

ABSTRACTS OF WORKING PAPERS IN ECONOMICS

This section contains abstracts and complete bibliographic information for current working papers, listed alphabetically by primary author. Brief entries appear for secondary authors, cross-referenced to the primary author. For more recent as well as historical information, consult the AWPE DATABASE, available on magnetic media from Cambridge University Press. (Call 212-924-3900)

Abraham, Katherine G.

PD June 1993. TI Does Employment Protection Inhibit Labor Market Flexibility? Lessons From Germany, France and Belgium. AU Abraham, Katherine G.; Houseman, Susan N. AA Abraham: University of Maryland and National Bureau of Economic Research. Houseman: W.E. Upjohn Institute for Employment Research. SR National Bureau of Economic Research Working Paper: 4390; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. PG not available. PR \$5.00. JE J68, J65, J23. KW Job Rights. Job Security Regulation. Employment Adjustment.

AB Laws in most Western European countries give workers strong job rights, including the right to advance notice of layoff and the right to severance pay or other compensation if laid off. Many of these same countries also encourage hours adjustment in lieu of layoffs by providing prorated unemployment compensation to workers on reduced hours. This paper compares the adjustment of manufacturing employment and hours in West Germany, France and Belgium, three countries with strong job security regulations and well-established short-time compensation systems, with that in the United States. Although the adjustment of employment to changes in output is much slower in the German, French and Belgian manufacturing sectors than in U.S. manufacturing, the adjustment of total hours worked is much more similar. The short-time system makes a significant contribution to observed adjustment in all three European countries.

Abrams, Richard K.

PD June 1993. TI Introduction of a New National Currency: Policy, Institutional, and Technical Issues. AU Abrams, Richard K.; Cortes-Douglas, Hernan. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/49; International Monetary

Fund, 700 19th Street, Washington, DC 20431. PG 28. PR not available. JE E42, F31, F33. KW Currency Conversion. Economic Transition. Currency Reform.

AB In the last few years, a number of countries in the Former Soviet Union and Eastern Europe have become independent or regained their independence. Many have chosen to issue their own currencies and more are likely to do so. This paper draws on these and earlier experiences in order to summarize the main policy and institutional arrangements necessary for the introduction of a new currency and to discuss the key features of, and procedures for, the conversion. The paper is designed as a working document for those involved with currency reforms to help ensure that all the necessary steps are taken prior to, during, and immediately after the introduction of a new

currency.

Abreu, Dilip

TI Necessary and Sufficient Conditions for the Perfect Finite Horizon Folk Theorem. AU Smith, Lones; Abreu, Dilip; Dutta, Prajit.

Agenor, Pierre-Richard

PD June 1993. TI Price Reform and Durable Goods in the Transition to a Market Economy. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/47; International Monetary

Fund, 700 19th Street, Washington, DC 20431. PG 14. PR not available. JE D91, E31, E64. KW Price Liberalization. Economic Transition. Hoarding.

AB The paper examines the short- and long-term effects of price liberalization in a reforming socialist economy. The analysis is based on an optimizing framework that highlights hoarding behavior and the existence of parallel goods markets. The behavior of official and parallel market prices, stock of durables, and the velocity of money in the transition period between reform announcement and reform implementation is characterized, in the presence and absence of uncertainty about the transition date.

PD July 1993. TI Credible Disinflation Programs. AA International Monetary Fund. SR International Monetary Fund Working Paper: PPAA/93/9; International Monetary Fund, Washington, DC 20431. PG 20. PR not available. JE E31, E61, O11. KW Credibility. Disinflation. Central Banks.

AB This paper examines the implications of the recent macroeconomic literature on credibility for the design of disinflation programs. It reviews alternative mechanisms that have been suggested to enhance the credibility of such programs, including the adoption of a shock therapy approach for signaling purposes, the use of multiple nominal anchors, and increased central bank independence. This analysis highlights the importance of a proper sequencing of macroeconomic and structural reforms for maintaining domestic political support and ensure sustainability of the reform process.

Aghion, Philippe

TI On the Speed of Transition in Central Europe. AU Blanchard, Olivier J.; Aghion, Philippe.

Aizenman, Joshua

PD July 1993. TI Political Feasibility and Investment in Economic Transformations. AU Aizenman, Joshua; Isard,

Peter. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/57; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 13. PR not available. JE E61, E62, H30, P40. KW Macroeconomic Stability. Private Investment. Economic Transition.

AB The paper characterizes the feasibility of economic transformation as requiring the simultaneous attainment of macroeconomic stability, political support, and adequate private investment. Macroeconomic stability is defined as fiscal balance; political feasibility is related to the income gains and losses of different population groups; and private investment is linked to public "infrastructure" investment. The analysis illustrates that attainment of the multiple requirements for successful transformation may necessitate a "big push" with external financial and technical assistance. It also emphasizes the importance of the productivity gains achieved when workers are induced to make occupational choices consistent with their comparative advantages.

Alberini, Anna

PD August 1990. TI Choice of Thresholds for Efficient Binary Discrete Choice Estimation. AU Alberini, Anna; Carson, Richard T. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-34; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C25, C13, C12. KW Discrete Choice. Threshold Level. Efficiency Loss.

AB Design issues for the collection of binary discrete choice data are considered. The focus of this paper is on the effect of the loss of information in estimating the parameters of the regression model using a discrete indicator relative to using the underlying continuous response variable. The choice of the threshold levels, which define the discrete indicator, is shown to influence the efficiency of the parameter estimates. Several methods for choosing those thresholds are compared. The potential efficiency gains from optimally choosing the threshold levels are shown to be large. The efficiency loss results suggest that data sets where the discrete indicator of interest represents a very unequal split of the population into two groups may have little power to test the hypotheses of interest about the center of the distribution.

Aldrich, John

PD June 1993. TI Cowles Exogeneity and CORE Exogeneity. AA University of Southampton. SR University of Southampton Discussion Paper in Economics and Econometrics: 9308; Department of Economics, University of Southampton, Southampton S09 5NH, ENGLAND. PG 47. PR no charge. JE B23, C10, C30. KW Causality. Simultaneous Equations Model.

AB This paper treats the development of two notions of exogeneity. "Cowles exogeneity" arrived fifty years ago along with endogeneity as part of the simultaneous equations model. Haavelmo and Koopmans were mainly responsible for this development. "CORE exogeneity" was the most ambitious recasting of exogeneity to emerge from the seventies and eighties. It was the work of Florens, Mouchart, Richard, Hendry and Engle. The central notion is a development of Cowles

"statistical completeness". But CORE exogeneity extends to embrace such post-Cowles developments as Granger causality and the Lucas Critique of policy analysis. Treating the two notions of exogeneity together offers the obvious scope for comparison. It is especially natural given the CORE writers' references to Cowles and their ingenious re-orchestration of themes from Cowles exogeneity.

Anderson, Heather M.

PD July 1990. TI Treasury Bill Yield Curves and Cointegration. AU Anderson, Heather M.; Granger, Clive W. J.; Hall, A. D. AA Anderson and Granger: University of California, San Diego. Hall: Australian National University. SR University of California, San Diego Department of Economics Working Paper: 90-24; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E43, C32. KW Yield to Maturity. Common Factor. Error Correction Model.

AB This paper shows that yields to maturity of U.S. Treasury Bills are cointegrated, and that the "spreads" between yields of different maturity define the cointegrating vectors. The cointegration found here implies that a single non-stationary common factor underlies the time series behavior of each yield to maturity. Estimation of implied error correction models which use spreads as error correction terms shows that these models are not stable over the Federal Reserve's policy regime changes, but post 1982 models are supported by the data, and are useful for forecasting changes in yields.

TI Modeling Nonlinearities in Business Cycles Using Smooth Transition Autoregressive Models. AU Terasvirta, Timo; Anderson, Heather M.

Andrews, Donald W. K.

PD July 1993. TI Nonlinear Econometric Models with Deterministically Trending Variables. AU Andrews, Donald W. K.; McDermott, C. John. AA Yale University. SR Yale Cowles Foundation Discussion Paper: 1053; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 29. PR no charge. JE C12, C13, C22. KW Asymptotics. Deterministic Trend.

AB This paper considers an alternative asymptotic framework to standard sequential asymptotics for nonlinear models with deterministically trending variables. The asymptotic distributions of generalized method of moments estimators and corresponding test statistics are derived using this framework. The asymptotic distributions are shown to be the same with deterministically trending variables as with non-trending variables. That is, the distributions are normal and chi-squared respectively. The asymptotic covariance matrices of the estimators, however, are found to depend on the form of the trends. These findings provide a justification for the use of standard asymptotic approximations in nonlinear models even when the variables have deterministic trends.

Arora, Vivek B.

PD July 1993. TI Sovereign Debt: A Survey of Some Theoretical and Policy Issues. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/56; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 20.

PR not available. JE F34. KW Debt Relief. Debt Reduction. Default Penalties.

AB This paper surveys the literature on sovereign debt that deals with the issues of a country's ability-to-pay, its willingness-to-pay, and the policy responses to the debt crisis of the 1980's. The existence of an ability-to-pay problem suggests a need for debt reduction, but plans for debt relief face potential incentive problems, and sovereign debt repurchases are not always a welfare maximizing method of debt restructuring. The paper synthesizes the main conclusions on these issues. With a willingness-to-pay problem, the potential penalties for debt repudiation are important in the endogenous determination of the repayment outcome. In addition, the asymmetric distribution of the costs of default can lead to a recurrent cycle of debt accumulation and default.

Artis, Michael J.

PD June 1993. TI DEER Hunting: Misalignment, Debt Accumulation and Desired Equilibrium Exchange Rates. AU Artis, Michael J.; Taylor, Mark P. AA Artis: University of Manchester and Centre for Economic Policy Research. Taylor: International Monetary Fund and Centre for Economic Policy Research. SR International Monetary Fund Working Paper: WP/93/48; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 21. PR not available. JE F31. KW Hysteresis. Exchange Rates.

AB This paper deals with hysteresis in the desired equilibrium exchange rate (DEER) arising from misalignment. When the actual real exchange rate departs from its DEER value, current account realizations--and consequently, debt service obligations--will differ from those assumed in the initial DEER calculation, necessitating its recomputation. The paper derives a formal expression for this hysteresis effect in the DEER, studies the convergence properties of a system in which the evolution of actual exchange rates depends on the DEER and provides illustrative calculations of its historical significance. Finally, the paper derives and applies rules of thumb for computing the hysteresis effect when considering the rate of approach of an exchange rate to its DEER value.

Auer, Peter

TI Degree of Approximation Results for Feedforward Networks Approximating Unknown Mappings and Their Derivatives. AU Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert; Auer, Peter.

Ayres, Robert U.

PD November 1992. TI Computer Aided Manufacturing. A Breakthrough in Productivity. AU Ayres, Robert U.; Butcher, Duane. AA Ayres: INSEAD, Butcher: U.S. State Department. SR INSEAD Working Papers: 93/42/TM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 29. PR not available. JE O30, O31, O33. KW Computerization. Technology. Productivity. AB A Third Industrial Revolution is underway in manufacturing. As products become more complex, quality control becomes more difficult, and customers grow more demanding and diverse, mass production of standardized products is increasingly unsatisfactory. In responding to this challenge managers of manufacturing firms have been forced to face several critical questions and some difficult strategic choices. How must the firm change internally to compete successfully in the future? What technologies must be mastered

and adopted "in house" and what can safely be contracted out? Is there an important distinction to be made between "human-centered" and "machine centered" approaches? If so, which offers the best long term prospects? These managerial challenges have been compounded by the integration of the world economy. This paper presents some major results of a four-year study recently completed at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria. The study concluded that Computer Integrated Manufacturing (CIM) is potentially a breakthrough of the "complexity-reliability-variety" barrier.

TI Entropy, Information and Evolutionary Selection. AU Martinas, Katalin; Ayres, Robert U.

PD June 1993. TI On Economic Disequilibrium and Free Lunch. AA INSEAD. SR INSEAD Working Papers: 93/45/EPS; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 19. PR not available. JE P00, O30, Q40, Q32. KW Energy Efficiency. Economic System. Greenhouse Gas Emissions. Technology.

AB There is a sharp disagreement between mainstream economists and advocates of energy efficiency as regards the potential for "free lunches" or "no regrets" policies to cut greenhouse gas emissions. From an economics perspective, the critical questions is whether the economic system is -- or is not -- close to a Pareto-optimum equilibrium state. If so, it follows that most technological systems now in place are optimum, or nearly so, from an economic perspective. If not, there may be many suboptimal technologies in place, with corresponding opportunities for very high returns on appropriate investments. This paper presents some of the evidence supporting the latter thesis.

PD August 1993. TI Life Cycle Analysis and Materials/Energy Forecasting Models. AA INSEAD. SR INSEAD Working Papers: 93/60/EPS; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 21. PR not available. JE D57, Q28. KW Process Analysis. Input-Output Model. Environmental Policy.

AB Life Cycle Analysis (LCA) is an increasingly important tool for environmental policy, and even for industry. To choose the "greener" of two products or policies it is necessary to know the indirect as well as the direct contributions to environmental disturbance. Moreover, it is important to consider the future (downstream) fate of a product as well as its past, since every material product must eventually become a waste. A tool that economists would naturally consider using for either of these purposes is the Leontief-type of Input-Output (I-O) model, which was explicitly developed to trace the characteristics that limit their applicability for LCA. LCA normally depends heavily on more detailed process analysis. However process analysis, also suffers from excessive aggregation of "upstream" materials transformation processes, combined with unnecessary disaggregation of "downstream" processes. The paper suggests that systematic use of materials balance conditions at the unit process and industry levels can overcome much of this difficulty. It concludes that a hybrid combination of process analysis and I-O analysis is the most promising approach.

Bagwell, Kyle

PD June 1990. TI Capacity, Entry and Forward Induction. AU Bagwell, Kyle; Ramey, Garey. AA Bagwell: Northwestern University. Ramey: University of

California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-22; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE L12, L41, D21, C72. KW Avoidable Fixed Costs. Coordination Problem. Monopoly.

AB We introduce avoidable fixed costs into the capacity and entry model of Dixit (1980) to produce a coordination problem among multiple postentry equilibria. Elimination of weakly dominated strategies makes it possible for the entrant to play a knockout strategy, consisting of a large capacity commitment which selects the entrant's preferred postentry equilibrium and drives the incumbent from the market. The incumbent must respond to the knockout threat by using judo tactics, involving a reduction in its capacity commitment. In subgame perfect equilibria which are robust to elimination of weakly dominated strategies, the incumbent must accept a market share smaller than the entrant's if avoidable fixed costs are sufficiently high, or cede the market to the entrant if avoidable fixed costs are higher still.

PD January 1992. TI Coordination Economies, Advertising and Search Behavior in Retail Markets. AU Bagwell, Kyle; Ramey, Garey. AA Bagwell: Northwestern University and Stanford University. Ramey: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-05; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 33. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D83, L11, M37, L81. KW Consumer Search. Industry Concentration.

AB We introduce a model of the retail firm in which consumers and active firms benefit collectively from coordination of sales at fewer firms. Using this model, we show that ostensibly uninformative advertising plays a key role in bringing about coordination economies, by directing consumer search toward firms that offer the best deals. Optimal consumer search takes the form of a simple rule of thumb that uses observed advertising information to guide search. Both industry concentration and social surplus are higher in the presence of advertising, relative to a no-advertising benchmark.

PD January 1992. TI Advertising and Coordination. AU Bagwell, Kyle; Ramey, Garey. AA Bagwell: Northwestern University. Ramey: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-07; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE M37, L10, D21, D40. KW Coordination Failure. Scale Economics. Market Communication.

AB When market information such as price is difficult to communicate, consumers and firms may be unable to take advantage of mutually beneficial scale economies, so that coordination failures arise. Ostensibly uninformative advertising expenditures can be used to eliminate coordination failures, by allowing an efficient firm to communicate implicitly that it offers a low price. This provides a theoretical explanation for Benham's (1972) empirical association of the ability to

advertise with lower prices and larger scale. Advertising becomes necessary for optimal coordination when the identity of the efficient firm is uncertain. Applications to loss leader advertising and product quality are developed.

PD September 1992. TI Advertising as Information: Matching Products to Buyers. AU Bagwell, Kyle; Ramey, Garey. AA Bagwell: Northwestern University. Ramey: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-33; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D83. KW Communication. Dissipative Advertising. Cheap Talk.

AB We consider communication of quality via cheap talk and dissipative advertising, when consumers have heterogeneous tastes for quality. For search goods, cheap talk communicates quality when fixed costs are roughly constant across quality levels, while if fixed costs vary greatly with quality, then firms having the higher-fixed-cost quality level use dissipative advertising. Further, product differentiation (generically) cannot occur in the absence of advertising. For experience goods, quality can be communicated by cheap talk in a range where low-quality firms have greater fixed costs, and low-quality, firms use dissipative advertising if their fixed costs are greater still.

Bai, Jushan

PD July 1993. TI Testing for Parameter Constancy in Linear Regressions: Empirical Distribution Function Approach. AA Massachusetts Institute of Technology. SR Massachusetts Institute of Technology Department of Economics Working Paper: 93-9; Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139. PG 23. PR \$8.00 domestic; \$10.00 overseas; \$5.00 Students. JE C12, C14. KW Structural Change. Nonparametric Test. Empirical Distribution Function.

AB This paper proposes some tests for parameter constancy in linear regression models with possible infinite variance. Both dynamic and trending regressors are allowed. The tests are based on the empirical distribution function of estimated residuals and are shown to have non-trivial local power against a wide range of alternatives. Within a certain class of alternatives including simple shifts, the tests have higher power for testing the simple shift alternatives. These tests are formulated in such a way that the limiting variables are distribution-free. The residuals may be obtained based on any root-n consistent estimator (under the null) of regression parameters. As part of these results, some weak convergence for weighted sequential empirical processes of residuals is established.

Balduzzi, Pierluigi

PD November 1992. TI A Model of Target Changes and the Term Structure of Interest Rates. AU Balduzzi, Pierluigi; Bertola, Giuseppe; Foresi, Silverio. AA Balduzzi and Foresi: New York University. Bertola: Princeton University, Centre for Economic Policy Research and National Bureau of Economic Research. SR New York University Salomon Brothers Working Paper: S-93-32; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New

York, NY 10006. PG 15. PR not available. JE E43, E44, E52. KW Monetary Regimes, Expectations Hypothesis, Peso Problem.

AB We document the existence of long-lived departures between U.S. overnight and short-term interest rates, and we propose a theoretical analysis of expectational mechanisms which may be responsible for this finding. In our model, overnight rates are targeted by the monetary authorities, but expectations of unrealized target changes introduce term-structure spreads with high persistence. We use three- and six-month T-bill and Fed funds-rates data to extract measures of expected target changes in three periods characterized by different operating procedures: 1974-79, 1979-82, and 1985-91.

Balkenborg, Dieter

PD June 1993. TI Strictness, Evolutionary Stability and Repeated Games with Common Interests. AA Balkenborg: University of Pennsylvania and Universitat Bonn. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-20; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 47. PR no charge. JE C70, C71, C73. KW Evolution, Stability, Game Theory.

AB It is shown that evolutionary stable sets or strict outcome paths - a natural variant of strict equilibrium points - must yield average-payoffs close to the maximal feasible ones in sufficiently long repetitions of games with common interests (which have a unique Pareto-efficient payoff-allocation). This almost-efficiency result is however only the other side of a non-existence result for all other games with a distributional conflict. The result is shown to be robust for a number of variations of the solution concepts.

Bartlett, Christopher A.

TI Quality of Management: The Invisible Engine of Corporate Performance. AU Ghoshal, Sumantra; Bartlett, Christopher A.

Bates, Charles E.

PD April 1992. TI Determination of Estimators with Minimum Asymptotic Covariance Matrices. AU Bates, Charles E.; White, Halbert. AA Bates: KPMG Peat Marwick Policy Economics Group. White: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-16; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 19. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C13. KW Huber Estimators, Asymptotic Variance.

AB We give a straightforward condition sufficient for determining the minimum asymptotic variance estimator in certain classes of estimators relevant to econometrics. These classes are relatively broad, as they include extremum estimation with smooth or non-smooth objective functions; also, the rate of convergence to the asymptotic distribution is not required to be n to the $-1/2$. We present examples illustrating the content of our result. In particular, we apply our result to a class of weighted Huber estimators, and obtain among other things analogs of the generalized least squares estimator for least L sub p-estimation, p between 1 and infinity.

Beach, Charles M.

TI Characterizing Life-Cycle Wealth Distributions in Canada Using Dominance Criteria. AU Siddiq, Fazley K.; Beach, Charles M.

Bencivenga, Valerie R.

PD June 1993. TI Liquidity of Secondary Capital Markets: Allocative Efficiency and the Maturity Composition of the Capital Stock. AU Bencivenga, Valerie R.; Smith, Bruce D.; Starr, Ross M. AA Bencivenga and Smith: Cornell University and Federal Reserve Bank of Minneapolis. Starr: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-24R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 33. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E22, E43, G12. KW Capital Production, Capital Markets, Liquidity.

AB We consider an economy where agents endogenously choose among capital production technologies with differing gestation periods. Long-gestation capital investments must be "rolled-over" in secondary capital markets. The use of such investments technologies therefore requires the support of financial market activity. We investigate how changes in the liquidity of secondary capital markets (i.e., in the costs of transacting) affect (a) the choice of capital production technology, (b) per capita income and the per capita capital stock (c) the level of financial market activity, (d) the real return on savings and (e) welfare in a steady state equilibrium. We describe conditions under which financial market activity and real activity will be positively related, as well as conditions under which they will not. Our interest in this issue stems from the prominence it receives in the literature on economic development. Finally, the model delivers testable predictions about the relationship between transactions costs and equilibrium rates of return.

Bensaou, M.

PD July 1993. TI Configurations of Inter-Organizational Relationships: A Comparison Between U.S. and Japanese Automakers. AU Bensaou, M.; Venkatraman, N. AA Bensaou: INSEAD. Venkatraman: Massachusetts Institute of Technology. SR INSEAD Working Papers: 93/55/TM/SM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 29. PR not available. JE L62, L14, L22. KW Automobile Industry, Transactions Costs, Organization Theory.

AB This paper uncovers dominant configurations of inter-organizational relationships across the USA and Japan in the automotive industry. We integrate relevant theoretical concepts from transaction cost economics, organization theory and political economy to develop a conceptual model of inter-organizational relationships based on the fit between information processing needs and information processing capabilities. This model is employed to collect data on 447 buyer-supplier relationships in these two countries. We empirically uncover a set of five naturally occurring patterns of inter-organizational relationships. These configurations provide rich explanations of the complexity of inter-organizational relationships. We discuss implications for further research pertaining to the logic and development of configurations.

Bera, Anil K.

PD July 1990. TI Interaction Between Autocorrelation and Conditional Heteroskedasticity: A Random Coefficient Approach. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L. AA Bera: University of Illinois and University of California, San Diego. Lee: Korea Maritime Institute. Higgins: University of Wisconsin-Milwaukee. SR University of California, San Diego Department of Economics Working Paper: 90-25; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C12. KW ARCH. Autocorrelation. Joint Test.

AB We consider a linear regression model with random coefficient autoregressive disturbances which provides a convenient framework to analyze autocorrelation and autoregressive conditional heteroskedasticity (ARCH) simultaneously. Under our framework, the necessary and sufficient conditions for the process to be stationary are easily derived, and these conditions further reveal the interaction between ARCH and autocorrelation. We present tests for ARCH in the presence of autocorrelation and vice versa. A joint test for autocorrelation and ARCH is also suggested. An empirical example is provided to illustrate the usefulness of our analysis.

PD July 1990. TI Information Matrix Test, Parameter Heterogeneity and ARCH: A Synthesis. AU Bera, Anil K.; Lee, Sangkyu. AA Bera: University of Illinois and University of California, San Diego. Lee: Korea Maritime Institute at Seoul. SR University of California, San Diego Department of Economics Working Paper: 90-26; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 12. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12. KW Conditional Heteroskedasticity. Lagrange Multiplier Test.

AB We apply the White information matrix (IM) test to the linear regression model with autocorrelated errors. A special case of one component of the test is found to be identical to the Engle Lagrange multiplier (LM) test for autoregressive conditional heteroskedasticity (ARCH). Given Chesher's interpretation of the IM test as a test for parameter heterogeneity, this establishes a connection among the IM test, ARCH and parameter variation. This also enables us to specify conditional heteroskedasticity in a more general and convenient way. Other interesting byproducts of our analysis are tests for the variation in conditional and static skewness which we call tests for "heterocliticity".

TI A Class of Nonlinear ARCH Models. AU Higgins, Matthew L.; Bera, Anil K.

PD October 1990. TI On the Formulation of a General Structure for Conditional Heteroskedasticity. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L. AA Bera: University of Illinois, Urbana-Champaign and University of California, San Diego. Lee: Korea Maritime Institute. Higgins: University of Wisconsin-Milwaukee. SR University of California, San Diego Department of Economics Working Paper: 90-41; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 31. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C51,

C12. KW ARCH. Random Coefficients. Stationarity Conditions.

AB In recent years, ARCH models have emerged as an indispensable tool for modeling the conditional second moment of economic variables, and therefore, proper formulation of the conditional variance function is of the utmost importance. In order to provide a unified approach to the problem of finding stationarity conditions and the test statistics for various specifications of conditional heteroskedasticity, we propose a general random coefficient disturbance process which encompasses AR, ARCH and GARCH processes. Through the vector representation of the model, we use a new procedure to derive stationarity conditions for our general disturbance process and discuss the interaction between autocorrelation and conditional heteroskedasticity. We also show that the stationarity conditions for AR, ARCH and GARCH models can be obtained as a special case of our result. Test statistics for conditional heteroskedasticity and autocorrelation are proposed.

Berger, Allen N.

PD May 1993. TI Using Efficacy Measures to Distinguish Among Alternative Explanations of the Structure-Performance Relationship in Banking. AU Berger, Allen N.; Hannan, Timothy H. AA Board of Governors of the Federal Reserve System. SR Board of Governors of the Federal Reserve System Finance and Economics Discussion Series: 93-18; C/O Stephen A. Sharpe, Mail Stop 89, Federal Reserve Board, Washington, DC 20551. PG 25. PR no charge. JE G21, G28, L41, L11. KW Banks. Concentration. Profits.

AB Prior research on the structure-performance relationship has not investigated all of the relevant relationships among market structure, profits, prices, and explicitly calculated measures of firm efficiency. This paper replicates the four approaches in the literature, adds several innovations, and applies the analysis to banking data. We find more support for the structure-conduct-performance hypothesis than for the relative-market-power and efficient-structure hypotheses, although the data are not fully consistent with any of these theories. We also find support for Hick's quiet-life hypothesis, which implies that firms with market power less rigorously adhere to efficiency maximization.

Bernard, Andrew B.

PD May 1993. TI Convergence in International Output. AU Bernard, Andrew B.; Durlauf, Steven N. AA Bernard: Massachusetts Institute of Technology. Durlauf: Stanford University. SR Massachusetts Institute of Technology Department of Economics Working Paper: 93-7; Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139. PG 11. PR \$8.00 domestic; \$10.00 overseas; \$5.00 students. JE F43, O40, N10. KW Long-Run Growth. OECD. Common Trends. Cointegration.

AB This paper proposes and tests new definitions of convergence and common trends for per capita output. We define convergence for a group of countries to mean that each country has identical long-run trends, either stochastic or deterministic, while common trends allow for proportionality of the stochastic elements. These definitions lead naturally to the use of cointegration techniques in testing. Using century-long time series for 15 OECD economies, we reject convergence but find substantial evidence for common trends. Smaller samples

of European countries also reject convergence but are driven by a lower number of common stochastic trends.

Bertola, Giuseppe

TI A Model of Target Changes and the Term Structure of Interest Rates. AU Balduzzi, Pierluigi; Bertola, Giuseppe; Foresi, Silverio.

Betts, Julian R.

PD March 1993. TI Does School Quality Matter? Evidence from the National Longitudinal Survey of Youth. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-10; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE I21, J31, J24. KW School Quality. Workers' Earnings.

AB The paper searches for links between school quality and subsequent earnings of students. Using data for white males from the NLSY, the paper rejects the hypothesis that workers' earnings are independent of which high school they attended. However, traditional measures of school "quality" such as class size, teachers' salaries and teachers' level of education fail to capture these differences. This result is robust to changes in specification and subsample. The paper contrasts the results with those of Card and Krueger (1992), and speculates that structural changes may have weakened the link between traditional measures of school quality and student outcomes.

PD March 1993. TI Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments. AU Betts, Julian R.; McFarland, Laurel L. AA Betts: University of California, San Diego. McFarland: The Brookings Institution. SR University of California, San Diego Department of Economics Working Paper: 93-12; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E32, I21, I22, E24. KW College Enrollment. Business Cycles. Education Policy.

AB The paper examines the impact of the business cycle on enrollment and finances at individual community colleges between 1966 and 1988. We find that 1% increases in the unemployment rates of recent high school graduates and of all adults are associated with rises in full-time attendance of about 0.8% and 4% respectively. Part-time enrollment exhibits similar anticyclical patterns. This link carries over in large part to degrees obtained. In contrast, state and local appropriations per student are procyclical. We interpret this funding pattern as a failure to integrate education policy sufficiently closely with labor-market policy.

PD June 1993. TI Trends in Skill Requirements: A Re-Examination of Evidence from the Dictionary of Occupational Titles. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-21; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 15. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, J24, J23. KW Skill Measures. Asymptotic Test. Ordinal Measure.

AB A large literature measures trends in firms' skill requirements using data on the occupational mix of employment and ordinal skill measures for occupations derived from the Dictionary of Occupational Titles. Much of this research arbitrarily converts categorical skill measures into cardinal values, which could render even the sign of estimated skill changes incorrect. The literature also fails to account for sampling error in estimates of the occupational mix. The paper therefore derives an asymptotic test for positive or negative changes in the skill level which is robust to these problems. The analysis casts doubt on several conclusions reached in earlier work.

Blackburn, Jan

TI U.S. Defense Expenditures: An Error Correction (Cointegration) Approach. AU Ramanathan, Ramu; Blackburn, Jan.

Blackburn, Joseph D.

PD May 1993. TI From IE to JIT to Time-Based Competition. AU Blackburn, Joseph D.; Van Wassenhove, Luk N. AA INSEAD. SR INSEAD Working Papers: 93/46/TM/SM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 20. PR not available. JE O30, O31, O32, L23. KW Just-in-Time. Industrial Engineering. Time-Based Competition.

AB Recent developments in global manufacturing suggest that the traditional industrial engineering approach for work improvement is off-target and ineffective. The experiences of many leading firms show that the task-oriented approach of Industrial Engineering (IE) misses major opportunities for process improvement. We maintain that the problem stems not from IE's original principles but from how it has evolved (or deviated) from them; the evolution of IE in support of mass production created a myopic, task focus that is inappropriate for the time-based, flexible operating environments of today. Just-in-time (JIT) represents a radical departure from IE practices and Time-Based Competition represents further development along that path. Remarkable changes are occurring on the factory floor and even more striking changes are affecting processes off the factory floor--in the white collar areas of the firm. We argue in this paper that these changes represent a departure from what has become standard IE practices and that these practices are obstacles to the quantum leaps in response time and quality necessary to compete in today's global markets.

Blackburn, Keith

PD September 1992. TI Endogenous Growth and Trade Liberalization. AU Blackburn, Keith; Hung, Victor Tin Yau. AA University of Southampton. SR Aarhus Institute of Economics Memo: 1993-5; Institute of Economics, University of Aarhus, Building 350, Universitetsparken, DK-8000 Aarhus C, DENMARK. PG 18. PR no charge. JE F43, O41, F13. KW Knowledge Spillovers. Market Size. Integration.

AB We develop an endogenous growth model in which trade liberalization has a positive effect on growth. This effect does not depend on marginal reallocations or on knowledge spillovers. Rather, it is due solely to the increase in market size following the integration of product markets. Our result contradicts a widely-held view that trade in physical goods per se has no consequences for long-run growth.

Blake, Christopher R.

PD July 1993. TI The Performance of Bond Mutual Funds. AU Blake, Christopher R.; Elton, Edwin J.; Gruber, Martin J. AA Blake: Fordham University. Elton and Gruber: New York University. SR New York University Salomon Brothers Working Paper: S-93-39; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 22. PR not available. JE G12, G14. KW Bond Funds. Predictability.

AB Using linear and non-linear models, we examine two samples of bond funds: one sample designed to eliminate survivorship bias, and a second much larger sample. Overall and for subcategories of bond funds, we find that bond funds underperform relevant indexes post-expenses. Our results are robust across a wide choice of models. We find that, on average, a percentage-point increase in expenses leads to a percentage-point decrease in performance. The non-linear model weights closely match actual composition weights. We find no evidence of predictability using past performance to predict future performance for our unbiased sample.

Blanchard, Olivier J.

PD June 1993. TI On the Speed of Transition in Central Europe. AU Blanchard, Olivier J.; Aghion, Philippe. AA Blanchard: Massachusetts Institute of Technology. Aghion: EBRD. SR Massachusetts Institute of Technology Department of Economics Working Paper: 93-8; Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139. PG 30. PR \$8.00 domestic; \$10.00 overseas; \$5.00 students. JE E10, O10, O40. KW Eastern Europe. Transition. Private Sector. State Firms. Unemployment.

AB Transition in Central Europe involves the closing and restructuring of state firms, as well as the emergence of a new private sector. The speed of closing and restructuring and the rate of private job creation determine the dynamics of unemployment. And unemployment in turn affects both the decisions to restructure as well as to create new private jobs. Our paper presents a model which captures these interactions. It characterizes the positive and normative properties of the equilibrium speed of transition and unemployment rate, and the role of policy.

Bliss, Christopher

PD June 1989. TI Pricing for a Divided Market. AA University of California, San Diego and Nuffield College, Oxford. SR University of California, San Diego Department of Economics Working Paper: 89-13; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 8. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D40, D21, D43. KW Ramsey Pricing. Retail Pricing. Heterogeneous Consumers.

AB In Bliss (1988) the author showed that, in a simple model, retail outlets competing for the custom of shoppers who have different transport costs for getting to the various stores, will practice modified Ramsey pricing in setting their mark-ups. This paper shows how that result may be generalized to treat the case of sellers dividing a market in which buyers differ more widely - e.g. in their tastes, incomes, etc. - in a very general framework. Of crucial importance is an assumption under which the "regions" served by the various sellers are subsets of a space of consumer characteristics bounded by a

finite number of N-1 dimensional surfaces. When these surfaces are hyper-planes, then the regions are polyhedrons. In this case it is shown that modified Ramsey pricing will again characterize an equilibrium.

Blume, Andreas

PD October 1991. TI Communication-Proof Equilibria in Cheap-Talk Games. AU Blume, Andreas; Sobel, Joel. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-31; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, C62. KW Cheap Talk. Stable Sets.

AB If players can talk quickly and at no cost, then it is reasonable to expect them to continue talking when there exist unexploited gains from communication. This paper investigates the intuition in a simple framework. We assume that there are two players. Only one player has private information, and only that player has the ability to communicate. The informed player first makes statements about his private information. The other player then takes an action that influences the payoffs of both players. We will assume that under certain circumstances the informed player will be believed.

PD August 1992. TI Evolutionary Stability in Games of Communication. AU Blume, Andreas; Kim, Yong-Gwan; Sobel, Joel. AA Kim and Sobel: University of California, San Diego. Blume: University of Iowa. SR University of California, San Diego Department of Economics Working Paper: 92-29; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, C73. KW Communication Games. Evolutionary Stability. Messages.

AB This paper identifies evolutionarily stable outcomes of communication games. We discuss simple Sender-Receiver games in which one player has private information and another player takes a payoff-relevant action. The central issue of this paper is whether messages take on commonly understood meanings that permit the informed player to communicate effectively when it is in her interest to do so. Our method of describing evolutionarily stable outcomes in communication games follows an earlier paper by two of us (Kim and Sobel (1992)), which characterizes the set of outcomes that satisfy a static evolutionary stability notion in two-player, normal-form games that have been augmented by open round of simultaneous communication. The general message of this work is that when pre-play communication is possible, evolutionary pressures destabilize inefficient outcomes. The strongest existence and efficiency results come in games with common interests. Otherwise the existence of stable outcomes is in doubt.

Bollerslev, Tim

TI Common Persistence in Conditional Variances. AU Engle, Robert F.; Bollerslev, Tim.

Bonanno, Giacomo

PD July 1993. TI Information Partitions and the Logic of Knowledge and Common Knowledge. AA University of California, Davis. SR University of California at Davis

Economics Department Working Paper: 93-16; Department of Economics, University of California at Davis, CA 95616-8578. PG 33. PR \$3.00 U.S. and Canada. \$4.00 International. JE D83, C70. KW Modal Logic. Common Knowledge. Topological Semantics.

AB We review the logician's and the economist's approach to the notion of knowledge and common knowledge and argue that the logician's approach is superior, in that it leaves no room for ambiguity. Furthermore, we show that an extension of the so-called topological semantics for propositional calculus provides semantics for knowledge and common knowledge which can be seen as a direct translation of the economist's approach. The paper is organized as follows. Sections 2 and 3 contain a brief reminder of the definition of propositional calculus and of the so-called topological semantics of it (which is less well-known than the standard one based on truth tables), as well as an illustration of possible applications. Section 4 and 5 extend the analysis to the system S5 of modal logic. Sections 6 and 7 deal with the notion of common knowledge and provide an illustration of this concept.

Borjas, George J.

PD August 1991. **TI** Ethnic Capital and Intergenerational Mobility. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-27; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 29. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** J24, J62. **KW** Ethnicity. Human Capital. Skill Differentials.

AB This paper analyzes the extent to which ethnic skill differentials are transmitted across generations. I assume that ethnicity sets as an externality in the human capital accumulation process. The skills of the next generation depend on parental inputs and on the quality of the ethnic environment in which parents make their investments, or "ethnic capital." The empirical evidence reveals that the skills of today's generation depend not only on the skills of their parents, but also on the average skills of the ethnic group in the parent's generation.

PD November 1991. **TI** A Two-Stage Estimator for Probit Models with Structural Group Effects. **AU** Borjas, George J.; Sueyoshi, Glenn T. **AA** University of California, San Diego and National Bureau of Economic Research. **SR** University of California, San Diego Department of Economics Working Paper: 91-37; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 29. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C13, C25, C15. **KW** Random Components Model. Two Stage Estimation.

AB This paper outlines a two-stage technique for estimation and inference in probit models with structural group effects. The structural group specification belongs to a broader class of random components models. In particular, individuals in a given demographic group share a common component in the specification of a conditional mean of a latent variable. For a number of computational reasons, existing random-effects models are impractical for estimation and inference in this type of problem. Our two-stage estimator provides an easily estimable alternative to the random effect specification. In addition, we conduct a Monte Carlo simulation comparing the

performance of alternative estimators, and find that the two-stage estimator is superior-both in terms of estimation and inference-to the traditional random effects model.

Braverman, Avishay

PD August 1989. **TI** Rural Credit in Developing Countries. **AU** Braverman, Avishay; Guasch, Jose Luis. **AA** Braverman: World Bank. Guasch: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-37; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 33. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** R51, O11, Q14, O18. **KW** Urban Bias. Institutional Reform. Credit Contracts.

AB In most LDC's, there is clear evidence of "urban bias" that is, government policies (price/tax, investment) favor residents of the urban sector over rural inhabitants. This bias seems to exist in the allocation of credit as well. The object of study is not to identify the reasons for the urban bias, but rather to evaluate public credit policies in the rural sector. Subsidized formal credit has been advocated on efficiency and equity grounds, but also as a much easier policy to implement than, for example, land reform. However, the record on these policies is quite dismal. In this paper we intend (I) to pinpoint the reasons behind the failure to achieve the stated objectives in rural credit allocation, many of them coming from within the institutions which were created to channel credit; and (II) to review the recent developments in the theory of incentives and organizations in order to shed some light on the process of institutional reform.

PD May 1990. **TI** The Theory of Rural Credit Markets. **AU** Braverman, Avishay; Guasch, Jose Luis. **AA** Braverman: World Bank. Guasch: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-19; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 39. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** O16, G28, O18. **KW** Subsidized Credit. Financial Institutions.

AB We present here an analysis of rural credit markets, theory and evidence, in order to attempt to understand the role that the government can effectively play in that sector, and to design effective reforms to improve the predicament of the sector and the efficiency of those markets. The particular policy questions we address are, should subsidized credit policies be continued?, should the government be building financial institutions to channel credit? and if so under which conditions?, is the targeting of small scale farmers a viable option?, are credit groups a viable institution to effectively increase the access to credit of the small farmers?, and lastly, should any restrictions be imposed in the informal credit sector?.

PD September 1990. **TI** Agricultural Reform in Developing Countries: Reflections for Eastern Europe. **AU** Braverman, Avishay; Guasch, Jose Luis. **AA** Braverman: World Bank and Ben Gurion University of the Negev, Israel. Guasch: University of California, San Diego and World Bank. **SR** University of California, San Diego Department of Economics Working Paper: 90-35; Working

Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 22. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE Q13, Q15, O13. KW Economic Transition. Commitment. Flexibility.

AB The transition to post collectivist agriculture presents unprecedented opportunities and dilemmas. The experience of developing countries has much relevance for the countries of Eastern Europe and USSR, but unfortunately it offers no magic formulas or guaranteed solutions. The scope of change is greater than that attempted in the structural adjustment programs of the developing world, and, because of its comprehensiveness, the potential that the parts will fit together is greater. A central dilemma is the tension between commitment and flexibility. Economic agents must believe that the government will and will force others to play by the new rules. Yet the rules must occasionally be changed or adjusted as ignorance clears or circumstances adjust. Western technical assistance with the support of international financial institutions can be effective only if professionals of the East and West work together, since it is a process of joint learning, not a pure transfer of knowledge.

PD September 1990. TI Promoting Rural Cooperatives in Developing Countries: The Case of SubSaharan Africa. AU Braverman, Avishay; Guasch, Jose Luis; Huppi, Monika. AA Braverman and Huppi: World Bank. Guasch: University of California, San Diego and World Bank. SR University of California, San Diego Department of Economics Working Paper: 90-36; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 33. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE O55, Q13, O13. KW Agriculture. Rural Cooperatives.

AB The economic crisis in SubSaharan Africa presents a major challenge to donors and to policy-makers. Agriculture is the most important sector in the economics of SubSaharan Africa. Although this sector has performed better than others during the 1980's, Africa is faced with a growing food deficit. Now, the plight of the rural sector and perhaps a change of philosophy, have led many donors and governments to search for alternative institutional ways to serve the rural population of SubSaharan Africa. Increasing attention focuses on the potential of rural cooperatives as service organizations. Because they are conceived as organizations by and for members, coops are seen as vehicles with the potential to provide services for the rural population. It is widely recognized, however, that the performance of SubSaharan cooperatives has been disappointing. It seems appropriate to examine the reasons behind successful and unsuccessful experiences with rural coops and to reevaluate the potential for remedying the major problems plaguing SubSaharan agriculture.

TI Agriculture and the Transition to the Market. AU Brooks, Karen M.; Guasch, Jose Luis; Braverman, Avishay; Csaki, Csaba.

