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A magazine about contemporary economic issues for everyone

EcoNZ@Otago

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INSIDE THIS ISSUE

FROM THE EDITOR

Welcome to Issue 17 of *EcoNZ@Otago*!

As most readers know already, *EcoNZ@Otago* is a magazine about contemporary economic issues, published by the University of Otago's Department of Economics.

The contents of the previous 16 issues of *EcoNZ@Otago* are listed at the back of this issue, and single issues are available on request (our addresses are below).

If there are any economic issues that you would like examined in a future issue of *EcoNZ@Otago*, then please email your suggestions to econz@otago.ac.nz.

Or you can write to *EcoNZ@Otago*, Department of Economics, University of Otago, PO Box 56, Dunedin.

This is the first issue since Paul Hansen handed over the editor's baton. The magazine flourished under Paul's guidance – both readers and authors greatly benefited from his astute editorship and design improvements.

The Department of Economics would like to thank Paul for his efforts.

Niven Winchester

You're reffing joking! Are football referees really biased and inconsistent?

Stephen Dobson
<sdobson@business.otago.ac.nz>

IN PROFESSIONAL team sports with a high public profile, including football (soccer), disciplinary transgressions by players and sanctions taken by referees provide a rich source of subject material for debate among pundits, journalists and the general public. Although newspaper and television pundits routinely and piously deplore incidents involving foul play or physical confrontation, there is no doubt that a violent incident, immediately followed by the referee's theatrical action of brandishing a yellow or red card in the direction of the miscreant, makes an important contribution to the popular appeal of the football match as a spectacle.

Artwork produced by Taarati Taiaroa-Smithies

Due to the ever-increasing scope of television coverage of football especially at the highest level, together with improvements in video technology, the actions of players and referees have never been more keenly and intensely scrutinised than they are in the modern-day game (witness Zidane's dismissal in the 2006 World Cup final).

In sporting terms, the margins separating success from failure can be slender, and often depend ultimately on split-second decisions taken by referees and players in the heat of battle. Yet the financial implications of success or failure for individual football clubs and their players can be huge. The football authorities are under intense pressure from all sides to take steps to ensure that refereeing decisions are as fair, consistent and accurate as is humanly possible. Bearing all of these considerations in mind, it is perhaps surprising that little is known about the incidence (or frequency) of disciplinary sanction in professional sports.

In an attempt to learn more we carried out a statistical analysis of patterns in the incidence of disciplinary sanction taken against players in English professional football's highest division, the Premier League, over a seven-year period from 1996 to 2003.

Sources of home team bias and inconsistency in refereeing standards

The statistical analysis addresses several questions concerning possible sources of inconsistency and home team bias on the part of referees. Among the hypotheses investigated are:

- A home advantage hypothesis – that the tendency for away teams to incur more disciplinary points than home teams is solely a corollary of home advantage, or the tendency for home teams to win more often than away teams.
- A refereeing consistency hypothesis – that the propensity to take disciplinary action does not vary between referees.
- A time consistency hypothesis – that the overall incidence of disciplinary sanction is stable over time and unaffected by changes to the content or interpretation of the rules.

The following questions are also examined in the course of the analysis:

- Does the average rate of disciplinary sanction against each team depend upon which team is the favourite and which is the underdog?
- Does it depend upon whether the match itself is competitive (between two evenly balanced teams) or uncompetitive?
- Does it depend upon whether end-of-season outcomes are at stake for either team?
- Is it affected by the stadium audience, and does it depend upon whether the match is broadcast live on TV?

Explaining the incidence of disciplinary sanction

Our dependent variables (the ones we are trying to explain) are the total number of disciplinary 'points' incurred by the home and away teams in each match.

We calculate the disciplinary points by awarding one point for a yellow card and two for a red card.[1] Table 1 shows the frequency distribution for the number of disciplinary points incurred by the home and away teams in the 2,660 Premier League matches during our sample period. For example, there were 182 matches in which neither side incurred any disciplinary points, 235 matches in which the home team received no disciplinary points but the away team incurred one point, and so on.

