

**Centre for Economic Policy Research  
Australian National University**

**and**

**Economic Research Centre  
University of Western Australia**

**Report of the 1998**

**PhD Conference in**

**Economics and Business**



**4 - 6 November  
ANU Canberra**

**Centre for Economic Policy Research  
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University of Western Australia**

**Report of the 1998**

**PhD Conference in**

**Economics and Business**

**4—6 November  
ANU Canberra**

**Conference Convener:     Adrian Pagan, ANU  
Conference Coordinator:   Rae Carson, ANU**

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## **The Report**

It is now more than a decade since the first of the PhD conferences in Economics and Business was convened. Indeed, the Conference held in Canberra from 4 to 6 November 1998 was the eleventh such Conference. Over the past decade the Conference has evolved a basic structure that involves around 24 students presenting papers based on their PhD theses. These papers are formally discussed by individuals chosen for their ability to make good suggestions on what has been written, indicating where it might be improved or extended. Students are nominated by their respective departments. There has been a tendency for the number of nominations to rise over the years, to such an extent that we are now at “full capacity”, if the policy of having just two parallel sessions and two papers per session is to be preserved. This year we initially thought that there might be too many nominations, but some juggling of the schedule meant that we managed to accommodate all those who applied. It would be unfortunate if we were unable to take all those nominated by their departments but there is a real possibility of this in future years.

As mentioned above the conference format is not a static one. As a result of a generous grant from the University of Western Australia, this year we were able to support visits from some Australians who were studying for the PhD abroad — Rochelle Edge from Princeton and Ricky Lam from Yale. In fact the “overseas contingent” was a trio, with Alex Heath being the other member. Alex is enrolled as a PhD student at the London School of Economics, although she was working in Australia at the Reserve Bank of Australia. There are obvious benefits to having such a representation. It enables students studying within Australia to meet others of their cohort and to learn about the experiences of being a student elsewhere in the world. It also provides a useful contact overseas. Moreover, the type of work done by the students pursuing PhDs overseas frequently provides interesting insights into the type of research that is engaging academics elsewhere. We felt that Alex, Rochelle and Ricky made a great contribution to the success of the conference.

A second difference from the past came with the award of the prizes for the best student presentation and the best discussant. This year we experimented with the idea of allowing the audience a voice in the process. KK Tang of the ANU (supervised by Warwick McKibbin) won the prize for the former and Denise Doiron was the recipient of the latter. Both were worthy winners of the awards. Denise has been runner up before and was a clear favourite with both audience and selectors. It should be mentioned however that the three “overseas” students were excluded from consideration but their presentations would certainly have put them in the running for the award. One should also say that the discussants were excellent and picking a winner was not an easy task.

In line with past practice a lecture was given at the conference by a distinguished economist. In a year which saw wild movements in exchange rates it was very appropriate that Dr David Gruen be asked to give that lecture. David, newly appointed as Head of the Research Group at the Reserve Bank of Australia, is probably Australia’s

leading researcher into exchange rate behaviour. What was equally pleasing, however, is that this was an historic selection, in that David became return to give the invited address. In another decade we may even have children following their parents in presenting papers to the conference!

As usual the convenor managed to avoid most of the administration and students wishing to make inquiries about the conference found that Rae Carson was the person to speak to. As usual, Rae did a superb job of organization and she was very ably supported by Stephanie Hancock. My thanks go to them both.

The conference relies on financial support from outside institutions as well as the resources of the University of Western Australia and the Australian National University. Many of our sponsors have supported the conference from its beginning. This year Access Economics and ECONTECH were newly added to the list. We would like to thank all of the following institutions for their generous support of an important activity in Australian graduate training.

Access Economics Pty Ltd  
Australia & New Zealand Banking Group Limited  
Australian Agricultural & Resource Economics Society, Inc  
Australian Bureau of Statistics  
Australian Finance Conference  
Bureau of Transport Economics  
Centre for International Economics, Canberra  
Economic Society of Australia  
ECONTECH  
Department of Employment, Education, Training & Youth Affairs  
Department of Finance & Administrative Services  
Department of Industry, Science & Tourism  
Housing Industry Association Ltd  
Macquarie Bank Limited  
Productivity Commission  
Reserve Bank of Australia  
The University of Western Australia

