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EDITORIAL TEAM OF

Assoc Prof Tay Boon Nga

Ms Annie Koh

Ms Khatini Bte Anuar

THIS
ISSUE

ESU Forecasts

The Econometric Studies Unit (ESU) announced the results of its study on the impact of SARS on the Singapore economy on 11 December 2003. The full text of the press release, including updated forecasts of the Singapore economy, is reproduced below.



*Assoc Prof Tilak
Abeysinghe, Director,
Econometric Studies Unit*



*Dr Choy Keen Meng,
Asst Director,
Econometric Studies Unit*

REVISITING SARS: IMPACT ON THE SINGAPORE ECONOMY

by

*Tilak Abeysinghe and Choy Keen Meng**
Econometric Studies Unit, Department of Economics
National University of Singapore

'No data yet,' he answered. 'It is a capital mistake to theorize before you have all of the evidence. It biases the judgement.'

Sherlock Holmes
A Study in Scarlet

** We would like to thank Peter Wilson for his valuable comments and suggestions.*

continued on page 2

Introduction

After recovering from the worst recession since independence with modest growth of 2.2% in 2002, the Singapore economy stagnated during the first nine months of this year. Compared to previous recessions, the bounce-back from the 2001 downturn has been exceptionally muted partly because of what seemed like an unending sequence of unexpected shocks to have buffeted Singapore, including repeated terrorist attacks, the Iraq war and the recent outbreak of the Severe Acute Respiratory Syndrome (SARS).

The most devastating of these shocks was undoubtedly SARS. Like the Asian financial crisis before it, the disease spread rapidly throughout the region by contagion. By the time the epidemic was contained in June this year, it had exacted a heavy toll on victims, their families and the domestic economy. Official estimates from the Economic Survey of Singapore, Third Quarter 2003 indicate that service industries that were directly or indirectly affected by the viral outbreak, such as hotels, restaurants and air transport, shrank by 10-30% in the second quarter of 2003.

Experts have warned that SARS may re-emerge during this winter season. A study of the history of major epidemics in the twentieth century by the Monetary Authority of Singapore in its Macroeconomic Review, October 2003 issue also revealed that in each of the past outbreaks, there were two waves of infection. In the light of these warnings, our objectives here are two-fold: to reassess, with the aid of econometric models, the impact of SARS on Singapore's economic growth in 2003, and thereby to project growth for 2004 in the unwelcome event that SARS should revisit us.

An Intervention Analysis of the SARS Economic Impact

One problem encountered by researchers attempting to estimate the economic impact of SARS is the current lack of data. Despite Holmes' exhortation to the contrary, we proceeded to carry out a preliminary assessment of its impact on Singapore using published statistical data up to the third quarter of this year and forecasts for the fourth quarter.¹

The econometric methodology we utilized goes by the name of 'intervention analysis'. This time series technique is ideal for modelling the effects of rare, but known, events that have either a transitory or permanent impact on variables of interest. In this case, the SARS outbreak was represented by a 'pulse' dummy variable for 2003Q2 in a regression model that incorporates other explanatory variables as control variables. The role of the dummy variable is to capture effects not otherwise explained by the included regressors. We assume that the SARS shock is transitory, but since its impact might not be purely confined to the second quarter of this year, we adopted a technical specification which allows for persistent effects that decay exponentially over time in the post-intervention period.²

The economic variables in the model are the ones commonly used to forecast GDP growth in Singapore — composite weighted foreign GDP (a gauge of external demand) and global chip sales (a proxy for world electronics demand). The inclusion of these variables is crucial if we want to disentangle the effects of SARS from other factors at work during the first half of 2003. For example, slower growth in both foreign GDP and semiconductor sales in the second quarter resulting from the uncertainties associated with the Iraq war led to a drastic fall of 7.1% in Singapore's manufacturing output which, if not taken into account, would exaggerate the impact of SARS.

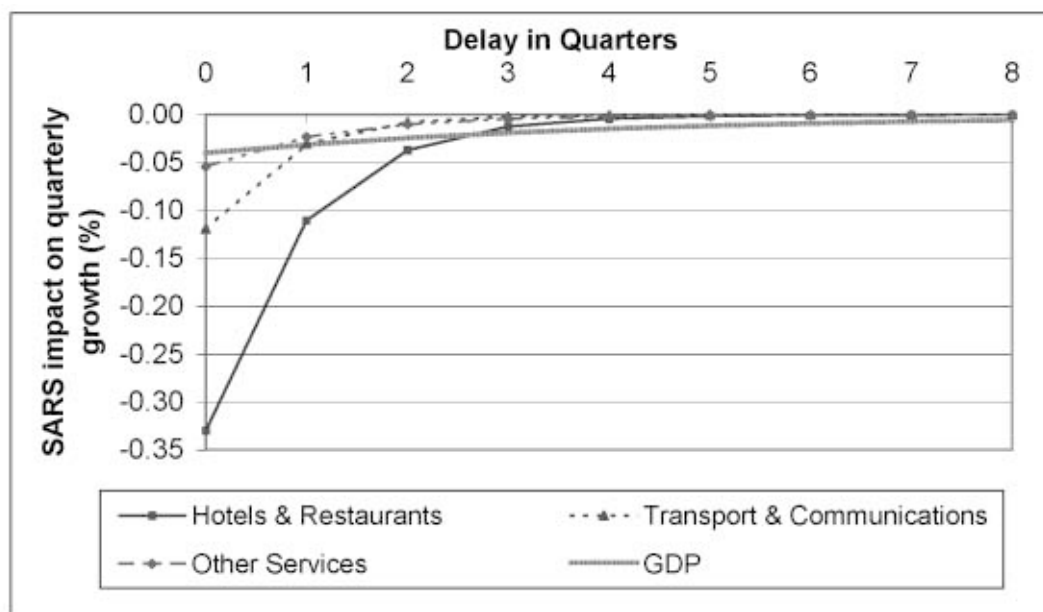
As we anticipated, the intervention analysis revealed that SARS had created a significant and persistent impact on the Singapore economy. The evidence suggests that although the SARS impact was greatest during the three months in the second quarter of 2003, its effects may not necessarily be short-lived. The figure above depicts the estimated dynamic effects of the SARS epidemic on the overall economy and badly hit sectors. Although SARS created a dent in the output of some other sectors as well, the estimated delayed effects on these sectors is not that significant. Each line in the graph traces the immediate — at quarter zero — as well as the spillover or delayed impact on the quarter-on-quarter growth of the relevant sector.

