UNIVERSITY OF
ROCHESTER

ECONOMICS

JOB MARKET CANDIDATES FOR 2001-2002

October 22, 2001

This booklet contains information on the Rochester Ph.D. candidates who will be on the job market this year. The packet includes an overall summary sheet for our 10 candidates and a curriculum vitae and a dissertation abstract for each candidate. In addition, a list of reference telephone numbers and e-mail addresses is included for your convenience. For additional information please contact them directly or contact me.

This year's graduating class is larger than last year's. The students are of very high quality, and I feel it will be well worth your while to look through the enclosed package.

Our students will be available for interviews at the ASSA meetings in Atlanta, Georgia the weekend of January 4-6, 2002. Please also note that their working papers can be obtained by contacting each candidate directly. Finally, information is also available on our PhD candidate web page at http://www.econ.rochester.edu/jobmarket/index.html

Please do not hesitate to contact me should you need additional information. I can be reached at one of the phone numbers below or via e-mail.

Sincerely,

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Placement Officer

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UNIVERSITY OF ROCHESTER - DEPARTMENT OF ECONOMICS

Summary Listing of Ph.D. Candidates Available for Positions in 2001

Name	Dissertation Title	Fields	References
Dror Goldberg	*Topics of Monetary Economics*	Monetary Economics Macroeconomics International Finance	Per Krusell* Mark Bils Alan Stockman Michael Wolkoff (teaching reference)
Burhanettin Kuruscu	*Essays on Savings and Labor Market Policies*	Macroeconomics Labor Economics Public Finance Dynamic Contracting	Per Krusell* Lance Lochner Anthony A. Smith, Jr
Javier Luque	*Essays on Economics of Education*	Public Finance Industrial Organization Economics of Education	Eric Hanushek* Margaret Raymond Michael Wolkoff
Toshihiko Mukoyama	*Essays on Innovation and Diffusion*	Macroeconomics Industrial Organization Labor Economics International Economics	Jeremy Greenwood* Mark Bils Per Krusell
Aysegul Sahin	*The Incentive Effects of Social Policies on Education and Labor Markets*	Macroeconomics Labor Economics Economics of Education Dynamic Contracting Applied Microeconomics	Mark Bils* Gordon Dahl Jeremy Greenwood Per Krusell
Irina Solyanik	*Essays on Semiparametric Estimation in Economics*	Econometrics Financial Econometrics International Economics	Douglas Hodgson* Shakeeb Khan Werner Ploberger

Chun-Hsien Yeh	*Axiomatic Approach on Choice Problems*	Game Theory Political Economy Mechanism Design	William Thomson* John Duggan Alvaro Sandroni
Kuzey Yilmaz	*Essays on Education and Individual Decision Making*	Public Finance Labor Economics Urban Economics Applied Microeconometrics	Eric A. Hanushek* Lance Lochner Werner Ploeberger Curtis S. Signorino Michael Wolkoff (teaching reference)
Morihiro Yomogida	*Essays on International Trade*	International Trade Industrial Organization International Finance Macroeconomics	Ronald W. Jones* Leslie M. Marx Michihiro Ohyama
Kazuhiro Yuki	*Essays on Income Distribution and Macroeconomics*	Macroeconomics Economic Growth Labor Economics Public Finance	Mark Bils* Per Krusell Ananth Seshadri

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Education	University of Rochester • Ph.D., Economics, 1999-2002 (expected) • M.A., Economics, 1997-1999 Tel Aviv University, Israel • M.A., Economics, 1995-1997 (Magna Cum Laude) • B.A., Economics, 1993-1995 (Magna Cum Laude) • LL.B., Law, 1993-1997
Research and Teaching Interests	Monetary Economics, Macroeconomics, International Finance
Dissertation	Title: *Search Frictions in Macroeconomics: Applications to Money and Growth* Advisor: Professor Per Krusell
Work in Progress	"A Computational Macro Model with Multiple Directed Search"
Working Papers	• "Directed Search, Money, and Endogenous Shops," 2001 • "IN GOD WE TRUST? On the Implicit Convertibility of Fiat Money," 2001 • "Directed Search, Money, and Endogenous Shops: The Asymmetric Case," 2000 • "Efficient Tax Collection and Implicit Convertibility of Fiat Money," 2000 • "A Model of Mean-in-ARCH and Friedman's Hypothesis," 1999 • "A Regime-Switching Model with an Absorbing Regime: Structural Changes in the CPI," 1998 • "Interest Rate Smoothing in Inflation Targeting Models," 1998 (M.A. Thesis in Tel Aviv University)
Teaching Experience	• Instructor, Money, Credit and Banking, University of Rochester, Summer 2001, Summer 2000

	• Teaching Assistant, Macroeconomics, Money, Credit and Banking, University of Rochester, 1999-2001
	• Teaching Assistant, Macroeconomics, Microeconomics, The Academic College of Tel Aviv, 1996-1997
	• Teaching Assistant, Macroeconomics, Microeconomics, Tel Aviv University, 1995-1996
	• Instructor, Israel Defense Forces, 1991-1992

Teaching Training
- An Advanced Course in Teaching, Israel Defense Forces, 1992
- A Basic Course in Teaching, Israel Defense Forces, 1991

Scholarships, Grants and Awards
- Graduate Scholarship, University of Rochester, 1997-2001
- Summer Research Grant, University of Rochester, 1998, 1999
- Award for achievements in the B.A. program, Tel Aviv University, 1996

Refereeing Experience   *Journal of Monetary Economics*, *The B.E. Journals in Macroeconomics*

Other Work Experience
- Visiting Researcher, Bank of Israel, 1998
- Airport security, Israel, 1992-1993

Programming Skills   C++, MATLAB, GAUSS

References

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Research Summary
Topics in Monetary Economics

Dror Goldberg
University of Rochester

During my graduate studies I have explored various aspects of monetary economics, from monetary policy to money's existence, and from monetary data to an integrated macro search model. Paper 1, the job market paper, is a full-fledged macro search model of a simple economy. Paper 2 revisits money's existence by inserting directed search into a random matching model. Paper 3 provides an explicit model, evidence, and new interpretation, for the theory that attributes fiat money's value to its use for tax payments. Paper 4 applies the Hamilton model to test the significance of CPI measurement changes for empirical work. Paper 5 contributes to the theory and evidence on a monetary policy puzzle: interest rate smoothing.

1. A Computational Macro Model with Multiple Directed Search

While search theory has been useful for the understanding of particular markets, it has been less successful in developing a full-fledged macro model. Such a model should include at least markets for both goods and vacancies. Analytical tractability has necessitated significant modeling compromises in the literature.[1]

An alternative route is a purely computational model. Such an approach, complementary to analytically tractable search models, can allow a very rich environment (including Walrasian financial markets and open market operations). It may offer an alternative to traditional full-fledged macro models. As a first step, the current model has directed search in the markets for consumption goods, investment goods (machines), and vacancies. Agents with machines hire others to operate them. Agents with enough money can go shopping, and then either consume or invest. Agents choose action strategies (hire, work, consume, or invest) as well as price and wage strategies. They can accumulate any amount of money and machines.

I explore stationary Nash equilibria with uniform price-wage schemes, and characterize paths of consumption and investment, occupational choice, and pricing strategies. With CRS matching functions there are Pareto-ranked multiple equilibria. In addition to a coordination failure in price setting, there is also a new coordination failure in actions: when agents cannot consume and produce simultaneously, too few might choose to consume, leading to low output and welfare; with low welfare the marginal value of money is high, leading agents to indeed prefer production to consumption. An increase in real money or a decrease in the depreciation rate may reduce the proportion of workers so much that output and welfare decline. If buyers' endogenous valuation of goods is uniform, then this is also the equilibrium price.[2] The endogenous proportions of buyers, sellers, and workers, create non-trivial relations between these proportions and prices.

2. Directed Search, Money, and Endogenous Shops

The standard monetary search model is characterized by random matching. Although easy to analyze, total randomness is unrealistic. This paper tests the robustness of the standard model to changes in the search technology. It modifies Kiyotaki and Wright (1989) to incorporate a form of directed search that is realistic, tractable, and still has a genuine role for money.

Each good can be produced only in a particular geographic location (e.g., fish in the lake), and these locations are common knowledge. In addition to trading strategies, agents choose location strategies. They can open a shop and wait for customers, or go to another particular production location, where they randomly choose which shop to visit. This random last step rules out bilateral credit; thus, money is still needed.

As in random matching models, commodity or fiat money is endogenously created in Nash equilibrium, but the details are more consistent with historical evidence. Any commodity can be the unique money, but the one with the best intrinsic properties is the most likely candidate. Fiat money can totally crowd out commodity money, even when goods have different intrinsic properties. Trade patterns and an endogenous shop structure are also determined in equilibrium. Going shopping is more likely than door-to-door sales.

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[1] E.g., hybrid Walrasian/search models (Diamond and Yellin, 1990; Merz, 1995), self-employment in the labor market (Diamond, 1984), or agents belonging to large insuring households (Shi, 1998).

[2] With an exogenous valuation of goods this is known as the Diamond paradox (Diamond, 1971).

3. IN GOD WE TRUST? On the Implicit Convertibility of Fiat Money

The most basic puzzle in monetary economics is the fact that fiat money has value. Of course it is accepted because it is expected to be accepted, but why is it only *government-issued* fiat money that has value? Why are these expectations correlated with the issuing regime's existence? And how are they formed initially?

   The paper reexamines the theory that fiat money is valued because we can pay taxes with it (Lerner, 1947). First, I reinterpret the theory as a mechanism of *implicit* convertibility. Convertibility is the issuer's obligation to convert a useless paper money into *something* useful. We pay taxes to avoid the government's punishment. Immunity from this punishment is the "commodity" that we buy when we pay taxes. If we can legally pay taxes with the government's fiat money, the government implicitly promises to convert that money into immunity. Hence, it is implicitly convertible, and valuable. Moreover, since everyone pays taxes, everyone agrees to accept fiat money in trade. Thus, it is not only valuable (as many real commodities are), but is also the general medium of exchange. In reality any government indeed *must* accept its own fiat money as tax payments since by *fiat* it has a status of "legal tender".

   I also provide a first explicit model of the theory, in which money has a genuine role. Government agents and a complete tax system are added to a random matching model. The government collects taxes, punishes tax offenders, uses the revenues for its consumption, and does *not* produce or sell goods. It demands tax payments in fiat money only, and punishes those who pay in real goods. As long as agents (subjectively) expect the government and its tax system to survive, an adequately severe punishment induces them to accept fiat money. By promoting the more efficient monetary equilibrium, the punishment can be optimal.