**Adrian Pagan**  
**Convenor**

## **The Program**

### **WEDNESDAY, 4 November 1998**

**6.00 - 10.00pm** Welcome to participants, BBQ  
The Drawing Room, University House, ANU

### **THURSDAY, 5 November 1998**

**9am** Conference Welcome: Venue: Ian Wark Theatre, Becker House  
Gordon Street, Acton

**9.10 - 10.40am** Session 1: Venue: Ian Wark Theatre, Becker House  
Session 2: Venue: Council Room, Becker House

**10.40 - 11.15am** Morning tea/coffee, Becker House foyer

**11.15 - 12.45pm** Session 3: Venue: Ian Wark Theatre  
Session 4: Venue: Council Room

**12.45 - 2.15pm** Lunch: University House

**2.15 - 3.45pm** Session 5: Venue: Ian Wark Theatre  
Session 6: Venue: Council Room

**3.45 - 4.15pm** Afternoon tea/coffee, Becker House foyer

**4.15 - 5.45pm** Invited Lecture: Venue: Ian Wark Theatre

**7.00 for 7.30pm** Conference Dinner: Vivaldi Restaurant, Arts Centre, ANU

### **FRIDAY, 6 November 1998**

**9.00 - 10.30am** Session 7: Venue: Ian Wark Theatre  
Session 8: Venue: Council Room

**10.30 - 11.00am** Morning tea/coffee, Becker House foyer

**11.00 - 12.30pm** Session 9: Venue: Ian Wark Theatre  
Session 10: Venue: Council Room

**12.30 - 2.00pm** Lunch: University House

*The Program*

- 2.00 - 3.30pm**    Session 11: Venue: Ian Wark Theatre  
                          Session 12: Venue: Council Room
- 3.30 - 4.00pm**    Afternoon tea/coffee and presentation of “Awards”  
                          End of Conference

## **The Sessions**

**Session 1:** Thursday, 9.10 - 10.40am

Chairperson: Graeme Wells, Dept of Economics, Faculty of Economics & Commerce, ANU

(i) Wana Yang, Dept of Accounting & Finance and Economic Research Centre, Dept of Economics, University of WA

*The demand for and supply of shares: an empirical study of the limit order book on the ASX*

(ii) Rochelle Edge, Dept of Economics, Princeton University

*Differential project completion times and the effect of monetary policy on residential and structures investment*

Discussants: (i) Richard Heaney, Dept of Commerce, Faculty of Economics & Commerce, ANU

(ii) John Landon-Lane, School of Economics, University of New South Wales

**Session 2:** Thursday, 9. 10 - 10.40am

Chairperson: Chris Skeels, Dept of Statistics & Econometrics, Faculty of Economics & Commerce, ANU

(i) Rodney Strachan, Dept of Econometrics & Business Statistics, Monash University

*Bayesian estimation of the reduced rank regression model without ordering restrictions*

(ii) Anthony De Francesco, School of Economics, University of New South Wales

*A modified test for the null of no cointegration using correlated stationary covariates in a single equation framework*

Discussants: (i) Trevor Breusch, Dept of Statistics & Econometrics, Faculty of Economics & Commerce, ANU

(ii) David Harris, Department of Economics, University of Melbourne

**Session 3:** Thursday, 11.15 - 12.45pm

Chairperson: Phil McCalman, Economics Program, RSSS, ANU

(i) Gouranga Gopal Das, Dept of Economics, Monash University

*Absorption capacity, structural similarity and embodied technology spillover: an implementation within the GTAP framework*

- (ii) Rina Oktaviani, Dept of Agricultural Economics, University of Sydney  
*The impact of APEC trade liberalisation on Indonesian economy and agricultural sector*

Discussants: (i) Warwick McKibbin, Dept of Economics, Research School of Pacific & Asian Studies, ANU  
(ii) Peter Warr, Dept of Economics, Research School of Pacific & Asian Studies, ANU

**Session 4:** Thursday, 11.15 - 12.45pm

Chairperson: Paul Lau, Dept of Economics, Faculty of Economics & Commerce, ANU

- (i) Sofia Levtchenkova, Dept of Economics, Faculty of Economics & Commerce, ANU  
*Forecasting the level of Australian economic activity: development of a new leading index*
- (ii) George Messinis, Dept of Economics, University of Melbourne  
*Credit and habit modification in consumption. USA 1959 - 1997*

Discussants: (i) Allan Layton, School of Economics & Finance, Queensland University of Technology  
(ii) Dimitris Hatzinikolaou, School of Economics, Flinders University of SA

