

# **Division of Humanities and Social Studies**

COL Robert B. Blose, Jr., USMC  
Director

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# Economics Department

Professor William R. Bowman  
Chair

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Members of the Economics Department faculty were engaged in research on a broad range of topics in 1999-2000. Associate Professor Karen Thierfelder, who was again the departmental nominee for the USNA Research Excellence Award, continued to develop and apply computable general equilibrium models to international trade flows. Working with several different teams of researchers, she published three working papers, made or was associated with three conference presentations and five other presentations to various groups. She continues work on a half dozen projects in various stages of completion. Assistant Professor Suzanne McCoskey won a prestigious Fulbright Scholarship to South Africa. She is at the University of Pretoria from February until November 2000. Prior to departing for South Africa, she published two papers, presented a third, and had another accepted for publication. In collaboration with faculty members from Pretoria, she is working on several projects which will result in papers submitted to journals and in conference presentations in South Africa. Other faculty have also been productive, although less prolific. Professors Bowman and Little have continued their work on diverse military manpower topics. Professor Goodman collaborated with Professor Little on some of that work and also was engaged in projects relating to her role as the Director of Teaching and Learning. Professor Kendry served for a fourth and final year as the William Crowe Professor. He published two pieces, one with Professor Fredland. The new holder and fourth occupant of the Crowe Chair in the Economics of the Defense Industrial Base is Dr. Francis L. McDonald, on leave from the Office of Secretary of Defense, Office of the Director for Program Analysis and Evaluation, General Purpose Programs, Force Planning Division. The Frederick L. Sawyer Prize, awarded to the best senior research paper by a graduating economics major, was won by Midshipman 1/C Andrew R. Sridhar for his paper "A Fundamental Analysis of the 'New' Economy," written under the direction of Assistant Professor John Krieg.

## Sponsored Research

### The NAFTA Debate and Its Outcome

RESEARCHER: Associate Professor Karen E. Thierfelder  
with Sherman Robinson (International Food Policy Institute)  
and Mary Burfisher (US Department of Agriculture)  
SPONSOR: Naval Academy Research Council (NARC)

The North American Free Trade Agreement (NAFTA) was one of the first regional trade agreements that linked a developing country (Mexico) with developed countries (The United State and Canada). The economic disparity generated some core issues in the NAFTA debate: How would labor intensive imports from Mexico affect wages and employment in low-skilled jobs in the United States? How could the labor-intensive and relatively inefficient Mexican agricultural sector compete with farm imports from the U.S.? Supporters of NAFTA focused on the economy-wide gains to the United States. They argued that consumers would benefit as imported goods became cheaper. This work revisits some of the main issues that framed the debate on NAFTA and discusses what is known empirically so far about how the integration process has evolved. The work has been completed and a paper is forthcoming in the *Journal of Economic Perspectives*.

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## **Independent Research**

### **The Relationship Between Marital Status and Job Performance Among Junior Enlisted Marines**

RESEARCHERS: Lt Col David Anderson, USMC, and Assistant Professor John Krieg

It has long been believed throughout the military that marriage among those in junior enlisted ranks adversely affects job performance and is thus a financial drain on defense dollars. The American public and its representatives hold a strong contrary opinion. When the 30<sup>th</sup> Commandant of the Marine Corps, General Mundy, initiated a marital restriction policy on junior enlisted Marines, strong public criticism led him to quickly retract the policy decision. The objective of this study is to determine whether job performance of married Marines is significantly different from that of unmarried Marines, and if so, what factors contribute to this observed difference, and at what cost to the Marine Corps. Results show that married Marines receive higher evaluations from superiors, indicating superior performance. However, whether this performance results from marital status or from other, unobserved, characteristics is at this point difficult to determine. The research is on-going.

### **Examination Performance and Incentives**

RESEARCHERS: Professor Rae Jean B. Goodman and Associate Professor Thomas A. Zak

The fundamental hypothesis is that providing a monetary incentive stimulates student performance on a standardized examination. The data used are the performances of first class economics majors on the Major Field Achievement Test for the 1989-1991 period. The experimental setup was to divide the class into separate classrooms matching the academic quality of the two rooms by QPR rank. As students entered the "incentive room", they were given a memorandum informing them that there were monetary prizes for the top three performers for each of four QPR groupings. The students in the other room received the same memorandum as they exited the exam. The analysis for differences in performance, holding various ability measures constant, is on-going.