Brenner, Menachem

PD April 1993. TI Hedging Volatility in Foreign Currencies. AU Brenner, Menachem; Galai, Dan. AA Brenner: New York University. Galai: Hebrew University, Jerusalem, and Floersheimer Institute for Policy Studies. SR New York University Salomon Brothers

Working Paper: S-93-20; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 17. PR not available. JE F31, G13, G11. KW Currency Hedge. Volatility Risk. Derivative Instruments.

AB Options and futures on currencies help in hedging the risk of changes in the value of currencies. A common assumption behind most pricing models of options is that the volatility is constant over the life of the option. Existing derivative instruments are useful in hedging against, or in speculating on, changes in the level of the market. They do not, however, provide means to hedge, or speculate on changes in market volatility. Since these changes become more pronounced and a matter of growing concern to many investors, we propose the creation of new instruments designed to manage volatility risk. In this paper we provide the rationale for creating new derivative instruments that handle the risk of changes in volatility, how such instruments could be used and what approach could be used to value these instruments.

Bresnahan, Timothy F.

PD February 1993. TI Segment Shifts and Capacity Utilization in the U.S. Automobile Industry. AU Bresnahan, Timothy F.; Ramey, Valerie A. AA Bresnahan: Stanford University and National Bureau of Economic Research. Ramey: University of California, San Diego and National Bureau of Economic Research. SR University of California, San Diego Department of Economics Working Paper: 93-08; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 8. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E32, L62. KW Sectoral Shifts. Oil Shocks.

AB An important school of thought argues that sectoral shifts may account for a substantial portion of aggregate fluctuations. Events such as the oil shocks of the 1970's, exchange rate fluctuations, and shifts in government spending have their direct effect on the composition of economic activity. The sectoral shift literature argues that they may affect the level and the dynamics of output and employment as well. This paper presents an empirical study of the impact of oil-shock sectoral shifts within the U.S. automobile industry. From an analytical perspective, a "sectoral shift" is any event that raises desired output and employment in some "sectors" and lowers them in others. For our purposes, a "sector" is a size class of automobiles. Within the automobile industry, we will be able to study two distinct questions. First, did the oil price-induced shocks to the composition of demand interact with short-run rigidities in supply to limit industry-wide capacity utilization?

Brooks, Karen M.

PD February 1991. TI Agriculture and the Transition to the Market. AU Brooks, Karen M.; Guasch, Jose Luis; Braverman, Avishay; Csaki, Csaba. AA Brooks: World Bank and University of Minnesota. Guasch: University of California, San Diego and World Bank. Braverman: Ben Gurion University of the Negev. Csaki: Budapest University of Economic Sciences. SR University of California, San Diego Department of Economics Working Paper: 91-07; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 15. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents,

University of California. JE Q13, Q18, P23, O52, O13. KW Economic Transition. Agricultural Policy. Eastern Europe.

AB Management of the agricultural transition in Eastern and Central Europe will affect the political sustainability of the process and will influence agriculture's contribution to the growth of emergent market economies. Important as agriculture is, from Poland in the north down to Yugoslavia and Bulgaria in the south, its impact on the countries, the region, and the world is dwarfed by the agriculture of the USSR. A positive program to arrest the decline in Soviet agriculture has the potential to contribute to economic growth and political stability in the region and in the world. Failure to address the fundamental flaws on Soviet agriculture will hasten the country's decline into poverty and ethnic turmoil, and reduce the likelihood that the monumental efforts of Central Europeans will be successful.

Brown, Donald J.

PD June 1989. TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. AU Brown, Donald J.; Heller, Walter P.; Starr, Ross M. AA Brown: Stanford University. Heller and Starr: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-25; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D51, D42. KW Natural Monopoly. Two-Part Tariffs. General Equilibrium Model.

AB Nonlinear pricing is explored in a general equilibrium model with increasing returns to scale. We consider a private ownership economy with a regulated natural monopoly. Competitive firms with nonincreasing returns price at marginal cost. The natural monopoly uses a two-part pricing scheme where the losses incurred by pricing at marginal cost are recovered by a non-uniform hookup charge for the right to purchase the monopoly good. Two-part marginal cost pricing equilibria are not generally Pareto-efficient. This is in contrast to the impression left by much of the partial equilibrium literature on two-part tariffs. Further, it is shown by example that it is not always possible to support an efficient allocation as a two-part tariff equilibrium. Hence, both the First and Second Fundamental Theorems of Welfare Economics may fail.

PD August 1991. TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. AU Brown, Donald J.; Heller, Walter P.; Starr, Ross M. AA Brown: Stanford University. Heller and Starr: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-14R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 32. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE L12, L51, D42, D61. KW Two Part Tariffs. Regulated Monopoly. Consumer Surplus.

AB Two-part tariffs are explored in a general equilibrium model with increasing returns to scale. Two-part marginal cost pricing equilibria are not generally Pareto-efficient. The Second Fundamental Theorem of Welfare Economics may also fail. We introduce a notion of consumer surplus as the willingness to pay for access to the increasing returns good. The individual's hookup charge is set to fixed fraction of his consumer surplus.

If aggregate consumer surplus exceeds the losses of the regulated monopoly, the exact two-part marginal cost pricing equilibria exist. Further, with positive net surplus, the Second Fundamental Theorem of Welfare Economics for two-part tariffs holds.

Brown, Scott J.

PD April 1989. TI Non-Cointegration and Econometric Evaluation of Models of Regional Shift and Share. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F. AA Brown: San Diego Gas & Electric. Coulson: Pennsylvania State University. Engle: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-32; Working Paper Coordinator, Economics Department, 0508, University of California, La Jolla, CA 92093-0508. PG 22. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C32, E23. KW Regional Output. Industry Output. Cointegration.

AB This paper tests for cointegration between regional output of an industry and national output of the same industry. An equilibrium economic theory is presented to argue for the plausibility of cointegration, however, regional economic forecasting using the shift and share framework often acts as if cointegration does not exist. Data analysis on broad industrial sectors for 20 states finds very little evidence for cointegration. Forecasting models with and without imposing cointegration are then constructed and used to forecast out of sample. The simplest, non-cointegrating models are the best.

PD June 1989. TI On the Determination of Regional Base and Regional Base Multipliers. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F. AA Brown: San Diego Gas and Electric. Coulson: Pennsylvania State University. Engle: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-22; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 14. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE R13. KW Regional Base. Base Multipliers.

AB Perhaps the thorniest problem in the analysis of regional economies is the determination of regional base for purposes of multiplier analysis. In what follows, the fact that the base multiplier model is a model of long-run equilibrium is used to yield a stationarity condition on the residual of the regression equation used to estimate the base multiplier. Then basic and total earnings are said to be cointegrated, and so cointegrating tests can be used to test whether the definition of the base is correct. In Section 1, the base multiplier is examined and the test is outlined. In Section 2, the problems of base identification is explored and some difficulties of the test examined, followed in Section 3 by an empirical example using state data. Section 4 concludes.

Brown, Stephen J.

PD February 1993. TI Risk Premia in Pacific Basin Capital Markets. AU Brown, Stephen J.; Otsuki, Toshiyuki. AA Brown: New York University. Otsuki: International University of Japan. SR New York University Salomon Brothers Working Paper: S-93-26; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 17. PR not available.

JE G15, G12. **KW** Global Equity Markets. Risk Premium.
AB We study the extent to which exposure to global risk factors explains excess returns in Pacific-Basin capital markets. These risk premia are analyzed using a multiperiod asset pricing model of global equity markets. The increasing integration of international asset markets suggests that a few variables might be sufficient to explain expected return differences and risk exposures across countries. A feature of this model is that we allow risk premia to change through time in response to global macroeconomic factors. We find that factors that influence Pacific-Basin markets are similar to those operating in other capital markets. These risk premia reflect a systematic response to changes in global economic conditions. However, this region is more exposed to global risk factors than is the United States. Furthermore, the composition of the risk premium differs across capital markets of the Pacific-Basin.

TI Attrition and Mutual Fund Performance.
AU Goetzmann, William N.; Brown, Stephen J.

Burda, Michael

PD July 1993. **TI** Gross Worker and Job Flows in Europe.
AU Burda, Michael; Wyplosz, Charles. **AA** INSEAD.
SR INSEAD Working Papers: 93/58/EPS; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. **PG** 25. **PR** not available. **JE** J64, J63.
KW Labor Markets. Unemployment. Job Destruction.
AB Despite the impression of Eurosclerosis, labor markets in Europe are in fact quite active. Flows into and out of unemployment are large, countercyclical, and highly coherent in four European countries examined. Worker exits from unemployment to employment exhibit a countercyclical pattern similar to that in the United States and Japan. The matching function paradigm is capable of explaining these facts only if the unemployment stock rises sufficiently fast in downturns. We propose an equilibrium model which can deliver a wide range of job and worker flow dynamics. For sufficiently large adverse shocks, the model can generate endogenous layoffs and job destruction which match the stylized facts.

Butcher, Duane

TI Computer Aided Manufacturing. A Breakthrough in Productivity. **AU** Ayres, Robert U.; Butcher, Duane.

Byg, Torkild

PD July 1993. **TI** Simultaneous Bargaining With Two Potential Partners. **AA** Tel-Aviv University. **SR** Tel Aviv Foerder Institute for Economic Research Working Paper: 6/93; Department of Economics, Tel Aviv University, Ramat Aviv 69978, Tel Aviv, ISRAEL. **PG** 28. **PR** no charge.
JE D49, D74. **KW** Bargaining. Three Player Games. Essentiality.

AB A bargaining model with one essential player, i.e. a player whose participation is necessary to create any surplus and two non-essential players is studied. The players of the game bargain simultaneously according to an extended alternating offers mechanism. A wide range of Nash equilibria is obtained under various parameter configurations and information structures. This set is then limited by demanding that the equilibria should be sequential. Further asymmetries in the information is introduced, and an example is analyzed extensively. Possible extensions are briefly considered.

Cabrales, Antonio

PD September 1991. **TI** On the Limit Points of Discrete Selection Dynamics. **AU** Cabrales, Antonio; Sobel, Joel. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-28; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 12. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California.
JE C73. **KW** Replicator Dynamics. Discrete Game Dynamics.

AB This paper provides an analog to the aggregate monotonicity condition introduced by Samuelson and Zhang (1991) in a study of continuous dynamics. Our condition guarantees that limit points of discrete selection dynamics are rationalizable strategies. We show that the condition will be satisfied by the discrete replicator dynamic if the population does not change rapidly. These results reconcile the Samuelson-Zhang theorem, which implies that limit points of continuous replicator dynamics must be rationalizable, with an example of Dekel and Scotchmer (1991), which shows that limit points of the discrete replicator dynamic may place positive probability on strictly dominated strategies.

PD March 1993. **TI** Heterogeneous Beliefs, Wealth Accumulation, and Asset Price Dynamics. **AU** Cabrales, Antonio; Hoshi, Takeo. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-11; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 33. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G10, C22, G12. **KW** Investor Type. Wealth Distribution. Asset Returns.

AB A model of asset markets with two types of investors is developed and its dynamic properties are analyzed. "Optimists" expect on average higher returns on the risky assets than "pessimists" do. The stochastic process for equilibrium asset returns changes over time as the distribution of wealth between the two types of investors changes. In the long run, the share of wealth held by one type of investor may become negligible, but it is also possible for both types to co-exist, depending on the parameter values of the model. Relations between this model and some econometric models with time varying parameters, such as the ARCH model, are examined. The dynamic properties of another model, regarding investors who use strategies that are a bit more complex, are also analyzed. "Fundamentalists" believe that the asset returns follow a process that is solely determined by fundamentals and "contrarians" assume the market is wrong and choose a portfolio that is exactly opposite of the market portfolio.

Calvo, Guillermo A.

PD September 1990. **TI** Debt Relief and Debt Rescheduling: The Optimal-Contract Approach. **AU** Calvo, Guillermo A.; Kaminsky, Graciela L. **AA** Calvo: International Monetary Fund. Kaminsky: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-37; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 31. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G21, F34, L14. **KW** Debt Contracts. International Lending. Banks.

AB In this paper we study the implications of assuming that bank syndicates and debtor countries entered into implicit debt contracts during the 1970's. Our approach rests on the assumption that loan contracts charged a risk premium because banks entertained the possibility of debt reduction. Contrary to the previous literature on sovereign debt and debt-overhang, we assume full coordination between banks and debtors in designing optimal debt contracts. In this respect, we find that debt relief may actually be consistent with full-precommitment situations. We present an application of the model to data from Argentina, Brazil, and Mexico.

PD July 1993. **TI** The Capital Inflows Problem: Concepts and Issues. **AU** Calvo, Guillermo A.; Leiderman, Leonardo; Reinhart, Carmen. **AA** Calvo and Reinhart: International Monetary Fund. Leiderman: Tel-Aviv University. **SR** International Monetary Fund Working Paper: PPAA/93/10; International Monetary Fund, Washington, DC 20431. **PG** 22. **PR** not available. **JE** F21, F41. **KW** Capital Mobility. International Capital Markets.

AB Since 1990 capital has started to move from industrial countries to developing regions like Latin America, the Middle East and parts of Asia. Reentry into international capital markets is a welcome turn of events for most countries. However, capital inflows are often associated with inflationary pressures, a real exchange rate appreciation, a deterioration in the current account, and a boom in bank lending. This paper briefly examines how these inflows have altered the macroeconomic environment in a number of Asian and Latin American countries. The pros and cons of a menu of policy options are discussed.

Carson, Richard T.

TI On the Theory of Growth Controls. **AU** Engle, Robert F.; Navarro, Peter; Carson, Richard T.

PD July 1990. **TI** Measuring the Benefits of Freshwater Quality Changes: Techniques and Empirical Findings. **AU** Carson, Richard T.; Martin, Kerry M. **AA** Carson: University of California, San Diego. Martin: Harvard University. **SR** University of California, San Diego Department of Economics Working Paper: 90-28; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 27. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** H41, D46, Q25. **KW** Contingent Valuation. Public Goods. Water Resources.

AB This chapter gives an overview of the techniques used to value the non-market benefits of water-related public goods and of the major empirical studies in this area. Travel cost, hedonic pricing, and contingent valuation are described; special emphasis is placed on the problems and limitations of implementing these methods to value changes in the quality and quantity of water-related amenities. Major empirical efforts to value national and regional water quality improvements, water-based recreation, ecosystem preservation, instream flows, groundwater protection and water supply reliability are discussed.

TI Choice of Thresholds for Efficient Binary Discrete Choice Estimation. **AU** Alberini, Anna; Carson, Richard T.

Caspersen, Erik

PD June 1993. **TI** Is a Value Added Tax Progressive? Annual Versus Lifetime Incidence Measures. **AU** Caspersen,

Erik; Metcalf, Gilbert. **AA** Caspersen: Princeton University and London School of Economics. Metcalf: Princeton University and National Bureau of Economic Research. **SR** National Bureau of Economic Research Working Paper: 4387; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. **PG** not available. **PR** \$5.00. **JE** H22. **KW** VAT. Lifetime Income. Progressive Tax.

AB We measure the lifetime incidence of a value added tax (VAT) using income data from the Panel Study of Income Dynamics and consumption data from the Consumer Expenditure Survey. When annual income is used as a measure of economic well-being, a VAT looks quite regressive. However, the results change significantly when the analysis is done using lifetime income. Using two different measures of lifetime income, we find that a VAT in the United States would be proportional to slightly progressive over the lifetime.

Chah, Eun Young

PD November 1991. **TI** Liquidity Constraints and Intertemporal Consumer Optimization: Theory and Evidence from Durable Goods. **AU** Chah, Eun Young; Ramey, Valerie A.; Starr, Ross M. **AA** Chah and Starr: University of California, San Diego. Ramey: University of California, San Diego and National Bureau of Economic Research. **SR** University of California, San Diego Department of Economics Working Paper: 91-34; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 30. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E21, D91. **KW** Nondurable Consumption. Borrowing Constraints. Excess Sensitivity.

AB This paper develops and tests a new set of stochastic implications of optimal consumption behavior in the presence of borrowing constraints. In a departure from previous models, the theory shows that liquidity constraints imply a distinctive intertemporal relationship between durable and nondurable goods consumption. The presence of binding liquidity constraints are manifested as part of an error correction term from the long-run cointegrating relationship between durables and nondurables. When liquidity constraints are binding, the error correction term will have predictive power for the future change in nondurable consumption. Empirical tests of the implications using aggregate data support the hypothesis that liquidity constraints, rather than rule-of-thumb behavior, best explain the excess sensitivity of consumption to predictable changes in income.

Chandra, Vandana

TI A General Equilibrium of Spot and Contract Sectors. **AU** Hamilton, Bruce W.; Chandra, Vandana.

Chang, Myong-Hun

PD May 1993. **TI** Product Differentiation and Cost Variability. **AU** Chang, Myong-Hun; Harrington, Joseph E., Jr. **AA** Chang: Cleveland State University. Harrington: Johns Hopkins University. **SR** Johns Hopkins Department of Political Economy Working Paper: 310; Department of Political Economy, Johns Hopkins University, Baltimore, Maryland 21218. **PG** 15. **PR** no charge. **JE** L13. **KW** Oligopoly Theory. Product Differentiation. Cost Variability.

AB It is generally believed that industries with greater

product differentiation have higher rates of return. This paper shows that the presumed monotonic relationship between product differentiation and industry profit breaks down in the presence of firm-specific cost shocks. Greater substitutability in products generates two opposing effects: 1) it raises the return to cost variability by allowing a larger increase in demand when a firm has a favorable cost shock, and 2) it results in more intense price competition. These two countervailing forces result in industry profit being highest in markets characterized by a moderate differentiation.

Chemmanur, Thomas J.

PD March 1993. TI Optimal Incorporation, Structure of Debt Contracts, and Limited-Recourse Project Financing. AU Chemmanur, Thomas J.; John, Kose. AA Chemmanur: Columbia University. John: New York University. SR New York University Salomon Brothers Working Paper: S-93-21; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 34. PR not available. JE G32, L22, L14. KW Debt Financing. Corporate Structure. Multiple Projects.

AB This paper develops a simple framework to study the many interrelated choices of corporate structure and the structure of debt contracts for a firm with multiple projects. The model perspective is that of an entrepreneur who derives benefits from the right to control corporations. With access to multiple projects, he makes the following choices: (1) Whether to set up his projects as a joint firm or as separate firms (spin-off), (2) the amount of debt financing to use, (3) the structure of the debt contract, and (4) the fraction of his wealth to invest in each firm (if he sets up more than one). Differences in managerial ability across projects, benefits of control, and the probability of loss of control through a takeover or through bankruptcy are driving factors in this model. Our results relate the project characteristics to the optimality of spin-offs and limited-recourse project financing and derive implications for the allocation of debt and the ownership structure across projects under these arrangements.

Chen, Xiaohong

PD April 1992. TI Weak and Strong Laws of Large Numbers for Hilbert Space-Valued Mixingales. AU Chen, Xiaohong; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-15; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 21. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C10. KW Mixingales.

AB We introduce the notions of L sub $p(H)$ -mixingales and L sub $p(H)$ -NED arrays and prove weak and strong laws of large numbers for these dependent heterogeneous Hilbert space-valued processes. Our results follow approaches of Andrews (1988), Hansen (1991), Davidson (1991) and De Jong (1991), extending their results for $H = R$ and improving the memory conditions in certain instances.

PD September 1992. TI Central Limit and Functional Central Limit Theorems for Hilbert Space-Valued Dependent Processes. AU Chen, Xiaohong; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-35; Working Paper Coordinator, Economics

Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C10, C13. KW Central Limit Theorems. Asymptotic Distributions.

AB Central Limit Theorems (CLT's) and Functional Central Limit Theorems (FCLT's) are powerful tools for obtaining asymptotic distribution results for estimators of econometric models. Recently, attention has been increasingly devoted in econometric to the study of semiparametric and nonparametric estimators. Because semiparametric and nonparametric estimation take place in certain infinite dimensional spaces, standard finite dimensional CLT's and FCLT's are not applicable. Nor can one simply apply an infinite dimensional CLT or FCLT in the same way that one would in finite dimensional settings -- certain fairly stringent rates of convergence must also be established. CLT's and FCLT's for dependent processes in a Hilbert space are already available. For example, a CLT for strictly stationary strong or uniform mixing processes is given by Dehling (1983) and by Dehling and Philipp (1982). Walk (1977) and Berger (1986) give an FCLT for Hilbert space martingale difference sequences. However, neither of these dependence conditions is plausible as a general description of non-explosive time series of the sort encountered in economics. More satisfactory is the mixingale condition, which contains both mixing and martingale difference processes as special cases, as well as near epoch dependent functions of infinite histories of mixing processes. Hilbert space CLT's and FCLT's explicitly applicable to the mixingale case are not presently available. Our purpose here is to provide such results.

Chidambaran, N. K.

TI Evaluating the Performance of the Protective Put Strategy. AU Figlewski, Stephen; Chidambaran, N. K.; Kaplan, Scott.

Chou, Ray

PD June 1989. TI Estimating Risk Aversion with a Time Varying Price of Volatility. AU Chou, Ray; Engle, Robert F.; Kane, Alex. AA Chou: Georgia Tech. Engle and Kane: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-16; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 22. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, C22. KW Stock Returns. ARCH Model.

AB This paper introduces a statistical model with ARCH disturbances and a Time Varying Parameter in the mean. This model is able to decompose the predictable component in stock returns into two parts: the time-varying coefficient measuring the price of volatility and the time varying conditional variance of returns. Although the price of "risk" as a parameter of consumers' taste is generally assumed to be relatively stable a priori, the price of "volatility" of the stock return can vary substantially over time. Stocks only constitute a small portion of total wealth, hence by the CAPM, the expected return of the stock index not only depends on its own volatility but is also affected by the covariance of stocks with the other portion of total wealth. In our model this portion of wealth is represented by an unobserved component which affects the stock return and is manifested by the temporal variations in the price of

volatility. Our model helps resolve some empirical puzzles in estimating the expected stock return using the ARCH-in-mean model.

Christopeit, Norbert

PD December 1990. TI Estimating Parameters of an Extreme Value Distribution by the Method of Moments. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-175; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 13. PR no charge. JE C13. KW Extreme Values. Earthquakes.

AB The paper shows that the method of moments provides simple and consistent estimates of the parameters of extreme value distributions used to approximate the distribution of maxima of grouped observations. As an illustration, the distribution of earthquake magnitudes in the middle Rhine region is estimated.

Chu, Chia-Shang James

PD February 1991. TI Testing for Structural Change in Some Simple Time Series Models. AU Chu, Chia-Shang James; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-06; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 34. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C22. KW Trend Stationarity. Cointegration. Structural Stability.

AB We consider tests for structural change. In particular, we obtain the asymptotic null distribution of Quandt's likelihood ratio test for structural change in some simple stationary and nonstationary regression models, and give new tests for change of a trend coefficient and for change in the co-integration coefficient. These tests do not require prior knowledge about the location of the change point. The limiting distributions are derived from the functional central limit theorem and the critical values from the hitting probability of a Brownian motion or a Brownian bridge. We analyze the power of the these tests against alternatives of both structural change, and structural stability in the presence of I(1) errors. Using a test sensitive to the hypothesis of trend stationarity with a structural break, we report empirical studies finding that the test applied to the consumer price index rejects the null hypothesis of trend stationarity.

Citanna, Alessandro

PD May 1993. TI On Generic Pareto Improvement in Competitive Economies with Incomplete Asset Structures. AU Citanna, Alessandro; Villanacci, Antonio. AA Alessandro: University of Pennsylvania. Villanacci: University of Pennsylvania and Università degli Studi di Firenze. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-21; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 17. PR no charge. JE D50, D51, D52, G10, G18. KW Incomplete Markets. Financial Markets. Equilibrium.

AB The paper analyzes a two-period exchange economy with

incomplete financial markets and numeraire assets. In such a model, Geanakoplos and Polemarchakis (1986) showed that, typically, if a planner can choose household's portfolio holdings and can close financial markets, the resulting equilibrium allocations are Pareto superior to those achieved by the market itself. In the present paper, we show that Pareto improvement can be achieved without closing any market, thereby without altering the market structure at all, and allowing a fully anticipated policy. We replicate in the incomplete markets model a Tinbergen-like result, by finding that to typically achieve Pareto improvement it is necessary and sufficient to use a number of policy instruments equal to the number of objectives: if H is the number of household, then the same has to be that of independent policy tools, in our case these instruments are lump-sum transfers of the numeraire commodity today and tomorrow.

Coe, David T.

PD July 1993. TI International R&D Spillovers. AU Coe, David T.; Helpman, Elhanan. AA Coe: International Monetary Fund. Helpman: Tel-Aviv University. SR Tel Aviv Foerder Institute for Economic Research Working Paper: 5/93; Department of Economics, Tel Aviv University, Ramat Aviv 69978, Tel Aviv, ISRAEL. PG 27. PR no charge. JE O40, F10. KW Research and Development. International Trade. Economic Growth.

AB Investment in research and development (R&D) affects a country's total factor productivity. Recently new theories of economic growth have emphasized this link and have also identified a number of channels through which a country's R&D affects total factor productivity of its trade partners. Following these theoretical developments we estimate the effects of a country's R&D capital stock and the R&D capital stock of its trade partners on the country's total factor productivity. We find large effects of both domestic and foreign R&D capital stocks on total factor productivity. The foreign R&D capital stocks have particularly large effects on the smaller countries in our sample (that consists of 22 countries). Moreover, we find that about one quarter of the worldwide benefits of investments in R&D in the seven largest economies are appropriated by their trade partners.

Cole, Rebel A.

PD June 1993. TI Separating the Likelihood and Timing of Bank Failure. AU Cole, Rebel A.; Gunther, Jeffery W. AA Cole: Board of Governors of the Federal Reserve System. Gunther: Federal Reserve Bank of Dallas. SR Board of Governors of the Federal Reserve System Finance and Economics Discussion Series: 93-20; C/O Stephen A. Sharpe, Mail Stop 89, Federal Reserve Board, Washington, DC 20551. PG 15. PR no charge. JE G21, C25. KW Survival Time. Hazard.

AB We use a split population survival time model to examine jointly the determinants of bank failure and the timing of failure. Basic indicators of a bank's condition, such as equity capital, troubled assets and net income are important in explaining time to failure; however, other variables often included in bank failure models, such as measures of bank liquidity, are not associated with the timing of failure. There also is no evidence that the closure of large failing banks is delayed relative to the closure of small failing banks.

Collie, David

PD August 1992. TI Tariffs for a Foreign Monopolist Under Incomplete Information. AU Collie, David; Hviid, Morten. AA University of Warwick. SR Aarhus Institute of Economics Memo: 1993-3; Institute of Economics, University of Aarhus, Building 350, Universitetsparken, DK-8000 Aarhus C, DENMARK. PG 19. PR no charge. JE F13, F12, D82, L12. KW Signaling. Imperfect Competition. Asymmetric Information.

AB When the domestic government is better informed about demand in the domestic market than a foreign monopolist that exports to the domestic market, the domestic government can use its tariff to signal about demand. In the signaling equilibrium, the domestic government uses a tariff which is larger than the optimal tariff under complete information. However, it is possible that welfare in the signaling equilibrium is lower than welfare when the domestic government is uncertain about demand. Thus, although superior information provides a rationale for using a larger tariff than under complete information, it may be that the domestic country is worse off as a result.

Collins, Charles

PD June 1993. TI Restructuring of Commercial Bank Debt by Developing Countries: Lessons from Recent Experience. AU Collins, Charles; El-Erian, Mohamed A. AA International Monetary Fund. SR International Monetary Fund Working Paper: PPAA/93/7; International Monetary Fund, Washington, DC 20431. PG 20. PR not available. JE F34, G15. KW Developing Countries. Debt. Debt Service. International Debt.

AB A number of developing countries, including some of the largest debtors, have recently completed comprehensive debt and debt service restructuring packages with their commercial bank creditors. The experience of these countries provides important lessons for other countries that are just embarking on discussions to normalize their external payments situation. Following a brief description of the framework of the international debt strategy, this paper discusses the main lessons, distinguishing between those that are relevant to the process of negotiation and those relevant to the structure of the package being negotiated.

Corradi, Valentina

PD June 1993. TI Regularized Neural Networks: Some Convergence Rate Results. AU Corradi, Valentina; White, Halbert. AA Institute for Neural Computation and University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-23; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C60, C14. KW Regularization. Continuous Function Approximation.

AB In a recent paper, Poggio and Girosi (1990), proposed a class of neural networks obtained from the theory of regularization. Regularized networks are capable of approximating arbitrarily well any continuous function on a compactum. In this paper we consider in detail the learning problem for the one dimensional case. We show that, in the case of output data observed with noise, regularized networks are capable of learning and approximating (on compacta) elements of certain classes of Sobolev spaces, known as

Reproducing Kernel Hilbert spaces (RKHS), at a nonparametric rate that optimally exploits the smoothness properties of the unknown mapping. On the other hand, if the unknown mapping is a continuous function, but it does not belong to a RKHS, then there still exists a unique regularized solution, but this is no longer guaranteed to converge in mean square to a well defined limit. However even if such a solution converges, the total squared error is bounded away from zero for all n sufficiently large.

Cortes-Douglas, Hernan

TI Introduction of a New National Currency: Policy, Institutional, and Technical Issues. AU Abrams, Richard K.; Cortes-Douglas, Hernan.

Coulson, N. Edward

TI Non-Cointegration and Econometric Evaluation of Models of Regional Shift and Share. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F.

TI On the Determination of Regional Base and Regional Base Multipliers. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F.

Crawford, Vincent P.

PD June 1989. TI Nash Equilibrium and Evolutionary Stability in Large- and Finite-Population "Playing the Field" Models. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-26; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 15. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C73. KW Evolutionarily Stable Strategy. Evolutionary Games.

AB This paper studies the correspondence between Nash equilibrium and evolutionary stability in large- and finite-population "playing the field" models. It is shown that whenever the fitness function is sufficiently continuous, any large-population ESS corresponds to a symmetric Nash equilibrium in the game that describes the simultaneous interaction of the individuals in the population, and any strict, symmetric Nash equilibrium in that game corresponds to a large-population ESS. This correspondence continues to hold, approximately, in finite populations; and it holds exactly for strict pure-strategy equilibria in sufficiently large finite populations. By contrast, a sequence of (mixed-strategy) finite-population ESS's may converge, as the population grows, to a limit that is not a large-population ESS, and a large-population ESS may not be the limit of any sequence of finite-population ESS's.

PD June 1989. TI On the Definition of an Evolutionarily Stable Strategy in the "Playing the Field" Model. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-27; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 5. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C73. KW Evolutionary Games.

AB This paper considers a strengthening of Maynard Smith's definition of an evolutionarily stable strategy, or "ESS," discussed by Vickers and Cannings (1987). Vickers and

Cannings showed that the stronger definition was equivalent to Maynard Smith's for the pairwise random matching model, as long as the game played by matched pairs has a finite number of pure strategies. This paper uses a different argument to extend their equivalence result to the "playing the field" model.

PD January 1990. TI Explicit Communication and Bargaining Outcomes. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-1; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 7. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C78. KW Cheap Talk. Explicit Bargaining.

AB Bargaining is a pervasive phenomenon in modern economies, and the leading examples of labor negotiations, trade agreements, and strategic arms limitation talks suggest that the potential welfare gains from improving the efficiency of bargaining outcomes are enormous. In recent years, there has been significant progress toward the kind of theoretical and empirical understanding of bargaining needed to realize some of those gains. However, in most of this work it is assumed that bargaining is tacit in the sense that bargainers can communicate only by making offers and counteroffers that directly affect their payoffs. Real bargaining, by contrast, is usually explicit, in that bargainers can also communicate by sending non-binding messages with no direct payoff implications. Such "cheap talk" messages evidently play an important role in coordinating bargainers' expectations so that they can reach agreement, and in determining how they share the resulting surplus. This paper discusses theoretical and experimental work on explicit bargaining.

PD March 1990. TI Thomas Schelling and the Analysis of Strategic Behavior. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-11; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C70, B31. KW Game Theory. Strategy of Conflict.

AB It is difficult to recall how the world looked before we first saw it with the aid of Thomas Schelling's vision. The challenge is particularly great for one who read *The Strategy of Conflict* before developing his own view of economics. Reading and rereading Schelling's work over the years has taught my subconscious mind the trick of presenting his ideas to my conscious mind without citation, leaving it to rediscover the original source weeks, months, or even years later. Memory rarely does justice to the original, and there is much to be gained by keeping Schelling's influence at the conscious level. This essay is an attempt to ease that task by identifying the distinctive features of his view of strategic behavior—his "theory of interdependent decision"—and tracing its effects on game theory and the analysis of strategic interactions in economics.

PD September 1990. TI An "Evolutionary" Interpretation of Van Huyck, Battalio, and Beil's Experimental Results on Coordination. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-28R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508.

PG 32. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C71, C73. KW Coordination Games. Evolutionary Dynamics.

AB This paper proposes an adaptive interpretation of the results of some recent experiments with repeated tacit coordination games. These experiments revealed several behavioral regularities, including a systematic discrimination between strict Nash equilibria in certain games, that appear to be driven by strategic uncertainty, and are not explained by traditional equilibrium refinements. The observed patterns of discrimination correspond closely to predictions based on Maynard Smith's notion of evolutionary stability. An adaptive model, in the spirit of the evolutionary dynamics but recognizing the important differences between learning in human populations and evolution, promises to yield a unified explanation of the results.

PD June 1993. TI Adaptive Dynamics in Coordination Games. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-02R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 35. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C73, C72, D83. KW Strategic Uncertainty. Repeated Games. Learning.

AB This paper models the process by which players learn to play coordination games, taking strategic uncertainty explicitly into account. One of its goals is to explain the striking, persistent patterns of discrimination among Nash equilibria observed in recent experiments involving repeated play of simple coordination games. Those patterns varied systematically with the number of players and the rules that governed their interactions, in ways that cannot be explained by traditional equilibrium refinements. The model explains them by showing how the dispersion of players' beliefs interacts with the learning process to determine the probability distribution of the limiting coordination outcome.

Csaki, Csaba

TI Agriculture and the Transition to the Market. AU Brooks, Karen M.; Guasch, Jose Luis; Braverman, Avishay; Csaki, Csaba.

Cumby, Robert E.

TI Measuring Current and Anticipated Future Credit Quality: Estimates from Brady Bonds. AU Evans, Martin D. D.; Cumby, Robert E.

Damodaran, Aswath

PD December 1992. TI Size, Risk and Information Structure. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-40; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 13. PR not available. JE G12, G14. KW Firm Size. Firm Performance. Risk Premium.

AB The return premium earned by small firms over larger firms has been widely documented in the literature. We argue that much of the "size effect" can be explained by the disparities in information production across firms, and suggest a simple approach for correcting for these differences. In an empirical test, we find that small firms do not earn a premium after the

suggested correction is made in systematic risk measures.

PD July 1993. TI The Effects of International Dual Listings on Stock Price Behavior. AU Damodaran, Aswath; Liu, Crocker H.; Harlow, W. Van. AA Damodaran and Liu: New York University. Harlow: Fidelity Investments, Boston. SR New York University Salomon Brothers Working Paper: S-93-41; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 16. PR not available. JE G12, G14, G15. KW International Listings. Dual Stock Listings.

AB This paper examines the effect of the listing U.S. securities on the Tokyo and London Stock exchanges. Using a sample of 276 NYSE stocks that were internationally listed, we examine the effects of the dual listing on return processes and report no change in variance but find that mean returns decline after the listing. We also examine the effects of dual listing on the speed with which information is incorporated in prices by developing a model for estimating price adjustment coefficients and using it to estimate coefficients before and after the international listing. We find that the price adjustment coefficients for one-day and two-day returns increase after the listing. In addition, we examine price reactions to earnings reports before and after dual listing and find little change for positive announcements, but some changes for negative announcements. These results are consistent with the hypothesis that international cross-listing increases opportunities for investors to trade on information without causing significant increases in trading noise or variance.

PD July 1993. TI Put Listing, Short Sales Restrictions and Return Processes. AU Damodaran, Aswath; Lim, Joe. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-48; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 16. PR \$5.00. JE G10, G13, G14, G18. KW Put Options. Market Prices. Price Adjustment.

AB The restrictions imposed by stock exchanges on short selling can prevent investors from taking short positions on stocks on which they possess bad news and delay the incorporation of such news into market prices. Since put options offer an unrestricted alternative to short sales for such investors, it can be argued that the listing of puts will result in a market where stock prices adjust much more quickly to negative information. We examine this hypothesis by looking at 200 firms which had puts listed on them in the period 1977-84, and come to three conclusions. First, the variance is unaffected by put listing, but the mean and skewness in returns are significantly lower after the listing of puts. Secondly, a comparison of investor reactions to quarterly earnings announcements in the pre-listing and post-listing periods leads to the conclusion that prices adjust much more rapidly to bad news after the put listing. Thirdly, we report an increase in the volume of short selling after the listing of put options, suggesting that trading on puts complements short selling as a "bad news" strategy after the listing.

Dardanoni, Valentino

PD May 1990. TI Implications of Behavioral Consistency in Dynamic Choice Under Uncertainty. AA University of California, San Diego. SR University of

California, San Diego Department of Economics Working Paper: 90-17; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 13. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D81. KW Non-Expected Utility. Independence Axiom. AB The majority of empirical and theoretical analyses of economic behavior in conditions of risk are based on expected utility theory (EUT henceforth). There is an ongoing debate in the foundations of decision theory under risk which essentially involves the continuing supremacy of EUT, despite increasing empirical evidence that individuals do not maximize expected utility even in simple decisions involving risk. In the light of this evidence, exploring alternative models of decision making under risk has become an extremely active area of research. Among the most promising models recently proposed are those which retain the basic ordering and continuity axioms and relax or generalize the independence axiom. These models consider an individual decision maker who maximizes a real valued functional defined over the space of probability distributions, which is not necessarily linear in that space; and it has been shown that such models are capable of explaining most of the systematic patterns of evidence of violations of the independence axiom.

PD August 1990. TI Three Notes on Inequality Measurement. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-30; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 19. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D31. KW Income Distribution. Inequality Comparisons. Income Mobility. AB The three notes are titled "Monotone Mobility Matrices and Income Distribution Dominance," "A Note on Multidimensional Inequality Comparisons," and "On the Lorenz Curve Ordering of Discounted Streams of Income."

PD July 1991. TI Measuring Social Mobility. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-18R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D31, D91, J62, D63. KW Income Distribution. Mobility Structures. Social Welfare.

AB The theory of inequality measurement is in general concerned with static income distributions, where "snapshots" of the income distribution are the basis of the analysis. In practice, income distributions change over time, under the effect of different transition mechanisms. Transition mechanisms may affect social welfare by changing the shape of the "spot" income distribution. Yet, two societies with the same spot income distributions may have a different level of social welfare depending on the mobility of the populations. Mobility studies either make assumptions directly on the various mobility indicators and analyze their properties, or focus on the welfare implications of the different mobility structures. This paper will analyze the latter problem and consider how economic mobility influences social welfare. We will consider the welfare prospects of individuals in society by deriving the stream of income distributions which obtains under different mobility structures.

Das, Sanjiv

TI Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios. **AU** Elton, Edwin J.; Gruber, Martin J.; Das, Sanjiv; Hlavka, Matthew.

De Frutos, Rafael Flores

PD July 1993. **TI** Public Capital and Aggregate Growth in the United States: Is Public Capital Productive? **AU** De Frutos, Rafael Flores; Pereira, Alfredo M. **AA** De Frutos: Universidad Complutense, Madrid. Pereira: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-31; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 24. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C32, H54, O40, O51. **KW** Economic Growth. VARMA Model.

AB This paper deals with the empirical relationships between public capital and aggregate economic growth in the United States, and in particular the question of whether or not public capital is productive. It develops a theoretical framework which allows for full consideration of feedback among variables without imposing a priori dynamic structural constraints. Parameter estimates are obtained through a VARMA model. This approach departs from the current literature, which relies on a single equation approach to estimate production functions and implicitly assumes the absence of feedback relations. In this paper estimates for the period 1956-1989 suggest that public capital has a substantial effect on production as well as on private capital formation and on labor. Furthermore, decisions on public capital seem to follow a policy rule that relates the current stock of public capital positively with lagged output and negatively with lagged labor.

Den Haan, Wouter J.

PD October 1991. **TI** The Term Structure of Interest Rates in Real and Monetary Production Economies. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-30; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 28. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E43, D51. **KW** Persistence. Monetary Equilibrium Model.

AB In this paper it is shown that in a real production economy the interest rate is likely to be close to a random walk. Moreover, the variance of yields to maturity on long rates is only slightly smaller than the variance of short rates. These results are found to be true even if there is no persistence in the driving process of the model. The persistence in interest rates is caused by economic agents' desire to smooth consumption. Usually persistence is attributed to persistence in monetary variables like inflation. It is shown why it is so difficult to get persistence in standard monetary equilibrium models. In both real and monetary economies the term structure is likely to be on average downward sloping.

PD August 1992. **TI** Accuracy in Simulations. **AU** Den Haan, Wouter J.; Marcet, Albert. **AA** Den Haan: University of California, San Diego. Marcet: Universitat Pompeu Fabra, Barcelona and Carnegie Mellon University. **SR** University of California, San Diego Department of Economics Working Paper: 92-30; Working Paper Coordinator, Economics

Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 20. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C63, C61, E12, E13. **KW** Simulation. Rational Expectations Models. Over-Identifying Restrictions.

AB Since the actual solution to intertemporal rational expectations models is usually not known, it is useful to have criteria to judge the accuracy of the numerical solution. In this paper we propose a test for accuracy that is easy to implement. We discuss the power of the test by simulating several models with the linear-quadratic approximation and with the method of parameterizing expectations and then testing for accuracy. We conclude that the test is powerful.

Detragiache, Enrica

PD July 1992. **TI** Public and Private Debt, Renegotiation, and Bankruptcy Reform. **AA** Johns Hopkins University. **SR** Johns Hopkins Department of Political Economy Working Paper: 285; Department of Political Economy, Johns Hopkins University, Baltimore, Maryland 21218. **PG** 32. **PR** no charge. **JE** G32, G33, K20. **KW** Public Debt. Bankruptcy. Debt Renegotiation.

AB A model is presented, in which firms finance investment with public debt, which cannot be renegotiated in insolvency states, and private debt, which can be renegotiated at no cost. The option to renegotiate is beneficial ex-post, as it allows the firm to avoid inefficient liquidation, but ex-ante it may worsen asset substitution. For some parameter values it is optimal to use both securities. The effects of altering the bankruptcy regime are then investigated taking into account that firms modify their financing decision in response to the regime change. The results suggest that Chapter 11 of the U.S. bankruptcy code should be reformed to insure that contractual priority is respected in the settlement, and to limit the time that firms are allowed to spend in court.

Deutsch, Melinda

TI Statistics and Society: The Construction and Evaluation of Policy Models. **AU** Granger, Clive W. J.; Deutsch, Melinda.

Deza, Michel

PD January 1992. **TI** A Survey of the Known Facets of the Cut Cone. **AU** Deza, Michel; Laurent, Monique. **AA** Deza: University of Paris. Laurent: University of Bonn. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: C-91722-OR; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 80. **PR** no charge. **JE** C44, C60. **KW** Graph Theory. Cut Polytope.

AB The cut cone $C_{sub n}$ is the cone generated by the cuts of the complete graph on n nodes. In this paper, we present a survey of the known results on the facial structure of the cut cone and of the related cut polytope.