**Session 5:** Thursday, 2.15 - 3.45pm

Chairperson: Bruce Chapman, Centre for Economic Policy Research, RSSS, ANU

- (i) Corrie Reiman, National Centre for Social & Economic Modelling, Univ. of Canberra  
*Has enterprise bargaining affected the gender wage gap in Australia?*
- (ii) Alex Heath, Reserve Bank of Australia and London School of Economics  
*The influence of neighbourhood effects on education decisions in a nationally funded education system: the case of Australia*

Discussants: (i) Mark Wooden, National Inst. of Labour Studies, Flinders University of SA  
(ii) Jeff Borland, Centre for Economic Policy Research, RSSS, ANU

**Session 6:** Thursday, 2.15 - 3.45pm

Chairperson: Simon Grant, Dept of Economics, Faculty of Economics & Commerce, ANU

(i) Glyn Wittwer, Dept of Economics, University of Adelaide  
*The impact of taxes on development of the Australia wine industry*

(ii) Ricky Lam, Yale University  
*Self sustaining stability in dynamic two-sided matching markets*

Discussants: (i) Ken Clements, Economic Research Centre, Dept of Economics,  
University of Western Australia

(ii) Abhijit Sengupta, Dept of Economics, University of Sydney

**Invited Lecture:** Thursday, 4.15 - 5.45pm

Chairperson: Ken Clements, Economic Research Centre, Dept of Economics,  
University of Western Australia

Speaker: David Gruen, Reserve Bank of Australia  
*Why does the Australian dollar move so closely with the terms of trade*

**Session 7:** Friday, 9.00 - 10.30am

Chairperson: Steve Dowrick, Dept of Economics, Faculty of Economics &  
Commerce, ANU

(i) Yi-Ping Tseng, Australia—Japan Research Centre, ANU  
*The analysis of experience, cohort, and year effects on wages: an empirical study of  
Taiwan*

(ii) Kathryn Matthews, School of Economic & Financial Studies, Macquarie University  
*A new look at an old problem - purchasing power parity*

Discussants: (i) Denise Doiron, Dept of Economics, University of Sydney

(ii) Tom Nguyen, School of Economics, Griffith University

**Session 8:** Friday, 9.00 - 10.30am

Chairperson: Ben Smith, Dept of Economics, Faculty of Economics & Commerce,  
ANU

(i) Danny Spring, School of Business, La Trobe University  
*Spatial optimisation in a managed mountain ash forest*

(ii) Luz Centeno, Dept of Economics, University of New England  
*Deforestation in the Philippines: a CGE modelling approach*

Discussants: (i) Charles Hyde, Dept of Economics, University of Melbourne

- (ii) Gil Rodriguez, Australian Bureau of Agricultural & Resource Economics

**Session 9:** Friday, 11.00 - 12.30pm

Chairperson: Kali Kalirajan, Dept of Economics, Research School of Pacific & Asian Studies, ANU

- (i) Sivaraman Govindarajalu, Mineral Economics Program, Curtin University of Technology  
*Mining and sustainable development in Western Australia*

- (ii) Vasanthi Monsingh, School of Economics & Finance, Curtin University of Technology  
*Dynamics of direct taxation and growth: a cointegrating VAR model*

Discussants: (i) Ron Bewley, School of Economics, University of New South Wales  
(ii) Prasad Bidarkota, School of Business, La Trobe University

**Session 10:** Friday, 11.00 - 12.30pm

Chairperson: Tim Brailsford, Faculty of Economics & Commerce, ANU

- (i) Layna Groen, School of Finance and Economics, University of Technology, Sydney  
*Reflections on and extensions of the Miller-Modigliani model of the value of a firm*

- (ii) K K Tang, Dept of Economics, Research School of Pacific & Asian Studies, ANU  
The property market in an intertemporal general equilibrium model

Discussants: (i) Chris Jones, Dept of Economics, Faculty of Economics & Commerce, ANU  
(ii) Chris Kent, Reserve Bank of Australia

**Session 11:** Friday, 2.00 - 3.30pm

Chairperson: Greg Connolly, Dept of Employment, Education, Training & Youth Affairs

- (i) David Trigger, National Centre for Social & Economic Modelling, Univ. of Canberra  
*How much does the way we measure poverty matter?*

- (ii) Yew May Martin, National Centre for Development Studies, ANU  
*Employment or welfare? The interaction between welfare, wage structures and taxation systems and their impacts on the income and employment of indigenous mothers*