Table 1: Frequency distribution for the number of disciplinary points

	Away team						
Home team	*0*	*1*	*2*	*3*	*4*	*5+*	*Total*
0	182	235	141	84	45	18	705
1	104	244	238	137	66	49	838
2	65	150	140	121	51	57	584
3	17	71	92	73	48	34	335
4	4	18	35	42	18	16	133
5+	2	7	17	20	10	9	65
Total	374	725	663	477	238	183	2660

[1] A yellow card, also known as a booking or caution, is awarded for less serious transgressions. There is no further punishment within the match, unless the player commits a second similar offence, in which case a red card is awarded and the player is expelled for the rest of the match (with no replacement permitted, so the team completes the match one player short). A red card, also known as a sending-off or dismissal, is awarded for more serious offences, and results in immediate expulsion (again, with no replacement permitted). After the match, a red card leads to a suspension, preventing the player from appearing in either one, two or three of his team's next scheduled matches. A player who accumulates five yellow cards in different matches within the same season also receives a suspension.

Table 2: Total disciplinary points awarded per match, by referee

Referee	*Matches*	*Disciplinary points awarded*			*Referee*	*Matches*	*Disciplinary points awarded*		
		Home team	Away team	Total			Home team	Away team	Total
Reed	85	1.788	2.753	4.541	Bennett	68	1.603	1.853	3.456
Willard	60	1.900	2.350	4.250	Barry	117	1.385	2.060	3.444
Barber	147	1.728	2.463	4.190	Jones	112	1.411	1.991	3.402
Riley	131	1.626	2.511	4.137	Ashby	33	1.212	2.152	3.364
Harris	52	1.750	2.327	4.077	Wilkie	81	1.358	1.975	3.333
Knight	41	1.829	2.171	4.000	Dunn	136	1.368	1.956	3.324
Styles	56	1.929	2.018	3.946	Elleray	129	1.295	1.984	3.279
Rennie	94	1.819	2.096	3.915	Winter	143	1.231	1.979	3.210
Dean	54	1.685	2.111	3.796	Gallagher	122	1.262	1.918	3.180
Wilkes	30	1.400	2.333	3.733	Halsey	74	1.338	1.730	3.068
D'urso	85	1.624	2.094	3.718	Alcock	78	1.000	2.026	3.026
Poll	160	1.619	2.069	3.688	Wiley	90	1.433	1.578	3.011
Bodenham	44	1.455	2.045	3.500	Durkin	145	1.248	1.469	2.717
Lodge	102	1.392	2.108	3.500	Burge	57	0.877	1.649	2.526

Source: The Football Association

In our statistical models, the number of disciplinary points that the home and away teams can expect to incur in each match is conditional upon a number of factors that vary from match to match. A lack of space prevents discussion of each of these factors. Instead, we focus on the role of the referee and summarise the other results below. Inconsistency in the standards applied by different referees is among the most frequent causes of complaint from football managers, players, supporters and media pundits.

Table 2 summarises the average numbers of disciplinary points per match awarded against the home and away teams and against both teams combined, by each of the 28 referees who officiated at least 30 Premier League matches during the study period. There appears to be considerable variation between the propensities for individual referees to take disciplinary action. For example, the most lenient referee (Keith Burge) averaged 2.526 disciplinary points per match over 57 matches, and the most prolific (Mike Reed) averaged 4.541 points over 85 matches.

Are referees inconsistent?

Does the degree of variation in the incidence of disciplinary sanction per referee as shown in Table 2 constitute statistical evidence of inconsistency in refereeing standards?

The answer is yes. Individual referee effects make a significant contribution to the expected number of disciplinary points incurred by the home and away teams in each match, suggesting there was significant variation in the standards between referees.

Since we also controlled for team quality and other potential influences on the incidence of disciplinary sanction, this result should not be attributable to any non-randomness in the assignment of referees to matches. For example, the tendency for referees with a reputation for toughness to be assigned to matches at which disciplinary issues are anticipated by the authorities.