Ding, Zhuanxin

PD May 1992. **TI** A Long Memory Property of Stock Market Returns and a New Model. **AU** Ding, Zhuanxin; Granger, Clive W. J.; Engle, Robert F. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-21; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA

92093-0508. PG 19. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C13, C22, G10. KW Long Memory. Volatility Persistence. Autocorrelation. ARCH.

AB A "long memory" property of stock market returns is investigated in this paper. It is found that not only is there substantially more correlation between absolute returns than returns themselves, but the power transformation of the absolute return also has quite high autocorrelation for long lags. It is possible to characterize this power transformation of the absolute return to be "long memory" and this property is strongest when d is around 1. This result appears to argue against ARCH type specifications based upon squared returns. But our Monte Carlo study shows both ARCH types of models based upon squared return and those based upon absolute return can produce this property. A new general class of models is proposed which allows the power d of the heteroskedasticity equation to be estimated from the data.

Dixon, Huw David

PD April 1992. TI Imperfect Competition and Open Economy Macroeconomics. AA York University and Centre for Economic Policy Research. SR Aarhus Institute of Economics Memo: 1993-1; Institute of Economics, University of Aarhus, Building 350, Universitetsparken, DK-8000 Aarhus C, DENMARK. PG 43. PR no charge. JE L16, D51, F41, E62. KW Fiscal Policy. Monetary Policy. General Equilibrium Model.

AB There is now a large and established literature on imperfect competition in closed economies. The main theme to emerge from the literature in imperfect competition and macroeconomics is that the welfare properties of equilibrium and policy are radically different from the Walrasian case. In this paper, we will develop a simple general-equilibrium macromodel of an open economy. We have chosen to focus on imperfect competition in the output market, leaving the labor market perfectly competitive. Imperfect competition in the output market is on its own enough to generate substantially different welfare effects for policy.

Durlauf, Steven N.

TI Convergence in International Output. AU Bernard, Andrew B.; Durlauf, Steven N.

Dutta, Prajit

TI Necessary and Sufficient Conditions for the Perfect Finite Horizon Folk Theorem. AU Smith, Lones; Abreu, Dilip; Dutta, Prajit.

Eitrheim, Oyvind

PD September 1992. TI Inference in Small Cointegrated Systems: Some Monte Carlo Results. AA The Central Bank of Norway and University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-31; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 66. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C22, C32, C15. KW Cointegration. Johansen Test. Small Sample Tests.

AB The Johansen procedure for testing and estimating cointegration models is analyzed from a practitioner's perspective. We address the robustness of the cointegration

tests in small samples and with respect to particular types of misspecification of the model. A small cointegrated system is parametrized and forms the basis for the Monte Carlo simulations. Non-parametric estimates of the distribution of the Trace and Lambda-Max tests are reported as well as for the estimators for long-and short-run parameters in the model. Power properties and finite sample performance for the cointegration test and estimators are discussed and the results seems to fit nicely with available asymptotic results. The identification of a long run system of equations is discussed and alternative methods to renormalize or restrict the cointegration space are compared. The types of model misspecification considered include the case with wrong dynamic specification and the case when we ignore non-normality in the DGP residuals. We also discuss how data properties like temporal aggregation or systematic sampling may affect the inference on cointegration, and how the Johansen procedure performs under those conditions. Finally, we consider the case with cointegration between non-stationary latent variables which are observed with measurement errors.

El-Erian, Mohamed A.

TI Restructuring of Commercial Bank Debt by Developing Countries: Lessons from Recent Experience. AU Collins, Charles; El-Erian, Mohamed A.

Elgar, Jane

PD May 1993. TI The Impact of the Law on Industrial Disputes in the 1980's: Report of a Survey of Engineering Employers. AU Elgar, Jane; Simpson, Bob. AA London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 150; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 16. PR no charge. JE J53, J58, J52, K31. KW Industrial Relations. Employment Law. Labor Legislation.

AB Both the government and independent commentators have claimed that the labor legislation enacted between 1980 and 1990 has had a considerable impact on the conduct of industrial relations. The nature and extent of this impact and the processes by which it has come about have usually either been assumed or ignored. This paper reports the results of one part of a research project designed to investigate these issues. Interviews were carried out with managers in a number of engineering companies affiliated to one of three regional associations of the Engineering Employers Federation (EEF) and directors of these associations. The responses showed a high level of awareness of certain developments in the law, in particular the law on strike ballots and the vulnerability of individual workers who take industrial action. There were, however, strong elements of continuity in industrial relations structures and practices and the law had generally been accommodated within these, rather than leading to radical new departures.

Elton, Edwin J.

PD October 1992. TI Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios. AU Elton, Edwin J.; Gruber, Martin J.; Das, Sanjiv; Hlavka, Matthew. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-24; Salomon Brothers Center for the Study of Financial

Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 20. PR not available. JE G14. KW Money Management. Portfolio Management. Mutual Funds.

AB The evaluation of professional money management has long been a topic of considerable interest to financial economists. The purpose of this paper is to show that even a very parsimonious description of the proxies generating returns on portfolios of bonds and stocks can lead to very different and superior inferences about the attributes of active portfolio management compared to a single index. We use as an example the data used (and conclusions reached) in a recent study of mutual fund performance by Ippolito (1989).

TI The Performance of Bond Mutual Funds. AU Blake, Christopher R.; Elton, Edwin J.; Gruber, Martin J.

PD not available. TI Multi Index Models Using Simultaneous Estimation of All Parameters. AU Elton, Edwin J.; Gruber, Martin J. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-34; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 30. PR not available. JE G11, G12. KW Security Returns. Index Model.

AB The concept of an index model and its role in both explaining and understanding the pattern of security returns, what affects individual security returns, the selection of optimal portfolios, and relative long run (equilibrium) returns has been discussed earlier in this monograph. Nevertheless, it is meaningful to review these techniques at this time as an introduction to the concepts of estimating multi-index models. We shall present most of our analysis in terms of a generic multi index model and a generic single index model. The single index model is included because the reader is most familiar with it and because it serves as a useful benchmark against which to judge multi index models.

Engle, Robert F.

TI Non-Cointegration and Econometric Evaluation of Models of Regional Shift and Share. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F.

TI Estimating Risk Aversion with a Time Varying Price of Volatility. AU Chou, Ray; Engle, Robert F.; Kane, Alex.

TI On the Determination of Regional Base and Regional Base Multipliers. AU Brown, Scott J.; Coulson, N. Edward; Engle, Robert F.

PD June 1989. TI Implied ARCH Models from Options Prices. AU Engle, Robert F.; Mustafa, Chowdhury. AA Engle; University of California, San Diego. Mustafa; Louisiana State University. SR University of California, San Diego Department of Economics Working Paper: 89-29; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, G13, C22. KW GARCH Model. Asset Markets. Volatility.

AB This paper estimates the implied stochastic process of the volatility of an asset from the prices of options written on the asset. The Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model is used to parameterize the process. Then the GARCH model implied by the option market

is estimated by a generalized simulation minimization method from option price data. The persistence of volatility shocks implied by options on the Standard & Poors 500 is found to be similar to that estimated from historical data on the index itself. However, the implied persistence after the meltdown in October 19, 1987 was much weaker. We use post October 19 data on the cash market prices to verify the correctness of the option markets' use of the less persistent model.

PD June 1989. TI A Factor ARCH Model for Stock Returns. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael. AA Engle and Rothschild; University of California, San Diego and National Bureau of Economic Research. Ng; University of California, San Diego and University of Michigan. SR University of California, San Diego Department of Economics Working Paper: 89-31; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, C32. KW Multivariate ARCH. Risk Premia.

AB This paper examines the pricing of size-based equity portfolios using CRSP returns data. Under the assumption that the conditional covariance matrix of returns is a one factor multivariate ARCH model with the value weighted index as the observable factor, the covariance matrix, betas on the factor, and risk premia are estimated. Two additional dynamic factors are then found and the price and factor loadings of these are jointly estimated. One is found to load onto a January dummy variable and basically explains the small firm effect as a response to time varying covariances.

PD July 1989. TI Modelling Peak Electricity Demand. AU Engle, Robert F.; Mustafa, Chowdhury; Rice, John. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-35; Working Paper Coordinator, Economics Department, 0508, University of California, La Jolla, CA 92093-0508. PG 17. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE Q41. KW Peak Demand. Demand Forecasting.

AB This paper estimates a forecasting equation for the hourly peak electricity demand one day in the future. The models incorporate deterministic influences such as holidays, stochastic influences such as average loads by building bivariate models, and exogenous influences such as the weather which is given a careful non-linear formulation. Out of sample comparisons are made using an additional year of data.

PD August 1989. TI Asset Pricing with a Factor ARCH Covariance Structure: Empirical Estimates for Treasury Bills. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael. AA Engle and Rothschild; University of California, San Diego and National Bureau of Economic Research. Ng; University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-38; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, C22, C52. KW Excess Returns. Risk Premia. ARCH Model.

AB In this paper we suggest using the FACTOR-ARCH model as a parsimonious structure for the conditional covariance matrix of asset excess returns. This structure allows

us to study the dynamic relationship between asset risk premia and volatilities in a multivariate system. One and two FACTOR-ARCH models are successfully applied to pricing of Treasury Bills. The results show stability over time, pass a variety of diagnostic tests and compare favorably with previous empirical findings.

PD October 1989. TI On the Theory of Growth Controls. AU Engle, Robert F.; Navarro, Peter; Carson, Richard T. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-50; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE R31, R52, R58. KW Housing Prices. Scarcity Effects. Amenity Effects.

AB Numerous empirical studies have examined the effect of growth controls on housing prices. All come to the same conclusion: controls raise the price of housing. In theory, there are both demand and supply side explanations for these observed price differences. On the supply side, housing caps, zoning restrictions, limitations on the amount of developable land, and other forms of growth controls may reduce the supply of housing over time. This may produce "scarcity effects" which manifest as shifts in the housing supply curve and attendant price increases. To the extent that growth controls may reduce or internalize expected negative externalities and/or congestion costs associated with growth, controls may also produce "amenity effects," manifested as changes in the demand curve. We argue that the scarcity effect view is the product of an inadequate partial equilibrium approach to growth controls. We show that when controls are viewed in a more general equilibrium context, most if not all of the observed housing price differences can be seen to have their roots in amenity effects.

PD November 1989. TI Common Persistence in Conditional Variances. AU Engle, Robert F.; Bollerslev, Tim. AA Engle: University of California, San Diego. Bollerslev: Northwestern University. SR University of California, San Diego Department of Economics Working Paper: 89-54; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 33. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C32, F31. KW Unit Roots. IGARCH. Exchange Rates.

AB Since the introduction of the Autoregressive Conditional Heteroskedastic (ARCH) model in Engle (1982), numerous applications of this modeling strategy have already appeared. A common finding in many of these studies with high frequency financial or monetary data concerns the presence of an approximate unit root in the autoregressive polynomial in the univariate time series representation for the conditional second order moments of the process, as in the so-called Integrated Generalized ARCH (IGARCH) class of models proposed in Engle and Bollerslev (1986). In the IGARCH models shocks to the conditional variance are persistent, in the sense that they remain important for forecasts of all horizons. This idea is readily extended to a multivariate framework. However, even though many time series may exhibit persistence in variance, it is likely that several different variables share the same common long-run component. In that situation, the variables are naturally defined to be co-persistent in variance. Conditions for

this to occur in the multivariate linear GARCH model are presented.

PD December 1989. TI Where Does the Meteor Shower Come From? The Role of Stochastic Policy Coordination. AU Engle, Robert F.; Ito, Takatoshi; Lin, Wen-Ling. AA Engle: University of California, San Diego and National Bureau of Economic Research. Ito: University of Minnesota, Hitotsubashi University and National Bureau of Economic Research. Lin: University of Wisconsin. SR University of California, San Diego Department of Economics Working Paper: 89-56; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 19. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE F31, F42. KW Volatility Spillovers. Exchange Rates. International Policy Coordination.

AB The purpose of this paper is to examine the intra-daily volatility of the yen/dollar exchange rate over three different regimes in the 1980's which correspond to different degrees of international policy coordination. In each regime we test for heat wave versus meteor shower effects. The heat wave hypothesis assumes that volatility has only country specific autocorrelations, while the meteor shower hypothesis allows volatility spillovers from one market to the next. Meteor showers can be caused by stochastic policy coordination, by gradual release of private information, or by market failures such as fads, bubbles or bandwagons. The rejection of the heat wave model over these three regimes discredits the stochastic policy coordination interpretation because there was little policy coordination among industrial countries prior to the Plaza Agreement in 1985.

PD May 1990. TI Valuation of Variance Forecasts with Simulated Option Markets. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex. AA Engle and Kane: University of California, San Diego. Hong: Citibank, New York. SR University of California, San Diego Department of Economics Working Paper: 90-16; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, G22. KW Forecasting Algorithms. Asset Returns. GARCH Model.

AB An appropriate metric for the success of an algorithm to forecast the variance of the rate of return on a capital asset would be the incremental profit from substituting it for the next best alternative. We propose a framework to assess incremental profits for competing algorithms to forecast the variance of a prespecified asset. The test is based on the return history of the asset in question. A hypothetical insurance market is set up, where competing forecasting algorithms are used. One algorithm is used by each hypothetical agent in an "ex post ante" forecasting exercise, using the available history of the asset returns. The profit differentials across agents (in various groupings) reflect incremental values of the forecasting algorithms. The technique is demonstrated with the NYSE portfolio, over the period of July 22, 1966 to December 31, 1985. For the limited set of alternative specifications, we find that GARCH(1,1) yields better profits than the 3 competing specifications.

PD June 1990. TI Semiparametric ARCH Models. AU Engle, Robert F.; Gonzalez-Rivera, Gloria. AA University of California, San Diego. SR University of

California, San Diego Department of Economics Working Paper: 89-17R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C14, C15, C13. KW Nonparametric Estimation. Stock Returns.

AB This paper introduces a class of time series models which have conditional first and second moments given by ARMA and ARCH parametric formulations, but a conditional density which is assumed only to be sufficiently smooth to be approximated by a nonparametric density estimator. This semiparametric ARCH model is estimated adaptively yielding estimates of both the parametric relationships in the first two moments and the full conditional density. For several particular conditional densities, the relative efficiency of the quasi-maximum likelihood estimator which falsely assumes normality is compared with maximum likelihood under correct specification. These potential efficiency gains for a fully adaptive procedure are compared in a Monte Carlo experiment with the observed gains from using the proposed semiparametric procedure and it is found that the estimator captures a substantial proportion of the potential. Finally, the estimator is applied to daily stock returns from small firms.

PD March 1991. **TI** Measuring and Testing the Impact of News on Volatility. **AU** Engle, Robert F.; Ng, Victor K. **AA** Engle: University of California, San Diego. Ng: University of Michigan. **SR** University of California, San Diego Department of Economics Working Paper: 91-12; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G12, G14, D83, C22, C14. **KW** News Impact Curve. Stock Return Volatility. ARCH Model.

AB This paper introduces the News Impact Curve to measure how new information is incorporated into volatility estimates. A variety of new and existing ARCH models are compared and estimated with daily Japanese stock return data to determine the shape of the News Impact Curve. New diagnostic tests are presented which emphasize the asymmetry of the volatility response to news. A partially non-parametric ARCH model is introduced to allow the data to estimate this shape. A comparison of this model with the existing models suggests that the best models are one by Glosten, Jaganathan and Runkle (GJR) and Nelson's EGARCH. Similar results hold on a pre-crash sample period but are less strong.

PD March 1991. **TI** Time-Varying Volatility and the Dynamic Behavior of the Term Structure. **AU** Engle, Robert F.; Ng, Victor K. **AA** Engle: University of California, San Diego. Ng: University of Michigan. **SR** University of California, San Diego Department of Economics Working Paper: 91-15; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E43. **KW** Yield Curve. Interest Rates. Liquidity Premium.

AB In this paper, we consider a framework with which the cross sectional and time series behavior of the yield curve can be studied simultaneously. We examine the relationship between the yield curve and the time-varying conditional volatility of the Treasury bill market. We demonstrate that

differently shaped yield curves can result given different combinations of volatility and expectations about future spot rates. Moreover, adjusting the forward rate for the volatility related liquidity premium can improve its performance as a predictor of future spot rates at least for the period from August 1964 to August 1979.

PD June 1991. **TI** Testing for Common Features. **AU** Engle, Robert F.; Kozicki, Sharon. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-23R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C12. **KW** Hypothesis Tests. Common Features.

AB This paper introduces a class of statistical tests for the hypothesis that some feature of a data set is common to several variables. A feature is detected in a single series by a hypothesis test where the null is that it is absent, and the alternative is that it is present. Examples are serial correlation, trends, seasonality, heteroskedasticity, ARCH, excess kurtosis and many others. A feature is common to a multivariate data set if a linear combination of the series no longer has the feature. A test for common features can be based on the minimized value of the feature test over all linear combinations of the data. A bound on the distribution for such a test is developed in the paper. For many important cases, an exact asymptotic critical value can be obtained which is simply a test of overidentifying restrictions in an instrumental variable regression. The test is applied to determine whether there is a common international business cycle.

PD September 1991. **TI** Testing Super Exogeneity and Invariance in Regression Models. **AU** Engle, Robert F.; Hendry, David F. **AA** Engle: University of California, San Diego. Hendry: Nuffield College, Oxford and University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-51R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 21. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C12, C52, E41. **KW** Parameter Constancy. Money Demand.

AB This paper introduces tests of super exogeneity and invariance. Under the null hypothesis, the conditional model exhibits parameter constancy while under the alternative, shifts in the independent variables' process induce shifts in the conditional model. The test is sensitive to particular types of parameter non-constancy, especially with changing variances and covariances. We relate the test to rational expectations models and the Lucas critique. An empirical example of money demand has prices and interest rates super exogenous in a conditional model but when the inflation specification changes, super exogeneity fails although standard specification tests do not.

PD October 1991. **TI** Statistical Models for Financial Volatility. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-32; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 14. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G12, C22. **KW** ARCH

Models.

AB The observation that volatility is forecastable implies that it may be modeled, hedged and priced. A variety of statistical models for volatility are discussed. Applications to modeling time varying risk premia, betas, and pricing options are discussed.

TI Common Trends and Common Cycles. **AU** Vahid, Farshid; Engle, Robert F.

TI Hourly Volatility Spillovers Between International Equity Markets. **AU** Susmel, Raul; Engle, Robert F.

PD January 1992. **TI** Common Volatility in International Equity Markets. **AU** Engle, Robert F.; Susmel, Raul. **AA** Engle: University of California, San Diego. Susmel: University of South Florida. **SR** University of California, San Diego Department of Economics Working Paper: 92-09; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 22. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C22, C12. **KW** Common Features. **ARCH** Model. International Stock Market.

AB In this paper, we take advantage of the time varying structure of stock returns variances to investigate whether two international stock markets share the same volatility process. We use a test recently developed by Engle and Kozicki (1990). This test is also used to assess the validity of a one factor ARCH model. We find that some international stock markets have the same time varying volatility.

PD May 1992. **TI** Arbitrage Valuation of Variance Forecasts with Simulated Options. **AU** Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex; Noh, Jaesun. **AA** Engle, Kane and Noh: University of California, San Diego. Hong: Nomura Securities Inc. **SR** University of California, San Diego Department of Economics Working Paper: 92-19; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 26. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G13, C22. **KW** Forecasting. Incremental Profits. GARCH Model.

AB An appropriate metric for the success of an algorithm to forecast the variance of the rate of return on a capital asset would be the incremental profit from substituting it for the next best alternative. We propose a framework to assess incremental profits for competing algorithms to forecast the variance of a prespecified asset. The test is based on the return history of the asset in question. A hypothetical insurance market is set up, where one algorithm is used by each hypothetical agent in an "ex post" forecasting exercise, using the available history of the asset returns. The profit differentials across agents reflect incremental values of the forecasting algorithms. The technique is demonstrated with the NYSE portfolio, over the period of June 23, 1966 to December 29, 1989. We find that GARCH (1,1) yields better profits than the a moving average, ordinary least squares, and ARMA(1,1) specifications. The profit from pricing one-day options on the NYSE portfolio with a GARCH(1,1) specification to make variance forecasts, against the 3 alternatives is significant.

PD May 1992. **TI** Estimating Sectoral Cycles Using Cointegration and Common Features. **AU** Engle, Robert F.; Issler, Joao Victor. **AA** University of California, San Diego. **SR** University of California, San Diego Department of

Economics Working Paper: 92-20; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 29. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E32, C22. **KW** Sectoral Output. Common Trends. Common Cycles.

AB This paper investigates the degree of short run and long run comovement in U.S. sectoral output data by estimating sectoral trends and cycles. A theoretical model based on Long and Plosser (1983) is used to derive a reduced form for sectoral output from first principles. Cointegration and common features (cycles) tests are performed and sectoral output data seem to share a relatively high number of common trends and a relatively low number of common cycles. A special trend-cycle decomposition of the data set is performed and the results indicate a very similar cyclical behavior across sectors and a very different behavior for trends. In a variance decomposition exercise, for prominent sectors such as Manufacturing and Wholesale/Retail Trade, the cyclical innovation is more important than the trend innovation.

TI A Long Memory Property of Stock Market Returns and a New Model. **AU** Ding, Zhuanxin; Granger, Clive W. J.; Engle, Robert F.

TI Do Bulls and Bears Move Across Borders? International Transmission of Stock Returns and Volatility as the World Turns. **AU** Lin, Wen-Ling; Engle, Robert F.; Ito, Takatoshi.

PD July 1993. **TI** Multivariate Simultaneous Generalized ARCH. **AU** Engle, Robert F.; Kroner, Kenneth F. **AA** Engle: University of California, San Diego. Kroner: University of Arizona. **SR** University of California, San Diego Department of Economics Working Paper: 89-57R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 19. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C32. **KW** GARCH. Simultaneous Equations.

AB This paper presents theoretical results in the formulation and estimation of multivariate generalized ARCH models within simultaneous equations systems. A new parameterization of the multivariate ARCH process is proposed and equivalence relations are discussed for the various ARCH parameterizations. Constraints sufficient to guarantee the positive definiteness of the conditional covariance matrices are developed, and necessary and sufficient conditions for covariance stationarity are presented. Identification and maximum likelihood estimation of the parameters in the simultaneous equations context are also covered.

PD July 1993. **TI** Long Run Volatility Forecasting for Individual Stocks in a One Factor Model. **AU** Engle, Robert F.; Lee, Gary G. J. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-30; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 20. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C22, G12. **KW** Stock Volatility. Idiosyncratic Shocks.

AB This paper develops long run volatility forecasts for fourteen individual stocks based on daily CRSP data. The model decomposes volatility into a permanent and transitory component as in Engle and Lee (1992). The transitory component is mean reverting towards permanent slowly

evolving measure. In an APT structure, time-varying volatility is due either to the factors or the idiosyncratic shocks. In a one-factor model where the factor is measured by the CRSP value-weighted index, the factor is found to also have a permanent and transitory component structure suggesting that if the idiosyncrasy has non-persistent volatility, the individual stocks and the market portfolio would be co-persistent. The data, however, rejects this hypothesis finding that the variance of idiosyncratic shocks is itself persistent and depends upon the market shocks in both the long run and the short run. In effect, the long run forecast of individual stock volatilities depends upon the market shocks as well as the idiosyncratic shocks.

TI A Test of Efficiency for the S&P 500 Index Option Market Using Variance Forecasts. AU Noh, Jaesun; Engle, Robert F.; Kane, Alex.

Escolano, Julio

TI The State of Tax Policy in the Central Asian and Transcaucasian Newly Independent States (NIS). AU Shome, Parthasarathi; Escolano, Julio.

Evans, George W.

PD August 1989. TI Expectation Calculation and Macroeconomic Dynamics. AU Evans, George W.; Ramey, Garey. AA Evans: London School of Economics. Ramey: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-40; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D84, E52, E31. KW Rational Expectations. Monetary Policy. Deficit Finance.

AB We establish a framework wherein agents make expectation revision decisions subject to a specified calculation technology and preferences over forecast errors. The rational expectations hypothesis emerges as a special case of the equilibrium paths obtained in our framework. In a natural rate model of monetary policy, optimal calculation behavior gives rise to long-run nonneutrality and hysteresis effects, and calculation externalities are shown to arise when agents differ in calculation abilities. In a model of deficit finance through seignorage, the timing of policy shifts can critically determine whether the economy avoids hyperinflation or currency collapse.

PD April 1992. TI Expectation Calculation, Hyperinflation and Currency Collapse. AU Evans, George W.; Ramey, Garey. AA Evans: London School of Economics. Ramey: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-17; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D84, E31, H62. KW Deficit Finance. Hyperinflation. Expectational Dynamics.

AB We develop an expectation calculation framework to analyze the problem of deficit finance via seignorage. Each agent is endowed with a technology for calculating expectation revisions, together with preferences over forecast errors. Expectational dynamics derive from an optimality criterion by which agents balance the costs and benefits of calculation.

Hyperinflationary episodes involving accelerating inflation and terminating in currency collapse arise naturally from agents' incentives to calculate expectations. Our framework also provides explanations for some recent anomalous experimental findings.

Evans, Martin D. D.

PD June 1993. TI Do Long-Term Swings in the Dollar Affect Estimates of the Risk Premia? AU Evans, Martin D. D.; Lewis, Karen K. AA Evans: New York University. Lewis: University of Pennsylvania and National Bureau of Economic Research. SR New York University Salomon Brothers Working Paper: S-93-43; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 24. PR \$5.00. JE F31, G12, G15. KW Foreign Exchange Returns. Exchange Rates. Risk Premium.

AB Foreign exchange returns have exhibited behavior difficult to reconcile with standard theoretical models. In this paper, we first present a new feature of excess return behavior that appears to be at odds with standard risk premium models; namely, that spot and forward exchange rates do not move together one-for-one in the long run. Consequently, disturbances to predictable excess returns have the same persistence as do disturbances to spot exchange rates. To provide an explanation for this finding, we first estimate a regime switching model of exchange rates. Unlike earlier switching models, we include the effects of time-varying risk premium and potential jumps in the exchange rate process. We then conduct Monte Carlo experiments based upon this model to show that estimates of the long-run relationship between spot and forward rates are likely to be biased when a sample contains infrequent shifts in regime. Taking these shifts into account, we can no longer reject the hypothesis that spot and forward rates move together one-for-one in the long run. We also show that switches in the exchange rate biases estimates of the high frequency movements of the foreign exchange risk premium.

PD June 1993. TI Measuring Current and Anticipated Future Credit Quality: Estimates from Brady Bonds. AU Evans, Martin D. D.; Cumby, Robert E. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-44; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 17. PR \$5.00. JE F21, G24, G15. KW Credit Quality. Bond Prices.

AB Two methods of deriving estimates of credit quality from observed bond prices are examined. We show that there are important limitations to simple specifications that assume that default probabilities are constant. In particular, we find evidence that the market anticipated declines in credit quality when pricing the Brady bonds issued by Mexico, Venezuela, and Costa Rica. Thus, the market distinguishes between current creditworthiness and future creditworthiness, a distinction absent from the constant probability model. We show that this distinction has important implications for pricing the interest and principal guarantees associated with these bonds.

Evstigneev, Igor

PD December 1992. TI Stochastic Equilibria on Graphs. I. AU Evstigneev, Igor; Taksar, Michael. AA Evstigneev:

University of Bonn and Central Institute for Mathematical Economics, Moscow. Taksar: State University of New York. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-391; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 31. PR no charge. JE C62, C50. KW Stochastic Equilibrium. Graph Theory. Random Fields.

AB We consider a stochastic model of economic equilibrium which takes into account the structure of commodity flows in the economic system. These flows are described in terms of a directed graph. The model is based on the theory of random fields on directed graphs. We examine the sensitivity of equilibria with respect to changes in the data of the model. The main results are quantitative estimates for the variations of equilibrium prices under changes in model characteristics.

PD January 1993. TI Stochastic Equilibria on Graphs, II. AU Evstigneev, Igor; Taksar, Michael. AA Evstigneev: University of Bonn and Central Institute for Mathematical Economics, Moscow. Taksar: State University of New York. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-395; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 25. PR no charge. JE C62, C50. KW Stochastic Equilibrium. Graph Theory.

AB We study stochastic equilibrium models taking into account the structure of interactions among agents. The basic model analyzed in this paper represents a generalization of that proposed by Polterovich (1976, 1978). We generalize Polterovich's model, in particular, in two respects. We introduce uncertainty and describe the structure of interactions among agents in terms of a directed graph. We show that the model under consideration can be examined by the techniques developed in our previous paper (Part I). By using this, we obtain an existence theorem for equilibrium. Also we investigate the sensitivity of equilibrium prices with respect to changes in agents' characteristics.

Feenstra, Robert C.

PD July 1993. TI Market Share and Exchange Rate Pass-Through in World Automobile Trade. AU Feenstra, Robert C.; Gagnon, Joseph E.; Knetter, Michael M. AA Feenstra: University of California, Davis. Gagnon: Board of Governors of the Federal Reserve System. Knetter: Dartmouth College. SR University of California at Davis Economics Department Working Paper: 93-14; Department of Economics, University of California at Davis, CA 95616-8578. PG 24. PR \$3.00 U.S. and Canada. \$4.00 International. JE F12, F14, L13, L62. KW Imperfect Competition. International Trade. Pricing to Market.

AB This paper explores the relationship between exchange rate pass-through and market share for monopolistically competitive exporters. Under fairly general assumptions we show that pass-through should be high for exporters based in a country with a very large share of total destination market sales. For source countries with small and intermediate market shares, the theoretical relationship is potentially nonlinear and sensitive to assumptions about the nature of consumer demand and firm interactions. The model is estimated using a panel data set of automobile exports from France, Germany, Sweden, and the United States to a variety of destinations over the period 1970-88. The empirical relationship between pass-through and market share is significantly nonlinear: pass-through is lowest

when the source country's market share is around 45 percent and it is highest when the source country's share approaches 100 percent.

PD July 1993. TI Measuring the Welfare Effect of Quality Change: Theory and Application to Japanese Autos. AA University of California, Davis. SR University of California at Davis Economics Department Working Paper: 93-15; Department of Economics, University of California at Davis, CA 95616-8578. PG 22. PR \$3.00 U.S. and Canada. \$4.00 International. JE F13, C43, D61. KW Price Index. Consumer Welfare. Automobile Imports.

AB The purpose of this paper is to identify conditions under which hedonic price indexes provide an exact measure of consumer welfare, so that the welfare effects of quality change can be inferred. Our results are quite positive in providing a rationale for existing practices, though the conditions needed to justify these practices are somewhat restrictive. An application of our results is provided to the increase in characteristics of Japanese autos sold in the United States following the imposition of quotas in 1981. We argue that consumers did not value the additional characteristics at their former shadow-values, but rather, attached a lower value to the increase in characteristics. We compute the exact index that reflects this lower imputed value, and compare it to the conventional quality adjustment. The deadweight loss associated with the quality change is between one-quarter and one-third of the values of the upgrading.

Fergus, James T.

PD July 1993. TI 1989-92 Credit Crunch for Real Estate. AU Fergus, James T.; Goodman, John L. Jr. AA Board of Governors of the Federal Reserve System. SR Board of Governors of the Federal Reserve System Staff Studies Paper: 164; Economic Editing Section, Division of Research and Statistics, Board of Governors of the Federal Reserve System, Washington, DC 20551. PG 17. PR no charge. JE G21, R31. KW Real Estate Lending. Mortgage Credit.

AB Private construction declined sharply during the late 1980's and early 1990's. Spending on both residential construction projects and nonresidential projects fell about one-third. The decline became especially pronounced during 1990 when financial institutions that are the traditional sources of credit to real estate were reducing their mortgage lending. According to many reports, not only credit for construction but also loans on existing properties became more difficult to acquire during this period. This study reviews current thinking about the causes of the 1989-92 "credit crunch" in real estate and summarizes a variety of data on the duration and extent of this episode. It weighs the relative importance of the credit crunch and other factors that also contributed to the falloff in real estate lending; and it considers the long-run outlook for the supply of mortgage credit.

Figlewski, Stephen

PD October 1992. TI Evaluating the Performance of the Protective Put Strategy. AU Figlewski, Stephen; Chidambaram, N. K.; Kaplan, Scott. AA Figlewski and Chidambaram: New York University. Kaplan: Citibank. SR New York University Salomon Brothers Working Paper: S-93-31; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 27. PR not available. JE G11, G13. KW Put

Options. Portfolio Insurance.

AB In early September 1987, the head of equity derivative products research at a major Wall Street securities firm began suggesting to the firm's customers that they should think about buying stock index put options to protect the extraordinary gains they had made on their equity portfolios during the first part of the year. A "protective put" would limit possible losses regardless of how far stock prices might drop, while allowing further profits to accrue as long as the market kept going up. Few of the firm's customers ended up buying protective puts because they did not correctly estimate to cost of put protection. Option theory gives little insight into the performance of longer term strategies that require rolling over short maturity options. This paper will examine the performance of path dependent protective put strategies using simulation to determine approximate results for a given set of parameters.

Foresi, Silverio

TI Interaction in Investment Among Rival Japanese Firms.
AU Mei, Jianping; Foresi, Silverio.

TI A Model of Target Changes and the Term Structure of Interest Rates. **AU** Balduzzi, Pierluigi; Bertola, Giuseppe; Foresi, Silverio.

Fratianni, Michele

PD September 1992. **TI** Central Bank Independence and its Optimal Degree of Conservativeness. **AU** Fratianni, Michele; Huang, Haizhou. **AA** Indiana University. **SR** Aarhus Institute of Economics Memo: 1993-8; Institute of Economics, University of Aarhus, Building 350, Universitetsparken, DK-8000 Aarhus C, DENMARK. **PG** 20. **PR** no charge. **JE** E58, D82, C72, E52. **KW** Time Consistency. Monetary Policy. Policy Preferences. **AB** This paper treats monetary shocks in an environment of asymmetric information using the framework of Barro and Gordon (1983a). The paper makes four main contributions. First, a monetary game with asymmetric information generates two possible equilibrium outcomes. Second, we prove that the noncooperative equilibrium is absolutely robust. Third, one cannot rely on reputation alone to solve the problem of time inconsistency. Finally, we address the issue of the optimal CB strategy, in particular, the degree of conservativeness in pursuing the price-level stability objective.

Fry, Maxwell J.

PD July 1993. **TI** The Fiscal Abuse of Central Banks. **AA** University of Birmingham. **SR** International Monetary Fund Working Paper: WP/93/58; International Monetary Fund, 700 19th Street, Washington, DC 20431. **PG** 23. **PR** not available. **JE** E58, E62, E52. **KW** Central Banks. Fiscal Activity. Fiscal Agent.

AB This paper reviews the fiscal activities that governments in a sample of 26 developing countries have obliged their central banks to undertake. In the main, these activities fall under five categories: (1) collecting seigniorage; (2) imposing financial restriction; (3) implementing selective credit policies; (4) undertaking foreign exchange operations at nonmarket-clearing prices; and (5) providing implicit or explicit deposit insurance at subsidized rates and recapitalizing insolvent financial institutions. Not all central banks engage in all these activities, but some central banks perform additional fiscal activities such as collecting taxes and running food

procurement programs.

Funk, Peter

PD January 1993. **TI** The Direction of Technological Change. **AA** University of Bonn. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-393; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 36. **PR** no charge. **JE** O33, O12, L13, D51. **KW** Endogenous Growth. General Equilibrium Model. Schumpeter.

AB This paper presents a stylized model of technological change in a general equilibrium economy. As in Schumpeter's theory of economic development, change is modeled as a sequence of perfectly competitive periods connected via monopolistically competitive transition periods that determine the direction of change. Under some assumptions it is argued that, although development is almost surely Pareto-inefficient, the long-run direction of change is always efficient.

PD January 1993. **TI** Auctions with Interdependent Valuations. **AA** University of Bonn. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-394; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 11. **PR** no charge. **JE** D44. **KW** Auctions. Bidding.

AB This paper analyzes auctions in which the valuation of each player not only depends on whether he wins or not, but also on who is the winner if it is not him.

Gagnon, Joseph E.

TI Market Share and Exchange Rate Pass-Through in World Automobile Trade. **AU** Feenstra, Robert C.; Gagnon, Joseph E.; Knetter, Michael M.

Galai, Dan

TI Hedging Volatility in Foreign Currencies.
AU Brenner, Menachem; Galai, Dan.

Gallant, A. Ronald

PD June 1991. **TI** On Learning the Derivatives of an Unknown Mapping with Multilayer Feedforward Networks. **AU** Gallant, A. Ronald; White, Halbert. **AA** Gallant: North Carolina State University. White: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-53R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 18. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C60. **KW** Neural Networks. Nonlinear Maps.

AB Recently, multiple input, single output, single hidden layer feedforward neural networks have been shown to be capable of approximating a nonlinear map and its partial derivatives. Specifically, neural nets have been shown to be dense in various Sobolev spaces (Hornik, Stinchcombe and White, 1990). Building upon this result, we show that a net can be trained so that the map and its derivatives are learned. Specifically, we use a result of Gallant (1987b) to show that least squares and similar estimates are strongly consistent in Sobolev norm provided the number of hidden units and the size of the training set increase together. We illustrate these results

by an application to the inverse problem of chaotic dynamics; recovery of a nonlinear map from a time series of iterates. These results extend automatically to nets that embed the single hidden layer, feedforward network as a special case.

Gaspar, Vitor

PD January 1992. TI The Impact of Financial Integration and Unilateral Public Transfers on Investment and Economic Growth. AU Gaspar, Vitor; Pereira, Alfredo M. AA Gaspar: Universidade Nova de Lisboa. Pereira: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-03; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 31. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE O41, F36, O16, F32. KW Endogenous Growth. Capital Accumulation. Portugal.

AB The purpose of this paper is to study the impact of financial integration and unilateral public transfers on the growth path of a capital-importing economy. These phenomena are essential to the process of integration in the European Community of the new Southern European entrants. The paper develops an endogenous growth model of private and public capital accumulation in which the public sector and the current account balances play a crucial role. This paper argues that financial integration and structural funds affect the economy according to different time profiles. In fact, while both generate a wealth effect financial integration induces a relative price effect and a debt repayment effect. The model is then applied to the case of Portugal. Simulation results suggest that ongoing structural changes have a substantial impact on economic growth both in the steady-state and in the transitional period and contribute markedly to the catching up of the Portuguese economy to European Community standards.

PD July 1992. TI A Dynamic General Equilibrium Analysis of EC Structural Funds (With an Application to Portugal). AU Gaspar, Vitor; Pereira, Alfredo M. AA Gaspar: Universidade Nova de Lisboa. Pereira: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-27; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 36. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE F32, F35, F20, O41. KW Public Transfers. Capital. Endogenous Growth. Current Account.

AB The purpose of this paper is to develop a methodology for studying the impact of international unilateral transfers on the growth path of a capital importing economy. Unilateral public transfers under the EC Structural European Programs are an essential part of the process of integration of the new Southern European entrants. The paper develops a two sector endogenous growth model of private and public physical capital and human capital accumulation in which the public sector and the current account balances play a crucial role. The model is applied to the case of Portugal. Simulation results suggest that ongoing structural changes have a substantial and permanent impact on economic growth and contribute markedly to the process of real convergence of the Portuguese economy growth and to EC standards. However, the impact of structural funds on public deficits, current account, and real exchange rates adversely affects the long run requirements of

nominal convergence and exacerbates the need for budgetary restraint.

Ghoshal, Sumantra

PD not available. TI Quality of Management: The Invisible Engine of Corporate Performance. AU Ghoshal, Sumantra; Bartlett, Christopher A. AA Ghoshal: INSEAD. Bartlett: Harvard University. SR INSEAD Working Papers: 93/57/SM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 38. PR not available. JE M10, D23, L21. KW Managerial Choices. Corporate Behavior.

AB The performance of a firm is influenced by its relative position in the industry and by its stock of relevant, valuable and unique resources. The firm's ability to develop and deploy such resources and to build attractive market positions in its businesses is, in turn, influenced by its organizational capabilities (Rumelt, Schendel and Teece, 1991). Underlying both the strategic positions and the organizational capabilities are what Porter (1991) describes as "managerial choices", i.e., the decisions and actions that actors within the firm have taken over time. While neither comprehensive nor nuanced, this crude recapitulation of the last two decades of work in the strategy field points to the next question in the chain of causation: What factors influence these choices and actions of individuals within the firm?

Goetzmann, William N.

PD February 1993. TI Attrition and Mutual Fund Performance. AU Goetzmann, William N.; Brown, Stephen J. AA Goetzmann: Columbia University. Brown: New York University. SR New York University Salomon Brothers Working Paper: S-93-33; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 17. PR not available. JE G12, C82. KW Survivorship Bias. Repeat Winner. Performance Persistence.

AB We examine the absolute and relative performance of equity mutual funds using a comprehensive database over the period 1976 through 1988 that is free of most forms of survivorship bias. We find clear evidence that mutual funds have been subject to attrition based upon poor performance, and that the attrition rate for funds conditional upon surviving the first year may be as high as 5% to 10% annually. We find the probability of disappearance is related to fund size, expense ratios and past performance. We emphasize the degree to which it is impossible to completely eliminate survivorship bias from relative performance studies. Instead, we adjust somewhat for survivorship bias by using observed attrition rates to adjust the rejection region for tests of the repeat winner phenomenon. We find that performance persistence occurs in several years over the period, but the reverse is occasionally the case. Performance persistence is due to repeat-loser behavior over long periods of the sample interval. It cannot be explained by the management style of the fund.

Gollier, Christian

PD June 1989. TI Economic Theory of Risk Exchanges: A Review. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-20; Working Paper Coordinator, Economics Department, 0508, University of California, 9500

Gilman Drive, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D81, G22, D52. KW Insurance. Risk Bearing. Contingent Claims.

AB This paper reviews the economic theory of risk-bearing. We focus on the link between models with a complete set of markets for contingent claims and the theory of optimal insurance. Accordingly, an insurance contract can be viewed as a bundle of contingent goods. Transaction costs are shown to be the driving force for deductibles. Coinsurance can be due to either insurers' risk aversion or nonlinearity in administrative costs. We conclude that insurance markets seem to be inefficient in the sense that they do not satisfy the mutuality principle, a property of efficient contingent allocations.

Gonzalez-Rivera, Gloria

TI Semiparametric ARCH Models. AU Engle, Robert F.; Gonzalez-Rivera, Gloria.

Gonzalo, Jesus

PD October 1991. TI Estimation of Common Long-Memory Components in Cointegrated Systems. AU Gonzalo, Jesus; Granger, Clive W. J. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-33; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22. KW Cointegration. Error Correction. Common Factors.

AB The study of cointegration of large systems requires a reduction of their dimensionality. To achieve this, we propose to obtain the $I(1)$ common factors in every subsystem and then analyze the cointegration among them. In this paper, a new way of estimating common long-memory components of a cointegrated system is proposed. The identification of these common factors is achieved by imposing that they be linear combination of the original variables $X_{sub t}$ and the permanent component. The estimation is done from the error correction model, which takes care of the unit root problem and makes it possible to test hypotheses on the linear combinations which define the common factors, using standard chi-squared tests. Several empirical examples show how to do this.

PD August 1992. TI Cointegration and Aggregation. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-30R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 10. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C43. KW Common Factors. Aggregation.

AB This paper explores the conditions under which cointegration at the micro level implies cointegration at the macro level and vice versa. The aggregation conditions considered in this paper are in terms of common factors assumption rather than the representative agent assumption, thereby allowing for certain kinds of heterogeneity among agents.