Discussants: (i) Boyd Hunter, Centre for Aboriginal Economic Policy Research, ANU  
(ii) Anne Daly, Faculty of Management, University of Canberra

**Session 12:** Friday, 2.00 - 3.30pm

Chairperson: Ken Clements, Economic Research Centre, Dept of Economics,  
University of Western Australia

(i) Xueyan Zhao, Dept of Econometrics, University of New England  
*The economic impacts of new technologies and promotion on the Australian beef industry*

(i) Sarah Ssewanyana, Dept of Agricultural Economics, University of Sydney  
*Determinants of household food security in rural Uganda: a non-separable agricultural household model approach*

Discussants: (i) Roger Rose, Australian Bureau of Agricultural & Resource Economics  
(ii) Robert Breunig, Dept of Statistics & Econometrics, Faculty of  
Economics & Commerce, ANU

3.30 - 4pm Presentation of Awards - end of Conference

## The Abstracts

### **DEFORESTATION IN THE PHILIPPINES: A CGE Modelling Approach**

**Maria Luz Centeno**  
**University of New England**

The Philippine forests have encountered massive destruction since the start of this century. There was no comprehensive program initiated by the government to protect these resources. However, in 1990, the Philippine government formulated the Master Plan for forestry development. The Master Plan is 'a nationwide and aggregate blueprint for the development of the forestry sector across a 25-year horizon' i.e., 1991 to 2015. Through CGE modelling, the general equilibrium effects of various policies such as an increase in the stumpage tax rate, allocation of fund for reforestation purposes and implementation of set-aside programs for environmental considerations as proposed in the Master Plan can be evaluated.

### **ABSORPTION CAPACITY, STRUCTURAL SIMILARITY AND EMBODIED TECHNOLOGY SPILLOVERS IN A 'MACRO' MODEL: An Implementation Within The GTAP Framework**

**Gouranga Gopal Das**  
**Monash University**

In this paper all technology transfers are embodied in trade flows within a three-region, one-traded-commodity version of the GTAP model. Exogenous Hicks-Neutral technical progress in one region can have uneven impacts on productivity elsewhere. Why? Destination regions' ability to harness new technology depends on their *absorptive capacity* and the *structural congruence* of the source and destination. Together with trade volume, these two factors determine the recipient's *spillover coefficient* (which measures its success in capturing foreign technology). Armington competition between the outputs of the three economies and shifts in their terms of trade loom large in the general equilibrium adjustment.

### **A MODIFIED TEST FOR THE NULL OF NO COINTEGRATION USING CORRELATED STATIONARY COVARIATES IN A SINGLE EQUATION FRAMEWORK**

**Anthony J De Francesco**  
**University of New South Wales**

This paper proposes a modified Phillips-Ouliaris ADF t test for the null of no cointegration which incorporates correlated stationary covariates in the single regression

equation. It is shown that the asymptotic distribution of the modified ADE t test depends not only on the number of regressors but also on the correlation between the cointegrating residuals and the stationary variables. It is shown that the modified test delivers more power than the conventional ADF test as the correlation increases. Power gains were also found to be substantial in finite samples.

## **DIFFERENTIAL PROJECT COMPLETION TIMES AND THE EFFECT OF MONETARY POLICY ON RESIDENTIAL AND STRUCTURES INVESTMENT**

**Rochelle Edge**  
**Princeton University**

This paper analyzes a puzzling empirical fact concerning the effect of monetary policy on fixed investment; specifically, that of why residential investment exhibits a strong and rapid response to changes in monetary policy while structures investment manifests little or no response. The paper proposes an explanation for these contrasting responses that is based on the differential completion times of these two categories of investment as well as inflexibilities that exist in changing the planned pattern of investment spending. This explanation is addressed both empirically and theoretically. The empirical analysis contrasts the response of U.S. residential and structures building project commencements and building work undertaken to a monetary policy shock in order to distinguish whether the investment taking place following a monetary tightening is accounted for by new investment projects as opposed to continuing work on large, partially completed projects. It finds support for this explanation and considers whether it is possible to explain the empirical facts in the context of a theoretical model. This involves constructing a monetary business cycle model with sticky-Calvo-pricing involving multi-stage and single-stage investment projects. A calibrated version of this model is then used to simulate the effect of a monetary policy shock on the two types of investment projects.