   Finally, I bring historical evidence to show that government-issued fiat money has failed only when it was not the only legal tender, its issuing regime was expected to collapse, or hyperinflation made it prohibitively costly to hold. I show that myths of successful non-governmental fiat money (e.g., stone money) are false.

4. A Regime-Switching Model with an Absorbing Regime: Structural Changes in the CPI

Economists have claimed that measurement changes in 1953 changed American CPI permanently and significantly, by reducing its volatility. Robust tests for this hypothesis have not been conducted. I employ the regime-switching model (Hamilton, 1989) in testing the hypothesis. I find that indeed the probability of being in the volatile regime abruptly falls from 1 to 0 around 1953, and this is the unique switch of regimes. However, there are inference problems in this model when there is an absorbing (or very persistent) regime.

5. Interest Rate Smoothing in Inflation Targeting Models

Interest rate smoothing is empirically associated with low inflation and successful conservative central banks. However, monetary policy models typically predict the opposite. I confirm this empirical result in a large sample, and show that smoothing increased since the early 1970s. In the theoretical part I modify the inflation targeting model of Svensson (1997) to generate optimal interest rate smoothing by conservative central banks. The existence of more than one transmission mechanism, with each mechanism operating at a different lag, creates this positive autocorrelation in interest rates. Exchange rate mechanisms are likely to be important, especially when there is interaction among central banks. This can explain the increased smoothing since the 1970s, and is consistent with small central banks following large central banks. Finally, a central bank may have inflation volatility in its loss function; arguably, uncertainty is one of the most costly aspects of inflation. Its optimal policy then exhibits smoothing and is observationally equivalent to flexible inflation targeting, because it cares about inflation costs and not about the inflation level per se.

References
Diamond, P. "A Model of Price Adjustment." *JET* 3 (1971): 156-168.
Diamond, P. "Money in Search Equilibrium." *Econometrica* 52 (1984): 1-20.
Diamond, P. and Yellin, J. "Inventories and Money Holdings in a Search Economy." *Econometrica* 58 (1990): 929-950.
Hamilton, J. "A New Approach to the Economic Analysis of Nonstationary Time Series and the Business Cycle." *Econometrica* 57 (1989), 357-384.
Kiyotaki, N. and Wright, R. "On Money as a Medium of Exchange." *JPE* 97 (1989): 927-954.
Lerner, A. "Money as a Creature of the State." AER 37 (1947): 312-317.
Merz, M. "Search in the Labor Market and the Real Business Cycle." *JME* 36 (1995): 269-300.
Shi, S. "Search for a Monetary Propagation Mechanism." *JET* 81 (1998): 314-352.
Svensson, L. "Inflation-Forecast Targeting: Implementing and Monitoring Inflation Targets." *EER* 41 (1997): 1111-1146.

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        M.A. Economics, May 2000.
Bilkent University, Ankara, Turkey
        B.S. Industrial Engineering, June 1996.

RESEARCH INTERESTS
Macroeconomics, Public Finance, Labor Economics, Dynamic Contracting.

HONORS AND AWARDS
- University of Rochester Fellowship and Tuition Scholarship, 1996-2000.
- Turkish Oil Foundation Graduate Scholarship, 1996-1997.
- Bilkent University Fellowship and Tuition Scholarship, B.S. Program, 1992-1996.
- Ranked 30th (out of more than one million entrants) at the Nationwide University Entrance Exam, Turkey 1992.

DISSERTATION
Title: *Essays on Savings and Labor Market Policies*.
Supervisor: Per Krusell.

JOB MARKET PAPER
- "Training and Lifetime Income."

JOURNAL PUBLICATIONS
- "Equilibrium Welfare and Government Policy with Quasi-Geometric Discounting," with Per Krusell and Anthony A. Smith, Jr. (Forthcoming, *Journal of Economic Theory*.)
- "Time Orientation and Asset Prices," with Per Krusell and Anthony A. Smith, Jr. (Forthcoming, *Journal of Monetary Economics*.)
- "Tax Policy with Quasi-Geometric Discounting," with Per Krusell and Anthony A. Smith, Jr., *International Economic Journal*, Vol.14, Issue 3, 2000, 1-40.

MANUSCRIPTS
- "Unemployment Insurance and the Role of Self-Insurance," with Atila Abdulkadiroğlu and Ayşegül Şahin. (Revised and Resubmitted, *Review of Economic Dynamics*.)
- "Temptation and Taxation," with Per Krusell and Anthony A. Smith, Jr.

WORK IN PROGRESS
- "Asset Pricing with Laibson-Epstein-Zin Preferences," with Per Krusell and Anthony A. Smith, Jr.
- "Temptation, Undersaving, and Tax Reform."

CONFERENCE PRESENTATIONS AND DISCUSSIONS
- *Presentation*, North American Summer Meetings of the Econometric Society, University of Maryland, Washington, DC, 2001. "Technological Change, the Minimum Wage, and Welfare.'' (Earlier Version of "Training and Lifetime Income.")
- *Presentation*, 35th Annual Meeting of the Canadian Economics Association, McGill University, Montreal, Quebec, 2001. "Technological Change, the Minimum Wage, and Welfare.''
- *Discussion*, North American Summer Meetings of the Econometric Society, University of Maryland, Washington, DC, 2001. "Changes in the Structure of Earnings During a Period of Rapid Technological Change: Evidence from the Polish Transition,'' by Michael Keane and Eswar Prasad.

TEACHING EXPERIENCE
- *Instructor*, University of Rochester, Department of Economics.
    Money, Credit and Banking (undergraduate), Summer 1999.
- *Teaching Assistant*, University of Rochester, Department of Economics.
    Money, Credit and Banking (undergraduate), Fall 1998, Fall 1999, Spring 2000.
    Intermediate Microeconomics (undergraduate), Spring 1999, Spring 2001.

TEACHING INTERESTS
- Graduate: Macroeconomics, Public Finance, Labor Economics, Contract Theory.
- Undergraduate: Macroeconomics, Microeconomics, Labor Economics, Money, Credit and Banking, Econometrics.

REFEREEING EXPERIENCE
- Latin American and Caribbean Economic Association (LACEA) Montevideo 2001 Conference.

SPECIAL SKILLS
- *Computer Languages*: Fortran 95, Matlab.

REFERENCES
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Essays on Savings and Labor Market Policies

Burhanettin Kuruşçu
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Part 1 – Labor Market Policies

Training and Lifetime Income (Job Market Paper)

Abstract: What is the quantitative importance of on-the-job training for the lifetime incomes of workers? Using a standard dynamic model of human capital investment, Ben-Porath (1967), I compare the lifetime income when the worker optimally invests in his human capital to the one when he does not make any investments at all. My estimated parameter values, which are in line with recent estimates in the literature, suggest a striking answer to the above question: on-the-job training increases lifetime income by less than one percent! The logic behind this finding is as follows.

First, I argue that the marginal return and the marginal cost of an additional unit of investment are both quite insensitive to the level of investment at any point in time. The marginal return of investment is the present value of future increases in earnings from the investment and, in the Ben-Porath model, it does not depend on the level of the investment. I use variation in wages and the variation in marginal return of investment over the life cycle to understand the marginal cost. Marginal return declines over time, but it declines more slowly early on in life due to the long remaining lifetime. With regard to wages, they grow faster early on in the worker's career; after about 25 years, wage growth is negligible. This implies that the investment in human capital must decrease faster with aging at younger ages. A small decline in marginal revenue can therefore only be consistent with a large early decline in investment if the marginal cost is also insensitive to the level of investment, i.e., the marginal cost curve---like the marginal revenue curve---is very flat.

Second, the increase in lifetime income from training is the summation of (MR-MC)*(amount of investment), and since both the marginal return and cost are insensitive to the level of investment---MR is very close to MC also for lower levels of investment---the result is a number close to zero. The result that marginal cost is very close to marginal revenue over a large range of investment choices is key, and I show that it is robust to extensions of the model. For example, a generalization of the Ben-Porath model to the setup considered in Heckman, Lochner, and Taber (1998) does not change the result.

This result has direct policy implications. For example, economists (Feldstein (1973) and Rosen (1972)) have argued that minimum wage laws may have severe welfare consequences for the affected workers by reducing on-the-job training they undertake. However, my result suggests that, even if the minimum wage blocks whole firm training, it cannot cause large welfare losses.

Unemployment Insurance and the Role of Self-Insurance (with Atila Abdulkadiroğlu and Ayşegül Şahin)
(Revised and Resubmitted, *Review of Economic Dynamics.*)

Abstract: An important adverse effect of unemployment insurance is the disincentive to find/maintain a job. Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997) suggest that a possible remedy is switching to long-term contracts where benefit payments depend on workers' unemployment histories. The optimal plan they propose provides a declining benefit path to create intertemporal incentives. A maintained assumption in these studies is that consumer/workers cannot save or, alternatively, that any savings they undertake are perfectly monitored and, thus, completely controlled by the insurance provider. In this paper, we study long-term unemployment insurance plans by relaxing the assumption that agents' savings can be perfectly monitored. Thus, we consider "hidden savings." We use a dynamic general equilibrium model to design and evaluate long-term unemployment insurance plans that depend on workers' unemployment history in economies with and without hidden savings.

We find that it is important to consider hidden savings in the analysis. The nature of the optimal unemployment insurance plans differs significantly from those suggested by Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997): the benefit path is not necessarily declining. We also find that the role of history dependence of unemployment insurance plans is not as important quantitatively as the earlier studies suggest: welfare gains are much lower when we consider hidden savings. Therefore, we argue that switching to long-term plans should not be a primary concern from a policy point of view. Our analysis also suggests that unemployment plans that are designed ignoring agents' ability to save privately could cause an increase in unemployment and be harmful to the economy.

Part 2 – General Equilibrium and Policy under Time-Inconsistent Preferences

Motivated by experimental evidence and introspection, this part of my research explores the effects of different forms of preference reversals for savings and labor supply decisions. The focus of the work is on exploring general equilibrium effects and studying the implications of economic policy.

Equilibrium Welfare and Government Policy with Quasi-Geometric Discounting (with Per Krusell and Anthony A. Smith, Jr.) (Forthcoming, *Journal of Economic Theory.*)

Abstract: We consider a representative-agent equilibrium model where the consumer has quasi geometric discounting and cannot commit to future actions. We restrict attention to a parametric class for preferences and technology and solve for time-consistent competitive equilibria globally and explicitly. We then characterize the welfare properties of competitive equilibria and compare them to that of a planning problem. The planner is a consumer representative who, without commitment but in a time-consistent way, maximizes his present-value utility subject to resource constraints. The competitive equilibrium results in strictly higher welfare than does the planning problem. As part of the paper, we develop general methods for solving for infinite-horizon differentiable Markov equilibria.

