest and most significant on firm price. The spatially lagged autoregressive coefficient was found to be positive and significant; indicating that gasoline firm prices move together and firms that are closer in neighborhood degree have a more significant effect on price. In addition, stations decreased price when the number of competitors in its closest neighborhood increased and when the number of independent stations (stations not connected with a major refiner) increased in the closest neighborhood. Price also increased when stations of the same brand overlapped into each other's neighborhood areas.

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## Publications

### Journal (Refereed) Manuscripts

BAKER, Matthew J., Assistant Professor and Miceli, Thomas, "The Old Ball Game: The Organization of 19<sup>th</sup> Century Professional Base Ball Clubs," *Journal of Sports Economics*, forthcoming 2004.

The first professional baseball clubs came in two varieties: stock clubs, which paid their players fixed wages, and player cooperatives, in which players shared the proceeds after expenses. It is argued that stock clubs were formed with players of known ability, while co-ops were formed with players of unknown ability. Although residual claimancy served to screen out players of inferior ability in co-ops, the process was imperfect due to the team production problem. Based on this argument, it is suggested that co-ops functioned as an early minor league system where untried players could seek to prove themselves and eventually move up to wage teams. Empirical analysis of data on player performance and experience in early professional base ball provides support for the theory.

BAKER, Matthew J., Assistant Professor and Miceli, Thomas, "Optimal Land Inheritance Rules: Theory and Cross-Cultural Evidence," *Journal of Economic Behavior and Organization*, forthcoming 2004.

This paper develops a general theory of land inheritance rules. The paper distinguishes between two classes of rules: those that allow a testator discretion in disposing of his land (like a best-qualified rule), and those that constrain his choice (like primogeniture). The primary benefit of the latter is to prevent rent seeking by heirs, but the cost is that testators cannot make use of information about the relative abilities of his heirs to manage the land. The impact of scale economies in land use are also accounted for. The paper concludes by offering some empirical tests of the model using a cross-cultural sample of societies.

CUNNINGHAM, Brendan M., Assistant Professor, and Alexander, P. J., "A Theory of Broadcast Media Concentration and Commercial Advertising," *Journal of Public Economic Theory*, forthcoming.

This paper analyzes a model in which the interaction of broadcasters, advertisers, and consumers determines the level of non-advertising broadcasting produced and consumed. The main finding is that an increase in concentration in broadcast media industries may lead to a decrease in the total amount of non-advertising broadcasting. The strength of this inverse relationship depends, in part, on the behavioral response of consumers to changes in advertising intensities. The paper also presents numerical general equilibrium solutions to the model and demonstrates a positive relationship between consumer welfare and the number of firms in the broadcast industry.

CUNNINGHAM, Brendan M., Assistant Professor, Alexander, P.J., and Adilov, N., "Peer-to-Peer File Sharing Communities," *Information Economics and Policy*, forthcoming.

Peer-to-peer file sharing communities present a paradox for standard public goods theory, which predicts that free-riding should preclude the success of the community. A model is presented in which users choose their level of sharing, downloading, and listening in the presence of sharing costs and endogenous downloading costs. In this model, sharing emerges endogenously, largely as a byproduct of users' attempts to reduce own-costs.

CUNNINGHAM, Brendan M., Assistant Professor, "The Distributional Heterogeneity of Growth Effects: Some Evidence," *The Manchester School*, Vol. 71 (4), pp. 417-447, July 2003.

This paper applies quantile regression and non-parametric density estimation techniques to international data on long-run economic growth. This approach reveals that previously identified drivers of growth vary in their impact across the conditional distribution of international growth. Specifically, these factors display disparate effects in conditional low-growth and high-growth contexts. These results suggest there is a general bias underlying prior research. The incumbent drivers of growth exhibit relatively larger coefficients, in absolute value, on the upper tail of the conditional growth distribution. This set of stylized facts identifies factors that might alter the international distribution of growth.

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FREDLAND, J. Eric, "Outsourcing Military Force: A Transactions Cost Perspective on the Role of Military Companies," *Defense and Peace Economics*, Vol. 15, no. 3, pp 205-219, June 2004.

Since the mid-1990s, the operations of private, for profit, military companies have been the subject of increased political and media scrutiny. Firms in this industry provide both combat and support functions to sovereign governments. In this paper, the current and potential future role of these companies is examined from the perspective of transactions cost economics. The transactions cost approach suggests that inevitable contractual hazards sharply limit the combat/combat support role of these companies, despite substantial potential cost saving, even for poor countries with weak governments. However, there is a growing market, even in developed countries, for private provision of training and support.

SCHMITT, Pamela M., Assistant Professor, "On Perceptions of Fairness: The Role of Valuations, Outside Options, and Information in Ultimatum Bargaining Games," *Experimental Economics*, Vol. 7(1), pp. 49-73, 2004.