## **MINING AND SUSTAINABLE DEVELOPMENT IN WESTERN AUSTRALIA**

**Sivaraman Govindarajalu**  
**Curtin University of Technology**

This paper investigates how income from mining has been invested in WA since 1978. Using time series data, measures of sustainability are estimated based on the long run multiplier derived from the impulse response functions of the Vector Autoregression methodology. The approach is to measure the impact of real income generated from mining on real gross state product, real manufacturing, real public utilities, real construction and real education. Results are compared with Queensland and the Northern Territory—other Australian mineral dependent regions. The study extends preliminary research undertaken by the writer using the Pearce and Atkinson approach to measuring economic sustainability of mineral dependent countries.

## **REFLECTIONS ON AND EXTENSIONS OF THE MILLER-MODIGLIANI MODEL OF THE VALUE OF A FIRM**

**Layna Groen**  
**Sydney University of Technology**

This paper attempts to form a stronger link between Miller and Modigliani's (MM) 1961 paper on dynamic investment and firm valuation, and the comparative statics models of the levered and unlevered firms found in their 1958 and 1963 papers. Attention is paid to the operation of interest rates and the nature of equilibrium in constructing the more general dynamic model. Partly as a result of this a number of criticisms arise with regard to MM's three propositions on valuation, cost of capital and investment. In addition, the model provides a broader base on which further work may be conducted.

## **THE INFLUENCE OF NEIGHBOURHOOD EFFECTS ON EDUCATION DECISIONS IN A NATIONALLY FUNDED EDUCATION SYSTEM: The Case of Australia**

**Alexandra Heath**  
**London School of Economics**

It has been well documented that personal characteristics and family background variables affect a teenager's education decisions. This paper asks whether the local environment beyond the individual's household also plays some role. Defining the neighbourhood as a post code area, we identify two different types of neighbourhood effects influencing a teenager's decision of whether or not to complete high school. First, teenagers are less likely to complete high school if the average dropout rate in the neighbourhood is high. That is, there is an endogenous feedback effect across peer groups. Second, teenagers less likely to complete high school if they live in neighbourhoods with low percentage of adults with graduate qualifications and a high percentage of adults with vocational qualifications. Thus, there is an exogenous effect of neighbourhood composition on dropout rates. While the analysis identifies the presence of neighbourhood effects, family background and personal characteristics remain important explanators of teenage education decisions.

## **SELF-SUSTAINING STABILITY IN DYNAMIC Two-SIDED MATCHING MARKETS**

**Ettore Damiano and Ricky Lam**  
**Yale University**

A repeated, one-to-one, two-sided matching market is considered. We define a new notion of stability for this dynamic setting and label it, *selfsustaining stability*. This concept can be viewed as the core with two additional requirements. Very loosely, these

requirements are the cooperative counterparts of subgame perfection and coalition proofness. We argue that our concept of stability has a more desirable interpretation than both the core and the recursive core. Moreover, we find that the self-sustaining stable set encompasses the recursive core and is thus non-empty in a wider class of models. We provide sufficient conditions for its existence and show how it can be found. In finite-horizon games, the self-sustaining stable set can be computed using backward recursion. With infinite-horizon, we propose an algorithm based on the idea of value iteration to compute the set. Finally, limitations of our definition, together with the extensions that they suggest, are discussed.

## **FORECASTING THE LEVEL OF AUSTRALIAN ECONOMIC ACTIVITY Development of a new Leading Index**

**Sofia Levtchenkova**  
**Australian National University**

This paper deals with the construction of a new Leading Index for the level of economic activity in Australia. The proposed leading index is obtained as a 2-quarter ahead forecast of the WCI. The forecasts are produced with a VAR Model, specified and estimated for the set of variables that consists of the WCI and a variety of individual economic series that usually lead Australian economic activity. These include *NAPM Composite index*, *WestpacMelbourne Consumer Sentiment*, *Yield Curve*, *Retail Sales*, *Westpac-Melbourne Leading index*, *All Ordinaries Index*, *DOG Leading Indicator*, *DEETYA Leading Indicator of Employment* and *ACCJ Index of Business Confidence*. The model is applied in the context of both monthly and quarterly data. Validity of the model specification and the quality of the produced forecasts are analyzed using a variety of statistical tests and graphical methods. The results demonstrate that the included series represent fairly reliable leading indicators of the Australian economic activity and their set can be successfully described by a correctly specified VAR Model producing accurate and reliable short-term forecasts of the WCI.