Time Orientation and Asset Prices (with Krusell and Smith)
(Forthcoming, Journal of Monetary Economics.)

Abstract: We analyze a general-equilibrium asset pricing model where a small subset of the consumers/investors have a short-run "urge to save." That is, their attitude toward consumption in the long run is a standard one---they do place zero weight on consumption far enough out in the future---but their short-run effective rates of discount may be negative. Our model, which is an elaboration on the framework proposed by Gul and Pesendorfer, does not feature time inconsistencies. Thus, we view consumers as fully rational, but subject to specific "internal frictions" in the form of temptation and self-control problems. The model nests the Mehra-Prescott model and we use it as a way of interpreting the wealth and asset pricing data. Some aspects of these data may possibly be better understood using our model than the standard one.

Tax Policy with Quasi-Geometric Discounting (with Krusell and Smith)
(*International Economic Journal*, Vol. 14, Issue 3, 2000, 1-40.)

Abstract: We study the effects of taxation in a model with a representative agent with time-inconsistent preferences: discounting is quasi-geometric. Utility is derived from consumption and leisure, and taxation can be based on consumption and investment spending as well as on capital and labor income. The model allows for closed-form solutions, and welfare comparisons can be made across different taxation systems.

Optimal taxation analysis in this model leads to time-inconsistency issues for the government, assuming that the government shares the consumer's preferences and cannot commit to future taxes. We study time-consistent policy equilibria for different tax constitutions. A tax constitution specifies what tax instruments are available, and we assume that the government can commit to a tax constitution. The results show that a constitution leaving the government with no ability to tax results in strictly higher welfare than one where the government has full freedom to tax. Indeed, for some parameter values, the best tax constitution of all is laissez-faire (even though the government is benevolent and fully rational). For other parameter values, it may be optimal to allow the government to use a less than fully restricted set of tax bases.

Temptation and Taxation (with Krusell and Smith)

Abstract: The Strotz/Phelps-Pollak/Laibson model of time-inconsistent preferences views intertemporal choices as deriving from a game between successive selves. In contrast, Gul and Pesendorfer propose a model where preferences are defined over sets, allowing "temptation" and a "preference for self-control" to be formalized. Their model can explain the same observable behavior (such as preference reversals), and it can be used for normative analysis. We extend/specialize the Gul-Pesendorfer setup to analyze the potential for active savings policy in the context of a general-equilibrium, neoclassical growth model. As part of our analysis, we show how the successive-selves model can be viewed as a special case of the Gul-Pesendorfer model. In a normative analysis of this model, outcomes should be evaluated using the utility of the self in the last period. We find that the optimal savings policy entails an investment subsidy.

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EDUCATION

1996-present **UNIVERSITY OF ROCHESTER (expected degree Spring 2002)**
PhD program in Economics
Dissertation title: **Essays on Economics of Education**
Fields of specialization: Public Finance, Industrial Organization.
Research topics: Social Program Evaluation, Economics of Education, Econometrics.

1988-1992 **PONTIFICIA UNIVERSIDAD CATOLICA DEL PERU (Lima, Peru)**
Bachelor of Arts in Economics, June 1993 (5 year program)
Ranked in top 10 percent of graduating class.

PAPERS

-Teach For America: An Evaluation of Teacher Differences and Student Outcomes in Houston Texas, with Margaret Raymond and Stephen Fletcher (CREDO, Hoover Institution, Stanford University, August 2001)
-Efficiency and Equity in Schools around the World, with Eric Hanushek (December, 2000, accepted for publication, Journal of Education Economics)
-Smaller Classes, Lower Salaries? The Effects of Class Size on Teacher Labor Markets, in Sabrina W.M. Laine and James G. Ward (ed.), Using What We Know: A Review of the Research on Implementing Class-Size Reduction Initiatives for State and Local Policymakers (Oak Brook, Ill.: North Central Regional Educational Laboratory, 2000), pp. 35-51
-International Differences in Worker Skills: Evidence and Policy, with Eric Hanushek, (March 2000, prepared paper for the international conference on Skills Measurement and Economic Analysis, University of Kent at Canterbury).
-Private vs. Public schools (mimeo, University of Rochester, December 1999)
-Effect of Class Sizes on Student Achievement: old discussion new methods (mimeo, University of Rochester, September 1999)

EXPERIENCE

2000-2001 **HOOVER INSTITUTION – STANFORD UNIVERSITY**
Visiting – Research Assistant
Research Assistant for Eric Hanushek, PhD

1998-2000 **UNIVERSITY OF ROCHESTER**
Advisor: Eric Hanushek, PhD

Instructor for:
-Economics of Growth and Development, undergraduate program (Summer Session 2000)

Teacher Assistant for:
-Economics Analysis of Competitive Strategy, MBA program (Winter Semester 2000)
-Economics of Education, Master in Public Policy and undergraduate programs Instructor: Eric Hanushek. (Spring Semester 1999 and 2000)
-Law and Economics, undergraduate program, Instructor: Walter Oi, PhD.
(Fall Semester 1998 and 1999)

-Labor Economics, undergraduate program, Instructor: Walter Oi, PhD.
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1999(Summer)　**THE WORLD BANK**
Development Economist Research Group
Summer Assistant
Assessed the impact of the reform in the education system in El Salvador (under supervision of Emmanuel Jimenez – Development Economics Research Group)

1993-1996　**BANCO CENTRAL DE RESERVA DEL PERU (Central Bank of Peru)**
Analyst, Department of Macroeconomics Analysis, 1996-1997
-Assess the evolution of the Peruvian economy under the different bilateral agreements with the International Monetary Fund (IMF).
-Forecast the country's macroeconomics variables such as GDP, investments, inflation, foreign exchange, international reserves, and monetary aggregates.
-Support the formulation of short and the long-term economic programs.
-Perform consistency analysis of sector models, such as monetary sector, fiscal sector, foreign sector and real sector.
-Researched and analyzed changes in the Peruvian banking system regulations
Junior Analyst, Department of Current Economic Analysis, 1993-1996
- Follow short-term domestic and international economic variables.
-Create weekly reports to the Board of Directors about the current economic situation, including recommendations for monetary policy measures.
-Create weekly reports to the general public release on the current economic situation.
-Research and analyze changes in the Peruvian pension funds system regulations.

FELLOWSHIPS
1998-2000　University of Rochester Fellowship
1996-1998　Central Bank of Peru Graduate Studies Fellowship

COURSES/PAPERS (Undergraduate level)

-Financial Programming, Organized by the IMF, Lima, Peru, 1995.
-Current Economic Analysis, Organized by the Organizacion de Estados Americanos (O.E.A.), Santiago de Chile, Chile, 1994
-*Survey on the Determinants of Savings in the Peruvian Case*, 1996
-*Mechanism for Monetary Policy Transmission*, 1995
-*Impact of the Newly Created Pension Funds Management Firms in the Financial Sector*, 1993

ADDITIONAL INFORMATION
Fluent in Spanish and English
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Essays on Economics of Education
By Javier Luque

Efficiency and Equity in Schools around the World, **with Eric Hanushek (forthcoming Journal of Education Economics)**

The emphasis on human capital policy that has become a centerpiece of government programs around the world is accepted as a natural and enlightened view of policy. Important contributions by Theodore Shultz, Gary Becker, and Jacob Mincer set the case for the importance of human capital for individual productivity and earnings, for the distribution of economic success, and ultimately for the growth of national economies. The central focus is how systematic policy actions of governments affect student performance. Most of the research attention has actually gone to the relevance of resources as a policy tool.

On that score the U.S. evidence has been reasonably clear. The resources devoted to schools are not closely or consistently related to student outcomes. While there has been some controversy over this analysis, the data indicate that a minority of studies finds significant and positive relationships with performance, Hanushek (1986, 1997). Empirical work on quality in an international setting has, however, been even rarer than in the United States. Few international data sets have had information on outcomes and resources, although – when available – there seems to be slightly stronger relationships of resources and outcomes (Heyneman and Loxley 1983; Hanushek 1995; Vignoles et al. 2000). When these data have been available, it has been difficult to summarize because the data sets have tended to be very specialized and to be very different across studies. And, little is known about the value of proxy relationships across countries

The primary objective of this work is to provide a consistent set of estimates for production function from a set of developing and developed countries. This analysis is made possible by recent international testing and data collection, which provide scores on common examinations across countries. Building upon the testing and surveys of the Third International Mathematics and Science Study (TIMSS), we consider specifically how families and schools contribute to within and between country variations in student performance. Special attention is devoted to the possible bias introduced by compensation policies within schools. We then go beyond this to investigate whether school in the different countries work to narrow or widen performance differences.

The results of analyses of educational production functions within a range of developed and developing countries show general problems with the efficiency of resource usage similar to those found previously in the United States. These effects do not appear to be dictated by variations related to income level of the country or level of resources in the schools. Neither do they appear to be determined by school policies that involve compensatory application of resources. The conventional view that school resources are relatively more important in poor countries also fails to be supported.

Smaller classes, Lower Salaries? The Effects of Class Size on Teacher Labor Markets, **, with Eirc Hanushek** [1]

The effects of changes in class size have been the focus of recent intense policy discussions. Almost all of the attention has been related to student performance. The related research has tried to quantify the effects on student outcomes and to interpret that from a policy perspective. While controversy about the magnitude of effects and the costs of change remains, the range of differences is narrowing, and the options are becoming clearer. The existing research has, however, generally neglected the overall effects of smaller class sizes on the teachers. When considered, the existing literature tends to concentrate on teacher behaviors – classroom management, time on task, and so forth – but these are largely details of the process by which achievement gains are realized. Most important, the analysis ignores the interactions

[1] A version of this paper was published in in Sabrina W.M. Laine and James G. Ward (ed.), Using What We Know: A Review of the Research on Implementing Class-Size Reduction Initiatives for State and Local Policymakers (Oak Brook, Ill.: North Central Regional Educational Laboratory, 2000)

of class size with overall teacher satisfaction and its implications for teacher labor markets, given the effects of class sizes on teacher load, among other job characteristics as suggested by the theory of compensating differentials.

Some attention has been given to various employment aspects of class size policy (e.g., Hanushek, Kain, and Rivkin 1999), but little analysis is available to indicate the quantitative importance of these. The quantitative importance makes a substantial difference for policy. If, for example, teachers are willing to accept noticeably lower salaries to have smaller classes and better working conditions, these feedback effects could significantly reduce the costs of lowering class sizes. On the other hand, if the policies simply show a systematic but small quantitative relationship, the feedback through employment factors would not enter into the policy debate significantly.