Not surprisingly, the immediate SARS impact on hotels and restaurants is the largest, followed by transport and communications and other services industries. The delayed

¹ The forecasts of real GDP and commerce sector growth for Q4, tagged at 4.5% and 5.5% respectively in year-on-year terms, are the median projections in the *MAS Survey of Professional Forecasters, Dec 2003*, which polled twenty two economists in late November. Forecasts of other variables were generated from the ESU's suite of models.

² The results we obtained through this approach are very similar to what we get if data up to only 2003Q3 were used with visitor arrivals representing the SARS impact. Total visitor arrivals, however, does not capture the drop in domestic demand due to SARS.

Immediate and Delayed Impact of SARS on Growth



effects on these sectors are consistent with the relatively slow recovery in visitor numbers and the gradual restoration of cancelled flights and business events. Except in the case of real GDP, the SARS impact peters out three quarters after the shock. Thus, we can expect the affected sectors to more or less recover completely from the outbreak by the end of 2004Q1, provided that both internal demand and visitor arrivals and expenditure recover fully.

The drop in real GDP in Q2 alone due to SARS is estimated at 17% on an annualized basis, compared to the actual decline of 9.8%. Translating this into year-on-year changes means that the entire contraction of 3.8% in Singapore's GDP from April to June can be accounted for by the SARS outbreak. Moreover, the delayed spillover effects are masked by the economy's rebound in the third quarter, which brought total output to slightly above its pre-SARS level by the end of September. In the absence of the epidemic, however, the level of GDP in the second half of 2003 would have been higher. For the year as a whole, economic growth could have been 2.5% stronger than the median forecast of 1% reported in the latest *MAS Survey of Professional Forecasters, December 2003*, which is also the ESU's best estimate at the moment.

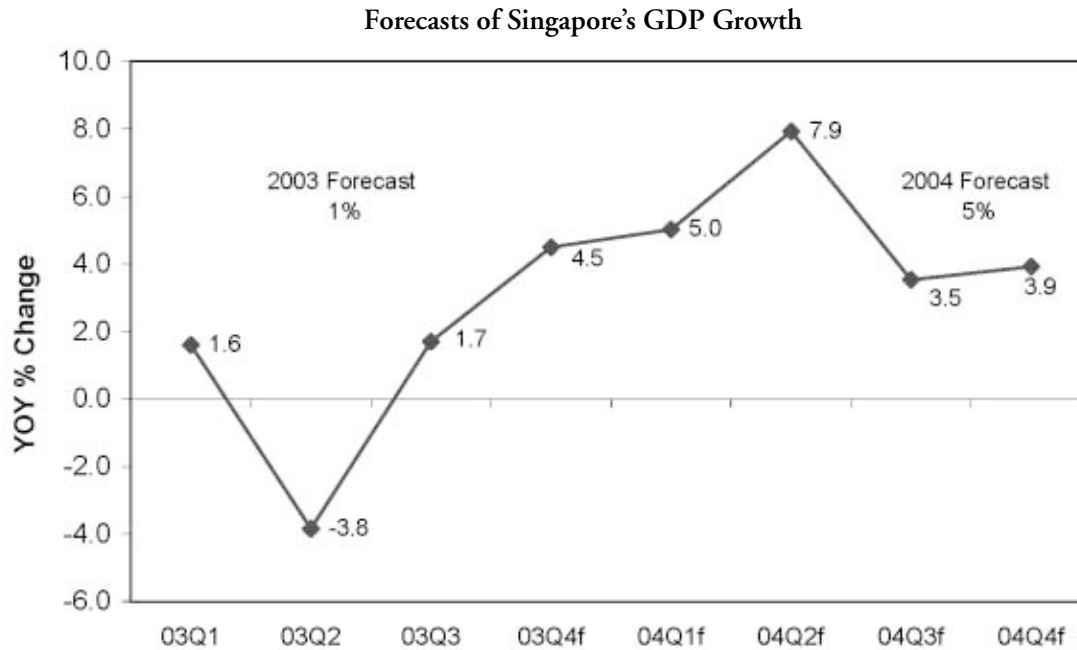
Our econometric estimate of the impact of SARS is substantially larger than that obtained by simply adding

up the negative percentage point contributions to GDP growth of services industries that were affected by the outbreak, which would imply that only two-thirds of the decline in second quarter GDP could be attributed to SARS. Our figure is also of the same order of magnitude as the comparable estimate from the Asian Development Bank. Based on counterfactual simulations from a global macroeconomic model, the ADB concluded that 3% of Singapore's GDP in 2003 will be lost to SARS (*Asian Development Outlook, 2003 Update*). Although it is difficult to be precise about the true economic impact of SARS in view of the complex effects involved, both our finding and that of the ADB imply that the ESU's forecast of 3.5-4.5% GDP growth made in January 2003 might have been quite reasonable had it not been for SARS.³

Economic Outlook for 2004: What If SARS Revisits?

There are grounds to believe that the Singapore economy will perform better in early 2004. Leading indicators of the global electronics cycle have risen more convincingly than at any time since the IT bubble burst in 2000. The US and Japanese economies have exhibited surprising strength in the second and third quarters of 2003, and this should spur growth in the other key trading partners of Singapore. The

³ *Forecasts for the Singapore Economy*, ISEAS Regional Outlook Forum, 7 January 2003 (available at <http://www.fas.nus.edu.sg/ecs/center/esu/>).



swift end to the large scale fighting in Iraq has also resolved a major source of uncertainty in the world economy and encouraged companies to start investing again in machinery and computers.

Singapore's economic performance during the later part of 2004 will be conditional on the sustainability of buoyant external conditions and the absence of further adverse shocks. Most analysts are sanguine about the economic future, with professional forecasters predicting that the US economy will expand by 4-4.5% in 2004 and the Semiconductor Industry Association (SIA) forecasting that global chip sales will grow by 19.4% next year. Confirming this rosy outlook, large chipmakers have announced plans to raise production capacity while semiconductor equipment manufacturers are anticipating an increase in sales of nearly 40% in 2004.

If these optimistic prognostications come to pass, Singapore's real GDP growth in 2004 may reach or even surpass the upper end of the government's preliminary forecast range of 3-5%. Given the current economic momentum and partly because of low base effects, growth is expected to be faster in the first half of 2004 compared to the second half (see the chart). The good news is that the improvement in the economy should feed through to the labour market after the usual lag of about half a year, so that the unemployment rate can be expected to come down gradually to 4.5-5% by the end of next year. In spite of this pickup in economic activity, the deflationary pressures generated by SARS in

2003 and excess capacity in the economy should cap CPI inflation at about 1% in 2004.