### **Near Integration, Bank Reluctance, and Discount Window Borrowing**

RESEARCHERS: Assistant Professor Suzanne K. McCoskey  
with Donald Dutkowsky (Syracuse University)

This study puts forth stationarity considerations in explaining the observed breakdown between aggregate Discount Window borrowing and the spread between the Federal Funds rate and the discount rate during the post-1987 period. Tests with biweekly data indicate stationarity for adjustment borrowing, but cannot reject the unit root for the spread. The Goodfriend-Dutkowsky dynamic implicit cost formulation can accommodate the contrasting stationarity properties. Structural restrictions are compatible with stationary borrowing and a stationary or near integrated spread. While empirical findings from the static model indicate greater bank reluctance to borrow over time, the dynamic model gives considerably less support. This paper has been completed and accepted for publication in the *Journal of Banking and Finance*.

### **North American Farm Programs in the WTO**

RESEARCHERS: Associate Professor Karen E. Thierfelder  
with Sherman Robinson (International Food Policy Institute)  
and Mary Burfisher (US Department of Agriculture)

Since the Uruguay Round, North American countries have fully implemented less distorting farm programs. The growing experience with less distorting farm programs has led some to argue that they may not be sufficiently non-distorting of agricultural production and trade. Recent research has identified several channels through which these

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programs can affect output, through their effects on farm wealth and risk aversion, labor migration, and the economy-wide distortions relating to raising the funds for such programs. In this work, the authors use North American agriculture as a setting to explore the potential for one type of less distorting programs - direct payments - to affect output through its effects on risk aversion. To do this, risk is modeled within a Computable General Equilibrium model of the United States, Canada, and Mexico. Direct payments are modeled to reduce the risk premium. In turn, producers apply this discount to returns from production activities characterized by risk. A paper has been completed and presented to the Allied Social Sciences meetings, January 2000. The paper has been accepted for publication in the *American Journal of Agricultural Economics*.

### **Trade Liberalization and Regional Trade Agreements: the Search for Large Numbers**

RESEARCHERS: Associate Professor Karen E. Thierfelder  
with Sherman Robinson (International Food Policy Institute)

The debate over the impact of regional trade agreements (RTAs) on world welfare hinges on (1) whether they are net trade creating or trade diverting; and (2) whether they impede multilateral trade liberalization. Theoretical models are ambiguous on these issues. The authors summarize the empirical literature on multi-country Computable General Equilibrium models which analyze RTAs. The empirical models show that trade creation dominates trade diversion. Indeed, often there is no absolute aggregate trade diversion from an RTA. The models also indicate that welfare for all members increases when RTAs expand. There are even bigger welfare gains when models incorporate aspects of "new trade theory," such as increasing returns and technology transfers. The authors broaden the search for large numbers by suggesting an additional gain from RTAs, conjecturing that increases in intra-sectoral trade arise from the fact that an RTA provides an expanded secure market, and permits firms to pursue economies of fine specialization. The paper is completed and has been presented at two conferences. It has been submitted for review.

### **The Trade-Wage Debate: Making Room for Labor Economists in General Equilibrium Trade Theory**

RESEARCHERS: Associate Professor Karen E. Thierfelder  
with Sherman Robinson (International Food Policy Institute)

The Heckscher-Ohlin-Samuelson (HOS) model in trade theory provides a powerful general equilibrium paradigm for analyzing the impact of changes in trade on factor returns. In the HOS model, factor returns are determined solely by commodity prices, which are determined on world markets. Changes in factor supplies affect the structure of production and trade, not relative factor returns. In this framework, there is little room for labor economists who focus on partial equilibrium analysis of supply and demand in factor markets. The authors extend the HOS model to include nontraded goods, distinguishing them theoretically from nontradable goods. The resulting "1-2-2-3" model applies to one country with two production activities using two factors of production, but consuming a third imported good. It is shown that the HOS model is a special case of the 1-2-2-3 model when imports and domestic goods are perfect substitutes. Here, changes in relative wages depend not only on changes in world prices but also on changes in factor endowments and in the balance of trade. Sensitivity analysis indicates that wages are more sensitive to changes in factor supplies than to changes in prices or the trade balance. This paper has been completed and submitted for review.