In this research project, we focus on the determinants of teacher salaries. Roughly speaking, we find that an increase of one student increases teacher salary between 0.9 and 1.2 percent. This effect is found to be statistically significant in some but not all of the empirical specifications and for some but not all points on the salary schedule. At the same time, other factors have a stronger influence on district salaries. For example, we find that teachers facing higher number of minorities within their school district are compensated positively.

The data available allow us to investigate how effects may differ across relevant policy dimensions. Specifically, one might think that the reactions to differences in class size are strongest in urban areas, where the alternative employment opportunities for teachers are larger. However, the results show stronger effects of class sizes on teachers' salaries in suburbs and rural areas (in that order). The data also allowed us to observe other dimensions of the relationship between teacher's labor market decisions and school environment: teacher turnover ratios and districts having difficulties finding qualified teachers.

Evaluation in Education, with Special Emphasis to The Teach For America program

Research in education production literature has failed to find consistent effects of the impact of the different school inputs on student education outcomes. There remains significant uncertainty on the appropriate specification: functional form; and the sources of data have been limited, often not allowing for adequate control of all the factors involved in the education process. However, previous research on education production functions has achieved mainly two conclusions, schools seem to have powerful effects on students achievement, but these effects appear to derive most importantly from variation in teacher quality, (Hanushek, Kain and Rivkin, 1999). But, the variation between observable teacher characteristics and measures of teacher quality is small. The impact of higher training is not conclusive, despite the popularity of the training programs.

The uncertainty coming from student, teacher and school unobservable characteristics makes evaluation in education a difficult task. Households sort themselves in different areas in metropolitan areas, frequently related to a particular school or school district (Tiebout 1956). Inside schools we should expect sorting of students into classrooms and programs, related to the teacher quality, and classroom characteristics. Among the unobservable teacher characteristics, we have effort and innate ability that are not directly observable by the researcher or the policy maker, but may have direct impact on student outcomes. However, it is important to find measures of teacher quality that will allow us to compare teachers, and make evaluations of different teacher training or teacher characteristics. In this study we use a database that allows us to characterize such effects with extraordinary precision. The panel data characteristics and teacher-school and student teacher matches, allow us overcome many of the standard problems found in education literature (related to unobservable characteristics) using the value added approach and constructing teacher fixed effects to characterize individual teacher unobserved characteristics.

We use the constructed teacher fixed effects to evaluate the Teach for America (TFA) special teacher certification program (Kopp, 2000). We find that the differences between TFA and non TFA teachers showed a positive impact of the former. However, the small number of TFA teachers relative to other teachers could have affected the results of the analysis. We also compare this teacher fixed effects with the standard measures of teacher quality used in the literature.

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Fellowships, Scholarships, and Awards
- Norman M. Kaplan Memorial Prize, University of Rochester, 1999
- Graduate Fellowship and Tuition Scholarship, University of Rochester, 1999-2001
- Summer Research Grant, University of Rochester, 1999
- Japan-IMF Scholarship for Advanced Studies, 1997-1999
- Uekawa Fellowship, University of Rochester, 1997
- Ikueikai Scholarship, 1995-1997
- Graduation Thesis Award, University of Tokyo, 1995

Research Interests
Economic Growth, Income Distribution, Unemployment, Dynamic Contracting

Graduate Work
Fields of Specialization: Macroeconomics, International Economics
Dissertation: "Essays on Innovation and Diffusion"
Advisor: Professor Jeremy Greenwood

Papers
- "A Theory of Technology Diffusion," October 2001.
- "Innovation, Imitation, and Growth with Cumulative Technology," September 2001.
- "Matching and Schooling," September 1999.
- "Imitation and Competition in R&D-based Growth Models," (in Japanese) *Financial Review* 46: 87-109, July 1998.

Work in Progress
- "The Effect of Income Distribution on the Timing of New Product Introductions." (Joint with Jeremy Greenwood.)
- "On-the-Job Training under Asymmetric Information: A Contract-Theoretic Approach." (Joint with Arantxa Jarque Llamazares and Aysegul Sahin.)
- "Technology Diffusion and Growth"
- "Cyclical Upgrading and Unemployment"

Teaching Experience
- Instructor, Intermediate Microeconomics (Undergraduate), Department of Economics, University of Rochester, Summer 2001
- Teaching Assistant, Ph.D. Macroeconomics (Professor Jeremy Greenwood), Department of Economics, University of Rochester, Spring 2000, Spring 2001
- Teaching Assistant, Ph.D. Introduction to Mathematical Economics (Professor Irasema Alonso), Department of Economics, University of Rochester, Fall 1999; William E. Simon School of Business Administration, University of Rochester, Fall 2000
- Teaching Assistant, Graduate Macroeconomics (Professor Shin-ichi Fukuda), Department of Economics, University of Tokyo, Summer 1997

Teaching Interests
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Work Experience
- Summer Intern, International Monetary Fund, Western Hemisphere Department, Summer 2000
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Essays on Innovation and Diffusion

Toshihiko Mukoyama
University of Rochester

New technologies and new goods are the engines of economic growth. Once invented, they are first brought into the economy by small groups of people (*innovation*), and then gradually adopted by many others (*diffusion*). Despite recent developments in the economics of innovation, not much attention has been paid to the economics of diffusion. Diffusion is as important as innovation: no new technologies or goods have an economic impact until they become widespread in the economy. Moreover, in many cases, innovation and diffusion are interrelated. In this dissertation, each of the three essays models innovation and diffusion in a unified framework. In each of the essays, different aspects of diffusion are addressed.

In the first essay, the innovation and diffusion of new technologies are analyzed. The engine of diffusion is quality improvement, which makes it possible for unskilled users to operate new machines. In the second essay, the introduction and diffusion of new consumer durables are studied. A monopolist tries to conduct price discrimination by reducing price over time and selling the product gradually to successively poorer and poorer consumers. The third essay considers product market competition, which contributes to diffusion through the reduction of prices.

A Theory of Technology Diffusion

Why does a new technology diffuse slowly? What determines the speed of diffusion? And what are the consequences of diffusion? A model of technology diffusion is constructed to address these questions.

As is empirically well established, adopting a new technology requires skill. In our model, skilled machine-users adopt a new technology first, while unskilled users wait until machines become more reliable and accessible. The increase in reliability and accessibility of machines is essential for diffusion, and we call it *quality improvement*. Quality improvement is carried out through *learning by using* and *R&D investment*. Learning by using is formulated by a *statistical* model, where the capital goods producer learns from the experience of users. The producer can also improve machine quality by conducting costly R&D activity.

It turns out that the speed of quality improvement and diffusion are affected by the distribution of skill in the economy. The amount of learning by using depends on the number of users: quality improvement is faster if there are more users who have enough skill to operate the machines. The monopolist invests in R&D to capture more demand in the future. The incentive for R&D investment is larger when the increase in demand generated by a given quality improvement is larger.

It is assumed that the machine producer can start producing a new generation of machines at any point in time. This event is called *innovation*. In contrast to the existing literature, diffusion and innovation are both endogenous here. Numerical analysis shows that an innovation occurs after the current-generation machine is adopted by almost everyone. Hence, there is a connection between diffusion and the timing of innovation. It follows that both are affected by the skill distribution.

The capital goods producer can also choose the size of innovation. It is assumed that there exists a trade-off: if the producer chooses to start producing more efficient and powerful machines, their quality (reliability and accessibility) at the outset will be lower. The size of innovation is also influenced by the shape of skill distribution: when the skill distribution exhibits high dispersion, the size of innovation tends to be large. This transpires since there are many very high-skilled users who are willing to buy powerful new machines, even though those machines are unreliable and difficult to handle.

The Effect of Income Distribution on the Timing of New Product Introductions

(joint with Jeremy Greenwood)

The rich tend to buy new products first, when they are sold at their highest prices. As prices decline over time, new goods start to be purchased by consumers with more ordinary incomes. If the pursuit for profit drives innovation, then does the possibility of selling to the rich at a high price spur on the introduction of new product? To tackle this question, a model of a durable good monopolist is constructed.

Consumers differ in the level of their wealth. Given a time path for the price of durables, a consumer must decide when to purchase the new good. In the world where prices are declining over time, the rich buy first, the poor last. Given the wealth distribution over consumers, the monopolist must decide when to introduce his product and the time path for his subsequent sales. For a common form of preferences, it is optimal for the monopolist to conduct intertemporal price discrimination.

The equilibrium is numerically computed. The diffusion curves can exhibit an S-shape when production cost declines over time (either exogenously or due to learning by doing). It is shown that a homogenous society exhibits faster diffusion.

It turns out that there exists no general relationship between inequality and the introduction of new goods. On the one hand, income inequality allows the monopolist to price discriminate over time. This is manifested by a declining price path. This encourages product development since the monopolist would like to seize the opportunity to sell to rich consumers at a high price early on. On the other hand, a high level of income inequality implies that the introductory price for the product will be high and sales will be low. This limits the initial amount of market penetration and dissuades the introduction of new products. Which effect dominates depends upon the details of society's income distribution.

Innovation, Imitation, and Growth with Cumulative Technology

It has long been known that a wave of imitative activity follows a creative innovation. In previous chapters, markets were perpetually monopolistic, and there was no entry or competition. Here, the implication of market structure is explicitly analyzed, by incorporating the possibility of imitation.

A dynamic general equilibrium model is constructed to study the interaction of innovation and imitation. Technology is assumed to be *cumulative*: only technological leaders can conduct next-round innovation. An outsider has to learn the state-of-the-art technology by imitation before inventing a new technology. In equilibrium, the incumbent monopolist conducts an innovation race with a newcomer who has successfully learned about the state-of-the-art technology. Both have an equal chance to succeed in innovation and become a future monopolist. Outsiders conduct costly imitation even if they cannot obtain any profit by the successful imitation itself. They invest in imitation so that they can become industry leaders and engage in innovative activity. The monopoly profit from the successful next-round innovation is their ultimate reward.

As in standard Schumpeterian growth models, subsidies to innovation always enhance technological progress. In contrast to standard models, subsidizing imitation may also increase the economy-wide rate of technological progress. Imitation enhances aggregate innovative activity by increasing the number of innovators. It is shown that there are cases where competition and growth exhibit positive correlation. In these cases, promoting imitation enhances not only static efficiency but also the dynamic performance of the economy. This prediction is consistent with recent empirical evidence.