But what if there is a renewed outbreak of SARS? To answer this question, we work with the following assumptions: (i) SARS resurfaces in 2004Q1 and comes under control within the same quarter; (ii) its impact on the Singapore economy mimics that of the first wave of infection. Using our earlier estimates, we found that real GDP growth in the first quarter of 2004 would be cut sharply to 1.6% (from 5% if there were no SARS relapse). And in accordance with the delayed effects in the 2003 episode, growth in subsequent quarters would also be adversely affected, albeit to a progressively lesser extent. To sum up, if SARS revisits, the Singapore economy would grow by only 3% in 2004.

There are, however, two reasons why a second wave of SARS is unlikely to inflict as much damage on the economy as our estimates might suggest. First, governments around the world are now much better equipped than previously to deal with the disease after going through the harrowing experience of 2003. This means that any incipient outbreak is likely to be contained faster. Second, many of the preventive measures taken earlier this year remain in place; indeed, health monitoring systems have greatly improved in the wake of the first infection. Hence, our projection of GDP growth in 2004 under the SARS scenario is best thought of as the worst outcome in the event of another outbreak.



Welcome to the Department

Assoc Prof Aditya Goenka who joined as Visiting Associate Professor with effect from 15 August 2003. He obtained his Ph.D. from Cornell University and his areas of specialization are Economic Theory (General Equilibrium Theory), Macroeconomics (Endogenous Fluctuations), Market Microstructure, Monetary Economics and Corporate Finance.

Assoc Prof Jie Zhang who joined as Associate Professor with effect from 2 January 2004. He obtained his Ph.D. from the University of Western Ontario and his areas of specialization are Macroeconomics/Growth, Development Economics and Public Economics.



Assoc Prof Shandre Thangavelu

*Heartiest Congratulations
to Dr Shandre Thangavelu on his promotion to
Associate Professor with effect from
1 January 2004.*

Thank You and Best Wishes to the following staff who had left the Department

Prof Robert Owen as Visiting Senior Fellow on 25 September 2003
Dr Jesuthason Thampapillai as Senior Fellow on 19 December 2003
Dr Wang Jianguo as Assistant Professor on 31 December 2003
Assoc Prof Yangru Wu as Visiting Associate Professor on 31 December 2003

Assoc Prof Julian Wright

Julian Wright has been appointed as the Associate Editor of the journal, Information Economics and Policy, which is published by Elsevier. He is also appointed as part of the Scientific Committee for the January 2004 CEPR and IDEI Conference on the "Economics of Two-Sided Markets" in Toulouse, France. The other committee members are Mark Armstrong, Dennis Carlton, Michale Katz, Jean-Charles Rochet, Richard Schmalensee, and Jean Tirole.

Mark Armstrong of Nuffield College, Oxford University invited Julian Wright as an Official Visitor from 5-12 July 2003 to work on a joint research on two-sided markets. Nuffield College paid for his visit (airfare and accommodation).

The Industrial Organization Workshop organized by Julian Wright has 34 names on the mailing list, including several from Computer Science, Business School, SMU and NTU, plus a number of graduate students. They meet at noon on the first Monday of each month and each month someone discusses their research on a topic related to Industrial Organization. If anyone is interested in being on the mailing list, please email to Julian Wright at: ecsjkdw@nus.edu.sg.

DEPARTMENT OF ECONOMICS, NATIONAL UNIVERSITY OF SINGAPORE MARITIME PORT AUTHORITY NETWORK ECONOMICS CONSULTING GROUP JOINT WORKSHOPS

by Assoc Prof Julian Wright

The Department of Economics has attracted the leading maritime economists from around the world to come together for two events in early March 2004. On **March 5th and 6th** the University will hold a two-day workshop titled “*The Industrial Organisation of Shipping and Ports*”, which will be followed by a one-day executive seminar on “*Critical Issues Facing the Port and Shipping Industry in the 21st Century*” (**March 8th**). The second day of the workshop will be devoted to the topical issue of shipping conferences (which are under attack from policymakers in the U.S. and Europe), and

the implications for pricing (freight rates). Some of the other topics addressed include: port competition in China, maritime safety and accidents, port labour issues, the network economics of shipping, governance structure and port performance, and container port production efficiency. The events are sponsored by NUS, the Maritime Port Authority (MPA) and the Network Economics Consulting Group (NECG).

For those interested in early registration, please contact Mrs Annie Koh at ecskoha@nus.edu.sg.

GRADUATE SEMINAR

by Mr Kuban Harichandra, M.Soc.Sci. (Economics) student

The Graduate Seminar “Challenges to the Conduct of Monetary Policy” was presented by Dr Khor Hoe Ee from the Economic Policy Department of the Monetary Authority of Singapore (MAS). This presentation focused on Singapore’s monetary policy framework and policy responses to recent economic developments. Given Singapore’s small economy and openness to both trade and capital flows, monetary policy in Singapore has centred on the exchange rate since 1981; replacing the earlier view that exchange rate was an instrument for attaining export competitiveness. Singapore’s exchange rate system consist a hybrid of basket, band and crawl characteristics aimed at preserving the purchasing power of the Singaporean dollar and buffering it against volatility. In this regard, the MAS have embarked towards providing a greater level of transparency in its monetary policy conduct. Measures include a twice-yearly monetary policy statement, release of S\$ NEER, economic roundtable

meetings and briefings to media and private sector analysts. To a question of whether MAS could follow the highly transparent Bank of England monetary policy model, Dr Khor remarked that ‘whilst the exact trade weighted Singapore dollars is not revealed, market participants generally anticipate correctly MAS’s trading bands’. Dr Khor also highlighted the impact of SARS on Singapore’s monetary policy and outlined that expansionary fiscal policy like increased spending on transport (S\$73.5m) and tourism (S\$155m) industries combined with the Courage Fund (S\$14.8m) were the appropriate first-order responses. Before rounding off his presentation, Dr Khor challenged our graduate students in formalizing the future role of monetary policy in sustaining economic growth in Singapore while simultaneously ensuring that monetary policy is sufficiently per-emptive and balances its objective in an ever-changing environment.

ANNUAL GRADUATE SYMPOSIUM

by Amarendu Nandy, Research Scholar

The Annual Graduate Symposium, organized by the Economics Graduate Students' Society (EGSS) was held on October 8, 2003. The Society invited leading social security expert Mukul Asher, Professor at the Public Policy Programme (PPP) in the National University of Singapore, to speak on the social security arrangements in Singapore with particular reference to recent changes and controversies concerning the Central Provident Fund (CPF). The title for the discussion was "Financial Safety Nets in Singapore". The speaker gave a good overview of the social security system in

Singapore. He provided thought-provoking policy insights regarding the CPF system. The presentation was interesting and quite interactive. This was followed by a Q & A session where the speaker answered several queries from the participants. The Symposium was well attended by students and the faculty. Assoc Prof Habibullah Khan chaired the proceedings. The Symposium was very well received by all the participants. The need for more such interactive sessions was felt by the students.