### **The Marginal Cost of Public Funds in Developing Countries**

RESEARCHERS: Associate Professor Karen E. Thierfelder  
with Shantayanan Devarjan (World Bank)  
and Sethaput Suthiwart-Narueput (World Bank)

In evaluating a particular public expenditure, one needs to know the marginal cost of public funds - the sum of the marginal dollar raised from the private sector and the marginal "excess burden" which is the change in the total welfare cost of taxation caused by increasing tax revenue by one dollar. The authors derive heuristic guidelines for estimating marginal cost funds in developing countries by first, explicitly calculating these costs in Bangladesh, Camerons and Indonesia

using Computable General Equilibrium models, and second, comparing these model based estimates with those obtained from simple rules-of-thumb. This paper has been completed and submitted for review.

### **Agricultural Support in the WTO**

RESEARCHERS: Associate Professor Karen E. Thierfelder  
with Mary Burfisher (U.S. Department of Agriculture)

According to the World Trade Organization (WTO) classification system, policies that do not distort production decisions are considered “green box” and are not subject to further scrutiny. Those which indirectly impact production are classified as “amber box” and those which have direct production effects are “red box.” The latter two types of policies are subject to further reduction in the next round of the WTO talks on agriculture. The authors are constructing a multi-region Computable General Equilibrium model to evaluate policies that support agriculture. The model will be used to describe the effects policies have on production, factor use and trade. The work is in preliminary stages.

## **Publications**

BOWMAN, William R., Professor, “Graduate Education and Employee Performance: Evidence from Military Personnel,” (with S. Mehay), *Economics of Education Review*, Vol 18, No 4, 1999.

Few studies have examined the relationship between on-the-job productivity and graduate education using single firm data. This paper studies the effect of graduate education on job performance using a unique micro-database consisting of military officers. Supervisor ratings and promotion probabilities are examined for professional and technical officers in the U.S. Navy, a hierarchical organization with an internal labor market and up-or-out promotion policies. Single stage estimates indicate that, among those eligible to be considered for promotion to grade 4, the up-or-out point, those with any graduate degree are more likely to be promoted. The effect is especially pronounced for those who receive a degree from the Navy’s sponsored, full-time program. However, when instruments uncorrelated with promotion are used to predict graduate degree status, the results suggest that a sizeable portion of the relationship between graduate and promotion is due to unobservable attributes that lead some people to attend graduate school and to be more promotable. The selection corrected estimates of the promotion effect of graduate education are reduced by between 40 and 50 percent.

FREDLAND, J. Eric, Professor, and Adrian P. KENDRY, Admiral William Crowe Chair in Economics, “The Privatisation of Military Force: Economic Virtues, Vices and Government Responsibility,” *Cambridge Review of International Affairs*, Vol XIII, No. 1, Autumn-Winter 1999, pp. 147-164.

This paper examines aspects of privatization in the process of defense production and supply from an economic point of view. It argues that the scope and rationale for privatization of military output has expanded with the changes in the mode and style of warfare and the decline of defense budgets evidenced in the post Cold War era. The paper proposes that limited private production can be both cost-effective and efficacious, provided that the contracts for that service, and the duties described therein, are sufficiently specific. Privatization is not, however, a panacea for resource misallocation and not necessarily an organizational structure that provides appropriate incentives to firms, consumers and the state. Viewed from the perspective of economic theory, the article concludes, privatization of military outputs seems to have some, but quite limited, viability.

GOODMAN, Rae Jean B., Professor, “The First Year: Results of a New Peer Tutoring Program” (w. K. Hubbard), *Official Proceedings of the National Tutoring Association 1999 Annual Conference*, pp.93-96.