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RESEARCH INTERESTS
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HONORS, FELLOWSHIPS AND SCHOLARSHIPS
- University of Rochester Fellowship and Tuition Scholarship, 1999-2001
- University of Rochester Summer Research Grant, 1999
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- Bilkent University Fellowship and Tuition Scholarship, M.S. Program, 1994-1996
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DISSERTATION
Title: *The Incentive Effects of Social Policies on Education and Labor Market*
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MANUSCRIPTS
- "The Rotten Kid at College: The Incentive Effects of Higher Education Subsidies on Student Achievement," October 2001
- "Unemployment Insurance and the Role of Self-Insurance," August 2001, revised and resubmitted to *Review of Economic Dynamics* (Joint with Atila Abdulkadiroglu and Burhanettin Kuruscu)
- "Education Specific Inter Vivos Transfers with Imperfect Altruism," September 2000

WORK IN PROGRESS
- "On-the-Job Training under Asymmetric Information: A Contract-Theoretic Approach" (Joint with Arantxa Jarque Llamazares and Toshihiko Mukoyama)

CONFERENCE PRESENTATIONS
- European Science Foundation Network Conference "Social Insurance: Modeling and Transition," Istanbul, Turkey, June 2000
(Unemployment Insurance and the Role of Self-Insurance)
- Midwest Macroeconomics Conference, Iowa City, April 2000
(Unemployment Insurance and the Role of Self-Insurance)

OTHER RESEARCH EXPERIENCE
- Accuracy Check for *Price Theory and Applications, 5e* by Steven Landsburg, 2001
- Research Assistant in the following project: Andreas Hornstein, Per Krusell, and Gianluca Violante. "Workers, Firms and New Equipment: A Search Model Analysis," 1999

REFEREEING EXPERIENCE
Review of Economic Dynamics

TEACHING EXPERIENCE
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TEACHING INTERESTS
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JOURNAL PUBLICATIONS IN ELECTRICAL ENGINEERING

- Ayşegül Şahin, M. Alper Kutay, and Haldun M. Ozaktas. "Nonseparable two-dimensional fractional Fourier transform," *Applied Optics*, 37:5444-5453, 1998
- Ayşegül Şahin, Haldun M. Ozaktas, and David Mendlovic. "Optical implementations of two-dimensional fractional Fourier transforms and linear canonical transforms with arbitrary parameters,"*Applied Optics*, 37:2130-2141, 1998
- M. Fatih Erden, Haldun M. Ozaktas, Ayşegül Şahin, and David Mendlovic. "Design of dynamically adjustable anamorphic fractional Fourier transformer," *Optics Communications*, 136:52-60, 1997
- Ayşegül Şahin, Haldun M. Ozaktas, and David Mendlovic. "Optical implementation of the two-dimensional fractional Fourier transform with different orders in the two dimensions," *Optics Communications*, 120:134-138, 1995

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THE INCENTIVE EFFECTS OF SOCIAL POLICIES ON EDUCATION AND LABOR MARKETS

Ayşegül Şahin
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A social policy might have strong disincentive effects on its beneficiaries in the presence of asymmetric information. For effective policy design and implementation, it is crucial to understand the significance of these incentive effects. This dissertation studies the incentive issues arising from the implementation of certain educational and labor market policies when informational asymmetry is present. In particular, the first part of this dissertation deals with the incentive effects of higher education subsidies on student achievement and the second part analyzes unemployment insurance and on-the-job training.

EDUCATION POLICIES
The Rotten Kid at College:
The Incentive Effects of Higher Education Subsidies on Student Achievement

The major goal of higher education subsidies has been to promote college enrollment by reducing tuition costs. Most studies, in fact, find that education subsidies make college education more accessible by increasing families' ability to pay for the college[1]. What is less trivial, however, is how subsidizing higher education affects students' achievement. When faced with lower educational costs, parents are likely to have less-challenging expectations about their child's academic success: they continue to pay for the child's college education even if they observe hardly satisfactory educational outcomes (grades). Consequently, the child might reduce her engagement in academic activities. This paper studies the potential disincentive effects of higher education subsidies on students' performance.

A game-theoretical model is employed to analyze the interaction between the parents and their child—the student—prior to and during the college education. The return to college education depends not only on the ability but also on the effort of the student. Students differ both in their innate ability and motivation. More highly motivated students choose higher effort levels, i.e., they study harder. This heterogeneity, together with the informational assumption that parents do not have perfect knowledge of their child's motivation, makes it possible to analyze how students' effort/leisure choices change when they are confronted with different incentive schemes.

The model is calibrated by using the High School and Beyond Sophomore Cohort: 1980-92 and The National Longitudinal Survey of Youth, 1979 data sets. The simulations show that when tuition levels are lower, parents set less-demanding standards for their children to meet and in return students decrease their effort levels. The analysis also shows that if parents can commit to higher standards, disincentive effects are less severe.

The model's key prediction is that lower tuition levels have nontrivial disincentive effects on students' effort choices. This prediction is tested by estimating the effect of tuition on college students' study time. Since tuition levels at public postsecondary institutions vary dramatically across states, a natural strategy for the estimation is to analyze how the study time of college students differs across states. The Time Use Survey of NLSY in 1981 is used to provide estimates of students' study time and the state averages for public tuition are taken from Higher Education Coordinating Board's Survey on Tuition and Fee Rates in the U.S.

The results of this study suggest that the incentive effects of higher education subsidies should be taken into account by policy makers for a more accurate evaluation of prospective policy reforms.

Education Specific Inter Vivos Transfers with Imperfect Altruism

This paper analyzes the college enrollment decision by using a principal-agent framework where the altruistic parent is the principal and the selfish child is the agent. Optimal transfer schemes—education specific transfers—are derived in the presence of privately observed effort. Parents are altruistic, however, they do not derive any disutility from the child's effort at college. This conflict of interest creates ineffi-

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[1]See McPherson and Shapiro (1991) and the references therein for a detailed study of the enrollment effects of higher education subsidies.

ciencies. From the parents' perspective, the child is tempted to choose an effort level that might not be satisfactory to meet her parents' expectations. The theoretical results show that, if parents can actually make education specific inter vivos transfers contingent on educational outcomes, and commit to the optimal incentive compatible transfer schemes, the efficiency of education might increase considerably.

Two interesting implications of the model deserve mentioning. First of all, the optimal transfer schemes do not necessarily reward the child in case of successful outcomes. This is the main distinction between the optimal contracts in the parent/child framework and the usual employer/worker framework. Secondly, the analysis shows that parents who have more than one child, do not necessarily choose to make higher inter vivos transfers to the less prosperous child.

LABOR MARKET POLICIES
Unemployment Insurance and the Role of Self-Insurance
(Joint with Atila Abdulkadiroglu and Burhanettin Kuruscu)

An important adverse effect of unemployment insurance is the disincentive to find/maintain a job. Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997) suggest that a possible remedy is switching to long-term contracts where benefit payments depend on workers' unemployment histories. The optimal plan they propose provides a declining benefit path to create intertemporal incentives. A maintained assumption in these studies is that consumer/workers cannot save or, alternatively, that any savings they undertake are perfectly monitored and thus completely controlled by the insurance provider. In this paper, we study long-term unemployment insurance plans by relaxing the assumption that agents' savings can be perfectly monitored. Thus, we consider "hidden savings." We use a dynamic general equilibrium model to design and evaluate long-term unemployment insurance plans (plans that depend on workers' unemployment histories) in economies with and without hidden savings.

We find that it is important to consider hidden savings in the analysis. The nature of the optimal unemployment insurance plans differs significantly from the ones suggested by Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997): the benefit path is not necessarily declining. We also find that the role of history dependence of unemployment insurance plans is not as important quantitatively as the earlier studies suggest: welfare gains are much lower when we consider hidden savings. Therefore, we argue that switching to long-term plans should not be a primary concern from a policy point of view. Our analysis also suggests that unemployment plans that are designed ignoring agents' ability to save privately could cause an increase in unemployment and be harmful to the economy.

On-the-Job Training under Asymmetric Information: A Contract-Theoretic Approach
(Joint with Arantxa Jarque Llamazares and Toshihiko Mukoyama)

When a firm trains a worker, the worker's effort is an essential input. However, in many situations, the effort level is not observable to the firm. This paper studies the situation where a firm and a worker write a binding long-term contract under this asymmetric information. Although the current and the past effort levels are private information, the output (which is stochastic but affected by the effort levels) is observable. Thus, the output can serve as a signal, and the contract can depend upon its realization. We characterize the optimal contract, and analyze the implications for wage dynamics. To describe the dynamic contract with history dependence, the recursive formulation by Fernandes and Phelan (2000) is adopted.

REFERENCES

Fernandes, Ana, and Phelan, Christopher. "A Recursive Formulation for Repeated Agency with History Dependence." *Journal of Economic Theory* **91** (2000), 223-247.

Hopenhayn, Hugo, and Nicolini, Juan Pablo. "Optimal Unemployment Insurance." *J.P.E.* **105** (1997), 412-418.

McPherson, Michael, and Shapiro, Morton Owen. Keeping College Affordable. Washington, DC: Brookings Institution, 1991.

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GRADUATE WORK

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PAPERS

- "Semiparametric Efficient Estimation of Dynamic Hedging Model," with Douglas Hodgson, October 2001
- "Adaptive Estimation in Regression ARMA model," September 1999

WORK IN PROGRESS

- "Estimation of Nonparametric Transformation Models with Multiplicative Heteroskedasticity," with Songnian Chen and Shakeeb Khan
- "GMM Estimation of Return Volatility Dynamics," with Werner Ploberger
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ESSAYS ON SEMIPARAMETRIC ESTIMATION IN ECONOMICS

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Semiparametric Efficient Estimation of Dynamic Hedging Model (with Douglas Hodgson)

It has long been recognized in the finance literature that forward currency contracts can be used as instruments to hedge foreign investment against exchange risk (e.g., Briys and Solnik, 1992). These contracts are appealing because forward currency markets are quite large and liquid, while transaction costs are rather small compared to the cost of restructuring investor's foreign asset position.

Several econometric models have been proposed to estimate the optimal hedging portfolio. Traditional approaches, such as OLS, are effective when the market fluctuations are assumed to be stable over time. Since it is well documented that the volatility of asset returns is time-varying and exhibits time-clustering, investors should benefit from revising, period by period, their hedging portfolio. By minimizing the portfolio return variance for the next period conditional on the information available in this period, investors should be able to reduce risk more than in the case of static hedging. This finding provides motivation for the application of GARCH in the models of dynamic hedging.

Another well-documented finding is that financial variables exhibit significant deviations from normality, skewness, and excessive thickness of tails. Despite the fact that quasi-maximum likelihood estimators (QMLE) based on the false assumption of normality are $n^{1/2}$-consistent, efficiency loss may be considerable. Therefore, semiparametric estimation of GARCH model is appropriate, because it does not place specific parametric assumptions on the distribution of innovation.