THE SINGAPORE ECONOMIC REVIEW (SER)

The *Singapore Economic Review* is a biannual journal devoted to the publication of high-quality theoretical and empirical papers on all aspects of economics with a special emphasis on the economic problems related to Asian countries. Contents of the coming issue, Volume 49, No. 1 (April 2004), is appended below. For more information on submission of manuscripts and subscription to the journal, please visit the website at: <http://www.worldscinet.com/ser/ser.shtml>.

Contents of Volume 49, No. 1 (April 2004)

*Invited Eminent Paper Series – How Intra-Industry Trade Changed
Our Perception of the World Economy*

Peter J Lloyd

University of Melbourne, Australia

*Economics, Economists, and Behavioural Economics:
Some Issues of Choice*

Jack L Knetsch

Simon Fraser University, Canada

*Credit Rating and Bank Behaviour in India:
Possible Implications of the New Basel Accord*

D M Nachane

Indira Gandhi Institute of Development Research, India

and Saibal Ghosh

Reserve Bank of India

Empirical Evidence of Exchange Market Pressure in Singapore

Hiroya Akiba and Yukihiro Iida

Waseda University, Japan

On Singapore Dollar-U.S. Dollar and Purchasing Power Parity
Venus Khim-Sen Liew, Ahmad Zubaidi Baharumshah and Kian-Ping Lim
University Putra Malaysia

Stochastic Frontier Analysis of Singapore Manufacturing Industries

Soo-Wei Koh, Shahidur Rahman and G K Randolph Tan

Nanyang Technological University, Singapore

*Markets and Industry Section – Risk Measurement of Investments in the
Satellite Ring of a Core-Satellite Portfolio: Traditional versus Alternative Approaches*

Hilary Till

Premia Capital Management, LLC, USA

JOINT WORKSHOP WITH CHULALONGKORN UNIVERSITY

The Joint Workshop between the Department of Economics, National University of Singapore and the Faculty of Economics, Chulalongkorn University was held on 12 December 2003. Economists from both institutions addressed economic policies and their impacts on social welfare in their respective economies. The workshop also focused on macroeconomic management after the 1997 Asian financial crisis and issues relating to free trade areas and regional cooperation. Two guest speakers from Saitama University, Japan presented their papers on Multinationalization of Firms and Technology Transfer, and Institutional Dollarization of Asian Currencies. It was a fruitful workshop and hopefully faculty members from both institutions will engage in a variety of research projects. Selected papers from this workshop will be published in an edited book by World Scientific Publishing Pte Ltd.

Four senior administrative staff members from Chulalongkorn University had a study tour of NUS



Prof Åke Blomqvist (right), Head of Department exchanging gift with Prof Suthipand Chirathivat (left), Dean of the Faculty of Economics, Chulalongkorn University

organized by the International Relations Office. We would like to record our appreciation to Professor Liew Ah Choy, Director of the International Relations Office and his staff for meeting and organizing the study tour.

Thirty graduate students from Chulalongkorn University also came for this Joint Workshop. Our graduate students played host to them.

A brief write-up of Chulalongkorn University: Faculty members of Chulalongkorn University function as advisors to the government, including directly aiding the Prime Minister. Faculty members are frequently quoted in the popular press, and engage in a variety of research projects for government ministries, international organizations, and the private sector. Chulalongkorn is one of the most sought after institutes of higher learning in Thailand, allowing the Department to be selective in its choice of students. Graduates from this faculty and from all of Chulalongkorn hold positions of importance throughout Thai society.



Prof Åke Blomqvist thanking Dr Motoi Ihara (right) of Saitama University and Visiting Researcher at Chulalongkorn University for presenting his paper on Multinationalization of Firms and Technology Transfer: A Framework for Case Study

ECONOMICS EXECUTIVE PROGRAMME (EEP) WORKSHOPS

The Ministry of Foreign Affairs, Singapore and the Colombo Plan Secretariat sponsored a two-week Workshop organized by the EEP on *Economic Development Experience of Singapore* from 27 October to 6 November 2003. Twenty participants from member countries of Colombo Plan Secretariat attended the Workshop.

Another two-week Workshop sponsored by the Ministry of Foreign Affairs and the Japan International Cooperation Agency on *Contemporary Development in Banking and Finance* was held from 3-13 November 2003. Twenty-one members from Asia took part in this Workshop.



Participants of the Workshop

The EEP Workshop on *Regulation and Competition in the Economy* was held on 20 October 2003 at the Orchard Hotel. Speakers were from overseas and locals. They were Professor Colin Kirkpatrick, Head of the Institute of Development Planning and Management at the University of Manchester, U.K., Dr Robert Ian McEwin, Principal Economist, Market Analysis Division, Ministry of Trade and Industry, Singapore, Mr Euan Morton, Executive Director and Principal, Network Economics Consulting Group, Australia, Professor Parkash Chander, Assoc Prof Julian Wright, and Dr Chang Youngho, Department of Economics, NUS. The experts presented an overview on how regulation has worked in a market economy, reviewed how legislative framework could shape economic policy for



Participants of the Workshop

fair competition under deregulation and free trade agreements, and the actual performance of competition policy in two recently deregulated markets – electricity and telecommunications.

On 13 December 2003, the EEP held a Workshop on *The Thai Economy: Amazing or a Maze?* at the Orchard Hotel. Expertise from academics, industry practitioners and research associates were Assoc Prof Suthiphand Chirathivat, Dean, Faculty of Economics, Chulalongkorn University, Assoc Prof Paitoon Wiboonchutikula, Faculty of Economics, Chulalongkorn University, Ms Low Ping Yee, Economist, United Overseas Bank Group Economic Research, Dr Sukulrat Montreevat, Institute of Southeast Asian Studies, Professor Dodo Thampapillai and Assoc Prof Habibullah Khan, Department of Economics, National University of Singapore. The topics discussed were: Thailand's Economic Outlook in the Changing World Conditions; Is the Thai Economic Recovery for Real; Thailand's International Economic Policy: New Issues and Challenges; Dual Track Policy: New Paradigm for Thai Economy; The Natural Environment: A Potential Vehicle to Enhance the Thai Economy; and Tourism in Thailand: Current Trends and Future Prospects. This Workshop attracted working participants from a wide spectrum of the industry.