## **THE INTERACTION BETWEEN WELFARE, WAGE STRUCTURES AND TAXATION SYSTEMS AND THEIR IMPACTS ON THE INCOME AND EMPLOYMENT OF INDIGENOUS MOTHERS**

**Yew May Martin**  
**Australian National University**

This paper examines the likely effects of labour market deregulation in Australia on the incentive to work taking into account social welfare and taxation arrangements, focussing on a poor socio-economic group, namely Indigenous mothers. Comparisons are made with Indigenous women in the United States. Applying Australia's social welfare entitlements to Indigenous women in the United States enables the effect of labour market deregulation to be simulated. Results indicate the average replacement ratios (the

ratio between welfare benefit entitlements and potential earnings from employment), for indigenous lone mothers is around 65 per cent in Australia and 76 per cent in the United States, suggesting that a move to a deregulated labour environment is likely to discourage such mothers from working because of the loss in income. Results also indicate that for *married* mothers there is little incentive in either country to seek employment given the high level of the replacement ratios (86% in Australia and 92% in the US). Therefore, other things being equal, moving from a centralised wage setting institution to a more - deregulated labour market whilst retaining the existing welfare system will see a fall in the wages of most Indigenous mothers with dependent children, a rise in their replacement ratios and hence decrease in their incentives to work. In addition, low income mothers who fall into the social welfare income taper range (having incomes of around \$410 to \$768 per week, depending on family composition and circumstances) have their welfare benefit payments reduced as incomes rise, resulting in an effective tax rate of more than 90%. It would therefore be difficult or impossible for many such families to increase their disposable income by work under the current or a deregulated labour market.

## **A NEW LOOK AT AN OLD PROBLEM — PURCHASING POWER PARITY**

**Kathryn Matthews**  
**Macquarie University**

Purchasing power parity (PPP) is an intuitively appealing and simple theory. If you could buy a particular good in one country you would expect to be able to buy the same good for around the same value in another country once you had converted your money into the domestic currency. However, as with a lot of intuitive simple theories, it doesn't meet well with the real world. There are a number of justifications for the poor empirical support for the theory. These range from difficulties of comparing price indices across countries, to the degree of non-tradable components in any good, to the productivity-bias hypothesis. These arguments imply that if the PPP mechanism is functioning at all, it must only be in a long-run perspective. Long-run PPP is a fundamental building block of most models of exchange rate determination. Fortunately for these exchange rate models, more advanced econometric method namely multivariate cointegration, are managing to find evidence that the long-run PPP relationship does hold. This paper focuses on Australian evidence of the PPP theory and exploits two different concepts of the real exchange rate - one based on the traditional PPP measure and one based on the 'so-called' Australian model - to provide a new look at an old problem.

## **CREDIT AND HABIT MODIFICATION IN CONSUMPTION - USA 1959 to 1997**

**George Messinis**  
**University of Melbourne**

Since Brown (1952), habit formation models of consumption have assumed that utility is additively separable in durables and non-durables, and memory loss is a univariate process. This paper dispenses with the latter assumption JO introduce habit modification in consumption. A model is proposed where consumer credit depletes the habit stock and motivates consumers towards a more forward-looking behaviour. The Johansen (1988) and Gregory and Hansen (1996) procedures are applied to test for cointegration using US data consistent with the theory, the evidence shows that a long-run relationship exists between consumption expenditure, disposable income and consumer credit, and the relationship has been subject to a structural break in 1987.

## **DYNAMICS OF DIRECT TAXATION AND GROWTH: A Cointegrating VAR Model**

**Vasanthi Monsingh**  
**Curtin University of Technology**

This study aims to investigate the relationship between direct taxation and growth in a developing economy. A time series analysis of data for the period 1950—51 to 1994—95 for the Indian economy reveals that the variables in the model have a unit root and hence cointegrating vector autoregressive and error correction models (ECM) are used to explain variations in the savings per capita in the long-run and short-run respectively. The direct tax per capita variable gives the correct sign and is statistically significant. The ECM model gives the correct sign and converges to an equilibrium solution. The analysis is also supplemented by examining the effect of variable-specific (such as direct tax and after-tax rate of interest shocks) on the long-run cointegrating relationship with the help of impulse response function. The study reveals that tax is one of the many variables that affect savings and investment behaviour and that reduction in direct taxes may promote capital formation and thus growth in the economy.