In this paper we develop a semiparametric efficient estimator of the parameters of the bivariate GARCH model that allows for a general form of the error distribution. Removing the symmetry assumption requires specification of location and scale of innovations as infinite dimensional nuisance parameters. We propose a way of treating the Euclidean and nuisance parameters within the single framework, and derive a joint efficiency bound. This bound represents the semiparametric information bound for attainable efficiency in the absence of knowledge of the true density function. We then propose an estimator that achieves this efficiency bound asymptotically.

We utilize the data set on Japanese spot and one-year forward exchange rates, and Tokyo stock market index to estimate the minimum-variance hedge ratio. It is then decomposed into the macroeconomic and asset-specific components. We find that the dynamic hedge significantly outperforms the static hedge by reducing portfolio variance by an additional 8%. In both cases, macroeconomic component contributes more to the reduction of portfolio variance than the asset-specific component. However, in the case of dynamic hedging, improvement of portfolio variance is due mainly to the asset-specific component. Our estimation strongly supports the hypothesis of asymmetric distribution of innovations. They indicate that the errors come from a non-Gaussian distribution with skewness and excessive kurtosis. Therefore, semiparametric estimation of the model is a step in the right direction, because it provides more efficient estimates. Finally, in the series of Monte Carlo studies we find that the semiparametric estimator indeed outperforms the QMLE.

Adaptive Estimation in Regression ARMA model

Adaptive estimators are semiparametric estimators that are asymptotically equivalent to Maximum Likelihood (ML) estimators. Therefore, at least asymptotically, no loss of information occurs in the absence of true density of the errors. These estimators are especially appropriate in empirical financial models, where data is characterized by significant departures from normality.

ARMA has long been used to model autocorrelation of regression disturbances present in time series data. Zero mean ARMA process with known order and unspecified distribution function was adaptively estimated by Kreiss (1987). In this paper we extend the model to a linear regression ARMA with non-zero intercept, and possibly asymmetrically distributed innovation errors.

Because the symmetry assumption is dropped, Euclidean parameters (intercept and slope) and an infinite dimensional nuisance parameter (p.d.f., $f(\cdot)$) are treated differently. We use the approach of Ibragimov and Khas'minskii to show the local asymptotic normality for local parametrization of the slope parameters. We then formulate the local asymptotic minimax result and derive the efficiency bound. We construct a one-step Newton-Raphson estimator that achieves the lower minimax bound and is, therefore, adaptive.

Estimation of Nonparametric Transformation Models with Multiplicative Heteroskedasticity (with Shakeeb Khan and Songnian Chen, work in progress)

Nonparametric transformation models are widely used in applied econometrics, as economic theory rarely provides functional form of relationship between variables. In this paper we propose a $n^{1/2}$-consistent estimator for the strictly monotonic regression transformation function with the multiplicative conditional heteroskedasticity. This is in contrast to the existing estimators of the transformation function (e.g., Horowitz, 1996, and Ye and Duan, 1997), which assume homoskedastic errors.

We assume the existence of a $n^{1/2}$-consistent and asymptotically linear estimator of the regression parameters. In a nonparametric setting, Chaudhuri, et al. (1997) obtain such estimator by using the locally polynomial quantile estimates, while Khan (2001) proposes a 2-stage rank estimation procedure to construct an estimator with the desirable property. As a first step, we estimate the scale function by utilizing pairs of observations with conditional median of one element matching conditional α^{th} quantile of the other element. The kernel weighted estimator of scale function converges pointwise at the nonparametric rate. Next, we estimate the shape of the transformation function by utilizing pairs of observations with matching scale parameters and matching propensity scores. The kernel weighted estimator uses the preliminary estimator of scale function and nonparametric estimators of the scores. We show that under standard regularity conditions the estimator of transformation function is $n^{1/2}$-consistent and asymptotically normal.

GMM Estimation of Return Volatility Dynamics (with Werner Ploberger, work in progress)

Stochastic volatility models have been extensively studied in the literature (e.g., Andersen, 1997, and Steigerwald, 1999). Economic theory suggests that return volatility process is driven by variables such as trading volume, number of transactions, and bid-ask spread. Because return variance is driven by information arrivals that differ across equal intervals of calendar time, there exists a time deformation between calendar and event (or economic) time (e.g., Ghysels and Jasiak, 1998). This time deformation is put forward as one explanation of conditional heteroskedasticity in asset prices.

Our class of models generalizes this approach. In this paper we use low-frequency data to estimate a stochastic volatility model with time deformation. We formulate the new set (the continuum) of moment conditions, and utilize the most relevant ones to construct a GMM estimator. Our approach to the selection of the number of moment conditions is in contrast to the grid search methods.

References

ANDERSEN, T. (1996): "Return Volatility and Trading Volume: An Information Flow Interpretation of Stochastic Volatility," *Journal of Finance*, 51(1), 169-204.

BRIYS, E., and B. SOLNIK (1992): "Optimal Currency Hedge Ratios and Interest Rate Risk," *Journal of International Money and Finance*, 11, 431-455.

CHAUDHURI, P., K. DOKSUM, and A. SAMAROV (1997): "On Average Derivative Quantile Regression," *The Annals of Statistics*, 25(2), 715-744.

GHYSELS, C., and J. JASIAK (1998): "GARCH for Irregularly Spaced Financial Data: The ACD-GARCH Model," *Studies in Nonlinear Dynamics and Econometrics*, 2(4), 133-149.

HOROWITZ, J.L. (1996): "Semiparametric Estimation of a Regression Model with an Unknown Transformation of the Dependent Variable," *Econometrica*, 64(1), 103-137.

KHAN, S. (2001): "Two-stage Rank Estimation of Quantile Index Models," *Journal of Econometrics*, 100, 319-355.

KREISS, J.-P. (1987): "On Adaptive Estimation in Autoregressive Models When There Are Nuisance Functions," *Statistics and Decisions*, 5, 59-76.

STEIGERWALD,D. (1999): "Mixture Models and Conditional Heteroskedasticity," U.C. Santa Barbara Manuscript.

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Papers

- "Reduction-consistency in collective choice problems," 2001
- "A note on Herrero and Villar's characterization of the constrained equal awards rule," 2001
- "Minimal rights, maximal claims, duality, and convexity for the resolution of conflicting claims," (with William Thomson) 2001
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- "Sustainability in claims problems," 2000
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Seminar and Conferences

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AXIOMATIC APPROACH ON CHOICE PROBLEMS

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We are concerned with the identification of well-behaved rules to resolve conflicts of interests. We examine two models. In a *standard abstract choice problem*, there is a discrete set of alternatives over which agents have unrestricted preferences. Which alternative(s) should be selected? A *claims problem* is a concrete model of resource allocation: agents have claims on a divisible resource that cannot be jointly honored. How should this resource be divided? Our approach is axiomatic. We explore the implications of desirable properties of rules to solve these two types of problems. We offer characterizations of several rules.

1. Reduction consistency in collective choice problems

We consider abstract choice problems and define a robustness property, "reduction consistency." This property is intended to guarantee the stability of decision rules. Consider a group of agents facing the problem of choosing a public project, and suppose that a choice is made. Now, imagine that some agents leave. Is the choice still a right choice? Let us reevaluate the situation from the viewpoint of the remaining agents. A natural constraint is that new choice should be such that those agents who left find it at least as desirable as the original choice so that they would agree upon the change if they were present. A rule is *reduction consistent* if the original choice made by the rule is confirmed in this "reduced problem."

We first investigate whether well-known rules such as the majority core and the plurality rule satisfy *reduction consistency*. Unfortunately, we show that most of them violate it. More generally, we show that no "scoring rule" is *reduction consistent*. Moreover, this property is incompatible with the *weak Condorcet principle*, which states that when there are only two alternatives, the alternative that is preferred by more than half of the population should be chosen. However, we identify a family of rules that satisfy *reduction consistency* as well as other desirable properties. These rules are similar to the "target rules" studied by Ching and Thomson (1992) for the problem of choosing a point on an interval when agents have "single-peaked preferences" over this interval.

When a rule is not *reduction consistent*, a natural question is how seriously it violates this property. To measure the extent of such violations, we consider the notion of "minimal consistent extension" of a rule (Thomson, 1994). We calculate the minimal consistent extensions of several rules (e.g. the Borda rule and the plurality rule). The results show that the Borda rule violates this property more seriously than the plurality.

2. Consistency concepts in collective choice problems

This chapter is also concerned with abstract choice problems. Here we focus on three robustness properties of rules. The first is the *q-Condorcet principle* (Moulin, 1988): given a real number, q, between 1/2 and 1, if the alternative is preferred to other alternatives by more than a proportion q of the population, then it should be chosen. The second is *union consistency* (Young, 1975), which relates the outcomes chosen for two problems with disjoint sets of agents to the outcomes chosen for the problem where the set of agents is the union of the former two. The third is *reduction consistency* (see Chapter 1).

We show that (i) the *q-Condorcet principle* is incompatible with *tops-only*, which states that two choice problems with the same top-alternatives profiles should share the same outcomes, (ii) the plurality rule is the only rule satisfying *union consistency* and certain additional desirable properties, and (iii) replacing *union consistency* with *reduction consistency* in (ii) yields a characterization of the "top rule", which chooses all alternatives that are most preferred by at least one agent.

3. Minimal rights, maximal claims, duality, and convexity for the resolution of conflicting claims
(with William Thomson)

We study operators on rules to solve claims problems. An operator is a mapping that associates each rule with a new one. Our goal is to use these operators to better understand the structure of the rich inventory of available rules. The first operator is duality: given a claims problem and a rule, *S*, we can either think of the issue as dividing what is available or focus on dividing the deficit. The rule associated with *S* by this operator treats what is available symmetrically as *S* treats what is missing. The second is claims truncation: the rule obtained by this operator is defined by first truncating claims by the amount available and then applying *S*. The third is attribution of minimal rights: each agent is first awarded the difference between the amount available and the sum of the claims of the other agents (or 0 if this difference is negative); this difference represents a minimum to which each agent is certainly entitled; Then, *S* is applied to allocate what is left, the claims being adjusted down by the minimal rights in the first step. The fourth is convexity, which calculates the weighted average of rules, given lists of rules and their respective weights.