Our research also found:

- The tendency for away teams to incur more disciplinary points than home teams cannot be explained solely by the home advantage effect on match results. Even after controlling for team quality, a (relatively strong) away team can expect to collect more disciplinary points than a (relatively weak) home team with the same win probability. Therefore, the statistical evidence points in the direction of a home team bias in the incidence of disciplinary sanction.
- Following on from this, there is evidence of variation between referees in the degree of home team bias; and this variation contributes to the overall pattern of refereeing inconsistency.
- The incidence of disciplinary sanction tends to be higher in matches between evenly balanced teams, in matches with end-of-season outcomes at stake, and in matches that attract high attendances.
- Home teams appear to play more aggressively in front of larger crowds, but perhaps surprisingly the crowd size does not influence the incidence of disciplinary sanction against the away team.
- There is no evidence that the behaviour of players or referees is any different in live televised matches (no evidence of 'playing to the camera').

- Despite an increase over time in the number of offences subject to disciplinary sanction, there is no consistent time-trend in the data: players and officials appear to have adjusted to changes in the rules so that in the long run the rate of disciplinary sanction remained approximately constant.

Conclusion

By providing a comprehensive statistical analysis of patterns in the award of yellow and red cards over a seven-year period, this study has provided the football authorities with a firmer factual basis than has been available previously for policy decisions and debate concerning the interpretation and implementation by referees of the rules governing disciplinary sanction in professional football.

Some questions to think about

1. What steps might the football authorities take to reduce home team bias and improve refereeing consistency? Is the extent to which corrective action is required likely to vary between referees?
2. Do you think this kind of study could be replicated for rugby in New Zealand? What kind of factors would be important in influencing the incidence of disciplinary sanction and what constraints might there be in undertaking such a study?

Further reading

This article is a greatly condensed version of Dawson et al. (2007). Referee bias is also examined by Sutter and Kocher (2004).

References

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UNIVERSITY OF OTAGO

Otago Workshop in INTERNATIONAL TRADE

The Department of Economics hosted the first Otago Workshop in International Trade earlier this year. The conference was the first of its type held in the Southern Hemisphere and attracted economists from Europe, North America, Asia and Australasia. The workshop facilitated the exchange of ideas and information regarding the most recent research in international economics.

The workshop featured two distinguished speakers, Professor David Greenaway from the University of Nottingham and Professor James Markusen from the University of Colorado.

David Greenaway's research concerns the connection between exports and domestic productivity, and globalisation and labour market adjustment. David Greenaway is a Pro-Vice-Chancellor of the University of Nottingham, Director of the Leverhulme Centre for Globalisation and Economic Policy, and a governor of the National Institute of Economic and Social Research.

The location, production and welfare effects of large-scale firms and multinational corporations are the focus of James Markusen's research. During the mid 1980s he served as a researcher and advisor for the McDonald Royal Commission in Canada, which laid the foundation for the US-Canada free trade agreement. Currently, he is a consultant for the Danish Ministry of Trade and Industry, World Bank, and the EU Commission.

Twenty other participants also presented their research. A copy of the programme, with links to papers presented at the conference, can be viewed at www.otago.ac.nz/economics

The second Otago Workshop in International Trade will be held in March 2007. Professor Peter Neary from the University of Oxford will feature as a keynote speaker.

Trust me, social capital matters!

Stephen Knowles
<sknowles@business.otago.ac.nz>

Since the 1990s 'social capital' has become something of a buzz word in economics, political studies and sociology, as well as in the policy arena. It has been argued that differences in social capital can explain cross-country differences in per capita income, rates of economic growth, political participation, crime rates and a vast array of other economic and social variables. As discussed below, one prominent New Zealand economist has argued that the economic reforms in New Zealand have not been as successful as promised because they have eroded New Zealand's social capital.

WHAT IS social capital? Why would it affect economic outcomes? How can it be measured? What evidence is there that it leads to improved economic outcomes? These questions will be explored in this article.

What is social capital?