STAFF PUBLICATIONS

QUARTERLY GDP ESTIMATES FOR CHINA AND ASEAN4 WITH A FORECAST EVALUATION

by Tilak Abeyasinghe and Rajaguru Gulasekaran
Journal of Forecasting (forthcoming)

The growing affluence of the East and Southeast Asian economies has come about through a substantial increase in their economic links with the rest of the world, the OECD economies in particular. Econometric studies that try to quantify these links face a severe shortage of high frequency time series data for China and the group of ASEAN4 (Indonesia, Malaysia, Philippines and Thailand). In this exercise we provide quarterly real GDP estimates for these countries derived by applying the Chow-Lin related series technique to annual real GDP series. The quality of the disaggregated series is evaluated through a number of indirect methods. Some potential problems of using readily available univariate disaggregation techniques are also highlighted.

WELFARE IMPLICATIONS OF RTAs WITHIN THE WTO SYSTEM IN THE PRESENCE OF FDI

by Jung Hur and Donghyun Park
Open Economies Review (forthcoming)

We examine the welfare implications of the two major types of regional trade agreements (RTAs) - free trade agreements (FTAs) and customs unions (CUs) - within the WTO system in the presence of FDI. To do so, we analyze multilateral tariff cooperation in the context of two types of WTO regimes: a pure WTO regime without any RTAs and a modified WTO regime in which RTAs coexist with the multilateral framework. Our main finding is that in the presence of significant foreign ownership, RTAs within a multilateral system do not raise the national welfare of its members, thereby weakening the incentives of countries to form RTAs.

A CROSS-COUNTRY COMPARISON OF THE CYCLICALITY OF REAL WAGES

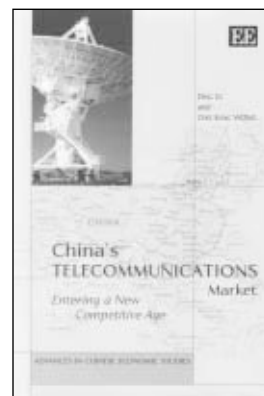
by Liu Haoming
Canadian Journal of Economics, Vol. 36, No. 1, November 2003, pp. 923-948

This paper contains the first cross-country comparison of the cyclical behaviour of real wages using microdata. After controlling for changes in labour quality, I find that real wages are strongly procyclical in Canada, the United Kingdom, and the United States. In contrast, the cyclical behaviour of government-published real aggregate hourly wages varies substantially across these three countries. The disparity suggests that a direct comparison of the cyclical behaviour of real aggregate wages is misleading. Finally, I show that variations in labour quality also bias the cross-country correlation of several key labour market variables.

CHINA'S TELECOMMUNICATIONS MARKET: ENTERING A NEW COMPETITIVE AGE

by Lu Ding and Chee Kong Wong
Edward Elgar, January 2004

Before the 1990s, China's telecommunications sector was a lacklustre monopoly featured by poor-quality service and inadequate capacity. Today the country boasts a dynamic telecommunications industry with the world's largest communications network and user-base with over 460 million telephone subscribers. China's accession to the WTO in 2001 has opened this huge developing telecommunications market to foreign participation and investment.



The authors examine the singularity of the Chinese experience in building up its extensive telecommunications network in merely a decade, by reviewing China's national industrial policies and institutional reforms within the industry. The reader will find in this volume a unique and in-depth analysis of the interplay between political and economic forces amidst the industry's structural overhaul and regulatory reforms. The accounts of industrial features and market conditions are enriched with up-to-date data, which are extremely useful for appreciating the development and prospects for this fast-growing market, set against the backdrop of China's accession to the WTO.

Scholars of China or Asian studies and researchers of information-communications industry and Asian/China studies will find this work of great interest, as will governmental policymakers, both in China and beyond. For foreign business practitioners eyeing this market, this volume provides a helpful guide to understand China's various interests and public welfare considerations that motivate changes in policies towards foreign investment and participation.

PRICE VERSUS QUANTITY REVISITED

by Sougata Poddar, Luca Lambertini and Dan Sasak
Economia Politica, Vol. 20, December 2003

We revisit Singh and Vives (1984) and Boyer and Moreaux (1987) to inspect the age-old problem of endogenous choices between price- and quantity-setting behaviour in an oligopolistic market. We establish that, when there is room for cost sharing between the firms (as is often the case in joint ventures in product development or shared infrastructural utilities), the well-established result by Singh and Vives (1984) that firms

endogenously choose quantity (resp., price) as a dominant strategy when their products are substitutes (resp., complements) may not be the only equilibrium outcome. In particular, the procedural order between firms' cost sharing decisions and their marketing decisions makes a key difference in the resulting equilibrium profiles.

EXCESS CAPACITY: A NOTE

by Sougata Poddar

Keio Economic Studies, Vol. 40, No. 1, 2003

In a two period model of strategic entry deterrence where the incumbent firm moves before the entrant by installing capacity for production, Dixit (1980) argued that in a (perfect) equilibrium excess capacity would not be observed, contradicting Spence's (1977) result on the same issue. In this note, we show that Dixit's result may not always remain true when we allow for demand uncertainty.

MODELLING TRANSBOUNDARY AIR POLLUTION IN SOUTHEAST ASIA: POLICY REGIME AND THE ROLE OF STAKEHOLDERS

by Asif Iqbal Siddiqui and Euston Quah

Environment and Planning: Series A, U.K. (forthcoming)

Transboundary air pollution in Southeast Asia, popularly known as the 'haze', is a recent but significant environmental crisis in Southeast Asia, which is the result of Indonesian forest-fires. The paper identifies that the fundamental motivation behind the practice of clearing forestland with fire by the polluters is economic in nature. It then argues that the major victims of the forest fires and haze are likely to play a vital role in the solution of the problem, at least by motivating the polluters, even if they cannot force them not to pollute. Thus, the polluters and victims can be regarded as the 'stakeholders' who would take interest and participate actively in the policy regime. A regional model is developed to analyze and specifically to take account of the states responsible for and affected by the haze. The problem of the affected resident population, the forest industries and the role of the regional government are modeled. The model also highlights the importance of key variables in determining the severity of the haze, namely the magnitude of the investment in the fire fighting, risk mitigation and scale of fire operations; including forecasting weather conditions. The paper argues that optimal policy options should simultaneously satisfy the economic needs of the key stakeholders to be effective.