PD August 1992. TI Five Alternative Methods of Estimating Long Run Equilibrium Relationships. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working

Paper: 89-55R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C32, C13. KW Cointegration. Error Correction Model.

AB This paper compares several methods (ordinary least squares, non-linear least squares, maximum likelihood in an error correction model, principal components and canonical correlations) of estimating cointegrating vectors. Although all of them are super-consistent, an empirical example shows that the estimates can vary significantly. The paper examines the asymptotic distribution of the estimators resulting from these methods, and shows that maximum likelihood in a fully specified error correction model (Johansen's approach) has clearly better properties than the other estimators. A Monte Carlo study indicates that finite sample properties are consistent with the asymptotic results. This is so even when the errors are non-Gaussian, or when the dynamics are unknown.

Goodman, John L. Jr

TI 1989-92 Credit Crunch for Real Estate. AU Fergus, James T.; Goodman, John L. Jr.

Gosling, Amanda

PD May 1993. TI Trade Unions and the Dispersion of Earnings in UK Establishments, 1980-1990. AU Gosling, Amanda; Machin, Stephen. AA Gosling: University College London. Machin: University College London and London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 140; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 14. PR no charge. JE J51, J31. KW Earnings Dispersion. Skilled Workers.

AB In this paper we examine the relationship between unions and earnings dispersion using data from the 1980, 1984 and 1990 Workplace Industrial Relations Surveys. The initial focus is on the cross-section relationship using the 1990 data and unionized establishments are seen to have lower earnings dispersion for skilled and semi-skilled workers. Second, within-establishment earnings dispersion is lower in 1990 among plants with recognized unions. We then use all three surveys to see to what extent the changing nature of union structure in the UK economy has contributed to the rise in earnings inequality for semi-skilled workers. Our findings point to an important increase in the gap between dispersion in union and non-union plants between 1980 and 1990. For semi-skilled workers, the decline in the share of plants with recognized unions can account for almost 20 per cent of the coincident rise in earnings inequality. The bulk of the overall rise in earnings inequality is, however, due to a large increase in earnings dispersion across non-union establishments.

Gotlibivski, Menachem

TI The Evolution of Wage and Employment in the Israeli Economy. AU Schwartz, Aba; Gotlibivski, Menachem.

Grandmont, Jean-Michel

PD August 1992. TI Aggregation, Learning and Rationality. AA CEPREMAP and Yale University. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-379; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1,

DEUTSCHLAND. PG 22. PR no charge. JE C43, D43, D84. KW Rational Expectations. Cournot Oligopoly.

AB The assumption of individual "rationality" is widely used in economics. The lecture reviews recent studies challenging two aspects of this assumption. The first issue concerns the well known fact that aggregation over optimizing households yields almost anything at the macroeconomic level. By contrast heterogeneity of individual characteristics alone (i.e. with only few individual rationality requirements) may generate strong macroeconomic regularities, with striking consequences for the prevalence in the aggregate of the weak axiom of revealed preference, of gross substitutability, and for uniqueness and stability of the Walrasian exchange equilibrium. In a partial equilibrium context, demand heterogeneity generates concave revenue functions and a unique Cournot oligopoly equilibrium. The second part of the lecture questions the "rational expectations" hypothesis that is widely used in dynamical economic models. Taking into account learning often makes "rational expectations" locally unstable.

Granger, Clive W. J.

PD August 1989. TI The Effect of Aggregation on Nonlinearity. AU Granger, Clive W. J.; Lee Tae-Hwy. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-43; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C15, C43, C52. KW Nonlinear Models. Common Factors. Nonlinearity Tests.

AB This paper investigates the interaction between aggregation (both cross-sectional and temporal) and nonlinearity, through a Monte Carlo study using various nonlinearity tests such as the neural network, Tsay, White dynamic information matrix, and Ramsey RESET tests with several different types of nonlinear models. It is observed that if common factors are present at the micro level nonlinearity is likely to remain in the aggregate but without common factors nonlinearity is likely to decline. It is also seen that nonlinearity reduces after either temporal aggregation or systematic sampling.

TI Testing for Neglected Nonlinearity in Time Series Models: A Comparison of Neural Network Methods and Alternative Tests. AU Lee, Tae-Hwy; White, Halbert; Granger, Clive W. J.

PD November 1989. TI Statistics and Society: The Construction and Evaluation of Policy Models. AU Granger, Clive W. J.; Deutsch, Melinda. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-44; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C51, C52, C82. KW Model Construction. Model Specification. Data Gathering.

AB This paper examines the construction and evaluation of models used in the policy making process. Current practices are shown often to be inadequate, and improvements are suggested for many stages of the modeling process including data gathering, specification, estimation, and evaluation of the model. In particular, a new test is proposed for the evaluation of

models used in the policy making process.

PD March 1990. TI Conjugate Processes. AU Granger, Clive W. J.; Lin, Jin-Lung. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-8; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 13. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22. KW Conjugate Processes. Autoregressive Processes.

AB It is generally the case that if two stochastic processes each have fairly simple dynamic structure, then their sum will have a more complicated structure. For example, if $X(t)$ and $Y(t)$ are independent and are each generated by different $AR(p)$ models then generally the sum will be $ARMA(2p,p)$. However, this simple to complex effect of adding processes is not inevitable and it is possible to go from complex to simple. This paper explores a particular case of this second possibility, where $X(t)$ and $Y(t)$ have dynamic structure, yet they add to a white noise. When this occurs, $X(t)$ and $Y(t)$ will be said to be conjugate processes.

PD March 1990. TI Long Memory Series with Attractors. AU Granger, Clive W. J.; Hallman, Jeff. AA Granger: University of California, San Diego. Hallman: Board of Governors of the Federal Reserve. SR University of California, San Diego Department of Economics Working Paper: 90-9; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22. KW Cointegration. Nonlinear Relationships.

AB The results presented in this paper can be motivated by considering the prices of some agricultural product, say tomatoes, in two parts of a country, denoted $PN(t)$, $PS(t)$ for the prices in the north and south. At a time t , values of these prices will be a point in the plane with axes PN , PS . In this plane the line $PN=PS$ may be considered to be an attractor as if two prices are quite different, and thus off this line, there will be market pressure to bring the prices together. If PN is much larger than PS it will be a profitable enterprise to buy tomatoes in the south, transport them to the north and sell them there. This activity will raise demand, and thus prices in the south and raise supply, and thus lower prices, in the north. The object of the paper is to characterize attractors, to study the properties of series having attractors and then to consider the empirical aspects of these concepts.

TI Treasury Bill Yield Curves and Cointegration. AU Anderson, Heather M.; Granger, Clive W. J.; Hall, A. D.

TI Power of the Neural Network Linearity Test. AU Terasvirta, Timo; Lin, Chien-Fu; Granger, Clive W. J.

PD April 1991. TI Reducing Self-Interest and Improving the Relevance of Economic Research. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-17; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE A11, B41. KW Economists. Economic Theory. Econometrics.

AB I will assume the following objectives: (a) for the scientific field (the discipline or main objective): to study and

attempt to understand the actual economy. (b) for an individual researcher (the individual objective): to maximize his or her personal utility, reflected through income, self-satisfaction, reputation; and (c) for a particular piece of research (research objective): to influence the beliefs - and thus probably the behavior - of other workers and in economics of economic agents. The three objectives are related but are not necessarily in agreement. A theme of this paper is to consider the implications, causes and cures of this disharmony, which I believe is weakening the discipline of economics attention towards the main objective. This leads to inefficiencies in the research effort and consequently a lack of respect for economic research by scientists in other fields, by politicians, the media and the public at large.

PD May 1991. **TI** Forecasting Stock Market Prices - Lessons for Forecasters. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-23; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 17. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G12, G14. **KW** Random Walk Hypothesis. Efficient Market Hypothesis.

AB For reasons that are probably obvious, stock market prices have been the most analyzed economic data during the past forty years or so. The basic question most asked is - are price changes forecastable? A negative reply leads to the random walk hypothesis for these prices, that is that stock prices are a martingale. In a sense this hypothesis has to be true. If it were not, then price changes would be consistently forecastable and so a money machine is created and indefinite wealth is possible. However, a more sophisticated theory - known as the Efficient Market Hypothesis - suggests that mere forecastability is not enough. This paper will concentrate on the martingale hypothesis, and thus will mainly consider the forecastability of price changes, or returns, but at the end I will give some consideration to the efficient market theory.

TI Estimation of Common Long-Memory Components in Cointegrated Systems. **AU** Gonzalo, Jesus; Granger, Clive W. J.

TI Using the Correlation Exponent to Decide if an Economic Series is Chaotic. **AU** Liu, Tung; Granger, Clive W. J.; Heller, Walter P.

PD May 1992. **TI** Comments on Testing Economic Theories and the Use of Model Selection Criteria. **AU** Granger, Clive W. J.; King, Maxwell L.; White, Halbert. **AA** Granger and White: University of California, San Diego. **King: Monash University. SR** University of California, San Diego Department of Economics Working Paper: 92-18; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 22. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C51, C52, C13. **KW** Model Specification. Hypothesis Testing.

AB This paper outlines several difficulties with testing economic theories, particularly that the theories may be vague, may relate to a decision interval different from the observation period and may need construction of a metric to convert a complicated testing situation to an easier one. We argue that it is better to use model selection procedures rather than formal hypothesis testing when deciding on model specification. This is because testing favors the null hypothesis, typically uses an

arbitrary choice of significance level and researchers working with the same data could easily end up with different final models.

TI A Long Memory Property of Stock Market Returns and a New Model. **AU** Ding, Zhuangxin; Granger, Clive W. J.; Engle, Robert F.

PD May 1992. **TI** What are We Learning About the Long-Run? **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-22; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 15. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C32, D50. **KW** Long-Run. Economic Relationships. Equilibrium.

AB In this paper I have tried to survey briefly and critically a number of methods of considering the long-run that are currently in use by econometricians. I have deliberately not been too detailed and careful with the definitions used because I feel that much of the present literature has a feel of pseudo-precision that detracts from our understanding of the actual economy. What are we learning about the long run is what are the difficulties with our techniques and in which directions pay-off are likely to be greatest. The long run is inevitably a difficult area for research, new information accumulates very slowly but there seems to be plenty of new approaches which are promising, particularly using non-linearity. This paper was presented as the Frank Parish Lecture at the Royal Economic Society Meeting in May 1992.

Groves, Theodore

PD September 1992. **TI** China's Evolving Managerial Labor Market. **AU** Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-36; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 27. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** P20, P23. **KW** Managerial Resources. China. State-Owned Enterprises.

AB Evidence is given that the reforms of the 1980's in Chinese state-owned enterprises strengthened a nascent managerial labor market by incorporating many of the incentives present in Western managerial labor markets, although in other forms. Poorly performing firms were more likely to have a new manager selected by auction; to be required to have a higher security deposit posted by the manager; and to be subject to more frequent review of the manager's contract. Managers could be, and were, fired for poor firm performance. A manager's pay was linked to the firm's sales and profits and this link was significantly strengthened by the reforms. The substitution of incentives for central control of enterprises was intended, in part, to improve productivity - - a result documented in other studies. We demonstrate that, in addition, the economic reforms helped develop an improved system of managerial resource allocation responsive to market forces.

PD April 1993. **TI** Autonomy and Incentives in Chinese State Enterprises. **AU** Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry. **AA** University of California, San Diego. **SR** University of California, San

Diego Department of Economics Working Paper: 93-16; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 21. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE J41, J33, J24, P27. KW Labor Productivity. Labor Contracts. China.

AB When the responsibility for output decisions was shifted from the state to the firm, and when firms were allowed to retain more of the profits, managers of Chinese state-owned enterprises strengthened workers' incentives: paying more in bonuses, and hiring more workers on fixed-term contracts. The new incentives were effective: productivity increased with increases in bonus payments and in contract workers. The increase in autonomy raised workers' incomes (but not managers' incomes) and investment in the enterprise, but tended not to raise remittances to the state or to lower subsidies from the state.

Gruber, Martin J.

TI Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios. AU Elton, Edwin J.; Gruber, Martin J.; Das, Sanjiv; Hlavka, Matthew.

TI The Performance of Bond Mutual Funds. AU Blake, Christopher R.; Elton, Edwin J.; Gruber, Martin J.

TI Multi Index Models Using Simultaneous Estimation of All Parameters. AU Elton, Edwin J.; Gruber, Martin J.

Guasch, Jose Luis

TI Rural Credit in Developing Countries. AU Braverman, Avishay; Guasch, Jose Luis.

TI The Theory of Rural Credit Markets. AU Braverman, Avishay; Guasch, Jose Luis.

TI Agricultural Reform in Developing Countries: Reflections for Eastern Europe. AU Braverman, Avishay; Guasch, Jose Luis.

TI Promoting Rural Cooperatives in Developing Countries: The Case of SubSaharan Africa. AU Braverman, Avishay; Guasch, Jose Luis; Huppi, Monika.

TI Agriculture and the Transition to the Market. AU Brooks, Karen M.; Guasch, Jose Luis; Braverman, Avishay; Csaki, Csaba.

Guest, David

TI The Dimensionality and Stability of Organizational Commitment: A Longitudinal Examination of Cook and Wall's (1980) Organizational Commitment Scale (BOCS). AU Peccei, Riccardo; Guest, David.

Gunther, Jeffery W.

TI Separating the Likelihood and Timing of Bank Failure. AU Cole, Rebel A.; Gunther, Jeffery W.

Hajivassiliou, Vassilis A.

PD July 1993. TI Simulating Normal Rectangle Probabilities and Their Derivatives: The Effects of Vectorization. AA Yale University. SR Yale Cowles Foundation Discussion Paper: 1049; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 20. PR no charge. JE C15, C35. KW Monte Carlo Simulations.

Multinomial Probit. Orthant Probability.

AB An extensive literature in econometrics and in numerical analysis has considered the computationally difficult problem of evaluating the multiple integral representing the probability of a multivariate normal random vector constrained to lie in a rectangular region. A leading case of such an integral is the negative orthant probability, implied by the multinomial probit (MNP) model used in econometrics and biometrics. Classical parametric estimation of this model requires, for each trial parameter vector and each observation in a sample, evaluation of a normal orthant probability and its derivatives with respect to the mean vector and the variance-covariance matrix. Several Monte Carlo simulators have been developed to approximate the orthant probability integral and its linear and logarithmic derivatives. In this paper, I discuss Gauss and FORTRAN implementations of 13 simulation algorithms, and I present results on the impact of vectorization on the relative computational performance of the simulation algorithms.

PD July 1993. TI Classical Estimation Methods for LDV Models Using Simulation. AU Hajivassiliou, Vassilis A.; Ruud, Paul A. AA Hajivassiliou: Yale University. Ruud: University of California, Berkeley. SR Yale Cowles Foundation Discussion Paper: 1051; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 40. PR no charge. JE C13, C15, C24. KW Limited Dependent Variables. Monte Carlo Simulation. Censored Data.

AB This paper discusses estimation methods for limited dependent variable (LDV) models that employ Monte Carlo simulation techniques to overcome computational problems in such models. These difficulties take the form of high dimensional integrals that need to be calculated repeatedly but cannot be easily approximated by series expansions. The simulation estimation methods we discuss here make it possible to estimate LDV models that are computationally intractable using classical estimation methods. We first review the ways in which LDV models arise, describing the differences and similarities in censored and truncated data generating processes. Censoring and truncation give rise to the troublesome multivariate integrals. Finally, estimation methods that rely on simulation are described.

Hall, A. D.

TI Treasury Bill Yield Curves and Cointegration. AU Anderson, Heather M.; Granger, Clive W. J.; Hall, A. D.

Hallman, Jeff

TI Long Memory Series with Attractors. AU Granger, Clive W. J.; Hallman, Jeff.

Hamilton, Bruce W.

PD June 1993. TI Only the Goods Die Young. AA Johns Hopkins University. SR Johns Hopkins Department of Political Economy Working Paper: 311; Department of Political Economy, Johns Hopkins University, Baltimore, Maryland 21218. PG 19. PR no charge. JE D42. KW Durability. Monopoly.

AB I analyze the steady state behavior of a monopolist producing an imperfectly durable good. In the steady state, consumers are assumed to be imperfectly informed, and to form static price expectations. In addition, the monopolist can control the lifetime of the good through built-in durability. In this setting, I show that a sales monopolist's power erodes as

durability increases (analogously with Bond and Samuelson (1984), though the effect is much less strong with static expectations). This diminution of market power as durability rises induces the sales monopolist to reduce durability below its optimal level. In numerical calculations, I show that the endogenous reduction of durability can be extremely large (from 24 years to 7 years in one simulation). The wasteful reduction in durability adds to the deadweight loss generated by the sales monopolist. In several numerical simulations the sales monopolist generates almost as much deadweight loss as an otherwise identical rental monopolist.

PD July 1993. **TI** A General Equilibrium of Spot and Contract Sectors. **AU** Hamilton, Bruce W.; Chandra, Vandana. **AA** Hamilton: Johns Hopkins University. Chandra: University of Georgia. **SR** Johns Hopkins Department of Political Economy Working Paper: 312; Department of Political Economy, Johns Hopkins University, Baltimore, Maryland 21218. **PG** 28. **PR** no charge. **JE** D52. **KW** Labor Contracts. General Equilibrium.

AB In this paper we model an economy with two sectors. Employers in one sector are able to offer long-term employment contracts to their workers, offering smooth and guaranteed incomes in exchange for reduced expected wages. The model is infinite horizon, with overlapping generations of workers. Thus even though the firm offers guaranteed employment to its contract workers, it can adjust the size of its labor force through attrition. Retired workers can be replaced by entrants or the jobs can be left vacant, depending upon the state of the economy. All workers not employed by the contract sector are absorbed by the spot sector. Wages in the spot and contract sectors adjust so that expected utility is the same in both sectors. Under many circumstances, the institution of income smoothing contracts increases earnings volatility in the spot sector. As workers are risk averse, this induced volatility reduces utility in the spot sector. This in turn, given the general equilibrium nature of the model, reduces equilibrium utility for workers in the contract sector. In addition, labor is misallocated across the two sectors. The net effect may well be that the institution of long-term income smoothing contracts, extended to only some of the workers in the economy, leaves all workers worse off, *ex ante*, than they would be if contracts were abolished altogether.

Hamilton, James D.

PD July 1993. **TI** Autoregressive Conditional Heteroskedasticity and Changes in Regime. **AU** Hamilton, James D.; Susmel, Raul. **AA** Hamilton: University of California, San Diego. Susmel: University of Houston. **SR** University of California, San Diego Department of Economics Working Paper: 93-28; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 23. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C22, G12. **KW** Stock Market Volatility. Stock Market Crash. Regime Switching.

AB ARCH models often impute a high degree of persistence to stock market volatility, and yet give relatively poor forecasts. One possible explanation is that extremely large shocks, such as the October 1987 crash, arise from quite different causes and have very different consequences for subsequent volatility than do small shocks. We explore this possibility with U.S. weekly stock returns by allowing the parameters of an ARCH process to come from one of several

different regimes, with transitions between regimes governed by an unobserved Markov chain. We estimate models with two to four regimes in which the latent innovations come from Gaussian and Student *t* distributions.

PD July 1993. **TI** State-Space Models. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-29; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 43. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C22. **KW** Linear Dynamic System. Kalman Filter.

AB Many dynamic models can usefully be written in what is known as a state-space form. This makes it extremely simple to analyze the dynamics of the process, make forecasts, or evaluate the likelihood function. The idea behind a state-space representation of a more complicated linear system is to capture the dynamics of an observed ($n \times 1$) vector $Y(t)$ in terms of a possibly unobserved ($r \times 1$) state vector for the system.

Handa, Puneet

PD November 1992. **TI** Dynamic Price Discovery. **AU** Handa, Puneet; Schwartz, Robert A. **AA** New York University. **SR** New York University Salomon Brothers Working Paper: S-93-35; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. **PG** 21. **PR** not available. **JE** G12. **KW** Asset Prices. Price Changes. Securities Markets.

AB This paper analyzes the dynamic process of price discovery in a competitive securities market where investors are equally informed about the fundamental determinants of an asset's end-of-period value but, because they do not know each other's wealth positions, do not know the equilibrium price of shares at the start of a current trading session. As trading progresses, participants update their expectations of an asset's equilibrium value. As they do so, price can either converge to a new level or, following a run, revert back to a previous level. This implies that, in clusters of adjacent prices, price changes are more apt to be predominantly of like sign (positive or negative) than would be the case under random walk with a bid-ask spread. An examination of 1988 transactions data for the thirty Dow Jones Industrial stocks shows that this is indeed the case.

Hannan, Timothy H.

TI Using Efficacy Measures to Distinguish Among Alternative Explanations of the Structure-Performance Relationship in Banking. **AU** Berger, Allen N.; Hannan, Timothy H.

Hardle, Wolfgang

PD December 1992. **TI** Testing a Regression Model When We Have Smooth Alternatives in Mind. **AU** Hardle, Wolfgang; Kneip, Alois. **AA** University of Bonn. **SR** Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: A-389; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 16. **PR** no charge. **JE** C14, C12, C52. **KW** Goodness-of-Fit. Expenditure Curves. Regression Models.

AB Goodness-of-fit tests based on residual sum of squares are a standard procedure in fitting regression models. Often we

have a smooth alternative in mind, a qualitative feature that the Chi square-test does not take into account. We show that the power of detecting a smooth alternative increases when we smooth the current model as well. The procedure is applied to expenditure curve estimation.

Harlow, W. Van

TI The Effects of International Dual Listings on Stock Price Behavior. AU Damodaran, Aswath; Liu, Crocker H.; Harlow, W. Van.

Harrington, Joseph E., Jr

TI Product Differentiation and Cost Variability. AU Chang, Myong-Hun; Harrington, Joseph E., Jr.

Hasbrouck, Joel

PD February 1993. TI Order Characteristics and Stock Price Evolution: Program Trading on the NYSE. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-36; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 28. PR not available. JE G14. KW Order Flow. Information. Program Orders.

AB The public transaction reports disseminated by a market represent summary outcomes of the orders converging on the market. This raises the possibility that the order flow contains information beyond that impounded in the transactions. This paper is an econometric analysis of the information contained in the computerized (SuperDOT) order flow at the New York Stock Exchange. The results suggest that the computerized order flow variables and transactions both contain information, but that transactions contain more. SuperDOT orders are also differentiated by type: index arbitrage program orders, non-index arbitrage program orders; and non-program orders. Estimations of models in which these components are modeled separately suggest that the eventual cumulative price impact of both types of program orders is higher than that of non-program orders. When the index futures return is included in the conditioning information set, however, the price impacts of program and nonprogram orders do not differ.

Haubrich, Joseph

PD July 1993. TI Capital Requirements and Shifts in Commercial Bank Portfolios. AU Haubrich, Joseph; Wachtel, Paul. AA Haubrich: Federal Reserve Bank of Cleveland. Wachtel: New York University. SR New York University Salomon Brothers Working Paper: S-93-47; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 32. PR \$5.00. JE G20, G28, G24. KW Bank Portfolios. Capital Requirements. Bank Regulation.

AB The evidence presented here suggests very strongly that bank portfolio changes since 1990 are at least in part a response to the introduction of risk based capital requirements. Understanding this mechanism improves our general understanding of the effects of bank regulation. The particular effect of capital requirements on bank portfolios merits special interest. The shift in bank portfolios can effect their overall risk, and therefore the risk of financial collapse and the liability of the Federal Government acting as the lender of last resort. In addition, such failures may (under the "credit view") have

macroeconomic consequences and reflect on economic growth, income, and unemployment.

Heller, Walter P.

TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. AU Brown, Donald J.; Heller, Walter P.; Starr, Ross M.

PD May 1990. TI Underemployment as a Coordination Problem with Savings and Increasing Returns. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-20; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 28. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E12, D43. KW Coordination Failure. Temporary Shocks.

AB Are temporary shocks sufficient to cause permanent underemployment in a dynamic model? That is the question being addressed here. A temporary equilibrium model with oligopolized output markets is analyzed. The main result is that there are Pareto-ranked multiple equilibria, all with low levels of employment by comparison with competitive equilibrium. The model displays "comovements" in equilibrium output and employment. Across equilibria, lower economic activity gives rise to lower economic welfare, if the degree of increasing returns is small. The multiple equilibria exhibit coordination failure: At a low-level equilibrium, a government should send a market signal that guides agents to behavior corresponding to the Pareto-best equilibrium. An announced increase in government spending is shown to be such a signal.

TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. AU Brown, Donald J.; Heller, Walter P.; Starr, Ross M.

TI Using the Correlation Exponent to Decide if an Economic Series is Chaotic. AU Liu, Tung; Granger, Clive W. J.; Heller, Walter P.

PD February 1993. TI Equilibrium Market Formation Causes Missing Markets. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-07; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D42, D41, D52. KW Market Makers. Complementarities. Incentive Structures.

AB I present a general equilibrium theory of market formation. The structure of markets is not taken as a primitive, but rather as an outcome of the theory. A new class of decision-making agents is introduced, the market-makers. The theory is then based on the information structure is assumed. Next, two polar cases of incentive structures for market-makers are presented: monopoly and perfect competition. I then use the theory to give an explanation of missing markets. Examples are given where missing markets arise out of complementarities among market-makers. These agents are rationally forecasting their projected demands and supplies. Too many markets may be formed when there are fixed costs to setting up markets. This can happen despite rational profit calculations by the market-makers.

PD June 1993. TI Efficiency Under Increasing Returns.

AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-24; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D51, D42, L12. KW Nonlinear Pricing Mechanism. Natural Monopoly. Price Discrimination.

AB An efficient nonlinear pricing mechanism is explored in a general equilibrium model with increasing returns to scale. All firms are profit-maximizing and price at marginal cost. There is one perfectly discriminating profit-maximizing natural monopoly in this private ownership economy. The natural monopoly uses a two-part pricing scheme: The losses incurred by (a) pricing at marginal cost are more than recovered by (b) perfectly discriminating hookup charges on the household buyers of the monopoly good. Equivalently, the pricing process is a series of bargains with each household, i.e., a sequence of all-or-nothing offers at progressively lower prices. For either view, it is essential that resale of the monopoly good is impossible or illegal. Two-part marginal cost pricing equilibria are not generally Pareto-efficient. Efficiency is regained here by permitting the monopolist to perfectly discriminate and thereby capture all the consumer surplus by choosing a Pareto-efficient allocation.

Helpman, Elhanan

TI International R&D Spillovers. AU Coe, David T.; Helpman, Elhanan.

Hendry, David F.

TI Testing Super Exogeneity and Invariance in Regression Models. AU Engle, Robert F.; Hendry, David F.

Hercowitz, Zvi

PD June 1993. TI Immigration and Growth Under Imperfect Capital Mobility: The Case of Israel. AU Hercowitz, Zvi; Kantor, Nirit; Rubin Meridor, Leora. AA Hercowitz: Tel-Aviv University. Kantor and Rubin Meridor: Bank of Israel. SR Tel-Aviv Sackler Institute of Economic Studies Working Paper: 12/93; Department of Economics, Tel-Aviv University, Ramat Aviv 69978, ISRAEL. PG 17. PR no charge. JE E20, F20. KW Immigration. Growth. Capital Mobility.

AB This paper analyzes the quantitative implications of capital mobility for immigration and growth, in the face of an open window of emigration abroad (from the CIS) for a given period. A neoclassical small open economy growth model with endogenous immigration is used, where imperfect capital mobility is represented by an upward sloping supply curve of foreign funds. The basic notion is that the supply of foreign funds is subject to exogenous changes, following, for example, from special loans granted by international organizations or other governments. A higher cost of foreign funds implies slower capital accumulation, and hence lower real wage and higher unemployment paths. This, in turn, diminishes the potential immigrants' benefits from immigration. The model is calibrated to Israeli data. To analyze the effects of shifts in the foreign funds schedule, dynamic paths for the immigration and other macroeconomic variables are simulated starting from a base year taken as 1992.

Hiemstra, Craig

PD February 1991. TI A Rare Events Model: Monte Carlo Results on Sample Design and Large Sample Guidance. AU Hiemstra, Craig; Kelejian, Harry H. AA University of Maryland. SR University of Maryland Department of Economics Working Paper: 91-4; University of Maryland, Department of Economics, College Park, MD 20742. PG 11. PR no charge. JE C15, C13. KW Small Samples. Maximum Likelihood Estimation.

AB A Monte Carlo rare events model is specified and estimated by maximum likelihood methods. Properties of the small sample distributions are studied.

Higgins, Matthew L.

TI Interaction Between Autocorrelation and Conditional Heteroskedasticity: A Random Coefficient Approach. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L.

PD October 1990. TI A Class of Nonlinear ARCH Models. AU Higgins, Matthew L.; Bera, Anil K. AA Higgins: University of Wisconsin, Milwaukee. Bera: University of Illinois, Urbana-Champaign and University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-40; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, F31. KW Specification Test. Nonlinear ARCH. Exchange Rates.

AB A class of nonlinear ARCH models is suggested. The proposed class encompasses several functional forms for ARCH which have been put forth in the literature. A Lagrange multiplier test is developed to test Engle's ARCH specification against the wider class of models. This test provides an easily computed diagnostic check of the adequacy of an ARCH model after it has been estimated. The theory is applied to a number of weekly exchange rate series and we find strong evidence of nonlinear ARCH.

TI On the Formulation of a General Structure for Conditional Heteroskedasticity. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L.

Hildenbrand, Werner

PD December 1992. TI Family Expenditure Data, Heteroscedasticity and the Law of Demand. AU Hildenbrand, Werner; Kneip, Alois. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-390; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 22. PR no charge. JE D12. KW Consumption Expenditure. Heteroskedasticity. Increasing Dispersion.

AB In this paper we present some results of a data analysis of Family Expenditure Surveys for the United Kingdom and France. These surveys contain (among other information) for every household of a large random sample from the whole population of households the expenditure (typically per year) on a variety of consumption items, like food (bread, flour, beef and veal, mutton and lamb...), housing, services, transport, etc. The sum of household expenditure on all consumption items that are considered in the survey is called household total expenditure. We shall show that all consumption expenditure data sets which we have analyzed so far exhibit a characteristic

feature that we shall call "increasing spread".

Hirshleifer, Jack

PD July 1993. TI The Dark Side of the Force. AA University of California, Los Angeles. SR University of California at Los Angeles Department of Economics Working Paper: 702; Department of Economics, University of California at Los Angeles, 2263 Bunche, Los Angeles, CA 90024. PG 17. PR \$5.00; checks payable to U.C. Regents. JE D74. KW Self Interest. Conflict. Machiavelli. AB Economists, in working out the implications of the self-interest postulate, have largely neglected the "dark side of the force" that leads to crime, war, and politics. There is the way of Ronald Coase, but also the way of Niccolo Machiavelli. Coase's Theorem says that individuals will never pass up an opportunity for mutually advantageous cooperation; Machiavelli's Theorem says that no-one will ever fail to realize a selfish advantage at the expense of another. The paper develops the implications of the Machiavellian or conflictual route to economic gain under four main headings: the sources of conflict, the technology of conflict, the modeling of conflict, and the consequence of conflict.

Hlavka, Matthew

TI Efficiency with Costly Information: A Reinterpretation of Evidence from Managed Portfolios. AU Elton, Edwin J.; Gruber, Martin J.; Das, Sanjiv; Hlavka, Matthew.

Holtz Wooders, Myrna

TI On Large Games with Bounded Essential Coalitions. AU Winter, Eyal; Holtz Wooders, Myrna.

Holtz-Eakin, Douglas

PD June 1993. TI Health Insurance Provision and Labor Market Efficiency in the United States and Germany. AA Syracuse University and National Bureau of Economic Research. SR National Bureau of Economic Research Working Paper: 4388; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. PG 41. PR \$5.00. JE J62, J63, J32, I18. KW Job Mobility. Employer Provided Insurance.

AB Health insurance has claimed a prominent place on the policy agenda in the United States. Critics argue that the status quo has led to spiraling health care costs, an inequitable distribution of quality medical care, and that employer-provided health insurance has "locked" individuals into jobs, thereby interfering with the efficient matching of employers and employees. In contrast to the United States, Germany guarantees virtually all citizens health insurance. Insurance is portable, but the cost may change when an individual changes jobs, again leading to the potential for job-lock. This paper assesses the empirical magnitude of health insurance-related impediments to job mobility in the United States and Germany. The results show little evidence that health insurance provision interferes with job mobility in either the United States or Germany, thus suggesting that these employer-based systems for providing the health insurance portion of the social safety net do not alter this aspect of labor market efficiency.

Hong, Che-Hsiung

TI Valuation of Variance Forecasts with Simulated Option Markets. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex.

TI Arbitrage Valuation of Variance Forecasts with Simulated Options. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex; Noh, Jaesun.

Hong, Yongmiao

PD December 1991. TI Consistent Specification Testing via Nonparametric Series Regression. AU Hong, Yongmiao; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-39; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 31. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C52, C14. KW Specifications Tests. Nonparametric Estimation.

AB This paper proposes two consistent specification tests for nonlinear parametric functional forms via nonparametric series regressions. The tests are closely related to consistent tests of Wooldridge (1990b) and Yatchew (1988) and can be viewed as the nested testing complement to Wooldridge's nonnested testing approach. They are also closely related to the tests of de Jong and Bierens (1991), Eubank and Spiegelman (1990) and Jayasuriya (1990) because asymptotically they are equivalent to a test of the joint hypothesis that the true parameters of a series regression model are zero, where the dependent variable is the residual from the parametric model, and the series terms are functions of the explanatory variables, chosen so as to support nonparametric estimation of a conditional expectation. We apply our results to Fourier series and regression splines, and present a Monte Carlo study of the finite sample performance of the new tests in comparison to the consistent tests of Bierens (1990), Eubank and Spiegelman (1990) and Jayasuriya (1990), Wooldridge (1990b) and Yatchew (1988).

TI China's Evolving Managerial Labor Market. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

TI Autonomy and Incentives in Chinese State Enterprises. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

Hornik, Kurt

PD February 1990. TI Universal Approximation of an Unknown Mapping and its Derivatives Using Multilayer Feedforward Networks. AU Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-36R; Working Paper Coordinator, Economics Department, 0508, University of California, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C63, C60. KW Functional Approximation. Derivative Approximation.

AB We give conditions ensuring that multilayer feedforward networks with as few as a single hidden layer and an appropriately smooth hidden layer activation function are capable of arbitrarily accurate approximation to an arbitrary function and its derivatives. In fact, these networks can approximate functions that are not differentiable in the classical sense, but possess only a generalized derivative, as is the case for certain piecewise differentiable functions. The conditions imposed on the hidden layer activation function are relatively mild; the conditions imposed on the domain of the function to

be approximated have practical implications. Our approximation results provide a previously missing theoretical justification for the use of multilayer feedforward networks in applications requiring simultaneous approximation of a function and its derivatives.

TI A Convergence Result for Learning in Recurrent Neural Networks. **AU** Kuan, Chung-Ming; Hornik, Kurt; White, Halbert.

PD May 1993. **TI** Degree of Approximation Results for Feedforward Networks Approximating Unknown Mappings and Their Derivatives. **AU** Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert; Auer, Peter. **AA** Hornik: Technical University of Vienna. Stinchcombe and White: University of California, San Diego. Auer: Technische Universität Graz. **SR** University of California, San Diego Department of Economics Working Paper: 93-15; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 8. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C60. **KW** Derivative Approximation. Activation Functions.

AB Recently Barron (1992) has given rates for hidden layer feedforward networks with sigmoid activation functions approximating a class of functions satisfying a certain smoothness condition. These rates do not depend on the dimension of the input space. We extend Barron's results to feedforward networks with possibly non-sigmoid activation functions approximating mappings and their derivatives simultaneously. Our conditions are similar but not identical to Barron's, but we obtain the same rates of approximation, showing that the approximation error decreases at rates as fast as $n^{-1/2}$, where n is the number of hidden units. The dimension of the input space appears only in the constants of our bounds.

Hoshi, Takeo

TI Heterogeneous Beliefs, Wealth Accumulation, and Asset Price Dynamics. **AU** Cabrales, Antonio; Hoshi, Takeo.

Hougardy, Stefan

PD March 1993. **TI** Extremal Uniquely Hamiltonian Graphs. **AU** Hougardy, Stefan; Hundack, Christoph. **AA** University of Bonn. **SR** Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: C-93791-OR; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 10. **PR** no charge. **JE** C44, C60. **KW** Graph Theory. Hamiltonian Graphs.

AB A graph is called uniquely hamiltonian if it contains exactly one hamiltonian circuit. It is called extremal uniquely hamiltonian if no uniquely hamiltonian graph with the same number of vertices has more edges. We will completely describe the structure of extremal uniquely hamiltonian graphs. Especially we will show that there are 2 to the $(n-7)/2$ non-isomorphic extremal uniquely hamiltonian graphs.

Houseman, Susan N.

TI Does Employment Protection Inhibit Labor Market Flexibility? Lessons From Germany, France and Belgium. **AU** Abraham, Katherine G.; Houseman, Susan N.

Huang, Haizhou

TI Central Bank Independence and its Optimal Degree of Conservativeness. **AU** Fratianni, Michele; Huang, Haizhou.

Hubbard, R. Glenn

PD June 1993. **TI** Internal Finance and Firm Investment. **AU** Hubbard, R. Glenn; Whited, Toni M.; Kashyap, Anil K. **AA** Hubbard: Columbia University and National Bureau of Economic Research. Whited: University of Pennsylvania. Kashyap: University of Chicago and National Bureau of Economic Research. **SR** National Bureau of Economic Research Working Paper: 4392; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. **PG** 26. **PR** \$5.00. **JE** D92, E22, G32. **KW** Financing Constraints. Dividend Payouts. Cash Flow.

AB We examine the neoclassical investment model using a panel of U.S. manufacturing firms. The standard model with no financing constraints cannot be rejected for firms with high (pre-sample) dividend payouts. However, it is decisively rejected for firms with low (pre-sample) payouts (firms we expect to face financing constraints). Here, investment is sensitive to both firm cash flow and macroeconomic credit conditions, holding constant investment opportunities. Sample splits based on firm size or maturity do not produce such distinctions. The latter comparison identifies firms where "free-cash-flow" problems might be expected to produce correlations between investment and cash flow.

Hummels, David

PD June 1993. **TI** Monopolistic Competition and International Trade: Reconsidering the Evidence. **AU** Hummels, David; Levinsohn, James. **AA** Hummels: University of Michigan. Levinsohn: University of Michigan and National Bureau of Economic Research. **SR** National Bureau of Economic Research Working Paper: 4389; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. **PG** not available. **PR** \$5.00. **JE** F12, L13, F14. **KW** Imperfect Competition. Intra-Industry Trade.

AB In this paper, we test some propositions about international trade flows that are derived from a model of monopolistic competition developed by Elhanan Helpman. We investigate whether the volume of trade between OECD countries is consistent with the predictions of a model in which all trade is intra-industry trade in differentiated products. We then repeat the test with non-OECD countries. We also investigate whether the share of intra-industry trade is consistent with a more general theoretical model in which some, but not all, trade is intra-industry trade. Our results lead us to question the apparent empirical success of these models.

Hundack, Christoph

TI Extremal Uniquely Hamiltonian Graphs. **AU** Hougardy, Stefan; Hundack, Christoph.

Hung, Victor Tin Yau

TI Endogenous Growth and Trade Liberalization. **AU** Blackburn, Keith; Hung, Victor Tin Yau.

PD June 1993. **TI** Sources of External Balance Fluctuations. **AA** University of Southampton. **SR** University of Southampton Discussion Paper in Economics and Econometrics: 9307; Department of Economics,

University of Southampton, Southampton SO9 5NH, ENGLAND. PG 20. PR no charge. JE E32, F32, C32. KW Real Business Cycles. Current Account. Technology Shocks.

AB This paper provides some empirical evidence regarding three questions about current account fluctuations. Those questions are: (i) Are the "stylized facts" about cyclical fluctuations on external balances proposed by Real Business Cycle (RBC) economists robust? (ii) Are technology shocks the main source of fluctuations of external balances? (iii) Are current account fluctuations explained by a simple intertemporal effect? First, we find that RBC evidence is not robust to the method of detrending. Second, we find that a substantial proportion of movement of current accounts is due to demand shocks. Third we find that the single commodity RBC model cannot explain countercyclical movement of current accounts.

Huppi, Monika

TI Promoting Rural Cooperatives in Developing Countries: The Case of SubSaharan Africa. AU Braverman, Avishay; Guasch, Jose Luis; Huppi, Monika.

Hviid, Morten

TI Tariffs for a Foreign Monopolist Under Incomplete Information. AU Collie, David; Hviid, Morten.

Ibrahim, Ali

TI Optimal Tariffs: Theory and Practice. AU Subramanian, Arvind; Ibrahim, Ali; Torres-Castro, Luis A.

Isard, Peter

TI Political Feasibility and Investment in Economic Transformations. AU Aizenman, Joshua; Isard, Peter.

Issler, Joao Victor

TI Estimating Sectoral Cycles Using Cointegration and Common Features. AU Engle, Robert F.; Issler, Joao Victor.

Ito, Takatoshi

TI Where Does the Meteor Shower Come From? The Role of Stochastic Policy Coordination. AU Engle, Robert F.; Ito, Takatoshi; Lin, Wen-Ling.

TI Do Bulls and Bears Move Across Borders? International Transmission of Stock Returns and Volatility as the World Turns. AU Lin, Wen-Ling; Engle, Robert F.; Ito, Takatoshi.

Jain, S. K.

TI Extensions of G-Based Matrix Partial Orders. AU Werner, Hans Joachim; Mitra, S. K.; Jain, S. K.

John, Kose

PD May 1992. TI Antitakeover Measures and Insider Trading: Theory and Evidence. AU John, Kose; Lang, Larry H. P.; Shih, F. Y. AA John and Lang; New York University. Shih: Rider College. SR New York University Salomon Brothers Working Paper: S-93-27; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 34. PR not available. JE G34. KW Announcement Effects. Takeover Defense.

AB Announcement effects of antitakeover measures and their complex interaction with concurrent insider trading are studied in this paper. In the theoretical section, we model a scenario in which corporate management has private information about firm value and enjoys private benefits of control. Insider trading and adoption of formal antitakeover devices, both are used as strategic defensive measures as well as potential signals in an information equilibrium of the model. The announcement effects of antitakeover defenses on stock price are shown to depend on (a) their restrictiveness, (b) the relative size of managerial private benefits of control and the takeover premium, (c) concurrent insider trading activity, (d) the extent of institutional ownership in the firm, and (e) the extent of insider ownership. Tests of the central predictions are carried out using data on antitakeover charter amendments, and poison pills. The empirical evidence is largely consistent with the implications of our model.

PD November 1992. TI Debt as an Engine of Creative Innovation. AU John, Kose; Madan, Dilip; Soubra, Badih. AA John and Soubra; New York University. Madan: University of Maryland. SR New York University Salomon Brothers Working Paper: S-93-37; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 19. PR not available. JE O31, G32, C78. KW Managerial Incentives. Strategic Bargaining. Technology Choice.

AB It is shown that when shareholders enter into an agreement with a manager who has bargaining power, shareholders can motivate the manager to exert more effort and adopt a superior technology by introducing a debt security which alters the manager's incentives. In our stylized economy, the agreement is reached using the Rubinstein (1982) strategic bargaining approach. The problem is then viewed in an economy where there is three way bargaining between shareholders, bank and management. Finally, a case in which a continuum of technologies exist, in a three way bargaining world, is solved. It is shown that an interior level of debt together with a unique ownership of shares by management will force the adoption of optimal innovation.