   We undertake a systematic analysis of these operators and uncover interesting relations among the operators, such as idempotence, commutativity, and distributivity. We also ask which properties of rules are preserved. We find that most properties are preserved under each of them with the following exceptions. (i) Two basic monotonicities are not preserved under duality. The first is *claims monotonicity*: if an agent's claim increases, his award should not decrease. The other is *population monotonicity*: if the number of agents increases, the awards to each agent initially present should not increase. (ii) *Self-duality*, which is invariant under duality operator, is preserved under neither claims truncation nor attribution of minimal rights separately, but is preserved under their composition. (iii) "Consistency" and "converse consistency" are not preserved under convexity.

4. Sustainability in claims problems

The "constrained equal awards" rule (CEA) is a well-known rule for the resolution of conflicting claims. It assigns equal amounts to all agents subject to no one receiving more than his claim. CEA satisfies a number of desirable properties. For instance, *composition down* (Moulin, 2000): when the amount available decreases, there are two ways to solve this new problem. Either we take the awards calculated on the basis of the amount available initially as claims in dividing the revised amount, or we cancel the initial division and recalculate the awards for the revised amount. *Composition down* says that both methods should recommend the same awards vector. Another example is a criterion that intends to protect the agents with smaller claims, called *sustainability* (Herrero and Villar, 2001). If an agent's claim is such that by substituting it to the claim of any other agent whose claim is higher, there is enough to reimburse everyone, then the agent should be fully compensated. Herrero and Villar (2001) show that CEA is the only rule satisfying *sustainability* and *composition down*.

   We conduct a systematic analysis of *sustainability* together with other desirable properties. We show that (i) CEA is the only rule satisfying *sustainability* and *claims monotonicity*, (ii) CEA is the only rule satisfying *sustainability* and *super-modularity* (if the amount available increases, then the agent with the greater claim should receive a share of the increment that is at least as large as the share received by the agent with the smaller claim), and (iii) CEA is the only rule satisfying *sustainability*, *order preservation* (the agent with the greater claim should receive no less than the agent with the smaller claim), and *consistency*.

References
Ching, S and W. Thomson (1992) Population monotonicity solutions in public good economies with single-peaked preferences. Forthcoming in *Social Choice and Welfare*.
Herrero, C and A. Villar (2001) Sustainability in claims problem, mimeo.
Moulin, H (1988) Condorcet's principle implies the no show paradox. *Journal of Economics Theory*, 45:53-64.
Moulin, H (2000) Priority rules and other asymmetric rationing methods. *Econometrica*, 68:643-684.
Thomson, W (1994) Consistent extensions. *Mathematical Social Science*, 28:219-245.
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- "Urban Spatial Structure in the Presence of Local Public Goods and Decentralized Employment Locations," 2000.
- "Redistribution Through Education and Other Transfer Mechanisms," 2000 (with Eric Hanushek and Charles Leung). *Paper presented at the 2001 annual meeting of Western Economic Association.*
- "Strategic Misspecification in Discrete Choice Models," 1999 (with Curtis Signorino). *Gosnell Prize for Best Paper in Political Methodology.*

WORKS IN PROGRESS

- "College Tuition Policies, Welfare, and Intergenerational Mobility," 2001 (with Eric Hanushek and Charles Leung).
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ESSAYS ON EDUCATION AND INDIVIDUAL DECISION MAKING

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Three papers, each of which are representative of my attempt to push the boundary of the research frontier, are included in this abstract. The first is an Overlapping Generations model studying the impact of higher education policies on the labor market. The second is another simulation model that analyzes the effect of accessibility and public amenities (education) on community choice. Finally, the third paper uses a Monte Carlo study to assess how successfully econometrics can approximate game theoretical strategic interaction models.

1. Higher Education Policies, Welfare, and Intergenerational Mobility
(with E. Hanushek and C. Leung)

The recent increase in higher education's return to the real wages of high school graduates has produced a popular debate in academia about how involved government should be in higher education. One major justification cited for its involvement is that a government has a responsibility to improve the distribution of its citizens' incomes and welfare by better-educating them. Also, many have argued that capital market imperfections inhibit the individual's ability to invest in human capital. Unfortunately, most of these papers are concerned only with the inequality in income between different families in the same generation. A full analysis of the income distribution also requires a study of the inequality in income across different generations.

We present an Overlapping Generations (OG) model in which pupils: 1) Receive a bequest and inherit an ability from their parents, 2) Make schooling decisions in an uncertain environment, 3) Sell their labor in a competitive market and earn a wage commensurate with their productivity, and 4) Leave some bequest and ability to their children. Some smart pupils cannot attend college due to imperfect capital market constraints. The National Longitudinal Survey of Youth (NLSY) is used to estimate a Galtonian regression for the transmission of ability. Then, the model is used to compare different college tuition policies, namely uniform education subsidies, means-tested education subsidies, and income-contingent loans. The tuition policies are compared with respect to welfare, income inequality and intergenerational mobility of income, and educational attainment. Also, a first best policy is identified and used to calculate welfare losses for each policy scheme.

For any tuition policy scheme we study, the results justify governmental involvement. Due to imperfect capital markets, governmental involvement improves both welfare and income inequality as well as breaks the nexus between pupils' and parents' income/educational attainment. However, each policy requires a different size of government for the same improvement in welfare and income. Also, a noteworthy result is that no matter what the government does, it cannot eliminate the income correlation between a pupil and his/her parents, due to the high correlation of ability. However, after five generations the persistence of income inequality, due to the persistence of ability, disappears.

2. Tiebout Meets Alonso

While the standard models of Alonso, Mills, and Muth - which form the cornerstone of modern neoclassical urban location theory - accurately predict urban spatial structure, limited attention has been paid to how local public goods effect residential community choice. On the public goods side, a broad consensus has emerged on the appropriate model for considering community choice. It evolved from the central positive insight of Tiebout (1956), and builds on the analytical framework developed in Ellicson (1971). However, these models are essentially designed to deal with spaceless economies, ignoring spatial problems such as land use, geographical allocation of households, etc.

The purpose of this paper is to unify the public goods and location theory approaches to residential choice, which have been artificially separated for study. Three urban simulation models - a closed monocentric city, and two closed cities with decentralized employment locations - are developed in conjunction with a local public good, education. Education is produced through a production function that also captures peer group effects and is financed through property taxes determined by majority voting. Households differ both in their income and valuation of education, vote with their feet, and bid for land. Commuting has both pecuniary and time costs.

In addition to the classical result of urban location models - the capitalization of a location's accessibility - the model also predicts the capitalization of the quality of education difference. As opposed to the stratification of households by income and tastes predicted by the traditional Tiebout models, both communities are heterogeneous and contain every type. Also, all models predict strategic interaction between communities.

3. Strategic Misspecification in Discrete Choice Models (with C. Signorino)

The most common specification of binary choice models - where the latent variable is a linear function of the parameters and regressors – is structurally inconsistent with strategic interaction. We characterize the misspecification induced by these models when used to analyze data generated by "the simplest strategic model possible" - one that is only partially strategic and where all action probabilities are monotonically related to each of the regressors. Even under these ideal conditions, the use of logit and probit is problematic: when actions are the dependent variable, distributional misspecification and biased and inconsistent estimates result; when outcomes are the dependent variable, the misspecification is equivalent to omitted variable bias. In both cases, the misspecification arises due to nonlinear terms that are implicit in the strategic model, but are not included in typical binary choice specifications. Researchers are recommended to avoid standard logit and probit models if the data generation process is believed to involve strategic interaction.

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Seminar Presentations

- Research Institute for Economics and Business Administration, Kobe University, Kobe, Japan, January 2001, "Vertical Intra-Industry Trade and Factor Proportions"
- Department of Economics, Keio University, Tokyo, Japan, January 2001, "Vertical Intra-Industry Trade and Factor Proportions"

Work Experience

- Research Assistant, Department of Economics, Keio University, 1996-1997

Teaching Experience

Instructor:
- International Trade, Department of Economics, University of Rochester, Summer 2001

Teaching Assistant:
- International Trade, Department of Economics, University of Rochester, Fall 2000, Fall 2001
- International Finance, Department of Economics, University of Rochester, Spring 2000, Spring 2001

Refereeing Experience

- *Keio Economic Studies*

Fellowships and Scholarships

- Graduate Fellowship, University of Rochester, 1998-2001
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Essays on International Trade

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These essays analyze the nature of trade between countries that are asymmetric in several aspects. Chapter 1 examines the composition of trade between countries having a difference in the structure of their oligopolistic industries. Chapter 2 focuses on the vertical aspect of trade so that differences in relative factor endowments affect the composition of trade. Chapter 3 considers the fragmentation of a production process in an oligopolistic industry and analyzes the effect of fragmentation on the pattern of trade and the distribution of gains from trade between countries.

1. Competition, Technology and Trade in Oligopolistic Industries

One of the central propositions in new trade theory is that 100% of trade is intra-industry trade when countries are identical in all respects. It is often argued that this proposition is supported by the empirical observation that most trade between developed countries is intra-industry trade. However, the share of intra-industry trade differs across industries even in trade between developed countries.

Why does the share of intra-industry trade vary across industries? I focus on two characteristics of the structure of industries, the level of competition and the quality of production technology, and I examine how these features affect the share of intra-industry trade.

I analyze intra-industry trade in an oligopolistic industry where firms behave in Cournot fashion and perceive each country's market as segmented. Brander (1981) has shown that market segmentation in Cournot oligopoly leads to intra-industry trade with two-way trade in identical products as each country's firms penetrate the other country. The present model is based on Brander and Krugman (1983), which is slightly more general than Brander (1981). I extend the Brander and Krugman model to allow the structure of the oligopolistic industry to differ between countries.

Helpman and Krugman (1985) have examined the composition of trade in a factor endowment model. In their model, both countries' firms in an imperfectly competitive industry have the same size so that the share of intra-industry trade is determined by the difference in relative factor endowments between countries. Brander and Krugman (1983) have not analyzed the composition of trade because they assume countries are identical in all aspects. In my extension of the Brander and Krugman model, the asymmetry in the structure of the oligopolistic industry between countries leads to a difference in the size of each country's firms. Thus the share of intra-industry trade is determined by the difference in the size of each country's firms as well as directly in the structure of the oligopolistic industry between countries.

I first consider a simplified model in which countries have the same production technology but differ in the number of firms in the oligopolistic industry. I show that a relative increase in the number of domestic firms creates a driving force for a country to be a net-exporter in this sector because of the increase in competition in the domestic market. Thus the share of intra-industry trade is negatively related to the asymmetry in the number of firms between countries.

In the full model, countries differ in production technology as well as in the number of firms in the oligopolistic industry. Technological advantage is another driving force for a country to be a unilateral exporter. Thus, these two differences may conflict with each other in their effects on intra-industry trade between countries. A framework I develop in this paper is useful to show how the pattern of trade depends on both the asymmetry in the distribution of firms and the difference in production technology between countries. Using this framework, I also show that there is a possibility of intra-industry trade even if the difference in production costs between countries is strictly greater than transport costs.