Social capital can be a difficult term to pin down, as it means different things to different people. Having said this, the most widely used definition is that first proposed by Robert Putnam and his colleagues (1993, p.167) who define social capital as "trust, norms, and networks [i.e., groups of people that interact with each other, such as sports teams], that can improve the efficiency of society". Most people, when they talk of social capital, have at least one of these notions (trust, norms and networks) in mind.

Most people would accept that social capital is important in its own right, as they would prefer to live in a society where others can be trusted, where people tend to cooperate with each other, and where networks are extensive. In addition, it has been argued that social capital has positive economic benefits. There are a large number of arguments as to why social capital will lead to improved economic performance; this article will present only a few.

As noted by Kenneth Arrow (1972), a Nobel prize-winning economist, all market transactions require some degree of trust. When you pay a plumber to fix a dripping tap, you trust that it won't start dripping again in a few days time. When you buy a sandwich for lunch, you trust that you won't end up with food poisoning. When you buy a magazine from the supermarket, you trust that it won't have any pages missing. If you can't trust the people you transact with, fewer transactions will take place, meaning that potential gains from specialisation and trade are not realised. In short, markets work best when participants can trust each other.

In a low-trust environment people need to take steps to protect themselves from exploitation and theft. For example, if the owners of a clothing factory cannot trust their workers they will have to hire supervisors to make sure workers do not shirk, and perhaps even install surveillance equipment to prevent workers stealing from them. This reduces the firm's (and hence the economy's) output, as money spent monitoring workers would be better spent hiring more workers, or buying more machines, to produce clothing.

No lock needed – an example of high social capital

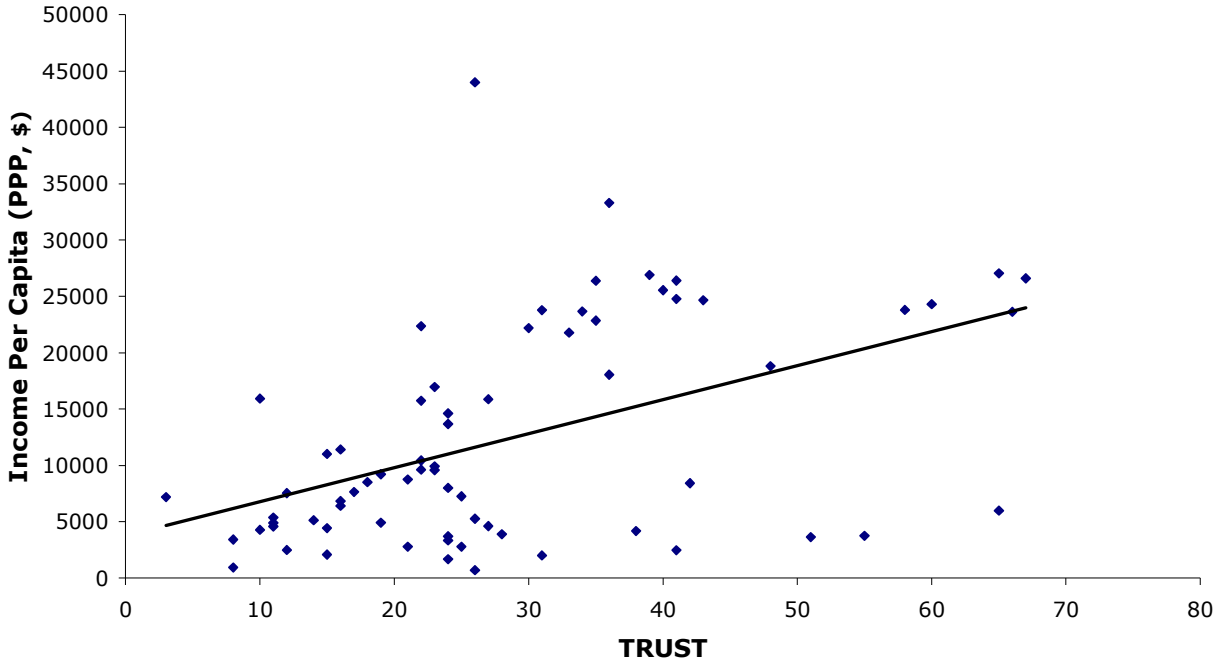
Cooperative norms in a society can also have positive economic effects. For example, societies where members of a community tend to cooperate with each other, rather than free ride, will find it easier to provide public goods and optimally harvest common property resources (such as fisheries). The existence of cooperative norms, of course, presupposes a high degree of trust.