TRUST, THE INTERNET, AND THE DIGITAL DIVIDE

by Jason Shachat, Hai Huang, Claudia Keser and Jonathan Leland
IBM Systems Journal, Vol. 42, No. 3, 2003, pp. 507-518

The Internet is expected to have a positive impact on economic growth. In this paper, we examine how differences in willingness to trust influence Internet adoption rates across countries. We show that trust has a statistically significant influence on levels of Internet penetration across countries. We also show that

increasing Internet adoption through policies to promote trust will have larger impacts on high than low trust countries — differences in trust may produce a *digital divide* among nations. Since low trust countries tend to be low or middle income countries, this digital divide between countries may translate into a *developmental divide*.

DO WE DETECT AND EXPLOIT MIXED STRATEGY PLAY BY OPPONENTS?

by Jason Shachat and J. Todd Swarthout

Mathematical Methods of Operations Research (forthcoming)

We conducted an experiment in which each subject repeatedly played a game with a unique Nash equilibrium in mixed strategies against some computer-implemented mixed strategy. The results indicate subjects are successful at detecting and exploiting deviations from Nash equilibrium. However, there is heterogeneity in subject behavior and performance. We present a one variable model of dynamic random belief formation which rationalizes observed heterogeneity and other features of the data.

HIDE AND SEEK IN ARIZONA

by Jason Shachat and Robert Rosenthal and Mark Walker

International Journal of Game Theory (forthcoming)

Laboratory subjects repeatedly played one of two variations of a simple two-person zero-sum game of "hide and seek." Three puzzling departures from the prescriptions of equilibrium theory are found in the data: an asymmetry related to the player's role in the game; an asymmetry across the game variations; and positive serial correlation in subjects' play. Possible explanations for these departures are considered.

IS THERE AN EXPORT OR IMPORT-LED PRODUCTIVITY GROWTH IN RAPIDLY DEVELOPING ASIAN COUNTRIES? A MULTIVARIATE VAR ANALYSIS

by Shandre Mugan Thangavelu and Gulasekaran Rajaguru

Applied Economics (forthcoming)

In contrast to cross-country studies, we investigate the relationships between trade and labour productivity for 9 rapidly developing Asian countries in a time-series framework using a Vector Error-Correction Model. Independent tests on the long-run and short-run relationship between trade variables of exports and imports on productivity are conducted. The results suggest that trade has important impact on productivity and output growth in the economy, however it is imports that provides the important "virtuous" link between trade and output growth. The results indicate that exports and imports have qualitatively different impacts on labour productivity. The long-run result shows that there is no causal effect from exports to labour productivity growth for Hong Kong, Indonesia, Japan, Taiwan and Thailand; thereby suggesting that there is no export-led productivity growth in these countries. However, we do find significant causal effects from imports to productivity growth,

suggesting import-led productivity growth in India, Indonesia, Malaysia, Philippines, Singapore, and Taiwan. In addition, the results indicate that imports tend to have greater positive

THE ROLE OF UNITED CHARITIES IN FUNDRAISING: THE CASE OF SINGAPORE

by Chua, Vincent C. H. and Chung Ming Wong, *Annals of Public and Cooperative Economics*, Vol. 74, No. 3, September 2003, pp. 433-463

Theory suggests that a united charity helps to economize on fundraising costs by reducing competition for donations among member charities. However, donors often cannot control the allocation of their donations, and charities may dislike the monitoring of their activities. This paper examines these and other issues relating to the Community Chest of Singapore. The results, based on analysis of financial position and fundraising costs of a large number of charities, suggest that the Community Chest does possess important fundraising advantages. Thus charities in financial difficulties or in need of funds for additional programs tend to seek membership. However, for organizations that value their autonomy and independence, and that are able to achieve low fundraising costs tend to remain as non-members. Thus a monopoly agency raising funds for all charities in the future is unlikely in the case of Singapore.

EXISTENCE OF TRADING NASH EQUILIBRIUM IN TARIFF RETALIATION MODELS

by Wong Siu Kee
Mathematical Social Sciences (forthcoming)

The paper considers a tariff retaliation model in which two countries set tariffs strategically in an exchange economy. In the classes of homothetic and quasi-linear preferences, I find conditions that guarantee existence of a trading Nash equilibrium. These conditions imply that the offer curves of the countries are convex to the origin, and thus the best response function of each country is continuous. An example is also constructed to show that a trading Nash equilibrium may not exist in general.

THE DETERMINANTS OF OPTIMAL INTERCHANGE FEES IN PAYMENT SYSTEMS

by Julian Wright
Journal of Industrial Economics (forthcoming)

This paper presents a model of a card payment system as a two-sided market that allows for partial participation by heterogeneous consumers and merchants. Taking into account the strategic effects arising from competition between merchants, the model is used to characterize the optimal structure of fees between those charged to cardholders and those charged to merchants, and more specifically the level of the interchange fee that banks charge each other. The results modify the existing characterizations of the interchange fee, and explain the source of potential deviations between the privately and socially optimal level of the fee.

OPTIMAL CARD PAYMENT SYSTEMS

by Julian Wright
European Economic Review, 2003, Vol. 47(4), pp. 587-612 (Lead article)

This paper presents a model of a card payment system to address the pricing and rules that govern such systems. It evaluates the social optimality of privately set interchange fees and the adoption of a rule by payment systems to prevent merchants surcharging for card transactions using two extremes of merchant pricing – monopolistic pricing and perfect competition. Both types of merchant pricing constrain the ability of card schemes to use interchange fees and the no-surcharge rule in anticompetitive ways, although for quite different reasons. The positive role of the no-surcharge rule in preventing excessive merchant surcharging is also highlighted.

PRICING IN DEBIT AND CREDIT CARD SCHEMES

by Julian Wright
Economics Letters, 2003, Vol. 80(3), pp. 305-309

This paper presents a model of a debit or credit card payment scheme, providing a simple determination of the socially optimal structure of fees between those charged to cardholders and those charged to merchants.

STAY IN TOUCH

We would like to express our sincere appreciation to all those who have contributed to this issue of the Newsletter.