2. Vertical Intra-Industry Trade and Factor Proportions

Helpman and Krugman (1985) have synthesized increasing returns to scale and imperfect competition with a factor endowment model. One of their striking propositions is that the share of intra-industry trade increases with the similarity of relative factor endowments. This result is not a direct consequence of increasing returns to scale and imperfect competition. Davis (1995) has shown that the same proposition holds in his model where intra-industry trade arises due to comparative advantage.

The common feature of these articles on intra-industry trade is that they discuss exclusively horizontal intra-industry trade, i.e., the exchange of differentiated or different final goods having the same factor intensity. However, intra-industry trade has another aspect, vertical intra-industry trade. In the present paper, I examine the effects of the difference in relative factor endowments on vertical intra-industry trade.

I apply the framework developed by Davis (1995) to vertical intra-industry trade. A direct exchange of one final good for one intermediate good is defined as vertical intra-industry trade because the intermediate good is used as an input for the final good in the same sector. I assume that countries share the same technology for the production of the final goods, but there exists a technical difference in the production of the intermediate good between countries. I derive the equilibrium of an integrated world economy to obtain a factor price equalization set, and examine the dependence of the pattern and the value of trade on relative factor endowments. I show that the share of intra-industry trade has a single peak in a graph showing its dependence on relative factor endowments. However, the share does not necessarily reach the peak at a point where countries have identical relative factor endowment ratios.

3. Fragmentation in Oligopolistic Industries (Paper in progress)

It is observed that production processes, which used to be integrated in one country, are dispersed across many countries. Why does a production process get fragmented across countries? What happens to trade if fragmentation of a production process takes place? Does every country gain if fragmentation changes the nature of trade between countries?

In the present paper, I analyze the impact of fragmentation on trade in a product produced in an oligopolistic industry. In the industry, firms use an intermediate good to produce a final good. If the production process is integrated in each country, then trade can take place only in the final good between countries. Then, as long as other things are equal, the difference in total production costs determines the direction of trade in the final good. However, if the fragmentation of the production process takes place, trade in the intermediate good as well as in the final good can occur between countries. I would like to examine how the direction of trade depends on the pattern of fragmentation and the difference in the structure of production costs between countries.

Fragmentation also affects the distribution of gains from trade between countries. In the oligopolistic industry, trade in the final good reduces its price in each country because of pro-competitive effects. Fragmentation changes the cost structure of firms that disintegrate their production process so that it would change the pro-competitive gains from trade. At the same time, fragmentation also affects the profits of each country's firms. I would like to analyze the effect of fragmentation on the distribution of gains from trade between countries.

References

1. Brander, J. (1981) "Intra-Industry Trade in Identical Commodities." *Journal of International Economics*, 1: 1-14.
2. Brander, J. and P. Krugman. (1983) "A Reciprocal Dumping Model of International Trade." *Journal of International Economics*, 15: 313-321.
3. Davis, D. (1995) "Intra-Industry Trade: A Heckscher-Ohlin-Ricardo Approach." *Journal of International Economics*, 39: 201-226
4. Helpman, E. and P. Krugman. (1985) *Market Structure and Foreign Trade*. The MIT Press.

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Education

- Ph.D. in Economics, University of Rochester, expected Spring 2002.
- M.A. in Economics, University of Rochester, March 2000.
- M.A. in Economics, Kyoto University, Japan, March 1996.
- B.A. in Economics, Kyoto University, Japan, March 1994.

Graduate Work

- Research Interests: Macroeconomics, Economic Growth, Public Finance.
- Dissertation Title: Essays on Income Distribution and Macroeconomics
- Dissertation Advisor: Professor Mark Bils.

Award and Fellowships

- University Fellowship and Tuition Scholarship, University of Rochester, 1996-2000.
- Kaplan Award (Best graduate GPA), University of Rochester, 1998.
- Uekawa Fellowship, University of Rochester, 1996.

Working Papers

- "Sectoral Shift, Income Distribution, and Development," 2001.
- "Savings, Intergenerational Transfers, and the Distribution of Wealth," (with Ignacio Ponce Ocampo) 2001.
- "Equity and Efficiency Effects of Redistributive Policies," (with Ananth Seshadri) 2000.

Work in Progress

- "Taxation and Savings in a Heterogeneous Agents Economy," (with Ignacio Ponce Ocampo).

Teaching Interests

- Macroeconomics, Economic Growth, Public Finance, Labor Economics, Political Economy.

Teaching Experience

- Teaching Assistant, Intermediate Microeconomics (undergraduate), University of Rochester, Spring 2001.
- Teaching Assistant, Intermediate Macroeconomics (undergraduate), University of Rochester, Fall 1999, Spring 2000, and Fall 2000.
- Teaching Assistant, Principles of Economics (undergraduate), University of Rochester, Fall 1998 and Spring 1999.

Refereeing Experience

- Review of Economic Dynamics.

Programming Skills

- C++, Matlab and Gauss.

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Essays on Income Distribution and Macroeconomics
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1. Sectoral Shift, Income Distribution, and Development

There are two notable phenomena widely observed when an economy departs from an underdeveloped state and starts rapid growth. One is the shift of production, employment, and consumption from the agriculture sector to the manufacturing and service sectors. The other is a huge increase in educational levels of its population. The question is why some economies have succeeded in such 'structural change' and rapid growth, but others do not. In order to answer the question, this chapter constructs an overlapping generations economy that explicitly takes into account sectoral change and human capital accumulation as sources of growth.

The model economy has two sectors, agriculture and manufacturing, the latter being more skill and capital intensive. The focus of the analysis is on an economy that lacks enough agricultural productivity to rely on exporting agricultural products to boost its growth. Hence, it is assumed that the market of agricultural goods is closed but that of manufacturing goods is open. An agent lives for two periods. In childhood he receives a transfer from his parent, with the parent allocating it between two investment opportunities, assets and education. Education is required to become a skilled worker; but it is costly. Since loan markets are nonexistent, the cost must be self-financed. In adulthood the agent earns income and spends on consumption of the two goods and intergenerational transfers. The preference is such that the agent consumes a subsistence level of agriculture goods irrespective of its price.

Because of the credit constraint, a parent's transfer is a key determinant of the educational choice. In turn this transfer depends on parental income and the agricultural price. Since income of an unskilled parent is affected by agricultural productivity and its price, whether an economy succeeds in the 'structural change' or not is critically dependent on the productivity and factors affecting supply and demand for agricultural goods. These factors are the productivity, the distribution of workers over the sectors, and total income of the economy.

It is shown that a relatively equal initial wealth distribution, or to be more accurate, a sufficient size of 'middle-class' is a necessary condition for a successful sectoral shift. Once the economy initiates the 'take-off', the sectoral shift and human capital growth continue until it reaches the steady state, where equal opportunity is attained. However, when agricultural productivity is low, the economy does not succeed in the sectoral shift irrespective of the initial distribution. Thus sufficient agricultural productivity is a prerequisite for the success.

2. Savings, Intergenerational Transfers, and the Distribution of Wealth (with Ignacio Ponce Ocampo)

People save for many different reasons. Important motives considered in the literature include the life-cycle motive, the precautionary motive, and the altruistic motive. The relative importance of these motives to an individual changes with his age and income level. The distribution of wealth over the heterogeneous population and aggregate wealth accumulation are results of savings made by heterogeneous people with different motives.

How important are the above-mentioned motives for wealth distribution and overall wealth accumulation of an economy? The question is interesting by itself, but it is more important because of its implications on policies such as public transfer programs or social security. Much empirical work has been done to measure the relative share of wealth accumulated for intergenerational transfers to that for life-cycle reasons, but problems with such measurement have been pointed out (Kessler and Masson, 1989).

Instead, this chapter examines the issue by constructing an overlapping-generations economy with heterogeneity within generations. In the economy agents differ in age, ability, luck, and inherited bequests. The model is solved numerically by calibrating its parameters to the U.S. economy. It succeeds in matching the actual earnings and wealth distributions quite well. Then the allocations of the baseline economy are compared with those of an economy with complete annuity markets, an economy without earnings uncertainty, and one without altruism. In this way, the effects of various savings motives on the wealth distribution and aggregate wealth accumulation can be investigated indirectly.

The effect of completing annuity markets falls predominantly on the older population and results in a large increase in wealth and bequests inequality. Alternatively, taking out earnings uncertainty decreases savings by the young especially among the poor, but lowers overall wealth inequality. Finally, the disappearance of altruism affects mainly the savings behavior of the older and richer population and reduces overall wealth and bequests inequality. The comparisons of aggregate capital stocks in the three hypothetical economies with the one in the baseline economy suggest that, aside from the pure life-cycle motive of savings, altruism is the most important factor affecting aggregate capital accumulation. Second in order of importance is the absence of annuity markets that generate accidental bequests, while the absence of insurance markets for earnings uncertainty is much less important.

3. Equity and Efficiency Effects of Redistributive Policies (with Ananth Seshadri)

Various authors have noted that, in an economy where loan and insurance markets are missing or incomplete, redistributive policies can alleviate market imperfections and improve efficiency, while at the same time increasing equity. Yet, these policies can have negative incentive effects on investment and labor supply decisions of those affected by the policies. It is by no means obvious that what policy choice performs well in achieving equity and efficiency concerns within the economy. However, there has been relatively little work trying to assess performance of various policies in a model that incorporates these market shortcomings.

The objective of this chapter is to investigate the issue using a dynamic general equilibrium model with heterogeneous agents, where individuals make investment decisions in both assets and human capital, but loan and insurance markets for such investments are missing. Specifically, two kinds of redistributive policies widespread in a real economy, money transfers and educational transfers, are considered. The model is solved numerically by calibrating its parameters to the U.S. economy so that it can match the actual economy in many aspects. Then three kinds of experiments are performed. The first two experiments examine how each of the two policies should be targeted to different people: is it better to make transfers mainly to poor people or to distribute more evenly? As for money transfers, both efficiency and equity are higher when they are distributed exclusively to the extreme poor or given equally to all. Intermediate targeting lowers efficiency and equity. In contrast, educational transfers should be distributed equally. The last experiment examines the relative performance of money transfers over educational transfers, and superiority of educational transfers is found.

Reference
Kessler, Denis and Andre Masson, " Bequest and Wealth Accumulation: Are Some Pieces of the Puzzle Missing?", *Journal of Economic Perspectives*, vol. 3 (3), Summer, 141-152, 1989.