TI Optimal Incorporation, Structure of Debt Contracts, and Limited-Recourse Project Financing. AU Chemmanur, Thomas J.; John, Kose.

PD May 1993. TI Source of Gains in Asset Sales: Fit or Focus? AU John, Kose; Ofek, Eli. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-22; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 27. PR not available. JE G31, D21, D92. KW Divestiture. Asset Performance.

AB We examine two motivations for asset sales: (1) to achieve a better fit for the divested assets and (2) to increase the focus and thus the performance of the seller's remaining assets. We find that both fit and focus are significant determinants of seller gains from asset sales. Consistent with the focus hypothesis, the firm's remaining assets are significantly more profitable in each of the three years following the divestiture. This increase in performance is significantly related to the seller's divestiture announcement return. Also, the abnormal announcement return is significantly higher when divesting an unrelated division. Consistent with the fit hypothesis, the seller

announcement return is higher when (a) the sale is to a superior buyer (such as an LBO or a buyer related to the divested asset), and (b) the divested asset underperforms the industry.

Kaiser, Kevin M. J.

PD May 1993. TI An International View of Bankruptcy Laws: Summary and Implications for Corporations Facing Financial Distress. AU Kaiser, Kevin M. J.; Kaiser, Kristen L. AA INSEAD. SR INSEAD Working Papers: 93/44/FIN; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 33. PR not available. JE G30, G33, G35. KW Bankruptcy. Financial Distress. Corporate Behavior.

AB Our goal in the present paper is neither to design nor to infer an optimal system for dealing with financially distressed firms. Rather, we take an explanatory look at different bankruptcy laws in place in industrialized countries and at how one would expect these to impact corporate behavior. Many have been written with careful consideration of the benefits and drawbacks of existing systems. We seek to locate the strengths or weaknesses in each system and draw implications for corporate behavior in financial distress resulting from these particular characteristics of each system. We will also make some hypotheses regarding the likely effectiveness of certain provisions in accomplishing their intended purpose.

Kaiser, Kristen L.

TI An International View of Bankruptcy Laws: Summary and Implications for Corporations Facing Financial Distress. AU Kaiser, Kevin M. J.; Kaiser, Kristen L.

Kaminsky, Graciela L.

TI Debt Relief and Debt Rescheduling: The Optimal-Contract Approach. AU Calvo, Guillermo A.; Kaminsky, Graciela L.

PD December 1991. TI Dual Exchange Rates: The Mexican Experience 1982-1987. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-38; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE F31, F21, E31. KW Capital Flight. Exchange Rate Regime. Inflation.

AB The purpose of this work is to critically examine the Mexican dual exchange market experience from 1982 to 1987, in particular, to examine whether the dual exchange regime was a useful tool in preventing speculative capital outflows and in insulating domestic prices from capital flight. Our results suggest that dual exchange rates did not prevent capital outflows. We also find that shocks in the financial foreign exchange market are transmitted to domestic prices. However, speculative capital movements can only explain a small part of the variance of domestic inflation.

PD January 1992. TI The Growth Collapse of Debtor Countries: Is it the Debt Burden? (With an Application to Argentina) AU Kaminsky, Graciela L.; Pereira, Alfredo M. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-06; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.;

\$4.00 Foreign; payable to Regents, University of California. JE O41, F34. KW Endogenous Growth. Foreign Debt. Argentina.

AB Most economists and specialists in international finance believe that the debt crisis has hurt investment and growth in debtor countries and have proposed debt relief as a way of alleviating the debt crisis. However, the empirical evidence on this link between the debt crisis and the collapse in growth has been elusive. In particular, recent work by Arrau (1990) and Borensztein (1990) have challenged the conventional wisdom by suggesting that the debt crisis did not generate a crippling burden. This paper evaluates the effect of the foreign debt crisis on investment and growth in Argentina, using numerical simulations of an endogenous growth model. Two effects are examined in detail: first, the effect of the collapse in public investment; and second, the effect of near-rational decisions. Simulation results suggest that when these effects are taken into consideration, the debt burden can explain a substantial part of the collapse in growth.

Kane, Alex

TI Estimating Risk Aversion with a Time Varying Price of Volatility. AU Chou, Ray; Engle, Robert F.; Kane, Alex.

TI Valuation of Variance Forecasts with Simulated Option Markets. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex.

TI Arbitrage Valuation of Variance Forecasts with Simulated Options. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex; Noh, Jaesun.

TI A Test of Efficiency for the S&P 500 Index Option Market Using Variance Forecasts. AU Noh, Jaesun; Engle, Robert F.; Kane, Alex.

Kanoh, Satoru

PD July 1990. TI Macro Investment Theories and Heterogeneous Investors. AA Yokohama National University. SR University of California, San Diego Department of Economics Working Paper: 90-27; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 22. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E22. KW Investment Demand. Stock Level. Investment Theory.

AB There exists an enormous variety of theories of investment demand. This paper is written to propose another dimension to macro investment theory which has been overlooked in the conventional research literature. Investment can be regarded as firms' attempts to adjust their capital stock levels to their "desired" stock levels. This paper estimates the stock level, which firms wish to employ, by utilizing a survey which asked about the firms' incentives to invest. In conventional investment theory, it is taken for granted that the scrutiny of the behavior of a typical representative agent leads to a better understanding of the behavior of an economy as a whole, partly due to the law of large numbers. Based on empirical results, we point out that such a stylized idea may lead us to fallacies in macroeconomic investment theory. We then proceed to propose an alternative way to construct an investment function. A main message of this paper is to cast doubt on the casual assumption of homogeneous investors often made in the literature.

Kantor, Nirit

TI Immigration and Growth Under Imperfect Capital Mobility: The Case of Israel. AU Hercowitz, Zvi; Kantor, Nirit; Rubin Meridor, Leora.

Kaplan, Scott

TI Evaluating the Performance of the Protective Put Strategy. AU Figlewski, Stephen; Chidambaran, N. K.; Kaplan, Scott.

Kashyap, Anil K.

TI Internal Finance and Firm Investment. AU Hubbard, R. Glenn; Whited, Toni M.; Kashyap, Anil K.

Kelejian, Harry H.

TI A Rare Events Model: Monte Carlo Results on Sample Design and Large Sample Guidance. AU Hiemstra, Craig; Kelejian, Harry H.

Keuschnigg, Christian

PD December 1992. TI Dynamic Effects of Tariff Liberalization: An Intertemporal CGE Approach. AU Keuschnigg, Christian; Kohler, Wilhelm. AA Keuschnigg; Institute for Advanced Studies, Vienna. Kohler; University of Essen. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-386; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 24. PR no charge. JE F41, F13, D91, D92. KW Trade Liberalization. Overlapping Generations.

AB The paper presents an applied CGE trade model with overlapping generations facing lifetime uncertainty. Investment and savings are derived from intertemporal optimization of agents under perfect foresight. We emphasize the features of a small open economy which takes prices for imports and the world interest rate as given. Export demand functions which are assumed downward sloping with respect to prices of domestically produced goods, make the terms of trade endogenous. The model intertemporally determines the current account and the accumulation of foreign assets. We calibrate the model to Austrian data and simulate the effects of trade liberalization as negotiated in the Tokyo round as well as a complete tariff liberalization. Among the results, we find that tariff reductions are expansionary in the long-run, but are contractionary in the short-run if the commercial policy is anticipated.

Khan, Mohsin S.

PD June 1993. TI Public and Private Investment and the Convergence of Per Capita Incomes in Developing Countries. AU Khan, Mohsin S.; Kumar, Manmohan S. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/51; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 25. PR not available. JE O41, O47, O57, H50. KW Convergence Hypothesis. Public Sector Investment. Growth.

AB This paper examines the extent to which there has been convergence in real per capita incomes across developing countries during the last two decades. In the analysis particular emphasis is placed on the separate roles played by private and public sector investment in determining both the extent and the speed of convergence. The paper also considers the importance

of the stock of human capital, trade orientation, and foreign direct investment in the long-run growth process. Empirical tests are carried out for a large sample of 95 developing countries over the period 1970-90. The results provide support for the notion of differential effects of public and private investment on long-term growth, as well as for the convergence hypothesis.

Kim, Yong-Gwan

PD January 1992. TI An Evolutionary Approach to Pre-Play Communication. AU Kim, Yong-Gwan; Sobel, Joel. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-01; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 35. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, C62. KW Coordination. Cheap Talk.

AB Although informal stories in game theory emphasizes that pre-play communication allows players to coordinate on efficient Nash equilibria, these stories are difficult to capture in full models of the communication process. The basic reason for the difficulty is that costless communication can never destroy a Nash equilibrium. If all but one player decides to ignore everything that is said and play according to an equilibrium strategy, then the other player can do no better than speak randomly and also follow the equilibrium. We do not assume that words have meaning outside the model. Instead, we show that if outcomes satisfy a stability condition suggested by adaptive dynamics, then pre-play communication effectively eliminates inefficient equilibria.

TI Evolutionary Stability in Games of Communication. AU Blume, Andreas; Kim, Yong-Gwan; Sobel, Joel.

King, Maxwell L.

TI Comments on Testing Economic Theories and the Use of Model Selection Criteria. AU Granger, Clive W. J.; King, Maxwell L.; White, Halbert.

Klein, Martin

PD March 1990. TI Seigniorage, Base Money Regimes and Central Bank Behavior. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-143.; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 9. PR no charge. JE E58, E52. KW Monetary Policy. Central Banks.

AB The purpose of this paper is to illustrate that central banks with identical objectives - maximizing seigniorage for the government - would pursue different policies depending on the tool kit of monetary instruments they are constrained to use. The main results can be summarized as follows. If the government has direct access to central bank credit and thus to the seigniorage the model reproduces the well-known results in the literature on the revenue-maximizing rate of base money growth and the ex post inconsistency of monetary policy. However, in a regime where base money is created exclusively by extending short-term credit to the private sector at market-determined interest rates, time inconsistency disappears and the revenue-maximizing monetary policy exhibits obvious conservative traits.

PD April 1990. TI Delors and the Core: Cooperative

Monetary Policy Games and the Transition to EMU. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-187; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 23. PR no charge. JE C78, F31, F41, F42, E52. KW Fixed Exchange Rates. Bargaining Game. Monetary Union.

AB This paper constructs a cooperative monetary policy game to model the policy choice in a fixed exchange rate arrangement between two countries. Bargaining arises because the countries' joint decision to maintain a fixed exchange rate leaves them with a degree of freedom with respect to the allocation of adjustment duties between them. The paper demonstrates how a solution for the bargaining game can be constructed and uses simulation methods to assess how the solution is affected by the parameters of the macro model. The model is used to investigate the difference between a monetary union and a fixed exchange rate arrangement with bargaining. One of the main results is that the allocation of adjustment between countries operates quite differently in these two systems. A fixed exchange rate arrangement tends to favor large member countries whereas a monetary union gives countries equal weights or even favors the small countries.

PD June 1990. TI The Option Pricing Approach to the Valuation of Country Risk. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-157; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 5. PR no charge. JE G13, F34, H87. KW Debt Service. Sovereign Risk. International Finance.

AB This paper provides a brief survey of some recent developments in the valuation of country risk. The point of departure is the recognition that the valuation of country risk can be approached using techniques developed in the literature on option pricing. The basic setup distinguishes three concepts of debt service: total contractual debt service, debt servicing capacity, and actual debt service. Insolvency occurs when debt servicing capacity falls short of the contractual debt service. Based on observations of stylized facts of rescheduling it is assumed that under insolvency the debtor country receives debt relief proportional to the difference between contractual debt service and debt servicing capacity. It is then shown that option pricing theory leads to a closed form representation of the spread a country has to pay on its external borrowing.

PD November 1991. TI Converting EMS to EMU: Why Not at Par with Sterling? AU Klein, Martin; Neumann, Manfred J. M. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-201; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 20. PR no charge. JE F36, F33, F31. KW Currency Reform. Monetary Union. Exchange Rates.

AB This paper considers the optimal choice of the numeraire for the currency conversion that will constitute the final step in the transition from EMS to EMU. At the moment it seems to be understood that the current basket-structured ECU will be chosen for this purpose. We argue that this choice is not justified on economic grounds and explore possible alternatives. Our major conclusions are: First, the current ECU is not the cost-minimizing choice of numeraire; it is preferable to use the national currency of an EMS member. Second, the

Pound sterling should be the first choice for the numeraire currency. Third, if sterling is politically not feasible because Great Britain does not participate in EMU from the start, the only realistic choice left is the DM.

Klevorick, Alvin K.

PD August 1993. TI On the Sources and Significance of Interindustry Differences in Technological Opportunities. AU Klevorick, Alvin K.; Levin, Richard C.; Nelson, Richard R.; Winter, Sidney. AA Klevorick and Levin: Yale University. Nelson: Columbia University. Winter: University of Pennsylvania. SR Yale Cowles Foundation Discussion Paper: 1052; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 35. PR no charge. JE O31. KW R&D. Industry Technological Change. Technological Advance.

AB The set of technological opportunities in a given industry is one of the fundamental determinants of technical advance in that line of business. We examine the concept of technological opportunity and discuss three categories of sources of those opportunities: advances in scientific understanding and technique, technological advances originating in other industries and in other private and governmental institutions, and feedbacks from an industry's own technological advances. Data from the Yale Survey on Industrial Research and Development are used to measure the strength of various sources of technological opportunity and to discern interindustry differences in the importance of these sources. We find that interindustry differences in the strength and sources of technological opportunities contribute importantly to explanations of cross-industry variation in R&D intensity and technological advance.

Kneip, Alois

TI Testing a Regression Model When We Have Smooth Alternatives in Mind. AU Hardle, Wolfgang; Kneip, Alois.

TI Family Expenditure Data, Heteroscedasticity and the Law of Demand. AU Hildenbrand, Werner; Kneip, Alois.

Knetter, Michael M.

TI Market Share and Exchange Rate Pass-Through in World Automobile Trade. AU Feenstra, Robert C.; Gagnon, Joseph E.; Knetter, Michael M.

Kohler, Wilhelm

TI Dynamic Effects of Tariff Liberalization: An Intertemporal CGE Approach. AU Keuschnigg, Christian; Kohler, Wilhelm.

Kopits, George

PD June 1993. TI Lessons in Fiscal Consolidation for the Successor States of the Soviet Union. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/54; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 15. PR not available. JE E62, H20, H50, P35. KW Fiscal Adjustment. Macroeconomic Stabilization. Economic Transition.

AB This paper reviews lessons in fiscal consolidation for the former Soviet Union that emerge from the experience of Central and Eastern European economies in transition. A central lesson is the need to support the macroeconomic

stabilization with front-loaded fiscal adjustment. Consistent with this adjustment path, structural reform in the tax and expenditure areas should be aimed at allocative efficiency and fairness, and its sequencing be predicated largely on administrative constraints. In the face of the uncertainty of fiscal projections, formulation of contingency measures is necessary. In addition, elimination of submerged fiscal imbalances, stemming from quasi-fiscal activities of state-owned nonfinancial enterprises and financial institutions, is just as important as correcting the measured budget deficit.

Kozicki, Sharon

TI Testing for Common Features. AU Engle, Robert F.; Kozicki, Sharon.

Krawczyk, Katherine

PD March 1993. TI The Selection of Authority in Legal Argument: Semantic Similarity, Pragmatic Centrality and Analogy. AU Krawczyk, Katherine; Marchant, Garry; Robinson, John. AA Krawczyk: North Carolina State University. Marchant: INSEAD. Robinson: University of Texas. SR INSEAD Working Papers: 93/39/AC; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 16. PR not available. JE A12, K10, C90. KW Legal Reasoning. Semantic Similarity. Structural Consistency.

AB The impact of constraint satisfaction of the selection of authorities in legal reasoning was examined in three experiments. It was hypothesized that subjects would select authorities with semantic similarities over authorities that are structurally consistent with a problem. In the first experiment 23 tax professionals were asked to rate on a 9-point scale the appropriateness of two authorities, presented separately, for each of eight problems. The authorities in both experiments varied in their level of structural consistence and semantic similarity in relation to the original problem, and in both experiments subjects rated authorities with high semantic similarity as more appropriate than authorities with high structural consistence. In the third experiment 83 tax professionals were asked to rate on a 9-point scale the appropriateness of two different authorities for each of four problems. The results of the third experiment supported those of the first two experiments.

Kroner, Kenneth F.

TI Multivariate Simultaneous Generalized ARCH. AU Engle, Robert F.; Kroner, Kenneth F.

Kuan, Chung-Ming

PD October 1990. TI Recursive M-Estimation, Nonlinear Regression and Neural Network Learning with Dependent Observations. AU Kuan, Chung-Ming; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-38; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C13. KW Recursive M-Estimator. Neural Networks.

AB We have applied the results of Kushner and Clark (1978) and Kushner and Hwang (1979) to establish the consistency and asymptotic normality of the Robbins-Monro recursive m-estimator under conditions allowing moderate dependence in

the underlying stochastic process $\{Z(t)\}$. Our consistency results impose asymptotic stationarity on the expectation $E(\Psi(Z(t), \theta))$; asymptotic normality results impose strict stationarity on $\{Z(t)\}$. Our conditions are chosen not to be the most general possible, but to provide readily interpretable and/or verifiable conditions without making great sacrifices in generality. We consider three implementations of the RM procedure for nonlinear regression as special cases, and further specialize these to study methods for "learning" in an interesting class of neural network models.

PD March 1991. TI Strong Convergence of Recursive M-Estimators for Models with Dynamic Latent Variables. AU Kuan, Chung-Ming; White, Halbert. AA Kuan: University of Illinois, Urbana-Champaign. White: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-05R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 32. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C13, D83. KW Recursive Estimation. Latent Variables.

AB Latent variables are variables entering the formulation of an econometric or statistical model that are not directly observable; dynamic latent variables are latent variables determined in time by their own previous values and the previous values of other variables in the system. Such variables play a fundamental role in modeling economic time series. Despite their utility and importance, models incorporating dynamic latent variables can be impressively difficult to estimate. In this paper we present a theory of strong convergence for a class of recursive m-estimators for dynamic latent variables models. These recursive estimators are rather straightforward computationally, and are especially well-suited to learning models.

PD February 1992. TI Artificial Neural Networks: An Econometric Perspective. AU Kuan, Chung-Ming; White, Halbert. AA Kuan: University of Illinois, Urbana-Champaign. White: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-11; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 54. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C63, D83. KW Neural Networks. Learning.

AB Artificial neural networks are a class of models developed by cognitive scientists interested in understanding how computation is performed by the brain. These networks are capable of learning through a process of trial and error that can be appropriately viewed as statistical estimation of model parameters. Although inspired by certain aspects of the way information is processed in the brain, these network models and their associated learning paradigms are still far from anything close to a realistic description of how brains actually work. They nevertheless provide a rich modeling framework with application across the sciences. The purpose of this article is two-fold: first, to review the basic concepts and theory required to make artificial neural networks accessible to economists and econometricians, with particular focus on econometrically relevant methodology; and second, to develop theory for a leading neural network learning paradigm to a point comparable to that of the modern theory of estimation and inference for misspecified nonlinear dynamic models.

PD January 1993. **TI** A Convergence Result for Learning in Recurrent Neural Networks. **AU** Kuan, Chung-Ming; Hornik, Kurt; White, Halbert. **AA** Kuan: University of Illinois, Urbana-Champaign. Hornik: Technical University of Vienna. White: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-42R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 18. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C60, D83. **KW** Back Propagation. Neural Network Model.

AB We give a rigorous analysis of the convergence properties of a recurrent back-propagation algorithm for recurrent networks containing either output or hidden layer recurrence. The conditions permit data generated by stochastic processes with considerable dependence. The theory suggests restrictions relevant in practical applications, as some simulations illustrate.

Kumar, Manmohan S.

TI Public and Private Investment and the Convergence of Per Capita Incomes in Developing Countries. **AU** Khan, Mohsin S.; Kumar, Manmohan S.

Kunst, Robert M.

PD June 1992. **TI** Threshold Cointegration in Interest Rates. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-26; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 24. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E43, C22, C32. **KW** Interest Rates. Cointegration.

AB Long- and Short-term interest rates have repeatedly incited researchers to apply bivariate cointegrating models. These models remain unsatisfactory as they do not restrict individual rates to lie within reasonable bounds. Simulations show that arbitrarily negative rates can be generated from these models. In order to accommodate the observed behavior of interest rates, a threshold model is suggested which is cointegrated in "normal" and stationary in "irritating" situations. Identification of thresholds and estimation of these models are demonstrated using Swiss daily series. The influence of time-changing volatility on estimation is also highlighted.

Kupiec, Paul H.

PD June 1993. **TI** On the Efficiency of a Portfolio Approach to Margin Setting in a Futures-Style Settlement System. **AA** Board of Governors of the Federal Reserve System. **SR** Board of Governors of the Federal Reserve System Finance and Economics Discussion Series: 93-19; C/O Stephen A. Sharpe, Mail Stop 89, Federal Reserve Board, Washington, DC 20551. **PG** 36. **PR** no charge. **JE** G11, G13, G18, E44. **KW** SPAN. Margin Requirements. Risk Management.

AB The results presented in this study provide a measure of the efficacy of a portfolio approach to margining counterparty risk exposures in a futures-style settlement system similar to the SPAN system used by all futures exchanges in the U.S. and by many exchanges internationally. No other study has considered

the adequacy of simulation-based margins on naked futures-options positions or portfolios of futures and options on futures. As such, the characteristics and performance of current futures-clearinghouse margin setting practice have not been analyzed in the literature. This study documents the historical performance of a SPAN-style margining system and, in doing so, provides some guidance as to the level of coverage that might be expected from alternative choices of controlling input levels.

Labahn, Roger

PD September 1992. **TI** Kernels of Minimum Size Gossip Schemes. **AA** University of Rostock. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: C-92774-OR; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 27. **PR** no charge. **JE** C44, C60. **KW** Graph Theory. Multigraph Gossiping.

AB The main part of gossip schemes are the kernels of their minimal orders. We give a complete characterization of all kernels that may appear in gossip schemes on simple graphs with a minimum number of calls. As consequences we prove several results on gossip schemes, e.g. the minimum number of rounds of a gossip scheme with a minimum number of calls is computed. Part II covers order theoretic questions for such kernel posets.

PD January 1993. **TI** Kernels of Minimum Size Gossip Schemes II. **AA** University of Rostock. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: C-92785-OR; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 19. **PR** no charge. **JE** C44, C60. **KW** Graph Theory. Multigraph Gossiping.

AB The main part of gossip schemes are the kernels of their minimal orders. In Part I, we gave a complete characterization of all kernels that may appear in gossip schemes on simple graphs with a minimum number of calls. As consequences, we proved several results on gossip schemes. In the present part, we deal with order theoretic questions for such kernel posets. After describing all p-grid-kernels in terms of permutations and subsets, isomorphism is investigated and they are enumerated. Then we compute the order dimension and the jump number of all possible kernels, and finally, we show how to determine the numbers of their linear extensions.

Lahiri, Sajal

PD October 1992. **TI** Quotas, Partial Rent Retention and the Second Best. **AU** Lahiri, Sajal; Raimondos, Pascalis. **AA** Lahiri: University of Essex. Raimondos: Copenhagen Business School. **SR** Aarhus Institute of Economics Memo: 1993-4; Institute of Economics, University of Aarhus, Building 350, Universitetsparken, DK-8000 Aarhus C, DENMARK. **PG** 5. **PR** no charge. **JE** F13, H21. **KW** Protectionism. Tariffs. Spillovers.

AB This paper reconsiders the question of second-best policy intervention in the presence of unalterable quota restrictions on a subgroup of commodities. It is shown that whether or not such intervention is justifiable depends crucially on the assumption about the distribution of quota rents.

Lang, Gunther

PD December 1992. **TI** Just Resource Sharing Among Generations: Equity, Efficiency, and Optimal Population.

AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-392; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 13. PR no charge. JE D63, J18, O40. KW Growth Rate. Resource Allocation. Population Growth.

AB This paper investigates whether a fair resource sharing among generations is possible. It turns out that existence crucially depends on the development of population and the durability and productivity of capital. Moreover, if a fair allocation does exist for non-negative growth rates of population then it can be shown that there is even an optimal growth rate which guarantees a fair resource sharing among generations in the sense that it provides the highest possible common utility for all of them.

Lang, Larry H. P.

TI Antitakeover Measures and Insider Trading: Theory and Evidence. AU John, Kose; Lang, Larry H. P.; Shih, F. Y.

PD July 1993. TI Why Do Firms Invest in Eastern Europe? AU Lang, Larry H. P.; Ofek, Eli. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-38; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 24. PR not available. JE F21, G12. KW Foreign Investment. Stock Prices.

AB U.S. investments in Eastern Europe are potentially difficult and risky. Under the drastically different investment environment, the new wave of foreign investments in the late 80's deserves more academic attention directed toward uncovering the motivation for foreign firms' expansion in this region. Stock prices react positively to U.S. investment announcements (1% average two-day return), and the total wealth created for shareholders averages \$64 million per firm. A number of hypotheses unique to the region are directly tested by focusing on the change in firm value (stock return) when direct investment takes place (announcement). We show that intangible assets and growth of sales are positively correlated with the stock price when the investment is announced. This evidence is consistent with the internalization theory that foreign investment should occur when a firm is able to increase its value by internalizing markets for its intangible assets or growth opportunities.

Laurent, Monique

TI A Survey of the Known Facets of the Cut Cone. AU Deza, Michel; Laurent, Monique.

Lawrance, Emily C.

PD July 1989. TI Poverty and the Rate of Time Preference: Evidence from Panel Data. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-34; Working Paper Coordinator, Economics Department, 0508, University of California, La Jolla, CA 92093-0508. PG 28. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D12, D91. KW Life Cycle Behavior. Intertemporal Preferences.

AB This paper uses the Panel Study of Income Dynamics to study the intertemporal preferences of rich and poor households in the United States. Subjective rates of time preference, identified from estimation of consumption Euler equations, are

3 to 5 percentage points higher for households with low permanent incomes than for those with high permanent incomes. Controlling for race and education widens this difference. Holding constant age and family composition, time preference rates vary from 12 percent for white, college educated households in the top 5 percent of the labor income distribution to 19 percent for nonwhite households without a college education whose labor incomes are in the bottom 5 percentile. Such differences imply very different patterns of consumption over the life cycle and suggest one possible explanation for observed heterogeneity in savings behavior across socio-economic classes.

Lee Tae-Hwy

TI The Effect of Aggregation on Nonlinearity. AU Granger, Clive W. J.; Lee Tae-Hwy.

Lee, Gary G. J.

TI Long Run Volatility Forecasting for Individual Stocks in a One Factor Model. AU Engle, Robert F.; Lee, Gary G. J.

Lee, Sangkyu

TI Interaction Between Autocorrelation and Conditional Heteroskedasticity: A Random Coefficient Approach. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L.

TI Information Matrix Test, Parameter Heterogeneity and ARCH: A Synthesis. AU Bera, Anil K.; Lee, Sangkyu.

TI On the Formulation of a General Structure for Conditional Heteroskedasticity. AU Bera, Anil K.; Lee, Sangkyu; Higgins, Matthew L.

Lee, Tae-Hwy

PD October 1989. TI Testing for Neglected Nonlinearity in Time Series Models: A Comparison of Neural Network Methods and Alternative Tests. AU Lee, Tae-Hwy; White, Halbert; Granger, Clive W. J. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-42; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 38. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C52. KW Model Evaluation. Neural Network Test.

AB In this paper a new test, the neural network test for neglected nonlinearity, is compared with the Keenan test, the Tsay test, the White dynamic information matrix test, the McLeod-Li test, the Ramsey RESET test, the Brock-Dechert-Scheinkman test and the Bispectrum test. The neural network test is based on the approximating ability of neural network modeling techniques recently developed by cognitive scientists. This test is a Lagrange Multiplier test that statistically determines whether adding "hidden units" to the linear network would be advantageous. The performance of the tests is compared using a variety of nonlinear artificial series including bilinear, threshold autoregressive and nonlinear moving average models, and the tests are applied to actual economic time series. The relative performance of the neural network test is encouraging. Our results suggest that it can play a valuable role in evaluating model adequacy; the neural network test has proper size and good power. Many of the economic series tested appear nonlinear.

Leiderman, Leonardo

TI The Capital Inflows Problem: Concepts and Issues. AU Calvo, Guillermo A.; Leiderman, Leonardo; Reinhart, Carmen.

Levich, Richard M.

PD April 1992. TI The Significance of Technical Trading-Rule Profits in the Foreign Exchange Markets: A Bootstrap Approach. AU Levich, Richard M.; Thomas, Lee R. AA Levich: New York University, City University Business School, London and National Bureau of Economic Research. Thomas: Investcorp Bank E. C. and Investcorp Trading Limited. SR New York University Salomon Brothers Working Paper: S-93-25; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 27. PR not available. JE G15, G14, C82. KW Trading Rules. Currency Futures. AB In this paper, we present new evidence on the profitability and statistical significance of technical trading rules in the foreign exchange market. We utilize a new data base, currency futures contracts for the period 1976-1990, and we implement a new testing procedure based on bootstrap methodology. Using this approach, we generate thousands of new exchange rate series constructed by random reordering of each original series. We then measure the profitability of the technical rules for each new series. The significance of the profits in the original series is assessed by comparison to the empirical distribution of results derived from the thousands of randomly generated series. Overall, our results suggest that simple technical trading rules have very often led to profits that are highly unusual.

Levin, Andrew

PD December 1990. TI Monetary Stabilization Policy in a General Equilibrium Model with Wage Contracts. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-43; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E52, E32, J41, D51. KW Monetary Policy. Labor Contracts. Output Stabilization. AB A dynamic stochastic general equilibrium model is formulated in which monetary policy can be used stabilize real output and employment. In the model, firms and workers sign multi-period labor contracts with a fixed nominal wage rate and a flexible employment level; while transactions in the goods market are subject to a cash-in-advance constraint. Under particular specifications of preferences, technology, and central bank policy, the structural parameters of the model are estimated by the full-information maximum likelihood method using quarterly U.S. wage and output data (1973:1 - 1982:4). The estimation results reported here are promising: the model fits the data relatively well, yields reasonable parameter estimates, and provides intuitively plausible evaluations of alternative monetary policy rules. In particular, stabilization of nominal GNP maximizes average household welfare in the model economy.

PD February 1991. TI The Macroeconomic Significance of Nominal Wage Contract Duration. AA University of California, San Diego. SR University of California, San

Diego Department of Economics Working Paper: 91-08; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 32. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE J41, E52, E32. KW Staggered Wage Contracts. Monetary Policy. Stabilization Policy.

AB By generating nominal rigidities within a rational expectations framework, the staggered wage contract model provides a potentially useful means of evaluating the real effects of alternative monetary stabilization policies. However econometric analysis has determined that the typical staggered contract model fails to capture several important features of aggregate wage and output fluctuations. This paper demonstrates that these empirical deficiencies can be overcome by generalizing the staggered contract model to allow for wage contracts of different length. In fact, maximum likelihood estimation of the model using quarterly U.S. wage and output data (1971:1 - 1988:1) indicates that the model fits the aggregate data as well as a high-order vector auto-regression. Finally, the estimated model provides implications about several of the policy issues which have been raised in the theoretical literature.

PD April 1992. TI Complementarities Between Exports and Human Capital in Economic Growth: Evidence from the Semi-Industrialized Countries. AU Levin, Andrew; Raut, Lakshmi K. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-14; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 33. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE F43, O15. KW Convergence. Human Capital Investment. Nonlinearities.

AB Previous empirical research on the determinants of GDP growth has yielded conflicting results on three critical issues: the tendency toward convergence of real GDP across countries; the mechanisms through which export growth influences productivity growth; and the macroeconomic significance of human capital investment. Using a panel of 30 semi-industrialized developing nations (SIC's) over the period 1965-84, we reproduce the sensitivity of earlier results to changes in sample period, selection of countries, and explanatory variables. However, we find strong and robust evidence that this sensitivity can be explained by two nonlinearities in the development process: a quadratic effect of initial GDP per capita; and an interaction between average education and growth in the export/GDP ratio.

PD May 1992. TI Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. AU Levin, Andrew; Lin, Chien-Fu. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-23; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 42. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C33, C32, C22, C23. KW Unit Roots. Panel Data. Large-Sample Properties.

AB This paper develops the asymptotic properties of unit root tests on panel data as both the time-series and cross-section dimensions grow arbitrarily large. In the case of i.i.d. disturbances, the unit root t statistic converges to the $N(0,1)$ distribution; due to the presence of a unit root, the convergence

occurs more quickly as the number of time periods grows than as the number of individuals grows. In the cases of individual-specific fixed effects or serial correlation in the disturbances, the unit root t-statistic diverges, but in each case a straightforward transformation of the t-statistic does converge to $N(0,1)$. Finally, the paper presents Monte Carlo results on the finite-sample properties of the unit root t-statistics for a wide range of panel dimensions likely to be encountered in applied research.

Levin, Jonathan

PD June 1993. TI An Analytical Framework of Environmental Issues. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/53; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 11. PR not available. JE Q20, Q30, Q32. KW Renewable Resources. Nonrenewable Resources.

AB Environmental effects which were insignificant in the past, when the fewer concentrations of population or products of modern technology allowed the vast absorptive capacity of nature to act as a sink, are quite evident today--in the pollution of air or water, the overuse of potentially renewable fishing or forestry resources, or the wasteful extraction of nonrenewable, mineral, resources. To contribute to an overall understanding of environmental issues, this paper sets out a general analytical framework encompassing the physical character of environmental problems, the behavioral factors that contribute to them, and the principal approaches to their prevention and correction.

Levin, Richard C.

TI On the Sources and Significance of Interindustry Differences in Technological Opportunities. AU Klevorick, Alvin K.; Levin, Richard C.; Nelson, Richard R.; Winter, Sidney.

Levinsohn, James

TI Monopolistic Competition and International Trade: Reconsidering the Evidence. AU Hummels, David; Levinsohn, James.

Lewis, Karen K.

TI Do Long-Term Swings in the Dollar Affect Estimates of the Risk Premia? AU Evans, Martin D. D.; Lewis, Karen K.

Lim, Joe

TI Put Listing, Short Sales Restrictions and Return Processes. AU Damodaran, Aswath; Lim, Joe.

Lin, Chien-Fu

TI Power of the Neural Network Linearity Test. AU Terasvirta, Timo; Lin, Chien-Fu; Granger, Clive W. J.

PD August 1991. TI Testing the Constancy of Regression Parameters Against Continuous Structural Change. AU Lin, Chien-Fu; Terasvirta, Timo. AA Lin: University of California, San Diego. Terasvirta: Research Institute of the Finnish Economy. SR University of California, San Diego Department of Economics Working Paper: 91-26; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents,

University of California. JE C12, C22. KW Smooth Transition Regression. Structural Break. CUSUM Test.

AB A standard explicit or implicit assumption underlying many parameter constancy tests in linear models is that there is a single structural break in the sample. In this paper that assumption is replaced by a more general one stating that the parameters of the model may change continuously over time. The case of a single structural break appears as a special case of this more general setting. The pattern of change is parameterized giving rise to a set of parameter constancy tests against a parameterized alternative. Although the null model is not identified, the Lagrange multiplier type tests that are derived have a standard asymptotic chi-squared distribution under the null hypothesis of parameter constancy. The power properties of the LM type tests in small samples are compared to those of other tests like CUSUM and CUSUMSQ for structural change and found very satisfactory. This is true both if the structural change is smooth and if it is discrete.

TI Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties. AU Levin, Andrew; Lin, Chien-Fu.

Lin, Jin-Lung

TI Conjugate Processes. AU Granger, Clive W. J.; Lin, Jin-Lung.

Lin, Wen-Ling

TI Where Does the Meteor Shower Come From? The Role of Stochastic Policy Coordination. AU Engle, Robert F.; Ito, Takatoshi; Lin, Wen-Ling.

PD October 1992. TI Do Bulls and Bears Move Across Borders? International Transmission of Stock Returns and Volatility as the World Turns. AU Lin, Wen-Ling; Engle, Robert F.; Ito, Takatoshi. AA Lin: University of Wisconsin: Madison. Engle: University of California, San Diego. Ito: Hitotsubashi University and Harvard University. SR University of California, San Diego Department of Economics Working Paper: 92-38; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, G15. KW Stock Returns. Stock Volatilities. International Asset Pricing.

AB This paper investigates empirically how returns and volatilities of stock indices are correlated between Tokyo and New York. Intradaily data are used, so that daytime and overnight returns are defined for both markets. We find that in general Tokyo (New York) daytime returns are significantly correlated with New York (Tokyo) overnight returns. This suggests that information revealed during the trading hours of one market has a global impact on the returns of the other market. We propose and estimate a signal extraction model with GARCH processes to model traders' behavior of extracting the global factor from daytime returns. In addition, we examine the effect of market structure at the open on international correlations in stock returns and the speed of the market reaction to foreign information.

Liu, Crocker H.

TI The Predictability of Real Estate Returns and Market Timing. AU Mei, Jianping; Liu, Crocker H.

TI The Effects of International Dual Listings on Stock Price Behavior. AU Damodaran, Aswath; Liu, Crocker H.;

Harlow, W. Van.

Liu, Tung

PD February 1992. TI Using the Correlation Exponent to Decide if an Economic Series is Chaotic. AU Liu, Tung; Granger, Clive W. J.; Heller, Walter P. AA Liu: Ball State University. Granger and Heller: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-21R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C22. KW Chaos. White Noise. Chaotic Time Series.

AB We consider several ways of distinguishing deterministic, chaotic time series from stochastic white noise: the Grassberger-Procaccia (1983) correlation exponent test and the Brock, Deckert, Scheinkman (1987) (or BDS) test. We use simulated data to test the robustness and power of these tests. The correlation exponent test can distinguish white noise from chaos, however it cannot distinguish a white noise from a chaotic process mixed with a small amount of white noise. With white noise as the null hypothesis, the BDS test rejects the null when the data was generated by deterministic chaos. Unfortunately, BDS also rejects the null when the data came from essentially stochastic sources.

Lorie, Henri

TI The Economic Reform Process in Russia. AU Odling-Smee, John; Lorie, Henri.

Lubrano, Michel

PD February 1992. TI Bayesian Tests for Single Equation Cointegration in the Case of Structural Breaks. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-10; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C11, C22, J38. KW Cointegration Test. Unit Root. Wage Regulation.

AB This paper considers the problem of testing for cointegration in a Bayesian framework. The test is based on a long run equilibrium regression with autocorrelated errors. It consists of examining the presence of a unit root in the lag polynomial of the autocorrelated errors. An efficient way of relaxing the implied common factor restriction is examined. The paper then addresses the question of a possible structural break in the equilibrium relation and the posterior density of the break point is given. It concludes with an empirical application on French data which examines the occurrence of a structural break introduced by wage regulation economic policy.

Machin, Stephen

TI Trade Unions and the Dispersion of Earnings in UK Establishments, 1980-1990. AU Gosling, Amanda; Machin, Stephen.

Machina, Mark J.

PD July 1990. TI A More Robust Definition of Subjective Probability. AU Machina, Mark J.; Schmeidler,

David. AA Machina: University of California, San Diego. Schmeidler: Tel Aviv University and Ohio State University. SR University of California, San Diego Department of Economics Working Paper: 90-29; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 46. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D81, D11. KW Expected Utility. Choice Theory. Risk Behavior.

AB Although their goal is to separate a decision maker's underlying beliefs (their subjective probabilities of events) from their preferences (their attitudes toward risk), classic choice-theoretic derivations of subjective probability all rely upon some form of the Marschak-Samuelson "Independence Axiom" or the Savage "Sure-Thing Principle," which is equivalent to requiring that the decision maker's preferences over lotteries conform to the expected utility hypothesis. This paper presents a choice-theoretic derivation of subjective probability which satisfies the axioms of classical probability theory, but which neither assumes nor implies that the decision maker's preferences over lotteries necessarily conform to the expected utility hypothesis.

MacKinnon, James G.

PD January 1990. TI Critical Values for Cointegration. AA Queen's University and University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-4; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 10. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C15. KW Unit Roots. Cointegration Tests.

AB This paper provides tables of critical values for some popular tests of cointegration and unit roots. Although these tables are necessarily based on computer simulations, they are much more accurate than those previously available. The results of the simulation experiments are summarized by means of response surface regressions in which critical values depend on the sample size. From these regressions asymptotic critical values can be read off directly, and critical values for any finite sample size can easily be computed with a hand calculator.

Madan, Dilip

TI Debt as an Engine of Creative Innovation. AU John, Kose; Madan, Dilip; Soubra, Badih.

Madriral, Vicente

PD July 1992. TI Risk-Neutral Valuation and Preference Restrictions in Discrete Time Models: General and Closed Form Solutions. AU Madriral, Vicente; Smith, Stephen D. AA Madriral: New York University and Harvard University. Smith: Georgia State University and the Federal Reserve Bank of Atlanta. SR New York University Salomon Brothers Working Paper: S-93-28; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 22. PR not available. JE D52, G14. KW Incomplete Markets. Risk Neutral Valuation. Contingent Claims.

AB We provide necessary and sufficient conditions for the existence and uniqueness of stable risk-neutral valuation relationships when markets are incomplete and trading takes

place at discrete intervals of time. That is, we find the set of preferences that are compatible with equilibria which admit risk-neutral valuation relationships. We also fully characterize the subset of solutions which yield closed form risk-neutral valuation relationships. This smaller class of solutions displays a "form invariance" property which has important implications for empirical work in the area of contingent claim analysis.

Mailath, George

PD March 1993. TI Correlated Equilibria as Network Equilibria. AU Mailath, George; Samuelson, Larry; Shaked A. AA Mailath: University of Pennsylvania. Samuelson: University of Wisconsin. Shaked: University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-244; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 15. PR no charge. JE C72, C73. KW Evolutionary Games. Random Matching.

AB Evolutionary models of games typically assume the existence of a large population of players that are repeatedly, randomly and anonymously matched to play a game. The common assumption is that the matching is uniform meaning that each player is equally likely to be matched with any of his opponents. In contrast, this paper studies a model with a network structure of neighborhoods: Agents are more likely to meet some opponents than others.

PD April 1993. TI Structural Indifference in Normal Form Games. AU Mailath, George; Samuelson, Larry; Swinkels, Jeroen. AA Mailath: University of Pennsylvania. Samuelson: University of Wisconsin. Swinkels: Stanford University and Northwestern University. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-249; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 24. PR no charge. JE C72. KW Refinements. Proper Equilibrium. Sequential Equilibrium.

AB Refinements of the Nash equilibrium concept differ in which indifferences between strategies they select for evaluation. In this paper, we suggest that "structural" indifferences, or indifferences that arise out of the structure of the payoffs of the game independently of opponents' strategies, are worthy of special attention. We define an order over a player's strategies, called the structural order, by ranking strategies according to expected payoff under a belief about opponents' play and requiring that (only) structural indifferences be evaluated by appealing to higher-order beliefs about opponents' play. This order is robust to trembles in payoffs and beliefs and ranks strategy r sub i ahead of s sub i if and only if r sub i receives a higher payoff along every sequence of trembles that converges (in a certain sense) to the beliefs. We use the structural order to define an equilibrium concept called the structural indifference respecting equilibrium (SIRE). A proper equilibrium is SIRE but not conversely.