We welcome your contributions on teaching, research and learning topics, as well as feedback on this issue. Please write to: ecskoha@nus.edu.sg or ecssec@nus.edu.sg

Do we have your correct name and address? Would you like us to send a copy of the Newsletter to your friends/colleagues? Please fill in the form below and fax (67752646) to:

Mrs Annie Koh
Economics Newsletter
Department of Economics
National University of Singapore
AS2, 1 Arts Link, Singapore 117570

Change of address:

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CONFERENCES

Conferences participation by our staff from July to December 2003 are given below:

Staff Name	Conference Title	Title of Paper	Venue	Date
Dr Emily Cremers	Western Economics Association	Overlapping Generations & the Dynamic Gains from Trade	Denver, Colorado USA	11 July-15 July
Assoc Prof Zhang Zhaoyong	International Congress on Modelling and Simulation (MODSIM03)	Shocking Aspects of East Asian Monetary Integration: an OCA approach	Australia	14 July-17 July
Assoc Prof Lu Ding	Singapore Globalization & China Reform	Growth Quality of China	Shanghai, China	1 Aug-2 Aug
Dr Shin Jang-Sup	UNDP/UM/MIER Conference on Investment, Energy and Environmental Services at Cancun	Investment Policies under WTO: The East Asian Experience and Implications	Kuala Lumpur, Malaysia	7 Aug-8 Aug
Dr Sougata Poddar	Hawaii International Conference on Business	On Software Piracy	Honolulu, Hawaii, USA	18 Aug-21 Aug
Dr Wong Wei Kang	58 th European Meeting of the Econometric Society (ESEM)	Economic Growth: A Channel Accounting Exercise	Stockholm, Sweden	18 Aug-25 Aug
Dr Jung Hur	18 th Annual Congress of the European Economic Association (EEA)	On the Explanation of Regionalism waves	Stockholm, Sweden	19 Aug-25 Aug
Dr Cheolbeom Park	18 th Congress of the European Economic Association	Rational Beliefs or Distorted Beliefs: Equity Premium Puzzle and Micro Survey Data	Stockholm, Sweden	19 Aug-26 Aug
Assoc Prof Jose Tongzon	ASEAN Roundtable 2003: Roadmap to an ASEAN Economic Community	The Role of AFTA in an ASEAN Economic Community	Singapore	20 Aug-21 Aug
Dr Chang Youngho	International Conference on "Energy Market Reform: Issues and Problems"	Efficiency and Deregulation of the Electricity Market in Singapore	Hong Kong	23 Aug-27 Aug
Dr Yohanes Eko Riyanto	30 th Annual Conference of the European Association for Research in Industrial Economics	Tariff Policy and the Exhaustion of Intellectual Property Rights in the Presence of Parallel	Helsinki, Finland	24 Aug-27 Aug
Dr Jung Hur	30 th Annual Conference of the European Association for Research in Industrial Economics	Wage Determination and the Incentive to Commit to a Free Trade Agreement	Helsinki, Finland	24 Aug-26 Aug
Dr Sougata Poddar	European Association for Research in Industrial Economics (EARIE 2003)	Retail Software Piracy when Piracy is Costly	Helsinki, Finland	24 Aug-26 Aug
Assoc Prof Jose Tongzon	The International Association of Maritime Economists Annual Conference 2003	Port Choice in a Competitive Environment: From The Shipping Lines' Perspective	Busan, Korea	3 Sep - 5 Sep

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Assoc Prof Wong Wing Keung	Scientific Conference on International & Development Economics in honor of Henry Wan	Money, Interest Rate and Stock Prices: New evidence from Singapore and USA	Cornell University, USA	4 Sep-10 Sep
Prof Robert Frank Owen	13 th Annual "SESAME" French National Economics Conference	Economic Globalization; Conceptual Issues includes material from RIE paper "Sunk Costs, Market Access, Economic Integration and Welfare"	University of CAEN, France	4 Sep-11 Sep
Dr Lin Mau-Ting	35 th Annual Conference of Money, Macro, and Finance Research Group	Measuring the effect of money: test, estimation and identification	University of Cambridge, UK	10 Sep-12 Sep
Dr Shin Jang-Sup	Economics for the Future	The Future of Development Economics: A Methodological Agenda	Cambridge, UK	18 Sep-21 Sep
Dr Kang Chang Hui	The 8 th Annual Meetings of the Society of Labour Economics	Union Wage Effect: New Evidence from Matched Employee data	Toronto, Canada	26 Sep-27 Sep
Assoc Prof Euston Quah	32nd Conference of Economists	The Internationalisation of Environmental Capital with special reference to Indonesia	Canberra, Australia	29 Sept-1 Oct
Dr Albert Hu Guangzhou	Fourth (4 th) International Conference on the Chinese Economy: The efficiency of China's Economic Policy	China's Technology Parks and Economic Reform	France	23 Oct-24 Oct
Prof Parkash Chander	A Life in Public Economics	Efficiency or Inefficiency: Issues in Coalition Formation Theory	CORE, Belgium	23 Oct-24 Oct
Assoc Prof Jason Shachat	North American Meetings of the Economic Science Association	Procuring Commodities RFQ or Revenue Auction	Arizona, USA	29 Oct-4 Nov
Assoc Prof Lu Ding	The World and China at a time of Drastic Changes – Towards the construction of a New and Modern Sinology	Key Elements in the Study of China's Economy: Institutions, Geography, and Globalization	Nagoya, Japan	31 Oct-2 Nov
Prof Åke G. Blomqvist	The International Conference on Generational Change & China's Future	Social Policy Reform in China: "The challenges of transition"	Kaohsiung, Taiwan	21 Nov-22 Nov
Assoc Prof Jose Tongzon	1. ASEAN + 3: Perspectives of Regional Integration in East Asia and the Lessons from Europe 2. Vision of Northeast Asian Free Trade Harbour Zone for 21 st Century	1. ASEAN + 3 And ASEAN Integration 2. The Development of Free Trade Harbour Zone: The Case of Singapore	South Korea	1 Dec-6 Dec
Assoc Prof Wong Wing Keung	Third International Conference on Electronic Business	Measuring Determinants of customer Interactions with Internet Banking	Marriot Hotel, Singapore	9 Dec-13 Dec
Prof Åke G. Blomqvist	28 th Conference of the Federation of ASEAN Economic Associations (FAEA)	ASEAN'S Competitiveness in Services	Batam, Indonesia	19 Dec-21 Dec

STAFF SEMINARS

Staff Seminars presented by our staff and other economists from August to November 2003