This study examines fairness perceptions in ultimatum bargaining games with asymmetric payoffs, outside options, and different information states. Fairness perceptions were dependent on treatment conditions. Specifically, when proposers had higher chip values, dollar offers were lower than when responders had higher chip values. When responders had an outside option, offers were higher and were rejected less often than when proposers had an outside option. However, a given offer was rejected more often when responders had an outside option. Therefore, similar to the first mover advantage, the "advantaged" or "entitled" player received a higher monetary payoff than they would otherwise. When there was complete information about payoff amounts (payoff conversion rates and outside options), rejections occurred more often, and given offer amounts were rejected more often than when there was incomplete information. When there was incomplete information, offers were higher in the initial rounds than in the final rounds. These results suggest that proposers made offers strategically, making offers that would not be rejected, rather than out of a concern for fairness.

SWOPE, Kurtis J., Assistant Professor, and Eckhard Janeba, "Taxes or Fees? The Political Economy of Providing Excludable Public Goods," *Journal of Public Economics Theory*, forthcoming.

This paper provides a positive analysis of public provision of excludable public goods financed by uniform taxes or fees. Individuals differing in preferences decide, using majority rule, the provision level and financing instrument. The decisive voter has median preferences in a tax regime, but generally has above median preferences in a fee regime. Numerical solutions indicate that populations with uniform or left-skewed distributions of preferences choose taxes while a majority coalition of high and low preference individuals prefer fees when preferences are sufficiently right-skewed. Public good provision and welfare under fees exceeds that under taxes in the latter case.

THIERFELDER, Karen E., Professor, Nielson, Chantal Pohl and Robinson, Sherman, "Consumer Preferences and Trade in Genetically Modified Foods," *Journal of Policy Modeling*, Vol. 25, no. 8, pp. 777-794, 2003.

Major agricultural exporters have adopted genetic engineering in agriculture to increase productivity. However, consumers in certain importing countries, particularly the EU and Japan, are wary of these products. In this paper, the impact of consumer attitudes towards genetically modified (GM) food on global production, prices, and trade patterns are analyzed. It was found that the potential benefits for GM producers depend crucially on consumer willingness to accept these new varieties. If consumers in some countries reject GM foods, then the global benefits from GM products are reduced and distributed differently. Production of non-GM foods may increase, despite the productivity gains in GM-varieties.

## Books

GOODMAN, Rae Jean B., Professor, and Morton, John S., *Advanced Placement Economics Macroeconomics: Student Activities*, Third Edition, National Council on Economic Education: NY, 2003.

The book provides fifty-five activities for students to learn the material in a macroeconomics principles course. The book also includes sample multiple choice, short free response and long free response questions for each

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unit. The audience is high school students taking an Advanced Placement Macroeconomics course. This edition involves a complete update and revision of the previous edition. We have added activities dealing with the short and long run effect of macroeconomic policies, the influence of the labor market on the aggregate supply curve, the money and loanable funds markets, and the crowding out effect. There is a strong emphasis on the aggregate demand-aggregate supply model.

GOODMAN, Rae Jean B., Professor, and Morton, John S., *Advanced Placement Economics Microeconomics: Student Activities*, Third Edition, National Council on Economic Education: NY, 2003.

The book provides sixty activities for students to learn the material in a microeconomics principles course. The book also includes sample multiple choice, short free response and long free response questions for each unit. The audience is high school students taking an Advanced Placement Microeconomics course. This edition involves a complete update and revision of the previous edition. We have added activities dealing with factor markets, game theory, the Coase theorem, public choice economics and the economics of information.

GOODMAN, Rae Jean B., Professor, and Morton, John S., *Advanced Placement Economics: Teacher Resource Manual*, Third Edition, National Council on Economic Education: NY, 2003.

*Advanced Placement Economics* is designed to help high school teachers teach Advanced Placement Economics courses and prepare the students for the AP Economics Examinations. The book provides course outlines, unit and lesson overviews, unit and daily lesson plans, planning suggestions, lesson objectives, visuals and answers to the Student Activities. The procedures in the lessons sometimes include instructional activities that are not in the Student Activities Books. *Advanced Placement Economics* is designed to be used with a college principles economics textbook. The textbook provides the basic content, and the activities for students provide both drill and practice with the content and the application of this content to a wide variety of situations.

## Book Chapters

THIERFELDER, Karen E., Professor, Burfisher, Mary E., and Robinson, Sherman, "Regionalism: Old and New, Theory and Practice," in *Agricultural Policy Reform and the WTO: Where Are We Heading?* Goiovanni, Aania (ed), Edward Elgar Press.

The objective of this paper is to review the major elements of the economics debate on new regionalism. First, a brief overview of the characteristics of old and new regionalism is provided. Then recent trends in the types of RTAs being formed are described, focusing on delineating the elements of deep integration and the links between developed and developing countries that represent the main distinctions between new and old regionalism. The practical challenges to regional integration are also discussed, particularly the inclusion of sensitive sectors like agriculture. Then the use of old trade theory to evaluate new regionalism and empirical work in this tradition was reviewed. Next, studies using new trade theory to analyze new regionalism are considered. It is concluded that progress in analyzing current and potential RTAs must move beyond the limited framework of old trade theory. Finally, some important knowledge gaps are identified, both theoretical and empirical, that should be the focus of future work.