Makridakis, Spyros

PD not available. TI Accuracy Measures: Theoretical and Practical Concerns. AA INSEAD. SR INSEAD Working Papers: 93/53/TM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 5. PR not available. JE C10. KW Forecasting. Accuracy Measures. AB There has been renewed concern recently (Armstrong and Collopy, 1992; Fildes, 1992) about the most appropriate

accuracy measure to be used in evaluating methods, and in reporting error statistics. The purpose of this editorial is to examine accuracy measures from a theoretical and practical point of view and suggest a modified form of MAPE as the most appropriate measure satisfying both theoretical and practical concerns while allowing meaningful relative comparisons.

Marcet, Albert

TI Accuracy in Simulations. AU Den Haan, Wouter J.; Marcet, Albert.

Marchant, Garry

TI The Selection of Authority in Legal Argument: Semantic Similarity, Pragmatic Centrality and Analogy. AU Krawczyk, Katherine; Marchant, Garry; Robinson, John.

Martin, Kerry M.

TI Measuring the Benefits of Freshwater Quality Changes: Techniques and Empirical Findings. AU Carson, Richard T.; Martin, Kerry M.

Martinas, Katalin

PD June 1993. TI Entropy, Information and Evolutionary Selection. AU Martin, Katalin; Ayres, Robert U. AA INSEAD. SR INSEAD Working Papers: 93/59/EPS; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 14. PR not available. JE C60. KW Biological Systems. Dynamical System. Evolutionary Change.

AB We show that the second law of thermodynamics for a general non-equilibrium system can be expressed as a relationship between physical information change over time, entropy production and physical information fluxes. We show that a steady state system far from thermodynamic equilibrium must embody some structural information. It must import physical information from external sources of free energy or structure to compensate for entropy production due to the loss of information from the dissolution of existing structures. Nevertheless, the Second Law is also consistent with an accumulation of physical information in the form of increasingly complex ordered structures ("order out of chaos"). We display a corresponding but contrasting axiom for evolutionary biological and economic systems. This sheds light on the role of purposive decision-making (selection) behavior and/or human preferences as a determinant of the direction of evolutionary change. It also sheds light on the role of selection in biological evolution.

Matsui, Akihiko

PD May 1993. TI Evolution and Rationalizability. AA University of Pennsylvania. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-19; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 37. PR no charge. JE C70, C71, C73. KW Rationality. Evolution. Game Theory. Foresight.

AB This paper synthesizes two ideas, evolution and rationalizability, in a dynamic environment. Both have drawn theorists' attentions to either justify or criticize equilibrium theory, which requires the coordination of beliefs and actions

among players. A drawback of rationalizability is its poor predictive power while that of evolution is lack of rationality in the decision making process. We show that the integration of these two ideas will be free of their respective drawbacks. We attempt to do this in a dynamic environment in which players are anonymous. A player's payoff depends only on his choice of action and the distribution of strategies in a society. A rationalizable foresight path is a path along which each player makes a rationalizable decision. We define social stability by making use of rationalizable foresight paths. A state is socially stable under rationalizable foresight if there exists no rationalizable foresight path which escapes from that state. We also define socially stable states under perfect foresight as the states from which no perfect foresight paths escape and show that social stability under rationalizable foresight sometimes makes sharper prediction than that under perfect foresight. Application to location theory is provided to show the usefulness of the stability captured by the concept of rationalizable foresight.

McDermott, C. John

TI Nonlinear Econometric Models with Deterministically Trending Variables. AU Andrews, Donald W. K.; McDermott, C. John.

McFarland, Laurel L.

TI Safe Port in a Storm: The Impact of Labor Market Conditions on Community College Enrollments. AU Betts, Julian R.; McFarland, Laurel L.

McMillan, John

TI China's Evolving Managerial Labor Market. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

TI Autonomy and Incentives in Chinese State Enterprises. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

Mei, Jianping

PD July 1992. TI The Predictability of Real Estate Returns and Market Timing. AU Mei, Jianping; Liu, Crocker H. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-29; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 15. PR not available. JE G14, R31, R33. KW Returns Predictability. Market Timing Strategies.

AB Recent evidence suggests that all asset returns to some extent are predictable with excess returns on real estate relatively easier to forecast. This raises the issue of whether we can successfully exploit this level of predictability using various market timing strategies to realize superior performance over a buy-and-hold strategy. The study first replicates the research of Liu and Mei (1991) using additional real estate categories to determine whether the level of predictability is similar for all types of real estate firms and finds that this is indeed the case in general. Moreover, this predictability remains relatively stationary for all asset classes which suggests that any successful market timing scheme will tend to remain effective over time. To evaluate the economic significance of this predictability, a rolling regression technique

is employed to obtain out-of-sample excess return predictions.

PD September 1992. TI Interaction in Investment Among Rival Japanese Firms. AU Mei, Jianping; Foresi, Silverio. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-30; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 15. PR not available. JE D92, E22, C21, D21. KW Investment Interaction.

AB This paper develops a simple framework for investigating the variation in firms' investment behavior across industrial sectors and over time. We divide the economy into three tiers: Major industrial sectors, businesses, and firms, and focus on the impact of business-level interaction on firms' investment behavior. After controlling for nonobservable firm-specific effects, business-specific effects, and a changing economic environment, we find that the investment and profitability of competitors help explain variations in investment across firms in major Japanese industrial sectors.

Melino, Angelo

PD October 1989. TI A Simple Approach to the Identifiability of the Proportional Hazards Model. AU Melino, Angelo; Sueyoshi, Glenn T. AA Melino: University of Toronto. Sueyoshi: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-48; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 9. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C41, C52. KW Duration Model. Model Identification. Selectivity Bias.

AB This paper provides a simple proof of identification in the proportional hazards model. Our approach emphasizes the role which observables play in influencing the self-selection of unobservables. We show that the proportional hazards assumption provides overidentifying restrictions that can be evaluated to determine the appropriateness of the specification.

Meredith, Guy

PD June 1993. TI Revisiting Japan's External Adjustment Since 1985. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/52; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 15. PR not available. JE F14, F11, F47. KW Trade Forecasting. Relative Prices. Japan.

AB The factors that explain Japan's external performance since the mid-1980's are controversial. While the current account surplus eventually declined following exchange rate changes in 1985-86, a widening since 1990 has led to renewed skepticism about the role of relative price movements in bringing about external adjustment. This paper revisits the post-1985 experience to determine whether it can be explained by traditional factors. The results indicate that, over the period as a whole, the behavior of trade volumes and prices was similar to that predicted by traditional relationships. In particular, relative price movements played an important role in reducing the surplus: in their absence, it would have widened further.

Metcalf, David

PD June 1993. TI Transformation of British Industrial Relations? Institutions, Conduct and Outcomes 1980-1990.

AA London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 151; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 40. PR no charge. JE J51, J53, J58, J50. KW Unions. Management. Performance Outcomes.

AB The institutions and conduct of British industrial relations changed fundamentally in the last decade or so. Under half of employees are now covered by collective agreements. The industrial relations environment has become harsher. Product market competition has intensified. Legislative changes have undermined collectivism. But what of the performance outcomes? Here the story is very different. The industrial relations system can no longer be held to stymie companies' achievements. But this is not a "transformation". It simply reflects compliance of labor in the conduct of workplace relations. The impact of changes in industrial relations institutions and conduct on the pay/jobs trade-off are even more acutely depressing. The pay-setting institutions have certainly been transformed. The government has achieved virtually all it set out to do yet unemployment rises inexorably to a post-war record high.

Metcalf, Gilbert

TI Is a Value Added Tax Progressive? Annual Versus Lifetime Incidence Measures. AU Caspersen, Erik; Metcalf, Gilbert.

Mitra, S. K.

TI Extensions of G-Based Matrix Partial Orders. AU Werner, Hans Joachim; Mitra, S. K.; Jain, S. K.

Mortensen, Dale

PD May 1993. TI Job Creation and Job Destruction in the Theory of Unemployment. AU Mortensen, Dale; Pissarides, Christopher. AA Mortensen: Northwestern University. Pissarides: London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 110.; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 32. PR no charge. JE J41, J63, J64, E32. KW Vacancies. Matching Model. Business Cycles.

AB In this paper we model a job-specific shock process in the matching model of unemployment with non-cooperative wage behavior. We obtain endogenous job creation and job destruction processes and study their properties. We show that an aggregate shock induces negative correlation between job creation and job destruction whereas a dispersion shock induces positive correlation. The job destruction process is shown to have more volatile dynamics than the job creation process. In simulations we show that an aggregate shock process proxies reasonably well the cyclical behavior of job creation and job destruction in the United States.

Mourmouras, Alex

PD July 1993. TI Collection Lags and the Optimal Inflation Tax: A Reconsideration. AU Mourmouras, Alex; Tijerina, Jose A. AA Mourmouras: International Monetary Fund. Tijerina: University of Nuevo Leon. SR International Monetary Fund Working Paper: WP/93/60; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 20. PR not available. JE H21, E31, E60. KW Inflation Tax. Overlapping Generations.

AB The observation that collection lags combine with inflation to erode fiscal revenues has long been a strong argument against seigniorage (Tanzi (1978)). However, with the exception of Dixit (1991), who used a general equilibrium model to reject this argument, the optimal tax literature has not analyzed how collection lags affect desired tax structures. In this paper, this issue is re-examined using an overlapping generations version of Dixit's model. It is shown that depending on the specification of the collection cost function and the size of government spending in GDP, collection lags may increase, leave unchanged, or reduce the desired rate of inflation.

Muller, Haiko

PD January 1992. TI On Edge Perfectness and Classes of Bipartite Graphs. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: C-92746-OR; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 21. PR no charge. JE C44, C60. KW Graph Theory. Edge Perfect Graphs.

AB We define a notion of dependence for the edges of a graph and derive a concept of edge perfectness. We give some examples of classes of bipartite edge-perfect graphs. Moreover the complexity of the corresponding algorithms is investigated.

Mustafa, Chowdhury

TI Implied ARCH Models from Options Prices. AU Engle, Robert F.; Mustafa, Chowdhury.

TI Modelling Peak Electricity Demand. AU Engle, Robert F.; Mustafa, Chowdhury; Rice, John.

Nakagami, Yasuhiro

PD October 1989. TI Housing Taxation in a Dynamic General Equilibrium Framework. AU Nakagami, Yasuhiro; Pereira, Alfredo M. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-46; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D51, H24. KW Mortgage Interest Deductions. Personal Income Tax. Housing Tenure.

AB This paper analyzes the efficiency and distribution effects of eliminating the deductibility of housing mortgage interest payments from the personal income tax base as well as the impact of taxation of imputed housing rental income. This analysis is pursued in the context of a dynamic general equilibrium model of the United States economy. This model emphasizes the different housing tenure situations and the changes in tenure status, the characteristics of housing as an investment good as well as a consumption good, and the importance of forward-looking behavior by households and industries and of government borrowing. Simulation results suggest that both policy changes would lead to a decrease in the relative price of renting versus owning.

PD March 1991. TI Housing Tax Policy and Homeowner Mobility. AU Nakagami, Yasuhiro; Pereira, Alfredo M. AA Nakagami: University of Saskatchewan. Pereira: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-14R; Working Paper Coordinator, Economics

Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 42. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE R21, H24, D11. KW Housing Demand. Trading Up. Mortgage Interest Rates.

AB This paper develops an intertemporal model of household behavior with optimal housing trading up which incorporates a detailed description of the provisions of taxation of owner-occupied housing. In the context of this model we discuss how changes in the taxation of owner-occupied housing would change the optimal timing of trading up, the value of upgrading, and the house-financing decisions. Also, we discuss how housing appreciation and mortgage interest rates affect the subsidy-value of the different tax provisions and how they affect the effects of the changes in housing taxation. Finally, we argue that for high housing appreciation and/or high mortgage interest rates there is a possibility that policy changes will lock-in homeowners at their current house.

PD March 1991. TI Housing Costs and Bequest Motives. AU Nakagami, Yasuhiro; Pereira, Alfredo M. AA Nakagami; University of Saskatchewan. Pereira; University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-14; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 8. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D91, R21, H24. KW User Costs. Housing Capital. Inheritance Tax.

AB The user cost of housing capital has been formulated and used extensively in the housing literature. Previous literature has examined the user cost of housing capital with imperfect capital markets and when households face liquidity constraint. However, the relevance of bequest motives and taxation of bequeathed assets for the user cost of housing capital has thus far been ignored. This note analyzes the effects of bequest motives on the user cost of housing capital. It shows that, in the presence of inheritance taxes that discriminate between physical and financial bequeathed assets, the actual user cost of housing capital is lower than the standard measure would suggest. We then proceed to discuss some of the empirically testable implications of this result.

PD April 1991. TI The Optimal Timing of Homeowner Mobility. AU Nakagami, Yasuhiro; Pereira, Alfredo M. AA Nakagami; University of Saskatchewan. Pereira; University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-16; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 40. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE R23, D91. KW Trading Up. Home Financing.

AB The objective of this paper is to provide a systematic discussion of the factors which affect intra-metropolitan homeowner mobility. It develops an intertemporal model of household behavior with trading up, which accommodates the consumption and investment aspects of homeownership, to determine the optimal timing of upgrade, the optimal amount of the housing upgrade, and the house-financing decision. This paper investigates the role of household-specific factors and loan market-related factors, as well as the effects of the provisions of taxation of owner-occupied housing and of the macroeconomic environment upon the upgrading decisions. In

addition, this paper investigates the possibility of lock-in, i.e. that the household would find it optimal not to upgrade.

Naughton, Barry

TI China's Evolving Managerial Labor Market. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

TI Autonomy and Incentives in Chinese State Enterprises. AU Groves, Theodore; Hong, Yongmiao; McMillan, John; Naughton, Barry.

Navarro, Peter

TI On the Theory of Growth Controls. AU Engle, Robert F.; Navarro, Peter; Carson, Richard T.

Nelson, Richard R.

TI On the Sources and Significance of Interindustry Differences in Technological Opportunities. AU Klevorick, Alvin K.; Levin, Richard C.; Nelson, Richard R.; Winter, Sidney.

Nett, Lorenz

PD February 1993. TI The Uniqueness of the Subscription Equilibrium with Endogenous Labor Supply. AU Nett, Lorenz; Peters, Wolfgang. AA Nett; University of Mainz. Peters; University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-405; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 3. PR no charge. JE C72, H24, H41. KW Public Goods. Income Tax. Private Donations.

AB The paper presents a proof for the uniqueness of the Nash equilibrium if public goods are financed through private donations and distortionary income taxation.

PD March 1993. TI Financing Public Goods: Voluntary Contributions and Income Taxation. AU Nett, Lorenz; Peters, Wolfgang. AA Nett; University of Mainz. Peters; University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-407; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 9. PR no charge. JE H21, H24, H41, C72. KW Optimal Taxation. Subscription Equilibrium.

AB The paper analyzes implications of taxation on voluntary contributions for public goods. We extend the analysis by allowing for distortionary taxation in the presence of endogenous labor supply. Scrutinizing the crowding-out effect of taxation on voluntary provision, the Pareto inferiority of the subscription equilibrium justifies public interventions. Thus, from the normative point a welfare optimal policy should be applied. The paper creates a link to the traditional literature on optimal taxation. Especially, we compare characteristics of a welfare optimal tax policy in the presence of strategic interaction between all taxpayers to the case where perfect competition excludes voluntary provision of the public good.

Neumann, Manfred J. M.

TI Converting EMS to EMU: Why Not at Par with Sterling? AU Klein, Martin; Neumann, Manfred J. M.

Newey, Whitney K.

PD July 1993. TI Convergence Rates for Series

Estimators. AA Massachusetts Institute of Technology. SR Massachusetts Institute of Technology Department of Economics Working Paper: 93-10; Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139. PG 16. PR \$8.00 domestic; \$10.00 overseas; \$5.00 students. JE C14, C10. KW Nonparametric Regression. Additive Interactive Models. Random Coefficients. Splines.

AB Least squares projections are a useful way of describing the relationship between random variables. These include conditional expectations and projections on additive functions. Series estimators, i.e. regressions on a finite dimensional vector where dimension grows with sample size, provide a convenient way of estimating such projections. This paper gives convergence rates these estimators. General results are derived, and primitive regularity conditions given for power series and splines.

Ng, Victor K.

TI A Factor ARCH Model for Stock Returns. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael.

TI Asset Pricing with a Factor ARCH Covariance Structure: Empirical Estimates for Treasury Bills. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael.

TI Measuring and Testing the Impact of News on Volatility. AU Engle, Robert F.; Ng, Victor K.

TI Time-Varying Volatility and the Dynamic Behavior of the Term Structure. AU Engle, Robert F.; Ng, Victor K.

Nitzan, Shmuel

PD not available. TI Transfers or Public Good Provision? A Political Allocation Perspective. AA Bar-Ilan University. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-398; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 11. PR no charge. JE D72, H55, H41, H50. KW Transfers. Public Goods.

AB Politically contestable transfers may take the form of individual transfers, group transfers or public-good transfers. This paper analyzes the problem faced by an optimizing politician of how to allocate his budget among these three types of transfers. The first result establishes that the politician's equilibrium strategy entails selection of an extreme type of portfolio of transfers consisting of just one type of transfer. This result provides a possible explanation for the tendency of politicians to specialize in the "production of transfers". The second and main result specifies the condition determining the nature of the preferred kind of transfer in terms of the environmental parameters: the distribution of the potential individual beneficiaries of the transfers across groups, the rule used within groups to distribute private-good transfers, and the relative value of a dollar spent on the provision of the local public good.

Noh, Jaesun

TI Arbitrage Valuation of Variance Forecasts with Simulated Options. AU Engle, Robert F.; Hong, Che-Hsiung; Kane, Alex; Noh, Jaesun.

PD July 1993. TI A Test of Efficiency for the S&P 500 Index Option Market Using Variance Forecasts. AU Noh, Jaesun; Engle, Robert F.; Kane, Alex. AA University of California, San Diego. SR University of California, San

Diego Department of Economics Working Paper: 93-32; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G13, G14. KW Forecasting. GARCH.

AB To forecast future option prices, autoregressive models of implied volatility derived from observed option prices are commonly employed (see Day and Lewis (1990), and Harvey and Whaley (1992)). In contrast, the ARCH model proposed by Engle (1982) models the dynamic behavior in volatility, forecasting future volatility using only the return series of an asset. We assess the performance of these two volatility prediction models from S&P 500 index options market data over the period from September 1986 to December 1991 by employing two agents who trade straddles, each using one of the two different methods of forecast. Straddle trading is employed since a straddle does not need to be hedged. Each agent prices options according to her chosen method of forecast, buying (selling) straddles when her forecast price for tomorrow is higher (lower) than today's market closing price, and at the end of each day the rates of return are computed. We find that the agent using the GARCH forecast method earns greater profit than the agent who uses the implied volatility regression (IVR) forecast model.

Noldeke, Georg

PD November 1992. TI An Evolutionary Analysis of Backward and Forward Induction. AU Noldeke, Georg; Samuelson, Larry. AA Noldeke: Princeton University. Samuelson: University of Wisconsin. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-228; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 25. PR no charge. JE C72, C73, D83. KW Evolutionary Games. Stochastic Learning. Mutations.

AB This paper examines the limiting behavior of a dynamic evolutionary process driven by stochastic learning and rare mutations. The analysis is focused on extensive form games. We are especially interested in whether the process yields outcomes that exhibit backward induction properties (such as subgame perfection) and forward induction properties (such as examined by van Damme.).

Nowak, Eugen

PD May 1991. TI Discovering Hidden Cointegration. AA University of Munich. SR University of California, San Diego Department of Economics Working Paper: 91-20; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C32. KW Errors-in-Variables. Identification. Unobservable Components.

AB The paper considers multivariate time series which are composed of two unobservable components. The components are I(0) stationary or I(1) integrated and possibly cointegrated vector processes with ARMA structure. The main topics of interest are the identification of both unobserved components and the relation between cointegration of the components and cointegration of the observed data. Derived are necessary and sufficient conditions for the identifiability of models formed by pairs of components with fixed order parameters. The

cointegration space of the observed data is shown to be the intersection of the cointegration spaces of the unobserved components. The paper interprets the pair of components as an errors-in-variables (EV) time series system consisting of a latent time series of interest and measurement errors. A principle proposed for the specification of EV models suggests that an integrated time series is affected by integrated EV. Then cointegration of the time series of interest can be hidden in the data.

Odling-Smee, John

PD July 1993. TI The Economic Reform Process in Russia. AU Odling-Smee, John; Lorie, Henri. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/55; International Monetary

Fund, 700 19th Street, Washington, DC 20431. PG 8. PR not available. JE E63, L52, E58, P31, P20. KW Hard Budget Constraint. Incentives for Reform. Economic Transition.

AB Although various factors point to a more arduous and longer transition in Russia than in Eastern Europe, the broad policy approach should be similar. A necessary condition for effective macroeconomic stabilization is the imposition of hard budget constraints on enterprises. Financial assistance from the Government and the central bank to enterprises must be strictly controlled to ensure compatibility with both inflation objectives and the creation of incentives for reform. While Russia needs external financial assistance, it must be willing and able to pursue economic policies that ensure that the assistance has the desired effects, especially macroeconomic stability and systemic reform.

Ofek, Eli

TI Source of Gains in Asset Sales: Fit or Focus? AU John, Kose; Ofek, Eli.

TI Why Do Firms Invest in Eastern Europe? AU Lang, Larry H. P.; Ofek, Eli.

Otsuki, Toshiyuki

TI Risk Premia in Pacific Basin Capital Markets. AU Brown, Stephen J.; Otsuki, Toshiyuki.

Papanikas, K.

PD not available. TI How Far are we from Steady State? On-Line Error Bounds for Steady State Approximations. AU Papanikas, K.; Van Dijk, N. M.; Van Wassenhove, Luk N.; Yucesan, E. AA Papanikas, Van Wassenhove, Yucesan: INSEAD. Van Dijk: Universiteit Van Amsterdam. SR INSEAD Working Papers: 93/52/TM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 14. PR not available. JE C60. KW Queueing Networks. Reward Structures.

AB By studying performance measures via reward structures, on-line error bounds are obtained by successive approximation. These bounds enable one to determine when to terminate computation with a guaranteed accuracy. Furthermore, they provide insight into steady-state convergence in practical situations. The method is tested for a number of simple capacitated queueing networks. The results obtained indicate that the method provides a practical tool for numerically approximating performance measures of queueing networks.

Peccei, Riccardo

PD May 1993. TI The Dimensionality and Stability of Organizational Commitment: A Longitudinal Examination of Cook and Wall's (1980) Organizational Commitment Scale (BOCS). AU Peccei, Riccardo; Guest, David. AA Peccei: London School of Economics. Guest: Birkbeck College. SR London School of Economics Centre for Economic Performance Discussion Paper: 149; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 36. PR no charge. JE C42, J26, L20. KW Temporal Stability. Structural Relations. Attitudinal Commitment.

AB The dimensionality and the temporal stability of Cook and Wall's (1980) measure of organizational commitment, referred to here as the British Organizational Commitment Scale (BOCS), were examined using two-wave longitudinal data collected from a sample of 218 employees in British Rail. Alternative one-, two-, and three-factor models of the BOCS were evaluated using both the standard nine-item version of the scale and a shorter (positive) six-item version. Confirmatory factor analyses revealed that (a) the BOCS is a multi-dimensional scale made up of three empirically distinct but related components, (b) the positive six-item version of the scale was psychometrically superior to the nine-item version, and (c) the measurement properties of the six-item BOCS were stable over time. Based on these results the causal (time-lagged) relations between the three empirically derived sub-components of attitudinal commitment were then examined by applying structural-relations analyses to the longitudinal data.

Pereira, Alfredo M.

PD June 1989. TI Trade-off Between Emigration and Remittances in the Portuguese Economy. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-12; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 21. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE O41, O15, O52, D61. KW Optimal Growth. Welfare Effects. Portugal.

AB This paper develops an optimal growth model in which resident labor force is allowed to emigrate due to wage differentials in the home and host countries and to send back remittances. The model is implemented with Portuguese data to determine the welfare and growth effects of the substantial emigration flow of the 1960's, as well as the potential effects of the liberalization of labor force movements that will follow the recent integration of Portugal in the European Economic Community (EEC). Simulation results suggest that past emigration had positive welfare effects, which means that the positive effects of remittances dominate the negative welfare effects of de-population. However, the annual growth of domestic production has been slowed down by about half a percentage point. Still, under most scenarios new emigration is welfare-improving for the resident population.

TI Housing Taxation in a Dynamic General Equilibrium Framework. AU Nakagami, Yasuhiro; Pereira, Alfredo M.

PD August 1990. TI Optimal Taxation of Foreign Source Investment Income with International Cooperation. AU Pereira, Alfredo M.; Wang, Lih-Jau. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-31;

Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 12. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D51, H21, F21, H24. KW Foreign Investment Income. Optimal Tax. Investment Income Tax.

AB In the context of a two-country general equilibrium model with tradables and non-tradables, this paper analyzes the optimal taxation of foreign source investment income under international cooperation. It shows that the optimal tax rate on foreign source investment income is no greater than the tax rate on domestic investment income, which contradicts Feldstein and Hartman (1979). It also shows that the after-tax return on one dollar of foreign investment income is greater than that on one dollar of domestic income, which contradicts Horst (1980).

PD August 1990. TI Optimal Taxation of Foreign Source Investment Income with Heterogeneous Households. AU Pereira, Alfredo M.; Wang, Lih-Jau. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-32; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D51, H21, F21, H24, D31. KW Tax Rates. Foreign Investment Income. Investment Income Tax.

AB Using a two-country static general equilibrium model with two goods (tradables and non-tradables) and heterogeneous consumers (capital and labor owners), this paper analyzes how income distribution and relative price of tradables versus non-tradables affect the optimal taxation of foreign investment income. This paper shows that if the home traded good sector is capital-intensive relative to the non-traded good sector and if the weight of capital owners in the social welfare function is sufficiently high, the optimal tax rate on foreign source investment income is lower than the tax rate on domestic investment income. This result is in contrast with the general optimal taxation rule in Feldstein and Hartman (1979). Numerical simulations suggest that greater labor abundance, higher preference for tradables and higher capital expenditure shares in the home country are among the factors that lead to a greater (negative) differential between the taxes on foreign and domestic investment income.

PD October 1990. TI The Efficiency Effects of Corporate Tax Integration and the Tax Reform Act of 1986. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-33R; Working Paper Coordinator, Economics Department, 0508, University of California, La Jolla, CA 92093-0508. PG 23. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE H25, H24, H21. KW Tax Reform. Corporate Income Tax.

AB The objective of this paper is to compare the effects of integrating corporate and personal income taxes before and after the Tax Reform Act of 1986 (TRA86) from the standpoint of intertemporal and intersectoral efficiency. The corporate income tax has long been criticized for its distortionary effects on the economy. This paper presents a dynamic general equilibrium model of the U.S. economy which accommodates optimal intertemporal investment decisions and optimal allocation of investment across sectors, intertemporal household consumption-leisure decisions, as well as government deficits and financial crowding out. Simulation

results concentrating on the inter-industry and intertemporal effects of integration suggest that the efficiency gains of corporate tax integration under the TRA86 are much lower than under the previous tax law.

PD January 1991. TI The Optimal Taxation of Foreign Investment Income with Two-Way Foreign Direct Investment Flows. AU Pereira, Alfredo M.; Wang, Lih-Jau. AA Pereira: University of California, San Diego. Wang: University of Wyoming. SR University of California, San Diego Department of Economics Working Paper: 91-03; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE H21, F21, D51, H24. KW Foreign Investment Income. Imported Capital. International Cooperation.

AB This paper analyzes the optimal taxation of foreign source investment income in the context of a two-country static general equilibrium model with two-way foreign direct investment and heterogeneous households. It assumes that the capital input in both countries is a composite of domestic and imported capital. This paper shows that if the weight of capital owners in the domestic social welfare function is sufficiently high, then the optimal tax rate on foreign source net investment income is lower than the tax rate on domestic investment income. Furthermore, the higher the elasticity of substitution of domestic capital for imported capital, the lower the weight of capital owners that is required to cause foreign source investment income to be taxed more lightly than domestic investment income. Finally, under international cooperation for sufficiently high elasticity of substitution of domestic for imported capital the optimal tax rate on foreign investment income is lower than in the absence of international cooperation.

PD January 1991. TI Optimal Capital Accumulation and the Optimal Taxation of Foreign Source Investment Income. AU Pereira, Alfredo M.; Wang, Lih-Jau. AA Pereira: University of California, San Diego. Wang: University of Wyoming. SR University of California, San Diego Department of Economics Working Paper: 91-04; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE H21, F21, D51, H24. KW Foreign Investment Income. Optimal Taxation. Capital Allocation.

AB This paper analyzes the optimal taxation of foreign source investment income in the context of a two-good two-country dynamic general equilibrium model with adjustment costs. This paper recognizes the special nature of investment demand, capital accumulation and the inter-sectoral allocation of capital in each country as well as the international capital allocation in the determination of the optimal taxation rule. This paper shows that in the steady-state, the optimal taxation of foreign investment income depends on the changes in the inter-sectoral allocation of capital and in the wealth formation of labor and capital owners induced by taxation of foreign investment income. If the home traded good sector is capital-intensive relative to the non-traded good and if the weight of capital owners in the social welfare function is sufficiently high, then the optimal tax rate on foreign source net investment income will be lower than the tax rate on domestic investment income.

TI Housing Tax Policy and Homeowner Mobility. AU Nakagami, Yasuhiro; Pereira, Alfredo M.

TI Housing Costs and Bequest Motives. AU Nakagami, Yasuhiro; Pereira, Alfredo M..

TI The Optimal Timing of Homeowner Mobility. AU Nakagami, Yasuhiro; Pereira, Alfredo M.

PD April 1991. TI Boom and Bust Hypothesis in the Colonial Chesapeake Economy: Empirical Evidence for the Period 1676-1713. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-18; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 11. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE N51, Q11, N11. KW Tobacco. Price Fluctuations. Chesapeake Colony.

AB This paper provides empirical evidence on fluctuations in the price of Chesapeake tobacco and on the economic variables that help predict tobacco prices. In addition, the paper provides evidence on the high responsiveness to prices of tobacco production relative to tobacco demand. Both findings provide strong empirical support for the central role of tobacco prices in economic fluctuations and growth in the Chesapeake economy as suggested by the boom and bust hypothesis.

TI The Impact of Financial Integration and Unilateral Public Transfers on Investment and Economic Growth. AU Gaspar, Vitor; Pereira, Alfredo M.

TI The Growth Collapse of Debtor Countries: Is it the Debt Burden? (With an Application to Argentina) AU Kaminsky, Graciela L.; Pereira, Alfredo M.

TI A Dynamic General Equilibrium Analysis of EC Structural Funds (With an Application to Portugal). AU Gaspar, Vitor; Pereira, Alfredo M.

TI Capital Income Taxation and the International Location of Investment. AU Wang, Lih-Jau; Pereira, Alfredo M.

TI Public Capital and Aggregate Growth in the United States: Is Public Capital Productive? AU De Frutos, Rafael Flores; Pereira, Alfredo M.

Peters, Wolfgang

TI The Uniqueness of the Subscription Equilibrium with Endogenous Labor Supply. AU Nett, Lorenz; Peters, Wolfgang.

TI Financing Public Goods: Voluntary Contributions and Income Taxation. AU Nett, Lorenz; Peters, Wolfgang.

Pissarides, Christopher

TI Job Creation and Job Destruction in the Theory of Unemployment. AU Mortensen, Dale; Pissarides, Christopher.

Poterba, James M.

PD June 1993. TI Do 401(K) Contributions Crowd Out Other Personal Saving? AU Poterba, James M.; Venti, Steven F.; Wise, David A. AA Poterba: Massachusetts Institute of Technology and National Bureau of Economic Research. Venti: Dartmouth College and National Bureau of Economic Research. Wise: Harvard University and National Bureau of Economic Research. SR National Bureau of Economic

Research Working Paper: 4391; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. PG 32. PR \$5.00. JE D91, E21. KW Retirement Saving. Private Saving.

AB During the late 1980's, contributions to 401(k) plans eclipsed contributions to Individual Retirement Accounts as the leading form of tax-deferred individual retirement saving. This paper uses data from the 1984, 1987, and 1991 Surveys of Income and Program Participation to describe patterns of participation in and contributions to 401(k) plans, and to evaluate the net impact of these contributions on personal saving. We find that 401(k) participation conditional on eligibility exceeds sixty percent at all income levels. This pattern contrasts with Individual Retirement Accounts in the early 1980's, which exhibited a sharply rising profile of participation across income groups. We study the net effect of 401(k) contributions on personal saving by comparing the growth of non-401(k) assets for contributors and non-contributors, and by comparing the level of wealth for families who are eligible for 401(k)s with that of those who are not. We find little evidence that 401(k) contributions substitute for other forms of private saving.

Price, Lydia J.

PD November 1992. TI The Indirect Effects of Negative Information on Attitude Change. AA INSEAD. SR INSEAD Working Papers: 93/43/MKT; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 39. PR not available. JE D80, D82, C90. KW Information. Attitudes. Product Communications.

AB Numerous studies have demonstrated that negative information cues tend to have a stronger influence on overall impressions than do positive information cues of equal intensity. The most commonly cited explanation for this phenomenon is that negative information is weighted heavily during integration processes in which diverse information cues are weighted and combined to form unitary impressions. This paper presents evidence to suggest that cognitive mechanisms other than information weighting may at least partially explain the negativity effect in the realm of product communications. Two experiments are described in which negative product test reports evoked systematic changes in product attribute beliefs that were not explicitly targeted in the report. These indirect changes in cognitive structure were found to significantly mediate the relationship between the strength of the targeted attribute belief and attitude change. Changes in non-targeted attribute beliefs were weak and non-systematic when valence of the stimulus test reports was positive.

Qian, Yingyi

PD June 1993. TI Why China's Economic Reforms Differ: The M-Form Hierarchy and Entry/Expansion of the Non-State Sector. AU Qian, Yingyi; Xu, Chenggang. AA Qian: Stanford University. Xu: London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 154; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 46. PR no charge. JE P23, P27, O53, L23. KW Chinese Economy. Economic Transition. Organization Structure.

AB China's thirteen years of economic reforms (1979-1991) have achieved an average GNP annual growth rate of 8.6%. What makes China's reforms differ from those of Eastern

Europe and the Soviet Union is the sustained entry and expansion of the non-state sector. We argue that the organization structure of the economy matters. Unlike their unitary hierarchical structure based on functional or specialization principles (the U-form), China's hierarchical economy has been the multi-layer-multi-regional one mainly based on territorial principle (the deep M-form, or briefly, the M-form). Reforms have further decentralized the M-form economy along regional lines, which provided flexibility and opportunities for carrying out regional experiments, for the rise of non-state enterprises, and for the emergence of markets. This is why China's non-state sector share of industrial output increased from 22% in 1978 to 47% in 1991 and its private sector's share from zero to about 10%, both being achieved without mass privatization and changes in the political system.

Rabin, Matthew

PD May 1993. TI Deviations, Dynamics, and Equilibrium Refinements. AU Rabin, Matthew; Sobel, Joel. AA Rabin: University of California, Berkeley. Sobel: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-18; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 28. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, C73. KW Intuitive Criterion. Signaling Refinements.

AB Many standard solution concepts rule out those Nash equilibria that are susceptible to deviations. We propose a framework for considering not only which equilibria are not susceptible to deviations, but also which equilibria are likely to persist in the long run because they are repeatedly deviated to. We call such equilibria recurrent. We explore which equilibria are recurrent based on the deviations underlying each of several prominent signaling refinements. We show that the set of recurrent equilibria based on Cho and Krep's (1987) intuitive criterion and Kohlberg and Merten's (1986) NWBR criterion are precisely what those papers already predict. In contrast, we show that applying our framework to cheap-talk refinements proposed by Farrell (1993) and Matthews, Okuno-Fujiwara, and Postlewaite (1991) can 1) make those solution concepts more realistic, 2) guarantee existence, and 3) guarantee meaningful communication in at least one class of games where it is not guaranteed by either Farrell or MOP.

Raimondos, Pascalis

TI Quotas, Partial Rent Retention and the Second Best. AU Lahiri, Sajal; Raimondos, Pascalis.

Ramanathan, Ramu

PD October 1989. TI Diagnostic Testing in Modeling Energy Demand. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-47; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 10. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C52, Q41. KW Electricity Demand. Specification Testing. Model Evaluation.

AB In recent years, a number of formal diagnostic tests for identifying misspecification of models and criteria for comparing alternative models have been proposed. Not many of

them, however, have found common use among energy analysts. This paper provides a comprehensive listing of these techniques and describes them in a manner easily accessible to modelers of energy demand. The methods suggested are illustrated with an application to the modeling of peak electricity demand in a utility service area in the upper midwest.

PD March 1991. TI U.S. Defense Expenditures: An Error Correction (Cointegration) Approach. AU Ramanathan, Ramu; Blackburn, Jan. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-13; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 14. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE H56, C22. KW Military Spending. Government Spending.

AB In the past three decades, numerous models have been developed in order to study and explain the factors that influence levels of military expenditure. We study military expenditure in relation to government expenditures. Doing this will perhaps allow us to obtain a clearer understanding of why military expenditures change. The studies previously mentioned, for the most part, have ignored the fact that national defense is but one of the responsibilities bestowed upon the government, and therefore, represents only a portion of the changes in governmental policy and strategy that are reflected through changes in overall government expenditure. The present study is based on the error correction framework or, equivalently, the cointegration approach. The principle behind these methods is that there often exists a long-run equilibrium relationship between two or more economic variables.

Ramey, Garey

TI Expectation Calculation and Macroeconomic Dynamics. AU Evans, George W.; Ramey, Garey.

TI Capacity, Entry and Forward Induction. AU Bagwell, Kyle; Ramey, Garey.

TI Coordination Economies, Advertising and Search Behavior in Retail Markets. AU Bagwell, Kyle; Ramey, Garey.

TI Advertising and Coordination. AU Bagwell, Kyle; Ramey, Garey.

TI Expectation Calculation, Hyperinflation and Currency Collapse. AU Evans, George W.; Ramey, Garey.

TI Advertising as Information: Matching Products to Buyers. AU Bagwell, Kyle; Ramey, Garey.

PD June 1993. TI On the Cost of Economic Fluctuations. AU Ramey, Garey; Ramey, Valerie A. AA Ramey, G.; University of California, San Diego. Ramey V.: University of California, San Diego and National Bureau of Economic Research. SR University of California, San Diego Department of Economics Working Paper: 93-22; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E32, L23. KW Residual Volatility. Production Inflexibility.

AB We present theoretical and empirical results showing that economic fluctuations lead to lower mean output. This effect

arises when fluctuations are unpredictable and firms face inflexibility in production planning. Such fluctuations, called residual volatility, impose costs in the form of ex post inefficient technology. Empirical tests using data from 24 OECD countries, as well as U.S. data from 1875 to 1992, reveal a strong negative relationship between residual volatility and mean output. In the 24 country panel, government spending-induced residual volatility exerts a significant negative effect on output even after controlling for both time and country fixed effects.

Ramey, Valerie A.

PD December 1989. TI Durable Goods Monopoly Behavior in the Automobile Industry. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-58; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 26. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, L12, L62. KW Automotive Industry. Precommitment. Price Setting.

AB The real price of automobiles in the U.S. has fallen almost monotonically for the last thirty years. This paper empirically tests whether the equilibrium prices and quantities in the U.S. automobile industry are the outcomes of a subgame perfect equilibrium for a durable goods monopolist. The analysis uses a model of the market for automobiles which produces first-order conditions that differ according to the firms' ability to precommit. A non-nested hypothesis test strongly rejects the precommitment equilibrium and accepts the subgame-perfect equilibrium with no precommitment.

TI Liquidity Constraints and Intertemporal Consumer Optimization: Theory and Evidence from Durable Goods. AU Chah, Eun Young; Ramey, Valerie A.; Starr, Ross M.

TI Segment Shifts and Capacity Utilization in the U.S. Automobile Industry. AU Bresnahan, Timothy F.; Ramey, Valerie A.

TI On the Cost of Economic Fluctuations. AU Ramey, Garey; Ramey, Valerie A.

Rauch, James E.

PD August 1989. TI Urbanization, Underemployment, and the Size Distribution of Income: Harris-Todaro and Kuznets's Inverted U. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-39; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D91, J61, D31, O18, O17. KW Formal Sector. Informal Sector. Income Inequality.

AB The time path of inequality in permanent income is investigated using an overlapping generations model that generates a transfer of the labor force from an agrarian rural sector to an urban industrial sector over time. The source of inequality is market luck in obtaining employment in the protected urban "formal sector" versus employment in the unprotected urban "informal sector". It is shown that over time the log variance measure of inequality in this economy tends to follow an "inverted U": it rises when urbanization is low and consequent pressure on the land keeps rural incomes low,

making agents willing to incur high risks of "underemployment" in the urban informal sector, and eventually falls after urbanization and consequently rural incomes have risen sufficiently to allow agents to make better than even bets in the industrial sector.

PD November 1989. TI Measuring Racial Prejudice Towards Blacks Using the Quality of Life Model. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-52; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 14. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D12, J71, J15. KW Quality of Life. Minorities.

AB The standard quality of life model used to estimate the valuation of local (dis)amenities by a representative household is modified to allow for division of households into two homogeneous groups, black and nonblack. The percentage of a county's population that is black is treated as an attribute of that county whose valuation by nonblacks can be measured along with their valuation of other county (dis)amenities such as climate, environmental pollution, crime, and school quality. The model and data set indicate that at the margin a representative nonblack household regards a one percentage point increase in the black share of county population about as negatively as a one percent decrease in school quality (measured by the county teacher-pupil ratio) or about two and a half times more negatively than a one percent increase in crime (measured by the county violent crime rate). It is also shown that neglecting to control for crime and/or school quality causes the negative value that nonblacks place on the percentage of blacks in their county to be overestimated.

PD August 1992. TI Balanced and Unbalanced Growth. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-28; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 38. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE F10, O19, O40. KW Endogenous Growth. Regional Interaction. Foreign Trade.

AB A mechanism of endogenous growth suitable for investigation of sectoral or regional interaction is developed. The effects on steady growth of consumption and production linkages between sectors are assessed, and it is shown how the high value placed on production linkages by economic historians might be reconciled with the high value placed on openness (often implying lack of linkages) by observers of contemporary less developed countries. It is also shown how sectors or regions interact out of steady state through both product and labor markets, and in particular how if the former interaction dominates one sector can be an "engine of growth" pulling along the other while if the latter interaction dominates one sector or region booms while the other declines. By building on these results it is shown why liberalization of foreign trade should lead to transition from a lower to a higher steady state growth rate and why, during the course of this transition, growth might initially be even slower than before liberalization. On this basis a reinterpretation of the post-1973 economic performance of Chile is offered. An application to economic integration of previously separate regions or countries shows that the largest growth effects are to be had if one region is allowed to decline and provide a source of cheap

labor for the other region.

Raut, Lakshmi K.

PD February 1990. **TI** Two-Sided Altruism, Lindahl Equilibrium and Pareto Efficiency in Overlapping Generations Models. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-7; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 33. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** D91, C62, D61, D11. **KW** Altruistic Preferences. Pareto Optimality.