Presenter	Topic	Date
Sowmya Varadharajan, Cornell University	The Pitfalls of Proxies of Power in Intra-household Analysis	5 Aug 03
Professor Parkash Chander, Dept of Economics, NUS	The γ -Core and Coalition Formation	7 Aug 03
Professor Cheng Hsiao, Dept of Economics, University of Southern California	Evaluating the Effectiveness of Washington State Repeated Job Search Services on the Employment Rate of Prime-age Female Welfare Recipients	8 Aug 03
Dr Wong Siu Kee, Dept of Economics, NUS	Factor Substitution and Factor Intensities in Models with More Factors than Goods	12 Aug 03
Dr Ho Kong Weng, Dept of Economics, NUS	Service Links and Wage Inequality	14 Aug 03
Professor M. Ali Khan, Johns Hopkins University	Choice of Technique in the Robinson-Solow-Srinivasan Model (joint seminar with IMS)	18 Aug 03
A/P Ziqi Liao, Hong Kong Baptist University	Customer Interactions with Internet Banking	19 Aug 03
Dr Albert G. Z. Hu, Dept of Economics, NUS	R&D and Technology Transfer: Firm-level Evidence from Chinese Industry	26 Aug 03
Dr Mau-Ting Lin, Dept of Economics, NUS	Long-Run Identification When the Long-Run Proposition is Over-Identifying	28 Aug 03
Professor Partha Sen, Delhi School of Economics	Population Growth and Welfare in a Two-Sector Overlapping Generations Model	4 Sep 03
Dr Cheolsung Park, Dept of Economics, NUS	Household Bargaining and Children's Education	11 Sep 03
Visiting Professor Gershon Alperovich, Dept of Economics, NUS	Structure and Changes in the Location of Non-Residential Activities in Urban Areas	18 Sep 03
Professor Aman Agarwal, Director, IIF Business School, GGS Indraprastha University, Delhi	Savings Concept in Derivative Instrument	22 Sep 03
Visiting Assoc Prof Yangru Wu, Dept of Economics, NUS	Optimal Transaction Filters Under Transitory Trading Opportunities: Theory and Empirical Illustration	25 Sep 03
Dr Iris Claus, The Treasury and Victoria University of Wellington	The quantitative effects of bank lending	30 Sep 03
Dr Robert Owen, Visiting Senior Fellow, Dept of Economics, NUS	Sunk Costs and Economic Methodology	30 Sep 03
Assoc Prof Jason Shachat, Dept of Economics, NUS	Do We Detect and Exploit Mixed Strategy Play by Opponents?	9 Oct 03
Assoc Prof Shreekant Gupta, Delhi School of Economics, University of Delhi	Resource Use Efficiency of US Electricity Generating Plants During the SO ₂ Trading Regime: A Distance Function Approach	10 Oct 03
Dr Eran Binenbaum, School of Economics, University of Adelaide	The Intellectual Property Strategy of International Agricultural Research Centres	14 Oct 03
Dr Huang Fali, School of Economics and Social Sciences, SMU	Social Trust, Cooperation, and Human Capital	16 Oct 03
Dr Jung Hur, Dept of Economics, NUS	On the Explanation of Regionalism Waves	21 Oct 03
Dr Yohanes Eko Riyanto, Dept of Economics, NUS	Tunneling and Propping: A Justification for Pyramidal Ownership	30 Oct 03
Dr Cheolbeom Park, Dept of Economics, NUS	The Predictability of the Dividend-Price Ratio When Dividends Have Long Memory	4 Nov 03
Dr Chang Pao-Li, School of Economics and Social Sciences, SMU	The Evolution and Utilization of the GATT/WTO Dispute Settlement Mechanism	6 Nov 03
Professor Basant K. Kapur, Dept of Economics, NUS	Non-Homothetic Tastes, Productivity Growth Differentials, and Structural Change: An Endogenous Growth Model	11 Nov 03
Dr Peter Nicholas Kriz, School of Economics and Social Sciences, SMU	Optimal Targeting Regimes for the Small Open Economy: Policy Implications for Integrated Globalization	13 Nov 03
Dr Shin Jang-Sup, Dept of Economics, NUS	The Future of Development Economics: A Methodological Agenda	18 Nov 03

ACTIVITIES REPORT: ECONOMICS SOCIETY (ENS)



About Economics Society:

Used to be known as the Economics and Statistics Society, ENS is one of the longest standing society in National University of Singapore, NUS.

Since the separation of the Statistics Department now relocated in the Science Faculty, the society is since known as the Economics Society, organizing activities for the well being of the student population taking economics modules.

This coming semester, the Society has a range of activities catering to the well being of students taking economics modules. Examples of such activities are 2nd hand textbook sales, organized talks by leading entrepreneurs pertaining to economics topics and games/competitions targeted at honing practical skills (such as funds management), just to name a few of the society's activities.

Interested in the coming activities or in joining our big family? Do let us know! Drop us an email @ nus_ens@yahoo.com.sg, we'll take care of your interests!

Like to find out more? The following are more information about some of our upcoming events.

National Economic and Fund Management Quiz 2003/2004



Guest of Honour Mr Douglas Foo

The National Economic and Fund Management Quiz (NEFMQ) is a prestigious, nation-wide event organized annually by the Economics Society (ENS), National University of Singapore. It seeks to promote greater awareness and interest in Economics among pre-University students and serves to provide recognition for students proficient in the subject. Started in 1991, it has received resounding response from the students and sponsors. Since the year 2000, the event has been proudly sponsored by Government of Singapore Investment Corporation (GIC).

NEFMQ is a series of events, comprising of a National Economics Essay Writing Competition and the Quiz itself. Last Year we had a successful event held in July 2003. Graced by our guest-of-honour Mr Douglas Foo, CEO of APEX-PAL, the homegrown company behind the Sakae Sushi and Crepes & Cream chains, the quiz is hotly contested by our 4 finalist junior colleges: Anderson Junior College, Hwa Chong Junior College, Temasek Junior College and Raffles Junior College. The event was eventually won by a jubilant Raffles Junior College, winning back the trophy from Hwa Chong Junior College, the previous year's winners.

For the year 2004, the Quiz will encompass a preliminary that is based on multiple choice questions, a semi-final in the form of debate, and the finals that consist of both multiple choice questions and a presentation. The contestants are tested on both economic concepts and current economic issues. Only the top four teams will compete in the finals for the coveted championship.

NEFMQ is a meaningful and enriching event not to be missed!



RJC, the eventual winners

Bazaar 2004: *Ens@ e Frontier*

The ENS annual bazaar provides society members a chance to venture beyond the mundane way of campus life into the vibrant commercial world. Society members are involved in the planning, coordination and execution of the entire event which helps build up camaraderie within the society.

This year ENS will hold the annual event at the science faculty, outside lecture theatre 27 on the 26th and 27th of January 2004. Being the 1st bazaar after Chinese new year, We will like to entice you with our bargain prices and wide assortment of goods. So what are you waiting for? Come on down and join us @ the frontier!

Talks and skill-learning games

Yearning for more? ENS's Talks and Seminar Committee organizes talks and seminars to enrich the university life of the NUS community. Students benefit from the seminars by learning finance-managing skills from exciting games like **Cashflow** and **Financial Quotient**, facilitated by individuals in the financial sector, and gain wider exposure to the business world in ENS's new annual talk **Economics Sense**, where leading entrepreneurs will be invited.

Had a taste of the things to come from ENS? Interested? Once again, do feel free to let us know at nus_ens@yahoo.com.sg, we'll keep you informed!