THIERFELDER, Karen E., Professor, Nielsen, Chantal Pohl and Robinson, Sherman, "Genetically Modified Food, Global Trade Patterns, and Developing Countries," in *Agriculture and the New Trade Agenda*, Merlinda Ingco and L. Alan Winters (eds), Cambridge University Press, p. 429-457.

This paper analyzes price, production, and trade consequences of changing consumer preferences regarding the use of genetically modified organisms (GMOs) in food production. The analytical framework used is an empirical global general equilibrium model, in which the entire food processing chain - from primary crops through livestock feed to processed products - is segregated into genetically modified (GM) and non-GM lines of production. This model is used to analyze the implications of widespread use of genetically engineered crops in some regions whilst consumers in Western Europe and High-income Asia adopt a critical attitude toward GM foods. Two different representations on consumer preference changes are illustrated: (1) a change in price sensitivity: i.e.

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consumers' demand is less sensitive to a decline in the price of GM foods relative to non-GM varieties, and (2) a structural demand shift: for a given price ratio consumers simply demand less of the GM variety relative to the non-GM variety. This analysis finds that developing countries adjust their trade patterns in response to preference changes in important trading partner countries. Non-GM varieties are diverted to GM-critical regions while GM varieties are sold to countries in which consumers are not sensitive to GM content. Furthermore, the development of segregated GM and non-GM food creates a potential niche market for producers if the non-GM characteristics can, in fact, be preserved and verified throughout the marketing system at reasonable costs.

## Presentations

CUNNINGHAM, Brendan M., Assistant Professor, "A Theory of Broadcast Media Concentration and Commercial Advertising," 2<sup>nd</sup> Workshop on Media Economics: How do Media Markets Work? Bergen, Norway, 25 October 2003.

CUNNINGHAM, Brendan M., Assistant Professor, "Product Variety in Broadcast Television News: Theory and Evidence," Ford Foundation Conference on Media Diversity: Meaning, Metrics and the Public Interest, New York, NY, 16 December 2003.

CUNNINGHAM, Brendan M., Assistant Professor, "Court Decisions and Equity Markets: Estimating the Value of Copyright Protection," Rutgers – Newark Department of Economics Faculty Seminar Series, Newark, NJ, 3 March 2004.

MILLER, Christopher M., Midshipman 1/C, USN, and CUNNINGHAM, Brendan M., Assistant Professor, "Employee Equity Ownership and its Effects on Firm Output," Eastern Colleges Science Conference (ECSC), New York, NY, April 2004

McCOSKEY, Suzanne K., Associate Professor, "Spatial Correlation of HIV-Aids Incidence in Sub-Saharan Africa," 8<sup>th</sup> Annual Conference on Econometric Modeling for Africa, Stellenbosch, South Africa, July 2003.

ROBINETTE, Christopher D., Midshipman 1/C, USN, and SWOPE, Kurtis J., Assistant Professor, "Voluntary Water Restrictions: A Field Test of the Rational Choice Theory of Collective Action," Eastern Colleges Science Conference (ECSC), New York, NY, April 2004.

SCHMITT, Pamela M., Assistant Professor, "On the Role of the Hostage in Ultimate Bargaining Games," Society for the Advancement of Behavioral Economics – Annual Meeting, Lake Tahoe, NV, July 2003, and Southern Economic Association Annual Meeting, San Antonio, TX, November 2003.

SMITH, Katherine A., Assistant Professor, and Mendoza, Enrique, "Margin Calls, Trading Costs, and Asset Prices in Emerging Markets: The Financial Mechanics of the 'Sudden Stop' Phenomenon," National Bureau of Economic Research (NBER) International Finance Meeting, Cambridge, MA, October 2003.

SWOPE, Kurtis J., Assistant Professor, SCHMITT, Pamela M., Assistant Professor, Shupp, Robert and MAYER, Justin, Class of 2003 Midshipman, "Personality Preferences and Pre-commitment: Behavioral Explanations in Ultimatum Games," Society for the Advancement of Behavioral Economics (SABE) Annual Meeting, Lake Tahoe, NV, July 2003, and Southern Economic Association Annual Meeting, San Antonio, TX, November 2003.

THIERFELDER, Karen E., Professor, Burfisher, Mary E. and Robinson, Sherman, "Modeling OECD Agricultural Programs in a Global Context," WTO: Competing Policy Issues and Agendas for Agriculture Conference (sponsored by USDA's Economic Research Service), Washington, D.C., 17 September 2003.

ZAK, Thomas A., Associate Professor, "Using Computation in Economic Education," Teaching and Learning Economics Through Games, Computation and Case Studies Workshop (sponsored by the Committee on Economic Education of the American Economic Association), 17 October 2003.

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