AB In this paper gift and bequest accommodated competitive equilibrium notions have been developed within an overlapping generations framework to incorporate a variety of two-sided altruistic preferences. Computation and properties of these equilibria are studied by relating them to Lindahl equilibrium (LE). Existence and Pareto optimality of LE have been studied. It has been shown that if each agent has sufficient sympathy for his parents relative to himself and his children, a LE is always Pareto optimal (PO); the concept of meta ranking proposed by Sen (1977) has been used to guide an agent to choose the degree of sympathy such that a competitive equilibrium is PO.

PD April 1990. **TI** Per Capita Income Growth, Social Expenditures and Living Standards: Evidence from Rural India. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-12; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 15. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JIE** O18, I12, J13, J18, D63. **KW** Fertility. India. Infant Mortality.

AB The relationship between various measures of living standards, growth in per capita income, and government expenditures on social sectors has been estimated using pooled time series data from 15 major states of India. The rates of poverty, female literacy, infant mortality, and total fertility are taken as measures of living standards. It has been found that equity oriented policies are most effective in improving living standards of the poor. Reducing the unemployment rate and providing of productive assets to reduce the poverty level, increasing public expenditures to raise the literacy rate, and improving medical facilities and the female literacy rate to reduce infant mortality and total fertility rates are the most effective policies.

PD May 1990. **TI** Determinants of Consumption and Savings Behavior in Developing Countries. **AU** Raut, Lakshmi K.; Virmani, Arvind. **AA** Raut: University of California, San Diego. Virmani: Planning Commission, India. **SR** University of California, San Diego Department of Economics Working Paper: 90-21; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 16. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** D91, E21. **KW** Life Cycle Models. Ricardian Equivalence. Permanent Income.

AB The determinants of savings generally and the specific effects of government policies on savings and consumption are pivotal forces in investment and economic growth. The Hall hypothesis states that consumption is a function of life-time,

i.e., permanent income, rather than income in each period independently. The changes in interest and tax rates, money supply or government expenditure will affect permanent income and hence consumption and savings only if they are unexpected and thus not already incorporated in the estimate of the permanent income. We are unable to reject the Hall hypothesis in tests for developing countries when we allow for varying interest rates. We do find evidence for negative effect of inflation on consumption, and a positive relationship between real interest rates and consumption. The evidence of the Hall hypothesis also suggests that the Ricardian hypothesis may be valid - this is Barro's hypothesis that the effect on the savings is the same whether the government deficits are financed through taxation or debt.

PD March 1991. **TI** Endogenous Fertility, Technical Change and Growth in a Model of Overlapping Generations. **AU** Raut, Lakshmi K.; Srinivasan, T. N. **AA** Raut: University of California, San Diego. Srinivasan: Yale University. **SR** University of California, San Diego Department of Economics Working Paper: 91-11; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 25. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** O41, D92, J13, D91. **KW** Population Growth. New Growth Theory.

AB The consequences of private reproduction and capital (physical and human) accumulation decisions to long-run economic development have been the focus of recent research. The earlier literature assumed the rate of growth of population, labor force and human capital were exogenous. The recent literature, in contrast, explicitly recognizes their endogeneity. We take a different approach: we assume fertility and savings are endogenous so that the rate of growth, labor and capital, and hence aggregate growth, are endogenous. Second, we assume that population density has an external effect (not perceived by individual agents) on the production process either through a negative congestion effect or through a positive effect in stimulating innovation and technical change, so that the change in production possibilities is endogenously determined by fertility decisions of individual agents. Our model is not necessarily geared to generating balanced growth steady states and its nonlinear dynamics generate a plethora of outcomes.

PD October 1991. **TI** R&D Spillover and Productivity Growth: Evidence from Indian Private Firms. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-29; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 20. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** O41, O32, O53, E23. **KW** Productivity Growth. Research and Development.

AB We examine the empirical validity of the R&D spillover hypothesis in endogenous growth models using balanced panel data for a sample of private manufacturing firms in India over the period 1975-1986. We estimate a production function that includes own in-house R&D capital and industry-wide spillover R&D capital together with physical capital and labor hours as inputs and examine the contribution of these factors to the productivity growth of private firms in India. When unobserved heterogeneity among firms is ignored, the least squares estimates of the parameters on Cochran-Orcutt transformed

data reveal that in the overall manufacturing industry, both in-house R&D and the spillover R&D capital contributes significantly to productivity growth, although at a more disaggregated level, R&D spillover capital does not seem to affect productivity growth. The parameter estimates from the selected models reveal that individually the private firms do not gain in productivity from their R&D effort; however, by contributing to the industry-wide R&D spillover, they all benefit.

PD March 1992. **TI** Partial Liberalization, Exports and Productivity Growth of Indian Private Firms. **AA** University of California, San Diego and University of Pennsylvania. **SR** University of California, San Diego Department of Economics Working Paper: 92-12; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 24. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** F13, L52, F31. **KW** Trade Policy. Import Liberalizations. India.

AB India has followed import substitution industrial policy since its First Industrial Policy Resolution of 1948. A plethora of regulations were introduced to that end in the 50's and 60's. By the mid sixties, India was producing a large number of goods, but many of them were produced at a higher cost than in the international markets. In this paper we use panel data for 415 Indian private firms over the period 1975-1986. In 1980, India introduced limited import liberalization and export promotion policies and thus this period is suitable for addressing the effect of such policy changes. Here we investigate whether in the early eighties Indian industries had significantly higher growth in output than during the seventies; whether their negative productivity growth of the seventies responded favorably to the limited liberalization policies of 1980. Did the liberalization policies of 1980 generate more incentives for the exporting firms to increase their rate of growth of output, productivity and export earnings than the nonexporting firms?

PD April 1992. **TI** Old-Age Security and Gender Preference Hypotheses: A Duration Analysis of Malaysian Family Life Survey Data. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 91-25R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 25. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** J13, O53, J12. **KW** Marriage Timing. Timing of Children. Fertility.

AB Accelerated hazard rate approach is more appropriate than the proportional hazard rate approach to model the timing of marriage and timing and spacing of children of couples when these timings are directly targeted by couples in response to their biological and socio-economic characteristics over their life cycles. Using Malaysian Family Life Survey Data, we estimate such models to examine the presence of the replacement effect, gender preference hypothesis and the old-age security hypothesis in their child bearing. Regarding the replacement effect we find that in response to a child death, parents like to have shorter durations up to fourth child and thereafter, the effect is not significant. We find weak evidence for son preference hypothesis. Regarding the old-age security hypothesis, we find strong evidence: If parents have sufficient wealth to support themselves during their old-age, they have longer birth intervals.

TI Complementarities Between Exports and Human Capital in Economic Growth: Evidence from the Semi-Industrialized Countries. **AU** Levin, Andrew; Raut, Lakshmi K.

PD October 1992. **TI** Theories of Long-Run Growth: Old and New. **AU** Raut, Lakshmi K.; Srinivasan, T. N. **AA** Raut: University of California, San Diego. Srinivasan: Yale University. **SR** University of California, San Diego Department of Economics Working Paper: 92-37; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 25. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** O40, O41, O30. **KW** Neoclassical Growth Theory. Growth Theory. Technical Progress.

AB We argue that the perceived problems of neoclassical growth theory are not inherent features of all the growth models of the era but only of those which assumed the marginal product of capital (or more generally of any reproducible factor) diminishes to zero as the input of capital (or that factor) is increased indefinitely relative to other inputs. Instead of directly relaxing this assumption about production technology the "new" growth theorists in effect make assumptions that are analogous to assuming that the marginal product of capital is bounded away from zero. In some of the models this is achieved by introducing a factor other than physical capital (e.g. human capital, stock of knowledge) which is not subject to inexorable returns. In doing so, some authors end up with an aggregate production function that exhibits increasing scale economies. Unsurprisingly in such models multiple equilibria are possible. We present a model that takes a different approach to endogenizing technical progress and growth by assuming fertility and savings to be endogenous and that the size of the total population has an external effect (of a Hicks neutral type) either through the negative influence of congestion or a positive stimulation of faster innovation. Our model generates a rich set of growth per capita income and consumption, some of which do not converge to a steady state and are even chaotic.

PD June 1993. **TI** Random Order Approach to Shapley-Value Games and Haar Measure. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-26; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 28. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C71. **KW** Random Order Value. Cooperative Games.

AB Imposing a group structure on the set of random orders, the paper reformulates and characterizes the random order value and more generally semi-value operators in a unified framework that encompasses games with finite and continuum of players and allows symmetry of the operators with respect to a subgroup of automorphisms. A set of orderings of players equipped with a group structure induced from the group structure of automorphisms together with a measure structure on it constitutes a group of random orders in the analysis. For finite games it is shown that given any fixed group of random orders, the linear operator on the whole space of games that assigns to each game its expected marginal contribution is symmetric with respect to the associated group of automorphisms if and only if the randomness of the group of orders is generated by a right invariant Haar measure.

PD June 1993. **TI** Construction of Haar Measure on

Projective Limit Group and Random Order Values of Non-Atomic Games. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-27; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 21. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C71. KW Cooperative Games. Automorphisms. Random Orders.

AB By superimposing a group structure on a sequence of projective probability spaces of Lebesgue measure preserving (l.m.p.) automorphisms of unit interval, the paper extends the Daniel-Kolmogorov consistency theorem that enables the construction of a measurable group structure with invariant Haar probability measure on an uncountable large projective limit space. The projective limit group is then represented as a subgroup of the group of l.m.p. automorphisms and constitutes a group of random orders. With respect to this group of random orders, and using the generalized consistency theorem again, a formula for the unique random order value operator, proposed in Raut (1993), is derived for a class of scalar and vector measure valued games in pNA and the formula is seen to be identical with the axiomatic value formula of such games in Aumann and Shapley (1974).

Reinhart, Carmen

TI The Capital Inflows Problem: Concepts and Issues. AU Calvo, Guillermo A.; Leiderman, Leonardo; Reinhart, Carmen.

Rice, John

TI Modelling Peak Electricity Demand. AU Engle, Robert F.; Mustafa, Chowdhury; Rice, John.

Robinson, John

TI The Selection of Authority in Legal Argument: Semantic Similarity, Pragmatic Centrality and Analogy. AU Krawczyk, Katherine; Marchant, Garry; Robinson, John.

Rothschild, Michael

TI A Factor ARCH Model for Stock Returns. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael.

TI Asset Pricing with a Factor ARCH Covariance Structure: Empirical Estimates for Treasury Bills. AU Engle, Robert F.; Ng, Victor K.; Rothschild, Michael.

PD August 1990. TI Economic Theory Teaches Us that Economic Theory Teaches Us Nothing: The Case of Asset Prices. AA University of California, San Diego and National Bureau of Economic Research. SR University of California, San Diego Department of Economics Working Paper: 90-33; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 7. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE G12, D11. KW Rational Agents. Asset Prices.

AB The purpose of this note is to put in the public domain a result which is so simple and obvious that "everyone knows it," but which some find surprising and interesting when it is presented to them. The question we address is the following: "What restrictions does economic theory (the assumption that rational agents maximize) place on asset prices?" The answer we give, "almost none," is similar to the one which

Sonnenschein (1973) gave when he asked the same question about (excess) demand functions.

Rubin Meridor, Leora

TI Immigration and Growth Under Imperfect Capital Mobility: The Case of Israel. AU Hercowitz, Zvi; Kantor, Nirit; Rubin Meridor, Leora.

Ruud, Paul A.

TI Classical Estimation Methods for LDV Models Using Simulation. AU Hajivassiliou, Vassilis A.; Ruud, Paul A.

Samuelson, Larry

TI An Evolutionary Analysis of Backward and Forward Induction. AU Noldeke, Georg; Samuelson, Larry.

TI Correlated Equilibria as Network Equilibria. AU Mailath, George; Samuelson, Larry; Shaked A.

TI Structural Indifference in Normal Form Games. AU Mailath, George; Samuelson, Larry; Swinkels, Jeroen.

Sanchez, Isabel

PD January 1991. TI Hierarchical Design and Enforcement of Income Tax Policies. AU Sanchez, Isabel; Sobel, Joel. AA Sanchez: Universidad Carlos III de Madrid. Sobel: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-02; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 24. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D73, H24. KW Hierarchy. Bureaucracy. Tax Policy.

AB In hierarchical structures higher levels of the organization design policies that are implemented by lower level entities. If the agency that enforces policy has access to more information or has different goals than the level of the organization that creates the policy, then conflicts of interest arise. As a result, the behavior of the hierarchical organization may be quite different from the behavior of an organization in which a single entity both makes and enforces policy decisions. In this paper we introduce a hierarchical model of tax compliance designed to describe the conflict between the government, which has the responsibility of selecting a tax policy, and the IRS, which has the job of enforcing the policy. We assume that the government cannot fully observe the actions of the IRS, so there is a potential conflict between the incentives of the IRS and the government. We investigate the consequences of this conflict.

Sandmann, Klaus

TI Anwendungen eines Binomialmodells der Zinsstruktur auf Marktdaten von Zinssatzoptionen. AU Von Borries, Daniel; Sandmann, Klaus.

Saunders, Anthony

PD July 1993. TI If History Could be Re-Run: Pricing Deposit Insurance in 1933. AU Saunders, Anthony; Wilson, Berry. AA Saunders: New York University. Wilson: Georgetown University. SR New York University Salomon Brothers Working Paper: S-93-45; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 23. PR \$5.00.

JE G21, G28, N22. **KW** Deposit Insurance. Banking.
AB This paper estimates the value of federal deposit insurance in the period prior to its announcement in 1933 and operational phase-in during 1934-1935. This period provides a relatively clean assessment of deposit insurance value compared to existing studies that assess its value during periods when the contract is already in force. The pre-1933 period was characterized by historically high volatility, a large number of bank failures and a weak federal safety net. Nevertheless, our results show, using a 8.33 bp insurance premium as a benchmark, that deposit insurance was generally over-priced on average with the possible exception of 1929--the year of the stock market crash. The main reason for the overpricing was the high capital (low leverage) ratios maintained by banks during this period. This leverage effect was also enhanced by the double liability exposure of bank stockholders in the pre-1933 period.

Scheel, Hans Henrik

PD May 1993. **TI** User Cost of Capital in the U.S. and Norway After the Tax Reforms: Similar Objectives with Different Outcomes. **AU** Scheel, Hans Henrik; Waerness, Eirik. **AA** Scheel: University of California, San Diego. Waerness: Norwegian Ministry of Finance. **SR** University of California, San Diego Department of Economics Working Paper: 93-19; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 59. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** H25, H21, G32. **KW** Financing Policy. Tax Reform.

AB The user cost of capital of different hypothetical investment projects in the U.S. and Norway is compared. The approach used is that following the tradition from inter alia King (1977) and King and Fullerton (1984), extending the use of the neoclassical theory of investment by explicitly taking account of the different regulations in the tax code in the U.S. and Norway in the income year 1992. The paper shows that even if the purpose of the U.S. tax reform in 1986 and in Norway in 1991 to a large extent were similar, with "leveling the playing field" as an important slogan, the outcomes are fairly different. In particular, while both tax systems contain distortions across different assets, the Norwegian system after the reform is much more neutral than the American tax code in its treatment of the decision to keep or sell an asset, and across different forms of finance. The U.S. tax system discriminates heavily against equity financing of investments and against selling an asset.

PD May 1993. **TI** Should Tax Depreciation Rates for Business Assets Reflect Economic Depreciation Rates? **AU** Scheel, Hans Henrik; Waerness, Eirik. **AA** Scheel: University of California, San Diego. Waerness: Norwegian Ministry of Finance. **SR** University of California, San Diego Department of Economics Working Paper: 93-20; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 32. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** H25, H21, H23. **KW** Corporate Taxation. Tax Depreciation.

AB The paper discusses three arguments for reduced tax depreciation rates that have been put forward in connection with corporate tax reforms. We show that neutral corporate taxation, interpreted as the investment decisions of firms being unaffected by the tax system, requires tax depreciation rates

that are equal to the nominal rates of economic depreciation for different assets. High rates of tax depreciation will on the one hand increase deductions for depreciation in an economic upswing involving higher investments, and will thus have pro-cyclical effects. On the other hand, high rates of tax depreciation will result in an effective tax rate that is below the statutory tax rate, which is the relevant marginal tax rate on cyclical windfall gains and losses. The tax system could, thereby, still have counter-cyclical effects. Furthermore, we discuss to what extent reduced depreciation rates contribute to increased tax revenues also in the long-term, and thereby give room for lower tax rates.

PD June 1993. **TI** Did the U.S. Tax Reform Act of 1986 Level the Playing Field? **AU** Scheel, Hans Henrik; Waerness, Eirik. **AA** Scheel: University of California, San Diego. Waerness: Norwegian Ministry of Finance. **SR** University of California, San Diego Department of Economics Working Paper: 93-25; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 35. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** H25, H21, G31, G32. **KW** Taxation. Investment Financing. Investment Policy.

AB The user cost of capital of different hypothetical investment projects in the U.S. in 1986 and 1992 is compared. The approach used is that following the tradition from inter alia King (1977) and King and Fullerton (1984), extending the use of the neo-classical theory of investment by explicitly taking account of the different regulations in the tax codes in the two income years, respectively prior to and after the implementation of the Tax Reform Act of 1986. The paper shows that even if one of the main purposes of the tax reform in 1986 was to "level the playing field" for different investments, distortions still remain, in particular across different forms of finance and with respect to the decision to keep or sell an asset. The current U.S. tax system discriminates strongly against most equity financing of investments and against selling an asset.

Schlag, Karl H.

PD February 1993. **TI** Cheap Talk and Evolutionary Dynamics. **AA** University of Bonn. **SR** Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: B-242; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 37. **PR** no charge. **JE** C72, C73. **KW** Evolutionary Stability. Efficiency.

AB The effect of cheap talk in partnership games on the evolutionary dynamics of homogeneous populations under symmetric and random matching is analyzed. As long as the message set is sufficiently large there exists an Asymptotically Stable Set with payoffs arbitrarily close to the maximal payoff for each player. However this only holds true for each Asymptotically Stable Set if there are no more than two strategies. Our results underline the importance of large message sets and reveal the implicit coordination device that drives the efficiency results in the alternative two type population models.

PD April 1993. **TI** Dynamic Stability in the Repeated Prisoner's Dilemma Played by Finite Automata. **AA** University of Bonn. **SR** Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: B-243; Sonderforschungsbereich 303 an der Universität Bonn,

Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 55. PR no charge. JE C72, C73. KW Replicator Dynamic. Finite Automata.

AB We investigate the replicator dynamics of the repeated Prisoners' Dilemma played by finite automata. The players discount repeated game payoffs and incur a cost which is proportional to the number of states in the automaton they use. An initial result is that the singleton set that contains "Defect for Ever" is the only asymptotically stable set containing a pure strategy. We then search for asymptotically stable sets when the dynamics are restricted to initial distributions that contain some given types in their support. It is shown that "Tit for Tat" is the only pure strategy (up to look-a-likes) besides "Defect for Ever" that is contained in such a set when the discount factor is sufficiently close to one and the cost per state is arbitrarily small. "Tit for Tat" when playing against itself will defect first and then cooperate forever.

Schmeidler, David

TI A More Robust Definition of Subjective Probability. AU Machina, Mark J.; Schmeidler, David.

Schmidt, Roland

PD January 1993. TI Why the Forward Rate is a Biased Predictor of the Future Spot Rate if Investors are Risk Neutral. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-237; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 7. PR no charge. JE G14, E43, E52. KW Market Efficiency. Risk Premium. Interest Rates.

AB The paper shows within the mean-variance model for the open economy that the forward rate is an unbiased predictor of the future spot rate only if investors have a constant rate of relative risk aversion equaling one, but that inflation risk is harmful for any degree of risk aversion.

Schurger, Klaus

PD November 1992. TI A Limit Theorem for Random Matrices with a Multiparameter. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-227; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 11. PR no charge. JE C10. KW Subadditive Processes. Ergodic Theory.

AB Based on multiparameter subadditive ergodic theorems of Akcoglu and Krengel (1981) and Schurger (1988) we derive an almost sure limit theorem for families of random matrices with a multiparameter which satisfy a supermultiplicativity condition. This extends results of Furstenberg and Kesten (1960) and Kingman (1973, 1976) to the multiparameter case. It turns out that a Borel-Cantelli argument in Kingman (1973, 1976) has to be replaced by a projection argument involving subadditive processes with lower dimensional indices.

PD March 1993. TI The Traveling Salesman Problem for Unbounded Random Points. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-248; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 12. PR no charge. JE C10, C60. KW Asymptotic Theory. Hamming Metric.

AB Let $X_{sub 1}, X_{sub 2}, \dots$ denote a sequence of independent identically distributed random points in \mathbb{R}^d , where d is

greater than or equal to 2. Let $L_{sub n}$ denote the Euclidean length of the shortest path through $X_{sub 1}, \dots, X_{sub n}$. We investigate the asymptotic behavior of $L_{sub n}$ when the distribution of $X_{sub 1}$ has a noncompact support. Recently W. Rhee noted that there is an interesting relation between $L_{sub n}$, its median and the Hamming metric. In this way, the nice large deviation properties of the Hamming metric become efficient for $L_{sub n}$. Along these lines we obtain conditions which guarantee that the limit as n approaches infinity of $(L_{sub n})/E[L_{sub n}]$ equals 1 completely when the distribution of $X_{sub 1}$ has a noncompact support.

Schwartz, Aba

PD August 1993. TI The Evolution of Wage and Employment in the Israeli Economy. AU Schwartz, Aba; Godlibivski, Menachem. AA Schwartz: Tel-Aviv University. Godlibivski: Tel-Aviv University and General Federation of Labor in Israel. SR Tel-Aviv Sackler Institute of Economic Studies Working Paper: 13/93; Department of Economics, Tel-Aviv University, Ramat Aviv 69978, ISRAEL. PG 38. PR no charge. JE J31. KW Wage. Employment. Wage Structure. Wage Dynamics.

AB In this paper we investigate the idiosyncratic evolution of the employment flows and relative wage and the interrelation of the evolution of wages in the different sectors in the Israeli economy. We find that: (a) The wage structure in the Israeli economy is characterized by a strong comovement of the series of the annual wage in the nine sectors at the 1-digit level of classification. (b) The relative wage of a sector and the employment flows into it are related in the short run, implying (at least) a partial segmentation of the labor markets of the different sectors. (c) In contrast to the short run nature of the relation of the sector's relative wage and its employment flows, the wage series of the different sectors have a stable long run relation. (d) The different sectors differ in their size and speed of response to wage changes which are initiated in other sectors.

Schwartz, Robert A.

TI Dynamic Price Discovery. AU Handa, Puneet; Schwartz, Robert A.

Schwarzler, W.

PD July 1992. TI Knots, Matroids and the Ising Model. AU Schwarzler, W.; Welsh, D. J. A. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: C-91718-OR; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 43. PR no charge. JE C44, C49. KW Graph Theory. Knot Theory. Bracket Polynomial. AB A polynomial is defined on signed matroids which contains as specializations the Kauffman bracket polynomial of knot theory, the Tutte polynomial of a matroid, the partition function of the anisotropic Ising model, and the Kauffman-Murasugi polynomials of signed graphs. It leads to generalizations of a theorem of Lickorish and Thistlethwaite showing that adequate link diagrams do not represent the unknot. We also investigate semi-adequacy and the span of the bracket polynomial in this wider context.

Schweizer, Martin

PD February 1993. TI A New Characterization of the Martingale Property. AA University of Gottingen.

SR Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: B-246; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 14. PR no charge. JE C10. KW Adjustment Process. Martingale.

AB For any finite family X of square-integrable random variables adapted to a given filtration, we construct a random variable Z such that X is martingale if and only if Z has expectation 1.

PD February 1993. TI Variance-Optimal Hedging in Discrete Time. AA University of Göttingen. SR Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: B-247; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 31. PR no charge. JE C10, G11, G12. KW Contingent Claims. Signed Martingale Measures.

AB We solve the problem of approximating in L_2 a given random variable H by stochastic integrals $G_{\text{sub } T}(\nu)$ of a given discrete-time process X . We interpret H as a contingent claim to be paid out at time T , X as the price evolution of some risky asset in a financial market, and $G(\nu)$ as the cumulative gains from trade using the hedging strategy ν . As an application, we determine the variance-optimal strategy which minimizes the variance of the net loss H minus $G_{\text{sub } T}(\nu)$ over all strategies ν .

Sebo, Andras

PD March 1993. TI Circuit Packings on Surface with at Most Three Cross-Caps. AA University of Bonn. SR Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: C-93789; Sonderforschungsbereich 303 an der Universität Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 17. PR no charge. JE C44, C60. KW Graph Theory. Compact Surfaces. Multiflow Theorem.

AB We prove a minimax theorem on the minimum length of specific kinds of one-sided walks on compact surfaces with at most three cross-caps. This theorem is a common generalization of a result of Schrijver about one-sided circuits on the Klein bottle (1989), and Karzanov (1990) about planar paths. The special cases include, besides these, new results concerning integer packings of metrics in planar graphs, or graphs embedded on the torus, which in turn, imply some fractional multiflow theorems. We establish a blocking relation between two classes of polyhedra. For one of these, the defining system of linear inequalities has an integer dual solution for every Eulerian objective function to minimize, whereas for the other an easy example will show that this does not hold. However, in some vertices of this polyhedron there exists an integer dual solution implying an integer multiflow theorem. The proof we provide here to the main result uses the framework of Schrijver (1989), and a theorem of Karzanov (1990) on planar multiflows.

Shaked A.

TI Correlated Equilibria as Network Equilibria. AU Mailath, George; Samuelson, Larry; Shaked A.

Shen, Pu

PD October 1992. TI Liquidity of the Treasury Bill Market and the Term Structure of Interest Rates. AU Shen, Pu; Starr, Ross M. AA University of California, San Diego.

SR University of California, San Diego Department of Economics Working Paper: 92-32; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E43, G12, E44. KW Term Structure. Transaction Costs. Liquidity.

AB In this study we investigate whether or not it is appropriate to attribute the term structure of interest rates (and the term premium) on Treasury bills to transaction costs, particularly bid/ask spreads, on the bills. The liquidity of an investment is one of the characteristics of a financial instrument that an investor will consider while composing his portfolio. Transaction costs, such as a bid/ask spread, are a measure of the illiquidity of a bill. We expect it to be reflected in the bill's price. Since the bid/ask spread on a bill is approximately linear in the maturity of the bill, part of the term premium can be modeled as a premium for illiquidity, explicable by the transaction cost differentials associated with the underlying bills. This intuition is formalized theoretically in a variant of the Townsend turnpike model. We test the model using monthly CRSP data. The empirical results show that the bid/ask spread in Treasury bills is priced in the bills market and accounts for a substantial portion of the term premium, sometimes to the extent that once the premium for illiquidity is accounted for, there is no remaining risk premium component in the term structure.

Shih, F. Y.

TI Antitakeover Measures and Insider Trading: Theory and Evidence. AU John, Kose; Lang, Larry H. P.; Shih, F. Y.

Shiller, Robert J.

PD June 1993. TI Aggregate Income Risks and Hedging Mechanisms. AA Yale University. SR Yale Cowles Foundation Discussion Paper: 1048; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 31. PR no charge. JE E30, G15, D30. KW Macroeconomic Risk. National Income. Perpetual Claims.

AB Estimates are made, from time series data on real gross domestic products, of the standard deviations of returns in markets for perpetual claims on countries' incomes. The results indicate that the variability of returns is of a magnitude comparable to that of returns in stock markets. Evidence is shown that there may be only minimal possibility of cross hedging these returns in existing capital markets. Methods of establishing markets for perpetual claims on aggregate incomes are examined. Such markets, by allowing hedging of these aggregate income risks, might make for dramatically more effective international macroeconomic risk sharing than is possible today. Retail institutions are described that might develop around such markets and help the public with their risk management. However, the establishment of such markets would also incur the risk of major financial bubbles and panics.

Shome, Parthasarathi

PD July 1993. TI The State of Tax Policy in the Central Asian and Transcaucasian Newly Independent States (NIS). AU Shome, Parthasarathi; Escolano, Julio. AA International Monetary Fund. SR International Monetary Fund Working Paper: PPA/93/8; International Monetary Fund, Washington, DC 20431. PG 20. PR not

available. JE H20, H30, P20, P35, P52. KW Tax Policy. Tax Structure. Central Asia.

AB Two possible tax policy strategies for the NIS are: (1) an optimal nondistortionary tax structure as a one-shot action; and (2) a structure with identifiable and clearly understood distortionary elements as a temporary phenomenon to close the fiscal gap. An assessment of NIS tax structures reveals that they conform to neither. They are rapidly acquiring complex features comprising multiple rates, exemptions, and other difficult-to-administer properties, with uncertain ramifications for efficiency, equity, and the fiscal deficit. Steady - - and perhaps prolonged - - effort needs to be made if simple, broad-based, and revenue - productive tax structures are to be achieved.

Shubik, Martin

PD June 1993. TI The Money Rate of Interest and the Influence of Assets in a Multistage Economy with Gold or Paper Money Part II. AU Shubik, Martin; Yao, Shuntian. AA Shubik: Yale University. Yao: University of Wellington. SR Yale Cowles Foundation Discussion Paper: 1050; Yale University, Cowles Foundation for Research in Economics, 30 Hillhouse Ave., Box 2125 Yale Station, New Haven, CT 06520. PG 32. PR no charge. JE D51, D91, E42. KW Market Game. Overlapping Generations. Fiat Money.

AB We consider the relationship between the length of life of individuals and the assets they own and their influence on trustless trade. In particular in some structures a role for government or an outside bank may be called for to support an equilibrium. An example of an OLG model with production illustrates the need for expanding the fiat money supply if population growth is greater than zero.

Siddiq, Fazley K.

PD July 1993. TI Characterizing Life-Cycle Wealth Distributions in Canada Using Dominance Criteria. AU Siddiq, Fazley K.; Beach, Charles M. AA Siddiq: Dalhousie University. Beach: Queen's University. SR Queen's Institute for Economic Research Discussion Paper: 886; Department of Economics, Queen's University, Kingston, Ontario, CANADA K7L 3N6. PG 19. PR \$3.00 + GST Canada; \$3.50 U.S. and Foreign. JE D31. KW Dominance Rankings. Wealth Inequalities.

AB This paper examines how the distribution of household wealth in Canada varies with age over the life cycles. The wealth distribution is characterized in terms of decile means and decile shares for each of six age groups, and comparisons between age-specific distributions are based on first- and second-order stochastic dominance criteria. It is found that (i) mean wealth levels and wealth distributions increase significantly with age in concave quadratic fashion until near retirement and then decline, and (ii) wealth inequality declines in convex function with age, at first steeply and then not significantly. This joint pattern in mean and inequality of wealth holdings across age groups presents a challenge for basic theories to explain.

Simon, Leo K.

PD August 1993. TI Equilibrium Refinement for Infinite Games. AU Simon, Leo K.; Stinchcombe, Maxwell B. AA Simon: University of California, Berkeley. Stinchcombe: University of California, San Diego. SR University of California, San Diego Department of Economics Working

Paper: 91-22R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72. KW Infinite Games. Perfect Equilibrium. Proper Equilibrium.

AB We present three distinct approaches to perfect and proper equilibria for infinite games. In the first two approaches, players "tremble" in the infinite game playing full support approximate best responses to others' strategies. In the strong approach, a tremble assigns high probability to the set of pure best responses; in the weak approach, it assigns high probability to a neighborhood of this set. The third, limit-of-finite approach applies traditional refinements to sequences of successively larger finite games. The theorems here apply only to games with compact normal forms and continuous payoffs, though we treat the more general class of continuum extensive form games by example. Overall, the strong approach to equilibrium refinement most accurately respects the structure of the infinite games.

Simpson, Bob

TI The Impact of the Law on Industrial Disputes in the 1980's: Report of a Survey of Engineering Employers. AU Elgar, Jane; Simpson, Bob.

Sinclair-Desgagne, Bernard

PD July 1993. TI Les Politiques Environnementalistes et la Structure Interne de la Firme. AA INSEAD. SR INSEAD Working Papers: 93/56/EPS/SM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 17. PR not available. JE L22, L51. KW Environmental Regulation. Hierarchy. Firm Organization.

AB This article examines the influence of policies adopted by an Environmental Protection Agency (EPA) on the internal structure of the firm. The firm is seen as a two-level hierarchy. At the top, the CEO selects incentive mechanisms and decision procedures in order to maximize profits. At the bottom of the hierarchy, the employee makes use of the means at his disposal within the firm to maximize his own satisfaction. In case of an accident, the EPA can punish the firm, the employee, or both. It so happens that when the penalties imposed on the firm increase, or when those of the employee diminish, the CEO chooses to assume more responsibility for (i.e. centralizes) the assessment of environmental risks. In the opposite case, however, the CEO prefers to delegate (i.e. decentralizes) this responsibility, while at the same time investing in the supervision and compensation of the employee's performance on the environmental side. Overall, the EPA's environmentalist policies support a centralized organization of the firm. The paper is written in French.

Smith, Bruce D.

TI Liquidity of Secondary Capital Markets: Allocative Efficiency and the Maturity Composition of the Capital Stock. AU Bencivenga, Valerie R.; Smith, Bruce D.; Starr, Ross M.

Smith, Lones

PD May 1993. TI Necessary and Sufficient Conditions for the Perfect Finite Horizon Folk Theorem. AU Smith, Lones; Abreu, Dilip; Dutta, Prajit. AA Smith: Massachusetts Institute of Technology. Abreu: Princeton University. Dutta: Columbia University. SR Massachusetts Institute of

Technology Department of Economics Working Paper: 93-6; Department of Economics, Massachusetts Institute of Technology, Cambridge, MA 02139. PG 9. PR \$8.00 Domestic; \$10.00 overseas; \$5.00 students. JE C72. KW Folk Theorem. Full-Dimensionality. Equivalent Utilities. AB Benoit and Krishna (1985) proved a finite-horizon n-player perfect folk theorem that assumed that every player has distinct Nash payoffs in the stage game and (essentially) that it satisfy the conditions of the infinite-horizon folk theorem. Abreu, Dutta and Smith (1993) have recently provided the necessary and sufficient condition (NEU) for the infinite-horizon folk theorem. We do prove that NEU is necessary for the finite-horizon folk theorem, but more importantly, this note substitutes the distinct Nash payoff condition requirement with a weaker necessary and sufficient condition, that players have recursive distinct Nash payoffs. As a consequence, we show how the n-player finite-horizon folk theorem might even obtain if only one player has distinct Nash payoffs in the stage game. Conversely, when the stage game satisfies NEU but not our condition, the folk theorem's failure is rather dramatic: In particular, at least one player's limit equilibrium payoff set is a singleton.

Smith, Stephen D.

TI Risk-Neutral Valuation and Preference Restrictions in Discrete Time Models: General and Closed Form Solutions. AU Madrigal, Vicente; Smith, Stephen D.

Sobel, Joel

PD January 1990. TI It's Not What You Know, It's Who You Are Playing. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-2; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 13. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, D83. KW Strategy Sets. Differential Ability. Game Theory.

AB Game Theory has little to say about what makes a player successful. A game specifies a set of players, a strategy set for each player, and payoffs. The analysis of a game does not explain why one individual assuming the role of a particular player should do better than another. But we often say that some people are better managers than others, that some people are better negotiators, etc. At a shallow level, there is an easy explanation. Certain tasks, including performance in strategic settings, require specific skills. People who have those skills perform the tasks better than those who do not. This paper investigates the idea that differential ability to play a game may be determined by the number of strategies in the game that an individual can effectively use. I have little to say about how the differential ability arises. Rather I assume that some individuals have access to a different subset of the (theoretically) available full strategy space. One special case of this assumption arises when individuals may differ in their access to information.

PD January 1990. TI Durable Goods Monopoly with Entry of New Consumers. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-3; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D42. KW Pricing Cycles.

Monopoly Pricing. Sales.

AB This paper analyzes a model of a dynamic monopolist who operates in a market in which there is a regular flow of new consumers. A monopolist seller produces a durable good at constant unit cost. Each period a new cohort of consumers enters the market. Allowing entry of new consumers changes the character of equilibria in the dynamic monopoly model. For interesting parameter values, the equilibrium specifies that the seller charge a relatively high price in most periods, selling only to buyers with high valuations. Periodically she cuts her price to sell to a large accumulation of buyers with lower valuations. After such a market-clearing sale, the pricing cycle begins again. My main result is that, if players are sufficiently patient, any positive average profit less than the maximum feasible level can be attained in a subgame-perfect equilibrium.

PD April 1990. TI Fixed-Equilibrium Rationalizability in Signaling Games. AU Sobel, Joel; Stole, Lars; Zapater, Inigo. AA Sobel: University of California, San Diego. Stole: Massachusetts Institute of Technology. Zapater: Brown University. SR University of California, San Diego Department of Economics Working Paper: 90-13; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 22. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72, D82. KW Equilibrium Refinements. Signaling Game.

AB In this paper we attempt to unify some recent work on equilibrium refinements in signaling games by examining procedures which delete strategies that are dominated relative to some reference payoffs. We present three techniques, all of which are variations of rationalizability (Bernheim; Pearce), and relate them to the intuitive criterion (Cho and Kreps) and divinity (Banks and Sobel). These techniques take the original game and an equilibrium for that game, and derive a new signaling game. In the new game we replace the equilibrium path with a sure outcome that yields the equilibrium payoff of the original game to all players. The informed player may choose the sure payoff or may send a signal that was not used in the equilibrium of the original game. We then ask whether the strategy of choosing the sure payoff survives iterative deletion of dominated strategies.

TI Hierarchical Design and Enforcement of Income Tax Policies. AU Sanchez, Isabel; Sobel, Joel.

TI On the Limit Points of Discrete Selection Dynamics. AU Cabrales, Antonio; Sobel, Joel.

TI Communication-Proof Equilibria in Cheap-Talk Games. AU Blume, Andreas; Sobel, Joel.

TI An Evolutionary Approach to Pre-Play Communication. AU Kim, Yong-Gwan; Sobel, Joel.

TI Evolutionary Stability in Games of Communication. AU Blume, Andreas; Kim, Yong-Gwan; Sobel, Joel.

PD May 1993. TI Evolutionary Stability and Efficiency. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-17; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 15. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C72. KW Evolutionary Games. Common Interest Games.

AB Theory can lag behind common sense. In some games there appears to be a clear prediction of behavior, but that prediction does not follow unambiguously from a direct application of common solution concepts. In this paper I will discuss how evolutionary arguments can lead to sensible predictions. In games where the players have common interests, one expects that they will be able to coordinate on an efficient outcome. Standard solution concepts do not yield this conclusion in games with multiple, strict, Pareto-ranked equilibria. I will describe arguments based on evolutionary stability that do guarantee efficiency in these games. The central message is that evolutionary pressures tend to destabilize inefficient outcomes. If the population ever reaches a state in which players obtain inefficient payoffs, then evolutionary pressures introduce a strategy that works as well as existing strategies against the current population, and has the flexibility to achieve an efficient payoff when playing with an appropriate partner.

TI Deviations, Dynamics, and Equilibrium Refinements. **AU** Rabin, Matthew; Sobel, Joel.

Soubra, Badih

TI Debt as an Engine of Creative Innovation. **AU** John, Kose; Madan, Dilip; Soubra, Badih.

Srinivasan, T. N.

TI Endogenous Fertility, Technical Change and Growth in a Model of Overlapping Generations. **AU** Raut, Lakshmi K.; Srinivasan, T. N.

TI Theories of Long-Run Growth: Old and New. **AU** Raut, Lakshmi K.; Srinivasan, T. N.

Starr, Ross M.

TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. **AU** Brown, Donald J.; Heller, Walter P.; Starr, Ross M.

TI Two-Part Marginal Cost Pricing Equilibria: Existence and Efficiency. **AU** Brown, Donald J.; Heller, Walter P.; Starr, Ross M.

TI Liquidity Constraints and Intertemporal Consumer Optimization: Theory and Evidence from Durable Goods. **AU** Chah, Eun Young; Ramey, Valerie A.; Starr, Ross M.

PD June 1992. **TI** Efficient Transportation Routing and Natural Monopoly in the Airline Industry: An Economic Analysis of Hub-Spoke and Related Systems. **AU** Starr, Ross M.; Stinchcombe, Maxwell B. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-25; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 21. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** D42, L93, L12. **KW** Transportation Network. Hub-Spoke System.

AB We investigate transportation network structures that result from optimization problems in the face of given cost and demand functions and given constraints on the networks. Hub-spoke or related systems are preferable to point-to-point systems when the number of connecting routes constitutes a significant component of network cost. Further, these systems are optimal under a variety of cost and demand configurations, and typically demonstrate large pervasive economies of scale.

The scale economies arise because each additional city included in the network increases traffic density to all other cities. Pervasive scale economies indicate that the industry is a natural monopoly.

TI Liquidity of the Treasury Bill Market and the Term Structure of Interest Rates. **AU** Shen, Pu; Starr, Ross M.

PD April 1993. **TI** Exchange in a Network of Trading Posts. **AU** Starr, Ross M.; Stinchcombe, Maxwell B. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 93-13; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 14. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** E42, D51. **KW** Bilateral Trade. Money.

AB We consider the problem of organizing bilateral trade for given equilibrium prices. In particular we wish to establish reasonable sufficient conditions on the structure of transaction costs so that monetary trade is the low cost method of conducting transactions. Walras (1954) suggests that we think of trade taking place at a family of trading posts, one for each pair of goods. In most economies we see few pairs of goods in active trade. Most trade takes place between the n goods and a single good differentiated as money. A monetary trade structure reduces the number of active trading posts. Professor Tobin (1980) suggests that the use of a single money is in the nature of a public good. In this article we will formalize this view by characterizing the use of a unique money as the result of an optimizing (cost minimizing) decision on the array of active trading posts in the model posited by Walras. In particular, we will develop sufficient conditions to allow us to derive the self-confirming public good character of the choice of the monetary instrument.

TI Liquidity of Secondary Capital Markets: Allocative Efficiency and the Maturity Composition of the Capital Stock. **AU** Bencivenga, Valerie R.; Smith, Bruce D.; Starr, Ross M.

Stinchcombe, Maxwell B.

PD June 1989. **TI** Some Measurability Results for Extrema of Random Functions over Random Sets. **AU** Stinchcombe, Maxwell B.; White, Halbert. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-18; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 20. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C10, C60, C70. **KW** Analytic Sets. Random Functions.

AB We consider the question, "Under what conditions is the extremum of a random function over a random set itself a random object?" The answer is relevant to problems in both game theory and econometrics, as we illustrate with examples. Our purpose here is to bring the powerful tools of the theory of analytic sets developed by Dellacherie and Meyer [1978] to the wider attention of the Economics profession and to distill Dellacherie and Meyer's work in such a way as to provide some readily accessible theoretical results which will permit relatively easy treatment of economically or econometrically relevant applications.

PD August 1989. **TI** Maximal Strategy Sets for Continuous-Time Game Theory. **AA** University of

California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-41; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 51. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C73. KW Continuous Time Games. Strategy Set.

AB To be logically coherent, a general framework for continuous-time games must restrict the allowable set of strategies. If this is not done, then it will be impossible to sensibly assign any outcome to some choices of "strategies" by the agents, and possible to assign uncountably many outcomes to other choices of "strategies." The choice of restrictions that the allowable set of strategies must satisfy is delicate: too restrictive a set of strategies might artificially determine the equilibrium set; too large a set of strategies will make the framework logically incoherent. This paper defines a maximal strategy set for continuous-time game theory, a set of strategies that cannot be expanded without losing its logical coherence. The set allows but does not require instant reactions, allows for general action spaces, and is characterized by two conditions: it must be possible to identify from the strategy when an agent moves next and what their next move will be; and agents must only initiate finitely many moves at one point in time.