This paper examines the results for students participating in a peer tutorial program in Chemistry at the U.S. Naval Academy. The Midshipman Group Study Program (MGSP), a peer tutoring program, began in 1997. Data from common course-wide examinations, grades, MGSP attendance data, and basic academic data were used to evaluate the impact of the MGSP on performance in Chemistry I and II. The academic performance of participants was compared with that of

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non-participants. The number of MGSP sessions was found to have a significantly positive impact on performance in Chemistry II. Holding gender, math SAT score and first semester Chemistry grade constant, attendance at one additional MGSP session increased the final examination score by 0.19 points.

McCOSKEY, Suzanne K., Assistant Professor, "Testing the Stability of a Production Function with Urbanization as a Shift Factor," Oxford Bulletin of Economics and Statistics, Vol 61, No. 9, 1999, pp.671-690.

Urban economists have long sought to explain the relationship between urbanization levels and output. In this paper, the authors revisit this question and test the long run stability of a production function including urbanization, using non-stationary panel data techniques. Results show that a long run relationship between urbanization, output per worker and capital per worker cannot be rejected for either a sample of 30 developing countries, or a sample of 22 developed countries. However, the sign and magnitude of the impact of urbanization varies considerably across countries.

McCOSKEY, Suzanne K., Assistant Professor, "Estimation and Inference of a Cointegrated Regression in Panel Data: A Monte Carlo Study,"(with B. Chen and C. Kao) American Journal of Mathematical and Management Sciences, Vol. 19, No.1, 1999, pp. 75-114.

This paper examines the finite sample properties of the least squares dummy variable (LSDV) estimator and t-statistic in a cointegrated regression in panel data. Through Monte Carlo studies, the authors find that both the LSDV estimator and the t-statistic have a small amount of bias, and the t-statistic diverges as the cross-sectional dimension increases. They also find that the bias-corrected LSDV estimator and the bias-corrected t-statistic do not reduce the magnitude of the bias problem.

MORRIS, Clair E., Professor, review of Mark Harrison, (ed) The Economics of World War II: Six Great Powers in International Comparison in Southern Economic Journal, Vol 66, No. 3, January 2000, pp. 808-810.

The reviewed book resulted from several meetings of an international workgroup of economic historians. There are seven chapters - one on each of the six great powers involved in the conflict, and an overview chapter by the editor. The common approach taken by each of the authors is to confront two issues: (1) what was the contribution of economics to the victory or defeat of each of the great powers, and (2) what was the impact of the war on long-run economic trends and post-war institutions. The Allied powers were weak and poorly mobilized at the outset of the war, with the result that the Axis powers had an early economic advantage. However the tide began to turn in 1942 and the ultimate outcome was easily predictable. The authors present a convincing case that Economics determined the outcome of the war.

THIERFELDER, Karen E., Associate Professor, "After the Negotiations: Assessing the Impact of Free Trade Agreements in Southern Africa"(with J. D. Lewis and S. Robinson) International Food Policy Research Institute, Trade and Macroeconomics Division Working Paper No 46, pp. 1-47, 1999.

The projected effects of the new free trade agreement between the European Union (EU) and South Africa on trade and development in southern Africa over time are explored in this paper, using a multi-regional model. Empirical findings include: (1) trade creation dominates trade diversion for the region under all Free Trade Area (FTA) arrangements; (2) the rest of southern Africa benefits from the FTA between the EU and South Africa; (3) the rest of southern Africa gains more from zero-tariff access to EU markets than from a partial (50 percent) reduction in global tariffs; (4) the South African markets are not large enough to serve as a growth pole for the region. Access to EU markets provides substantially greater gains for the rest of southern Africa than does access to South Africa.

THIERFELDER, Karen E., Associate Professor, "Small Countries and the Case for Regionalism vs. Multilateralism," (with M. Burfisher and S. Robinson) International Food Policy Research Institute, Trade and Macroeconomics Division Working Paper No 54, pp. 1-32, 2000.

Developing countries commonly have high tariffs, high trade dependency on one developed trading partner, and use distortionary domestic policies often linked with their trade restrictions. This paper focuses particularly on

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the third of these characteristics. It argues that participation in a Regional Trade Agreement (RTA) can create pressures for domestic policy reform, using Mexico as a case study. Mexico has all three characteristics - high tariffs, high dependency on the U.S. and a pervasive farm support system linked to trade restrictions. Using a multi-country computable general equilibrium model, the authors find that Mexico gains from the RTA, NAFTA, only when it removes domestic distortions in agriculture. Then, agriculture can generate allocative efficiency gains that are large enough to offset the terms of trade losses which arise because Mexico has higher initial tariffs than other RTA members.