## **THE IMPACT OF APEC TRADE LIBERALISATION ON INDONESIAN ECONOMY AND AGRICULTURAL SECTOR**

**Rina Oktaviani**  
**University of Sydney**

The APEC agreement on trade liberalisation will affect, perhaps significantly, the trade and economic performance of the members, including Indonesia. The agreement will affect Indonesian's macro economy and individual sectors, including the agricultural sector. Previous studies have analysed these effects by using general equilibrium

methods, either in a multi-country or a single-country model. This study tries to link the GTAP multi-country model with an ORANI-F based Indonesian model to analyse the impact of APEC trade liberalisation on the Indonesian economy and its agricultural sector, both in the short run and the long run.

### **HAS ENTERPRISE BARGAINING AFFECTED THE GENDER WAGE GAP IN AUSTRALIA?**

**Corrie Reiman**

**University of Canberra**

Decentralised wage determination in Australia is generally expected to widen the gender wage gap. Utilising the 1995 Australian Workplace Industrial Relations Survey (AWIRS95), econometric analysis provides the first major assessment of the associated gender wage gap.

Structural testing of data sets, split by gender and bargaining status, indicate that enterprise bargaining has affected the wage determination process of males, but not of females. Regression results hold significant interest and logit analysis allows for an observed gender wage gap to be decomposed into explained and unexplained components.

### **SPATIAL OPTIMISATION IN A MANAGED MOUNTAIN ASH FOREST**

**Danny Spring**

**La Trobe University**

A recently developed application of linear programming, which allows for the simulation of wildlife growth and dispersal, is applied to the problem of selecting areas to harvest for timber, over time. The areas are chosen so as to maximise the population of a threatened species, Leadbeater's possum, in the final period of a 150 year time horizon. A key constraint on maximising possum abundance is to ensure adequate supplies of sawlogs and pulplogs in each period, to meet contractual obligations to sawmills and pulpmills. The spatial layout of harvested areas is found to have a significant impact on the objective function, illustrating the importance of spatial optimisation. Policy implications are discussed.

### **DETERMINANTS OF HOUSEHOLD FOOD SECURITY IN RURAL UGANDA A Non-Separable Agricultural Household Model Approach**

**Sarah Nakabo Ssewanyana**

**University of Sydney**

Despite Uganda's long history of food self-sufficiency, there is evidence of growing food insecurities at the household level. To address this problem, policymakers require

knowledge on how exogenous factors influence household food security. This paper seeks to provide such knowledge by focusing on rural Uganda. A non-separable agricultural household modelling approach is employed. The results of the study tend to suggest that household full income, food prices and women specific-variables such as education, age, access to productive resources and time allocation influence household food security. The policy implications of the results are explored.

## **BAYESIAN ESTIMATION OF THE REDUCED RANK REGRESSION MODEL WITHOUT ORDERING RESTRICTIONS**

**Rodney W. Strachan**  
**Monash University**

As demonstrated in this paper, mis-specification of identifying restrictions in the reduced rank regression model, such as the cointegrating ECM, can have significant consequences. Traditionally Bayesians have relied on zeroone identifying restrictions which impose an order on the variables to achieve global identification. However, incorrect ordering may, for example, result in an estimated space for the cointegrating vectors of an ECM that does not contain the true cointegrating space. In this paper, we present an estimation method which does not require *a priori* ordering by using restrictions similar to those used in maximum likelihood estimation by Anderson (1951) and Johansen (1988).

## **THE PROPERTY MARKET IN AN INTERTEMPORAL GENERAL EQUILIBRIUM MODEL**

**KK Tang**  
**Australian National University**

This paper presents a theoretical simulation model to examine the interaction between the property market and the rest of the economy in a small open economy framework. Besides a household and a government, the model is constructed with a tradable manufacturing sector, a non-tradable service sector, and a non-tradable housing sector, respectively. The model separates three different property markets: industrial housing, private-funded residential housing, and public-subsided residential housing, respectively. The model also distinguishes between physical labor and knowledgeable labor to captures the reality of imperfect labor mobility between industries, and to highlight the role of human capital in economic growth.

## **HOW MUCH DOES THE WAY WE MEASURE POVERTY MATTER?**

**David Scott Trigger**  
**University of Canberra**

This paper assesses the impact upon the estimated level of poverty of variations in some of the key poverty measurement parameters. The expenditure data derived from the 1993—94 Household Expenditure Survey has been analysed to assess the sensitivity of poverty estimates, derived from a range of poverty indices, to variations in the generosity of the equivalence scales, the level of the poverty line, and the choice of the indicator of the level of resources used. The sensitivity of each poverty index to variations in these parameters is assessed while those population sub-groups particularly susceptible to poverty are identified.