PD October 1989. TI More on the Multivariate Helly Theorem. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-15R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 4. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C60. KW Helly's Selection Theorem. Local Compactness.

AB The aim of this paper is to give an alternative and more general proof of Helly's selection theorem than that presented in Winter (1984). The proof and the ensuing discussion make clear the role of local compactness in determining the crucial properties of the topology of vague convergence.

TI Universal Approximation of an Unknown Mapping and its Derivatives Using Multilayer Feedforward Networks. AU Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert.

PD February 1990. TI A Further Note on Bayesian Information Topologies. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-6; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 7. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C11. KW Bayesian Topologies. Boylan Topology.

AB Bayesian topologies on sub-sigma-fields of a probability space are given by defining two sub-sigma-fields to be close if there is an ϵ ante high probability that the associated posterior distributions will be close after conditioning. Stinchcombe (1989) proved that if the closeness of the posterior distributions is interpreted as variation norm closeness, then the induced Bayesian topology is at least as fine as the Boylan (1971). Here we prove that the Boylan topology is at least as fine as the variation norm Bayesian topology, establishing the equivalence of the two topologies. The continuity of the join operation in the Boylan topology is an immediate Corollary.

PD March 1990. TI Approximating and Learning

Unknown Mappings Using Multilayer Feedforward Networks with Bounded Weights. AU Stinchcombe, Maxwell B.; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-10; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 16. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C60. KW Universal Approximation. Bounded Weights.

AB Bounded weights are necessary for any practical network implementation, but previous results have left open the possibility that weights of arbitrarily large magnitude might be required for universal approximation. We show that multilayer feedforward networks with bounded weights can have the universal approximation property, and that such networks can learn arbitrary mappings to any pre-specified accuracy.

TI Adaptive Efficient Weighted Least Squares with Dependent Observations. AU White, Halbert; Stinchcombe, Maxwell B.

TI Efficient Transportation Routing and Natural Monopoly in the Airline Industry: An Economic Analysis of Hub-Spoke and Related Systems. AU Starr, Ross M.; Stinchcombe, Maxwell B.

PD September 1992. TI When Approximate Results are Enough: The Use of Nonstandard Versions of Infinite Sets in Economics. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-34; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 29. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D52, C62. KW Infinite Sets. Approximate Results.

AB In economic models using infinite choice sets, strong additional assumptions are often needed for exact counterparts of approximate results. In models substituting nonstandard for standard versions of these same infinite sets, approximate results are sufficient for exact results. The need for additional assumptions is an artifact of the chosen model of the infinite, not an intrinsic aspect of the situation being modeled. Substituting nonstandard for standard versions of infinite sets is a minimal extension of standard models, closing the set of predictions, no more. By contrast, substituting a nonstandard for a standard continuum of agents can fundamentally change a model.

TI Exchange in a Network of Trading Posts. AU Starr, Ross M.; Stinchcombe, Maxwell B.

PD April 1993. TI Consistent Specification Testing with Unidentified Nuisance Parameters Using Duality and Banach Space Limit Theory. AU Stinchcombe, Maxwell B.; White, Halbert. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-14; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 52. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C52. KW Misspecification. Consistent Test.

AB In recent work Bierens (1990) has put forward a consistent test of model misspecification. His test is based on

the correlation with the model errors of a special class of transformations of the conditioning variables. Under the alternative of misspecification, essentially every member of this class is correlated with the model errors. Bierens proposes a number of test statistics based on these correlations. In this paper we seek answers to a number of questions raised by Bierens' approach to specification testing. These are: (1) Are there conditions under which Bierens' class is optimal? (2) What, if any, transformation of the conditioning variables is optimally correlated with model errors in general? (3) Is Bierens' special class unique, or are there other transformations having comparable properties? (4) What is the scope of this approach to specification testing? (5) Are there simple computational procedures that can be used to obtain critical values for tests based on Bierens'-type statistics?

TI Degree of Approximation Results for Feedforward Networks Approximating Unknown Mappings and Their Derivatives. AU Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert; Auer, Peter.

TI Equilibrium Refinement for Infinite Games. AU Simon, Leo K.; Stinchcombe, Maxwell B.

Stole, Lars

TI Fixed-Equilibrium Rationalizability in Signaling Games. AU Sobel, Joel; Stole, Lars; Zapater, Inigo.

Streufert, Peter A.

PD February 1991. TI Existence and Characterization Results for Stochastic Dynamic Programming. AA University of California, San Diego and University of Wisconsin, Madison. SR University of California, San Diego Department of Economics Working Paper: 91-09; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 18. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C61, D91. KW Biconvergence. Bellman's Equation.

AB Biconvergence is a topological axiom requiring that preferences are not too sensitive over the span of consumption levels which growth makes feasible in distant time periods. It is specifically designed for preferences which are neither time-additive nor expected-utility, and it is demonstrably more general and more intuitive than the Lipschitz conditions employed by contraction-mapping techniques. Under biconvergence, I prove that the true value function exists and that it is characterized as the unique admissible solution to Bellman's equation.

PD February 1991. TI Nonnegative Stochastic Dynamic Preferences. AA University of California, San Diego and University of Wisconsin, Madison. SR University of California, San Diego Department of Economics Working Paper: 91-10; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 30. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D11, D81, D91. KW Biconvergence. Impatience. Uncertainty.

AB This paper develops intuitive and easily tested conditions which imply the biconvergence of nonnegative stochastic dynamic utility functions. These sufficient conditions are very general because they let impatience asymptotically (rather than uniformly) dominate growth, and because they bound growth

by "averaging" across states (rather than by taking the maximum). The paper also reveals that high "anxiety" (i.e., intense desire for the early resolution of uncertainty) can violate biconvergence by making preferences too sensitive to risk in distant time periods. All these results are illustrated by a tractable four-parameter family of preferences which can be readily applied to economic problems.

PD May 1991. TI An Abstract Topological Approach to Consistent Intergenerational Preferences and Markov-Perfect Equilibria. AA University of California, San Diego and University of Wisconsin, Madison. SR University of California, San Diego Department of Economics Working Paper: 91-19; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 37. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE D91, D11. KW Biconvergence. Intergenerational Game.

AB We show that biconvergence characterizes the set of all consistent intergenerational preferences that may be equivalently expressed as a sequence of recursive aggregators. Then we consider the Markov-perfect equilibria of an intergenerational game with consistent preferences. Under biconvergence, we show that such equilibria exist and are equivalent both to the solutions of Bellman's optimality equations and to the optima of the first generation's utility function. In the special case of primitive nonnegative aggregators, we derive biconvergence from a very general nonstationary asymptotic condition. And in the case of time-additivity, we show that biconvergence and finite-valuedness are virtually equivalent.

Subramanian, Arvind

PD June 1993. TI Optimal Tariffs: Theory and Practice. AU Subramanian, Arvind; Ibrahim, Ali; Torres-Castro, Luis A. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/50; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 29. PR not available. JE F13, F14. KW Uniform Tariff. Differentiated Tariffs. Protectionism.

AB This paper examines the theory underpinning the design of optimal tariffs in a developing economy, and the experience of implementation of tariff reforms. A central issue is whether and when a case can be made for a uniform tariff structure. While theory advocates a differentiated tariff structure (except under a balance of payments objective), political economy considerations, inadequate information, and administrative convenience point to a minimally differentiated tariff structure. The experience of reform indicates that tariff structures are mainly influenced by income distribution and protection objectives. The ability to successfully reduce tariffs depends on measures taken to alleviate fiscal and balance of payments constraints.

Sueyoshi, Glenn T.

TI A Simple Approach to the Identifiability of the Proportional Hazards Model. AU Melino, Angelo; Sueyoshi, Glenn T.

PD November 1991. TI A Class of Binary Response Models for Grouped Duration Data. AA University of California, San Diego and National Bureau of Economic

Research. **SR** University of California, San Diego Department of Economics Working Paper: 91-35; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 37. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C25, C41, J64. **KW** Probit. Logit. Proportional Hazard.

AB This paper explores the relationship between conventional models for binary response such as the probit and logit and the proportional hazard and related specifications for grouped duration data. I outline a general class of hazard models for grouped duration data based upon the choice of period-specific distribution functions. This class of models nests, among others, the proportional hazard (PH), probit, and logit specifications for interval survival. I consider the implications of various specifications on hazard behavior, focusing on the PH, probit and logit models. While the specifications will generally yield results that are quite similar along a number of dimensions, there are significant difference between the models. In particular, the probit model generates non-proportional effects of variables on the discrete hazard, while the logit and PH will tend to show only slight non-proportionality.

PD November 1991. **TI** Evaluating Simple Alternatives to the Proportional Hazard Model: Unemployment Insurance Receipt and the Duration of Unemployment. **AA** University of California, San Diego and National Bureau of Economic Research. **SR** University of California, San Diego Department of Economics Working Paper: 91-36; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 39. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** J64, J65, C12, C41, C52. **KW** Chow test. Unemployment Duration.

AB This paper outlines Chow-type tests for alternatives to the proportional hazards model. The parameter stationarity restrictions implied by proportionality are shown to be testable using conventional hypotheses tests which can take simple Lagrange Multiplier forms based upon auxiliary linear regressions. Moreover, these tests can provide considerable insight into the nature of departures from proportionality. The tests are applied to Katz's (1986) unemployment data from the Panel Study of Income Dynamics. For these data, the proportionality assumption is strongly rejected in favor of time-varying coefficients. The principal empirical finding is that the negative impact of unemployment insurance (UI) receipt on new job exit hazards is front loaded, with the bulk of that effect occurring in the first 10 or so weeks of the spell. Later durations, especially those following typical exhaustion periods, are associated with large positive increases in the new job hazard. These effects are not captured in a proportional hazard specification.

TI A Two-Stage Estimator for Probit Models with Structural Group Effects. **AU** Borjas, George J.; Sueyoshi, Glenn T.

Susmel, Raul

PD January 1992. **TI** Hourly Volatility Spillovers Between International Equity Markets. **AU** Susmel, Raul; Engle, Robert F. **AA** Susmel: University of Virginia. Engle: University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 92-08; Working Paper Coordinator, Economics

Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 20. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** G12, G15, C22. **KW** Stock Price Volatility. ARCH Model.

AB This paper examines the timing of mean and volatility spillovers between New York and London equity markets. Using an ARCH model it is found that the evidence of volatility spillovers between these markets is minimal and have a duration which lasts only an hour or so. The most significant effects surround the movement of share prices around the New York opening, but these results are not strong. Several new ARCH models are estimated including an asymmetric or "leverage" model and a non-linear model which allows big shocks to have a different impact from small shocks.

TI Common Volatility in International Equity Markets. **AU** Engle, Robert F.; Susmel, Raul.

TI Autoregressive Conditional Heteroskedasticity and Changes in Regime. **AU** Hamilton, James D.; Susmel, Raul.

Swinkels, Jeroen

TI Structural Indifference in Normal Form Games. **AU** Mailath, George; Samuelson, Larry; Swinkels, Jeroen.

Taksar, Michael

TI Stochastic Equilibria on Graphs. I. **AU** Evstigneev, Igor; Taksar, Michael.

TI Stochastic Equilibria on Graphs. II. **AU** Evstigneev, Igor; Taksar, Michael.

Taylor, Mark P.

TI DEER Hunting: Misalignment, Debt Accumulation and Desired Equilibrium Exchange Rates. **AU** Artis, Michael J.; Taylor, Mark P.

Terasvirta, Timo

PD April 1990. **TI** Power Properties of Linearity Tests for Time Series. **AA** Research Institute of the Finnish Economy and University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-15; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 26. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C12, C15. **KW** Time Series Analysis. Monte Carlo Experiments.

AB This paper examines the power properties of several linearity tests applied in time series analysis. The tests are the ones Lee et al. (1989) used in their Monte Carlo study. The main tool used for power comparisons in this paper is the Pitman asymptotic relative efficiency. The results generally strengthen the outcome of the simulations and usefully complement some results in Lee et al. (1989). They also suggest guidelines for designing Monte Carlo experiments for linearity tests.

PD October 1990. **TI** Specification, Estimation, and Evaluation of Smooth Transition Autoregressive Models. **AA** Research Institute of the Finnish Economy and University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-39; Working Paper Coordinator, Economics

Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 28. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C51, C52. KW Nonlinear Model. Model Specification. STAR Models.

AB This paper considers the application of two different families of nonlinear autoregressive models, logistic (LSTAR) and exponential (ESTAR) smooth transition autoregressive models. The ESTAR model is a slight generalization of a two-regime threshold autoregressive model. Testing linearity is the first step of the model specification. If the null of linear autoregression is rejected, the next stages consist of determining the value of the delay parameter present in both LSTAR and ESTAR models and selecting one of the two families on the basis of the observed time series. This is done by simple F tests in the framework of auxiliary regressions and interpreting graphs related to another F test. The detailed specification of the lag structure is carried out by estimating different specifications and comparing them. Parameter estimation and post-estimation model evaluation techniques for checking the properties of the estimated models are discussed.

PD December 1990. TI Generalizing Threshold Autoregressive Models. AA Research Institute of the Finnish Economy and University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 90-44; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, C12. KW Nonlinear Time Series. STAR Model. Smooth Transition.

AB Threshold autoregressive (TAR) models are nonlinear time series models that have been extensively applied in the literature. In this paper, generalizations to the case where the transition between regimes is smooth rather than discrete are considered. Properties of linearity tests against these smooth transition autoregressive (STAR) models are discussed. The well-known exponential autoregressive model is seen to be a generalization of a special case of a double threshold TAR model. A smooth transition counterpart to a general double threshold TAR model, called the hybrid STAR model, is illustrated by means of Wolf's sunspot data comprising the years 1700-1979.

PD January 1991. TI Power of the Neural Network Linearity Test. AU Terasvirta, Timo; Lin, Chien-Fu; Granger, Clive W. J. AA Terasvirta: Research Institute of the Finnish Economy and University of California, San Diego. Lin and Granger: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-01; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 14. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C12, C22, C15. KW Linearity Test. Nonlinear Time Series. Lagrange Multiplier Test.

AB Recently, a new linearity test for time series was introduced based on concepts from the theory of neural networks. Lee et al. (1989) already studied the power properties of this test and they are further investigated here. They are compared by simulation to those of a Lagrange multiplier type test we derive from the same single hidden layer neural network model. The auxiliary regression of our LM type test is a simple cubic Volterra expansion of the original series, and the

power of the test appears superior overall to that of the other test.

PD May 1991. TI Modeling Nonlinearities in Business Cycles Using Smooth Transition Autoregressive Models. AU Terasvirta, Timo; Anderson, Heather M. AA Terasvirta: Research Institute of the Finnish Economy and University of California, San Diego. Anderson: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 91-24; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 20. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE E32, C22. KW STAR Model. Nonlinear Time Series.

AB During the last few years investigators have found evidence indicating that various time series representing business cycles may be nonlinear. These non-linearities have sometimes been modeled using a two-regime switching model in which changes in regime from a recession to an expansion or vice versa are assumed to follow a Markov process. In this paper it is assumed that if the time series is nonlinear, then the transition from one regime to the other is smooth. The economy is not seen as a two-state process, either being in a contraction or an expansion, but more realistically as being between these two states for most of the time. This assumption leads to the use smooth transition autoregressive models to describe the behavior of the series characterizing business cycles. Two main possibilities are considered: (i) the behavior of the series is non-symmetric, so that the dynamics of contraction are different from those of expansion; and (ii) the dynamics of the extreme regimes are similar to each other, but different from those followed by the economy when it is between these regimes.

TI Testing the Constancy of Regression Parameters Against Continuous Structural Change. AU Lin, Chien-Fu; Terasvirta, Timo.

Thomas, Lee R.

TI The Significance of Technical Trading-Rule Profits in the Foreign Exchange Markets: A Bootstrap Approach. AU Levich, Richard M.; Thomas, Lee R.

Tijerina, Jose A.

TI Collection Lags and the Optimal Inflation Tax: A Reconsideration. AU Mourmouras, Alex; Tijerina, Jose A.

Tinsley, P. A.

PD June 1993. TI Fitting Both Data and Theories: Polynomial Adjustment Costs and Error-Correction Decision Rules. AA Board of Governors of the Federal Reserve System. SR Board of Governors of the Federal Reserve System Finance and Economics Discussion Series: 93-21; C/O Stephen A. Sharpe, Mail Stop 89, Federal Reserve Board, Washington, DC 20551. PG 43. PR no charge. JE C51, C52, D90, D91, D92. KW Dynamic Model Specification. Euler Equations. Rational Expectations.

AB Many empirical studies in macroeconomics indicate that second-order Euler equations, motivated by quadratic costs of adjusting the levels of variables, provide inadequate dynamic descriptions of agent behavior. This paper discusses a tractable polynomial formulation of adjustment costs that provides a structural basis for richer dynamic specifications, similar to the

complex transfer functions estimated in reduced-form time series models. Polynomial adjustment costs imply higher-order, self-reciprocal Euler equations and, in the case of difference-stationary variables, a general class of error-correction decision rules. Although standard restrictions of rational agent modeling impose nonlinear parameter restrictions, the self-reciprocal structure of the decision rules permits estimation by linear regressions.

Torres-Castro, Luis A.

TI Optimal Tariffs: Theory and Practice. AU Subramanian, Arvind; Ibrahim, Ali; Torres-Castro, Luis A.

Vahid, Farshid

PD January 1992. TI Common Trends and Common Cycles. AU Vahid, Farshid; Engle, Robert F. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-04; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C22, E21. KW Common Features. Excess Sensitivity. Consumption.

AB The existence of a serial correlation common feature among the first differences of a set of I(1) variables implies the existence of a common cycle in the Beveridge-Nelson-Stock-Watson decomposition of those variables. A test for the existence of common cycles among cointegrated variables is developed. The test is used to examine the validity of the common trend-common cycle structure implied by Flavin's excess sensitivity hypothesis and Campbell and Mankiw's mixture of rational expectations and rule of thumb hypothesis for consumption and income. Linear independence between the cointegration and the cofeature vectors is exploited to decompose consumption and income into their trend and cycle components.

Van Dijk, N. M.

TI How Far are we from Steady State? On-Line Error Bounds for Steady State Approximations. AU Papanikas, K.; Van Dijk, N. M.; Van Wassenhove, Luk N.; Yucesan, E.

Van Wassenhove, Luk N.

TI From IE to JIT to Time-Based Competition. AU Blackburn, Joseph D.; Van Wassenhove, Luk N.

TI How Far are we from Steady State? On-Line Error Bounds for Steady State Approximations. AU Papanikas, K.; Van Dijk, N. M.; Van Wassenhove, Luk N.; Yucesan, E.

Venkatraman, N.

TI Configurations of Inter-Organizational Relationships: A Comparison Between U.S. and Japanese Automakers. AU Bensaou, M.; Venkatraman, N.

Venti, Steven F.

TI Do 401(K) Contributions Crowd Out Other Personal Saving? AU Poterba, James M.; Venti, Steven F.; Wise, David A.

Vettas, Nikolaos

PD July 1993. TI Demand and Supply in New Markets: Diffusion with Bilateral Learning. AA University of Pennsylvania. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-24; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 28. PR no charge. JE D83, D51, D11, D21. KW Product Innovations. Diffusion Curves. Bilateral Learning. Entry. Externalities.

AB This paper combines consumers' Bayesian learning and a dynamic entry model to study the joint evolution of demand and supply in new markets. Over time consumers who have not yet tried the good learn its "quality" by observing the purchasing behavior of those who have. Firms learn the market demand observing equilibrium outcomes of previous periods. In equilibrium, entry occurs in waves and its level depends on two distinct effects. The model identifies an externality explaining S-shaped diffusion curves: entry reveals information to the consumers about the quality of the good and thus early waves of entry affect the profitability of subsequent entry.

Villanacci, Antonio

TI On Generic Pareto Improvement in Competitive Economies with Incomplete Asset Structures. AU Citanna, Alessandro; Villanacci, Antonio.

Villanueva, Delano

PD July 1993. TI Openness, Human Development, and Fiscal Policies: Effects on Economic Growth and Speed of Adjustment. AA International Monetary Fund. SR International Monetary Fund Working Paper: WP/93/59; International Monetary Fund, 700 19th Street, Washington, DC 20431. PG 22. PR not available. JE F43, H30, H50. KW Learning by Doing. Fiscal Policy. Labor Productivity.

AB The model developed here postulates that learning through experience plays a critical role in raising labor productivity over time, with three major consequences. First, the steady-state growth rate (of output) becomes endogenous and is influenced by government policies. Second, the speed of adjustment to steady-state growth is faster, and enhanced learning further reduces adjustment time. Third, both steady-state growth and the optimal net rate of return to capital are higher than the sum of exogenous rates of technical change and population growth. Simulation results confirm the model's faster speed of adjustment, while regression analysis explains a large part of divergent growth patterns across countries in terms of the extent of openness and human development and of the quality of fiscal policies.

Virmani, Arvind

TI Determinants of Consumption and Savings Behavior in Developing Countries. AU Raut, Lakshmi K.; Virmani, Arvind.

Von Borries, Daniel

PD February 1993. TI Anwendungen eines Binomialmodells der Zinsstruktur auf Marktdaten von Zinsoptionen. AU Von Borries, Daniel; Sandmann, Klaus. AA University of Bonn. SR Universität Bonn Sonderforschungsbereich 303 - Discussion Paper: B-241; Sonderforschungsbereich 303 an der Universität Bonn.

Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 23. PR no charge. JE G13, E43, G14. KW Interest Rate Options. Binomial Model. Arbitrage. AB Not available. The paper is written in German.

Wachtel, Paul

TI Capital Requirements and Shifts in Commercial Bank Portfolios. AU Haubrich, Joseph; Wachtel, Paul.

Waerness, Eirik

TI User Cost of Capital in the U.S. and Norway After the Tax Reforms: Similar Objectives with Different Outcomes. AU Scheel, Hans Henrik; Waerness, Eirik.

TI Should Tax Depreciation Rates for Business Assets Reflect Economic Depreciation Rates? AU Scheel, Hans Henrik; Waerness, Eirik.

TI Did the U.S. Tax Reform Act of 1986 Level the Playing Field? AU Scheel, Hans Henrik; Waerness, Eirik.

Wang, Lih-Jau

TI Optimal Taxation of Foreign Source Investment Income with International Cooperation. AU Pereira, Alfredo M.; Wang, Lih-Jau.

TI Optimal Taxation of Foreign Source Investment Income with Heterogeneous Households. AU Pereira, Alfredo M.; Wang, Lih-Jau.

TI The Optimal Taxation of Foreign Investment Income with Two-Way Foreign Direct Investment Flows. AU Pereira, Alfredo M.; Wang, Lih-Jau.

TI Optimal Capital Accumulation and the Optimal Taxation of Foreign Source Investment Income. AU Pereira, Alfredo M.; Wang, Lih-Jau.

PD February 1993. TI Capital Income Taxation and the International Location of Investment. AU Wang, Lih-Jau; Pereira, Alfredo M. AA Wang: University of Wyoming. Pereira: University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 93-09; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 27. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE H25, F21, H87. KW Capital Income Tax. Foreign Investment.

AB In this paper we analyze the impact of capital income taxation on international capital flows in the context of a two-country general equilibrium model. It is assumed that the capital input in both countries is a composite of domestic and imported capital. Accordingly, we consider two-way foreign investment. We consider the different taxes which may affect the international location of investment under different tax systems. We show that an increase in the tax on domestic investment income and a decrease in the tax on foreign source investment income lead to an increase in outflows of domestic capital. Furthermore, on a worldwide tax base with credits, if the elasticities of substitution between domestic and imported capital in both countries are high relative to the elasticities of substitution between labor and aggregate capital, these tax changes also lead to an increase in inflows of foreign capital.

Wathieu, Luc

PD not available. TI Immediate Self-Reporting of Mistakes. AA INSEAD. SR INSEAD Working Papers: 93/54/TM; INSEAD, Boulevard de Constance, Fontainebleau, 77305 Cedex, FRANCE. PG 12. PR not available. JE M12. KW Incentives. Monitoring. Mistake Reporting.

AB Individuals are naturally tempted to delay reporting of mistakes that occur under their responsibility. This results from ordinary features of intertemporal preferences. In many settings however, a principal (a superior authority) needs to be immediately notified, so that she can quickly react to minimize the consequences of the mistake. It then becomes of primary importance to obtain an immediate self-report from the responsible agent. In the incentives scheme that we propose, we give an unusual role to monitoring: the principal sets monitoring dates so as to manipulate the agent's temporal horizon, and this (together with an appropriate combination of real incentives) suffices to ensure timely self-reporting.

Weitzman, Martin L.

PD June 1993. TI Chinese Township Village Enterprises as Vaguely Defined Cooperatives. AU Weitzman, Martin L.; Xu, Chenggang. AA Weitzman: Harvard University. Xu: London School of Economics. SR London School of Economics Centre for Economic Performance Discussion Paper: 155; Centre for Economic Performance, London School of Economics, Houghton Street, London WC2A 2AE, ENGLAND. PG 27. PR no charge. JE D23, J54, L14, P32. KW Property Rights. Economic Transition. China.

AB This paper concerns the paradoxes and dilemmas that the very successful "Chinese model" presents for transition theory. The "Chinese model" is centered on the development of township-village enterprises. The main purpose of this paper is to make the case that TVE's are not just some form of disguised capitalist institution; they are much better described as "vaguely defined cooperatives" - meaning an essentially communal organization extremely far removed from having a well defined ownership structure. That a transition strategy based on vaguely defined cooperatives should be so successful presents a severe challenge for traditional property rights theory. We speculate that to address this challenge properly, traditional property rights theory should be extended by including a dimension corresponding to the degree of individualism/cooperation existing in a society. A model of the required extension is described. Implications and applications are discussed.

Welsh, D. J. A.

TI Knots, Matroids and the Ising Model. AU Schwarzler, W.; Welsh, D. J. A.

Werner, Hans Joachim

PD 1992. TI Characterizations of Minimal Semipositivity. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-230; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 7. PR no charge. JE C60. KW Rectangular Monotonicity. Nonnegative Matrices.

AB A real $m \times n$ matrix A is said to be semipositive if there is a nonnegative vector x such that Ax exists and is componentwise positive. A is said to be minimally semipositive if it is semipositive and no proper $m \times p$ submatrix of A is

semipositive. Minimal semipositivity is characterized in this paper and is related to rectangular monotonicity and weak r -monotonicity.

PD 1992. **TI** Extensions of G-Based Matrix Partial Orders. **AU** Werner, Hans Joachim; Mitra, S. K.; Jain, S. K. **AA** Werner: University of Bonn. Mitra: Indian Statistical Institute. Jain: Ohio University. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-231; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 18. **PR** no charge. **JE** C60. **KW** Partial Orders. Star Order. Minus Order.

AB This paper continues a series of recent articles investigating different types of matrix orders and discussing their properties and relations.

PD 1992. **TI** G-Inverses of Matrix Products. **AA** University of Bonn. **SR** Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-250; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. **PG** 16. **PR** no charge. **JE** C10, C30. **KW** Moore-Penrose Inversion. Reverse Order Law. G-Inversion.

AB Let A and B be complex matrices such that AB exists. As is well known, the reverse order law does not always hold for Moore-Penrose inversion. In this paper several results of a reverse order law type relative to the more general setting of generalized inversion are established. In practice factorizations of a g -inverse often arise from factorizations of the matrix which is to be inverted. In addition to full rank factorizations, normal factorizations and singular value decompositions (SVD) there are other factorizations of particular matrices that are natural to certain problems, e.g. in statistics. Answers to the problems discussed in this paper may thus be a computational tool. Besides they are of significant interest in the basic theory of g -inversion because they provide us with intrinsic insights into the g -inversion of matrix products.

White, Halbert

PD February 1989. **TI** An Additional Hidden Unit Test for Neglected Nonlinearity in Multilayer Feedforward Networks. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-23; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 14. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C12. **KW** Hypothesis Test. Neural Networks.

AB We present a statistical test of the hypothesis that a given multilayer feedforward network exactly represents some unknown mapping subject to inherent noise against the alternative that the network neglects some nonlinear structure in the mapping, leading to potentially avoidable approximation errors. The tests are based on methods that statistically determine whether or not there exists some advantage to be gained by adding hidden units to the network.

TI Some Measurability Results for Extrema of Random Functions over Random Sets. **AU** Stinchcombe, Maxwell B.; White, Halbert.

TI Testing for Neglected Nonlinearity in Time Series Models: A Comparison of Neural Network Methods and

Alternative Tests. **AU** Lee, Tae-Hwy; White, Halbert; Granger, Clive W. J.

PD October 1989. **TI** Learning in Artificial Neural Networks: A Statistical Perspective. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 89-49; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 50. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** D83, C10, C60. **KW** Feedforward Networks. Network Learning.

AB The premise of this article is that learning procedures used to train artificial neural networks are inherently statistical techniques. It follows that statistical theory can provide considerable insight into the properties, advantages and disadvantages of different network learning methods. We review concepts and analytical results from the literatures of mathematical statistics, econometrics, systems identification and optimization theory relevant to the analysis of learning in artificial neural networks. Because of the considerable variety of available learning procedures and necessary limitations of space, we cannot provide a comprehensive treatment. Our focus is primarily on learning procedures for feedforward networks. However, many of the concepts and issues arising in this framework are also quite broadly relevant to other network learning paradigms. In addition to providing useful insights, the material reviewed here suggests some potentially useful new training methods for artificial neural networks.

TI Universal Approximation of an Unknown Mapping and its Derivatives Using Multilayer Feedforward Networks. **AU** Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert.

PD February 1990. **TI** Connectionist Nonparametric Regression: Multilayer Feedforward Networks Can Learn Arbitrary Mappings. **AA** University of California, San Diego. **SR** University of California, San Diego Department of Economics Working Paper: 90-5; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. **PG** 24. **PR** \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. **JE** C60, C14. **KW** Network Experience. Nonparametric Estimation.

AB It has been recently shown (e.g., Hornik, Stinchcombe and White, 1989a,b) that sufficiently complex multilayer feedforward networks are capable of representing arbitrarily accurate approximations to arbitrary mappings. We show here that these approximations are learnable by proving the consistency of a class of connectionist nonparametric regression estimators for arbitrary (square integrable) regression functions. The consistency property ensures that as network "experience" accumulates (as indexed by the size of the training set), the probability of network approximation error exceeding any specified level tends to zero. A key feature of the demonstration of consistency is the proper control of the growth of network complexity as a function of network experience. We give specific growth rates for network complexity compatible with consistency.

TI Approximating and Learning Unknown Mappings Using Multilayer Feedforward Networks with Bounded Weights. **AU** Stinchcombe, Maxwell B.; White, Halbert.

PD October 1990. **TI** Adaptive Efficient Weighted Least Squares with Dependent Observations. **AU** White, Halbert;

Stinchcombe, Maxwell B. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 89-45R; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 25. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C14, C13. KW Nonparametric Estimation.

AB Among weighted least squares (WLS) estimators for models with martingale difference errors, the minimum asymptotic variance estimator is obtained by choosing weights proportional to the inverse of the conditional error variance. This is the generalized least squares estimator in the absence of autocorrelation. This "efficient WLS" (EWLS) estimator is not feasible when the conditional variance function is unknown. However, nonparametric techniques can be used to estimate the unknown conditional variance function under appropriate conditions. The resulting nonparametric estimator of conditional variance can be substituted for the unknown true conditional variance in the expression for the efficient WLS estimator, yielding a feasible efficient weighted least squares estimator (nonparametric feasible EWLS). A main goal of the present paper is to study nonparametric feasible EWLS estimation without imposing the restrictive i.i.d. assumption. Instead, we permit the data to be dependent and heterogeneously distributed.

TI Recursive M-Estimation, Nonlinear Regression and Neural Network Learning with Dependent Observations. AU Kuan, Chung-Ming; White, Halbert.

TI Testing for Structural Change in Some Simple Time Series Models. AU Chu, Chia-Shang James; White, Halbert.

TI Strong Convergence of Recursive M-Estimators for Models with Dynamic Latent Variables. AU Kuan, Chung-Ming; White, Halbert.

TI On Learning the Derivatives of an Unknown Mapping with Multilayer Feedforward Networks. AU Gallant, A. Ronald; White, Halbert.

TI Consistent Specification Testing via Nonparametric Series Regression. AU Hong, Yongmiao; White, Halbert.

TI Artificial Neural Networks: An Econometric Perspective. AU Kuan, Chung-Ming; White, Halbert.

PD March 1992. TI Parametric Statistical Estimation with Artificial Neural Networks. AA University of California, San Diego. SR University of California, San Diego Department of Economics Working Paper: 92-13; Working Paper Coordinator, Economics Department, 0508, University of California, 9500 Gilman Drive, La Jolla, CA 92093-0508. PG 63. PR \$3.00 U.S.; \$4.00 Foreign; payable to Regents, University of California. JE C63, D83, C13. KW Learning, Neural Networks.

AB Learning in artificial neural networks is a process by which experience arising from exposure to measurements of empirical phenomena is converted to knowledge, embodied in network weights. This process can be viewed formally as statistical estimation of the parameters of a parametrized probability model. In this chapter we exploit this formal viewpoint to obtain a unified theory of learning in artificial neural networks. The theory is sufficiently general to encompass both supervised and unsupervised learning in either feedforward or recurrent networks.

TI Weak and Strong Laws of Large Numbers for Hilbert Space-Valued Mixingales. AU Chen, Xiaohong; White, Halbert.

TI Determination of Estimators with Minimum Asymptotic Covariance Matrices. AU Bates, Charles E.; White, Halbert.

TI Comments on Testing Economic Theories and the Use of Model Selection Criteria. AU Granger, Clive W. J.; King, Maxwell L.; White, Halbert.

TI Central Limit and Functional Central Limit Theorems for Hilbert Space-Valued Dependent Processes. AU Chen, Xiaohong; White, Halbert.

TI A Convergence Result for Learning in Recurrent Neural Networks. AU Kuan, Chung-Ming; Hornik, Kurt; White, Halbert.

TI Consistent Specification Testing with Unidentified Nuisance Parameters Using Duality and Banach Space Limit Theory. AU Stinchcombe, Maxwell B.; White, Halbert.

TI Degree of Approximation Results for Feedforward Networks Approximating Unknown Mappings and Their Derivatives. AU Hornik, Kurt; Stinchcombe, Maxwell B.; White, Halbert; Auer, Peter.

TI Regularized Neural Networks: Some Convergence Rate Results. AU Corradi, Valentina; White, Halbert.

Whited, Toni M.

TI Internal Finance and Firm Investment. AU Hubbard, R. Glenn; Whited, Toni M.; Kashyap, Anil K.

Whitelaw, Robert F.

PD December 1992. TI Time Variations and Covariations in the Expectation and Volatility of Stock Market Returns. AA New York University. SR New York University Salomon Brothers Working Paper: S-93-42; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 32. PR not available. JE G12, C32, E32. KW Return Volatility, Business Cycles.

AB This paper presents an empirical analysis of the time-variation and covariation of the expectation and volatility of stock returns. The results provide convincing empirical evidence of predictable variation, and they extend the results in the literature by demonstrating the importance of the yield spread between commercial paper and Treasury bills for forecasting movements in stock volatility. The fitted mean and volatility exhibit an asymmetric relation which contrasts with the simple positive relation that has been tested in previous studies. In particular, the volatility leads the expected return over the course of the business cycle. An explanation for these empirical phenomena is proposed which relies on time-variation in the expectation and volatility of inflation and real activity over the course of the business cycle in conjunction with the levered nature of the equity claim.

Wilson, Berry

TI If History Could be Re-Run: Pricing Deposit Insurance in 1933. AU Saunders, Anthony; Wilson, Berry.

Winter, Eyal

PD May 1989. TI The Consistency and Potential for Values of Games with Coalition Structure. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-242; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 13. PR no charge. JE C70. KW Consistency Property. Game Theory. Hyperplane Games. AB In the present paper we discuss the notion of values for games with coalition structure, applying the approach suggested by Hart and Mas-Colell (1985) concerning the consistency property and the potential function. An axiomatic formulation of the values by this approach leads to two known values for coalition structure, namely, Aumann and Dreze's (1974) generalization of the Shapley value and Owen's (1977) value for games with coalition structure.

PD June 1990. TI On Large Games with Bounded Essential Coalitions. AU Winter, Eyal; Holtz Wooders, Myrna. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: A-317; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 25. PR no charge. JE C70. KW Coalitions. Large Games.

AB Games in coalitional form with bounded essential coalitions are ones with the property that all gains to coalition formation can be realized by coalitions bounded in size, i.e., any large coalition can achieve its worth by cooperation restricted to coalitions (in a partition of the coalition) containing fewer members than the bound. This sort of game is frequently used in the literature to illustrate properties of large games. In this paper, we show that games with a finite number of types of players and bounded essential (or effective) coalition sizes are asymptotically equivalent to games derived from markets where all players have the same, piecewise-linear utility function.

Winter, Sidney

TI On the Sources and Significance of Interindustry Differences in Technological Opportunities. AU Klevorick, Alvin K.; Levin, Richard C.; Nelson, Richard R.; Winter, Sidney.

Wise, David A.

TI Do 401(K) Contributions Crowd Out Other Personal Saving? AU Poterba, James M.; Venti, Steven F.; Wise, David A.

Wright, Randall

PD June 1993. TI Search, Evolution and Money. AA University of Pennsylvania and Federal Reserve Bank of Minneapolis. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-22; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 30. PR no charge. JE E00, D83, C73. KW Search Model. Money. Evolution.

AB This paper describes a search-theoretic model that can be used to determine which objects serve as media of exchange, or money. Existing versions of the model are generalized to allow arbitrary distributions of agents who specialize in different

consumption - production activities. I characterize the way the numbers of consumers and producers of the various goods help determine which goods serve as money. The distribution is then endogenized so that agents can choose their type. This generates a unique equilibrium outcome. Ideas from evolutionary dynamics are employed as a way to interpret the model, and to compute equilibria.

PD June 1993. TI A Note on Sunspot Equilibria in Search Models of Fiat Money. AA University of Pennsylvania and Federal Reserve Bank of Minneapolis. SR University of Pennsylvania Center for Analytic Research in Economics and the Social Sciences (CARESS) Working Paper: 93-23; University of Pennsylvania, Center for Analytic Research in Economics and the Social Sciences, McNeil Building, 3718 Locust Walk, Philadelphia, PA 19104-6297. PG 10. PR no charge. JE D50, D84, E40. KW Money. Fiat Money. Sunspots.

AB Search models of the exchange process can generate an endogenous role for fiat money, in the sense that there exists equilibria where intrinsically useless, unbacked paper currency is valued due to its function as a medium of exchange; see, for example, Kiyotaki and Wright. In this note, I ask if there exist equilibria in these models where the value or the acceptability of money fluctuates along with extrinsic random events, called sunspots, even though the fundamentals of the economy are deterministic and time invariant.

Wyplosz, Charles

TI Gross Worker and Job Flows in Europe. AU Burda, Michael; Wyplosz, Charles.

Xu, Chenggang

TI Why China's Economic Reforms Differ: The M-Form Hierarchy and Entry/Expansion of the Non-State Sector. AU Qian, Yingyi; Xu, Chenggang.

TI Chinese Township Village Enterprises as Vaguely Defined Cooperatives. AU Weitzman, Martin L.; Xu, Chenggang.

Yamada, Tadashi

PD June 1993. TI The Allocation of Time: Young Versus Elderly Households in Japan. AU Yamada, Tadashi; Yamada, Tetsuji. AA Yamada, Tadashi: University of Tsukuba and National Bureau of Economic Research. Yamada, Tetsuji: Rutgers University and National Bureau of Economic Research. SR National Bureau of Economic Research Working Paper: 4386; National Bureau of Economic Research, 1050 Massachusetts Avenue, Cambridge, MA 02138. PG 20. PR \$5.00. JE D13, D12, J22. KW Time Allocation. Household Production. Consumption Expenditures.

AB Our study shows that the household production theory illuminates the behavior of households in the allocation of time and consumption expenditures. Among the noteworthy findings derived from our data, the various household non-market time allocations (consequently, market labor supply) cannot be separated from consumption expenditures. An increase in market wage rates for both young and elderly households reduces their time spent on household non-market activities, such as child care, medical care, and listening to the radio and watching TV. The high opportunity costs of waiting at the hospital clearly discourage working people from visiting the hospital. These results show not a few similarities between the

household non-market time allocation in Japan and that to be found in the U.S.

Yamada, Tetsuji

TI The Allocation of Time: Young Versus Elderly Households in Japan. AU Yamada, Tadashi; Yamada, Tetsuji.

Yao, Shuntian

TI The Money Rate of Interest and the Influence of Assets in a Multistage Economy with Gold or Paper Money Part II. AU Shubik, Martin; Yao, Shuntian.

Yu, George G.

PD June 1993. TI Valuation of American Bond Options. AA J.P. Morgan Securities, Inc. SR New York University Salomon Brothers Working Paper: S-93-46; Salomon Brothers Center for the Study of Financial Institutions, Graduate School of Business Administration, New York University, 90 Trinity Place, New York, NY 10006. PG 13. PR \$5.00. JE G10, G13. KW Bond Options. Term Structure. Option Value.

AB This paper studies the valuation of American bond options within the framework of the arbitrage-free Heath, Jarrow and Morton (1992) term structure model. By modeling American bond option prices as solutions to free-boundary problems, we derive closed-form, analytic valuation formulas for American bond options. These valuation formulas resemble the analytic valuation formulas for American equity options but the early exercise premiums reflect the effects of decreasing bond price volatility structure. We also introduce numerical procedures to efficiently implement the analytic valuation formulas for both American bond option prices and option hedge ratios.

Yucesan, E.

TI How Far are we from Steady State? On-Line Error Bounds for Steady State Approximations. AU Papanikas, K.; Van Dijk, N. M.; Van Wassenhove, Luk N.; Yucesan, E.

Zapater, Inigo

TI Fixed-Equilibrium Rationalizability in Signaling Games. AU Sobel, Joel; Stole, Lars; Zapater, Inigo.

Zenner, Marcus

PD November 1992. TI Performance of Least Squares Learning in Autoregressive Models with Forecast Feedback - The Deterministic Case. AA University of Bonn. SR Universitat Bonn Sonderforschungsbereich 303 - Discussion Paper: B-224; Sonderforschungsbereich 303 an der Universitat Bonn, Adenauerallee 24-42, D-5300 Bonn 1, DEUTSCHLAND. PG 36. PR no charge. JE C22, C60. KW OLS Learning. Nonlinear Dynamics.

AB Since the pioneering work of M. Bray (1982) considerable efforts have been made in analyzing the convergence of learning procedures towards rational expectations, but still there are many questions open. For models including lagged endogenous variables Marcet, Sargent (1989, 1989) developed an approach to analyze convergence of OLS-learning based on the ordinary differential equation approach by Ljung (1977). In this paper we try to analyze such a simple model where the current endogenous variable is determined as a linear combination of the one period lagged endogenous variable and the forecast of a future value of the

endogenous variable. This model was already considered by Kottmann, Kuliberda (1990) in a Monte-Carlo study. We used their simulation computer program to get a deeper understanding of the quite complicated dynamics of that model and discovered some interesting facts beyond the study of Kottmann, Kuliberda: The simple model is able to produce not only convergence and divergence but also stable limit cycles and chaos.