THIERFELDER, Karen E., Associate Professor, "Genetic Engineering and Trade: Panacea or Dilemma for Developing Countries," (with C.P. Neilson and S. Robinson) International Food Policy Research Institute, Trade and Macroeconomics Division Working Paper No 55, pp. 1-40, 2000.

Advocates of the use of genetic engineering techniques in agriculture contend that this new biotechnology promises increased productivity, better use of natural resources and more nutritious foods. Opponents, on the other hand, are concerned about potentially adverse implications for the environment and food safety. In response to consumer reactions against genetically modified (GM) foods in some countries - particularly in Western Europe - crop production is being segregated into GM and non-GM varieties. This paper investigates how such changes in the maize and soybean sectors may affect international trade patterns, with particular attention given to different groups of developing countries.

## **Presentations**

BOWMAN, William R., Professor, "Predicting Midshipman Success at the Naval Academy," Western Economic Association International, San Diego, July 1999.

BOWMAN, William R., Professor, "Minority Representation and Performance at the Naval Academy," Pax River Alumni Association, April 2000.

GOODMAN, Rae Jean B., Professor, "Effects of Peer Tutoring in Chemistry," Davidson College, March 2000.

JANZEN, Leslie N., Lieutenant Colonel, USMC, "Teaching the Failed State," Purdue University Conference on Failed States, Florence, Italy, April 2000.

KENDRY, Adrian P., Admiral William Crowe Chair in Economics, "Transnational Consolidation of the Defense Industrial Base," Western Economic Association International, San Diego, July 1999.

KENDRY, Adrian P., Admiral William Crowe Chair in Economics, "The Health of the US Industrial Base," Office of the Under Secretary of Defense for Industrial Affairs, Department of Defense, January 2000.

KENDRY, Adrian P., Admiral William Crowe Chair in Economics, "Transatlantic Defense Industrial Integration" Office of the Under Secretary of Defense for Industrial Affairs, Department of Defense, April 2000.

LITTLE, Roger D., Professor, and GOODMAN, Rae Jean B., Professor, "Gender Differences in the Second Paycheck, 1992 and 1999," Western Economic Association International, San Diego, July 1999.

McCOSKEY, Suzanne K., Assistant Professor, "Regional Consumption Smoothing: an Econometric and Neural Network Investigation of the Life-Cycle Hypothesis," Southern Economics Association Conference, New Orleans, November 1999.

THIERFELDER, Karen E., Associate Professor, "After the Negotiations: Assessing the Impact of Free Trade Agreements in Southern Africa," presented at: (1) Trade and Industrial Policy Secretariat forum, Johannesburg, South Africa, September, 1999; (2) IFPRI Workshop on Macroeconomic Reform and Integration in Sub-Saharan Africa (MERRISA project), Maputo, Mozambique, October 1999; (3) Center for Economic Research in Agricultural Development, Paris, France, October 1999, (all presented by co-authors).

THIERFELDER, Karen E., Associate Professor, "North American Farm Programs and the WTO," Allied Social Sciences Associations meetings, Boston, January 2000.

THIERFELDER, Karen E., Associate Professor, "An Overview of the Computational Aspects of General Equilibrium Analysis Used in Economics" USNA Operations Analysis Colloquium, February 2000.

THIERFELDER, Karen E., Associate Professor, "The Marginal Cost of Public Funds in Developing Countries," Microeconomic Research Seminar Series, World Bank, April 2000.

THIERFELDER, Karen E., Associate Professor, "Genetic Engineering and Trade: Panacea or Dilemma for Developing Countries," Third Annual Conference on Global Economic Analysis, Melbourne, Australia, June 2000 (presented by co-author).

THIERFELDER, Karen E., Associate Professor, "North American Farm Programs and the WTO," Third Annual Conference on Global Economic Analysis, Melbourne, Australia, June 2000 (presented by co-author).

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