## **WAGE BEHAVIOUR IN TAIWAN OVER THE PAST Two DECADES**

**Yi-Ping Tseng**  
**Australian National University**

This paper studies the change of earnings profiles over time and across cohorts in 1978 - 1996. In the past three decades, Taiwan has experienced high economic growth and tremendous changes in demographic features, such as the decreased fertility rate and the increased share of higher educated population. As well recognised in the modern labour market analysis, the fast accumulation of human capital may have important impact on the wage structures. Due to the limited availability of longitudinal data, most studies focused on the cross-sectional earnings profiles. However, the cross-sectional earnings profiles could be biased by the cohort effect when the economy has been undergoing significant changes of cohort characteristics. This paper uses data collected from 19 successive cross-sectional household surveys to study the cohort, year (growth), and experience effect on earnings. To overcome the infeasibility of completely separating the three effects caused by identification problem, the results obtained from three different empirical methods will be compared. The three methods are: 1) adjusting cohort effect on cross-sectional earnings profiles; 2) adjusting growth effect from cohort earnings profiles; 3) only consider the year effect as cyclical movement.

## **THE IMPACT OF TAXES ON DEVELOPMENT OF THE AUSTRALIAN WINE INDUSTRY**

**Glyn Wittwer**  
**University of Adelaide**

What would be the consequences for the grape and wine industry of moving to a GST in Australia? This question is addressed in this paper with the help of a computable general equilibrium model of the Australian economy (FEDSA-WINE), based on a two-region

version of ORANI (South Australia where half the wine industry is located, and the rest of Australia) which distinguishes (FEDSA-WINE). The model distinguishes premium from non-premium grapes and wine, and South Australia (where half the wine industry is located) from the rest of Australia. In addition, the model is used to assess the impacts of tax changes over the past decade and the contribution of other influences on growth of the domestic wine industry. The modelling framework can also be used to project future growth scenarios and prospective returns to grape and wine producers.

## **THE DEMAND FOR AND SUPPLY OF SHARES**

### **An Empirical Study of the Limit Order Book on the ASX**

**Wana Yang**  
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Nowadays many financial markets operate on an electronic open limit order book structure. The widespread adoption of this trading system has raised some new issues in financial economics. In traditional dealer (i.e., quote-driven) markets, dealers provide liquidity to traders and earn profits from this service (their gross margin is generally measured by the bid-ask spread). Electronic open limit order book markets (primarily order-driven) reduce the liquidity-provider function of dealers by utilising public limit orders as a major source of liquidity. In these markets, traders demand liquidity by submitting market (or marketable) orders and they supply liquidity by submitting limit orders, whereby they substitute for dealers in quote-driven markets. Limit orders live on the market are kept in the limit order book, which represents the available liquidity that can be provided immediately to onmarket trading and reveals the price impact of a given trading quantity. The limit order book is an essential part of the information that investors consider before their trading decisions are made. So far, however, many characteristics of the limit order book have not been studied much in the literature, except perhaps for the bid-ask spread. The objective of this paper is to characterise and to explain the limit order book in an electronic market, using data from the Australian Stock Exchange. Limit orders are described by three variables — price, quantity and age. Three hypotheses regarding these variables are proposed and tested:

- That there is a positive relationship between the age of a live limit order and its distance from the market price.
- That there is an inverse relationship between the size of a live limit order and its distance from the market price.
- That there is an inverse relationship between the size of a live limit order and its age.

These properties determine directly the shape of the price schedule for the limit order book, which usually can be approximated by an S-shaped curve. A spliced doublelog functional form is found to mimic many of the price schedules.

**THE ECONOMIC IMPACTS OF NEW TECHNOLOGIES AND PROMOTIONS  
ON THE AUSTRALIAN BEEF INDUSTRY**

**Xueyan Zhao**  
**University of New England**

Benefits from various types of research (on-farm, feedlot, processing and marketing management) and promotion (domestic and export markets) in the Australian beef industry, and the distribution of the total benefits among industry groups (farmers, feedlotters, processors, marketers and domestic and overseas consumers) are studied using an Equilibrium Displacement Model (EDM) and economic surplus measures. Underlying assumptions of EDM and sizes of errors when assumptions are not met are investigated. Integrability conditions for the model are examined. A stochastic approach is proposed to represent the sensitivity of results to parameters. The paper is an overview of the unfinished thesis; the model is presented but results are not yet finalized.

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