The existence of networks within a society may also have positive economic effects. For example, when individuals are unable to borrow from a bank (a common problem in developing countries) they may turn to borrowing money from family or friends, when wanting to start a small business or send their children to school. The more people someone knows, the larger the pool of potential lenders. New technologies and best practice techniques are also likely to disperse more quickly in a society where people are well networked.

How can social capital be measured?

The most common measure used to compare social capital across countries is the variable TRUST, which is derived from the World Values Survey, a questionnaire asking people a large number of questions about their values and beliefs. TRUST is equal to the percentage of people answering "most people can be trusted" when asked the question "generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?" The countries with the highest

Figure 1: Trust and income per capita



level of TRUST include Denmark (67%), Norway (65%), the Netherlands (60%) and Iran (65%). The lowest levels of TRUST are found in Brazil (3%), Uganda (8%) and the Philippines (8%). New Zealand's level of TRUST is 48%.

An alternative way of measuring trust is to conduct experiments. For example, several years ago the *Reader's Digest* conducted an experiment where they dropped a number of wallets in various countries around the world to see how many would be returned and interpreted the proportion of wallets returned as a measure of trustworthiness. Countries where a large proportion of wallets were returned also tend to have high levels of TRUST, as measured in the World Values Survey (the coefficient measuring the degree of correlation between the two measures, for the countries where the *Reader's Digest* experiment was conducted, is 0.67).[1]

Rather than relying solely on measures of trust to capture the level of social capital across countries, other researchers have used data, typically from the World Values Survey, on the membership of different groups. For example, the percentage of people who belong to sports and recreation groups could be used as a proxy for the extent of networks in a country. Membership of sports and recreation groups is highest in the Netherlands (51%), Sweden (37%) and the USA (36%) and lowest in Turkey (1%) and Romania (2%). The World Values Survey does not report a figure for New Zealand.

Does social capital have positive effects? What the data say

Whether higher levels of social capital really do lead to better economic outcomes is ultimately an empirical question. We will use TRUST as a proxy for social capital, as these data are available for more countries than are data on group memberships.

Figure 1 presents the simple correlation between TRUST and income per capita. There is a positive relationship between the two variables (the coefficient measuring the correlation between per capita income and TRUST is 0.48). Note, however, that there are a number of outliers. In particular, there are a number of countries where TRUST is high, but income per capita is low.

It should be acknowledged that this is a fairly simplistic way of analysing the relationship between TRUST and income per capita. There may be other variables which affect income per capita, and ignoring them may lead to omitted variable bias.[2]

One study which examines the effect of TRUST on the rate of economic growth, controlling for the effect of other variables, is Knack & Keefer (1997) who find that TRUST remains positively correlated with economic growth, when the effect of other variables is controlled for. Knowles & Weatherston (2006) find that an index of social capital, which includes TRUST, is positively associated with the level of income per capita across countries, when other variables are controlled for.

Other researchers have examined the effect of social capital (as proxied by measures of trust or group memberships) on income differences across villages in developing countries, controlling for the effects of other variables. These studies have typically found that villages with higher levels of social capital have higher levels of income per capita.

[1] The correlation coefficient would equal one if there was a perfect positive correlation between the two variables and zero if there was no correlation.

[2] That is, income per capita may be determined by other variables, such as research and development spending, and social capital and income per capita may be positively correlated only because social capital is correlated with one or more of these other variables.

Further evidence that a high level of social capital is required for markets to function may be found in the disappointing performance of the Russian economy following the transition to a market economy. Russia's level of TRUST, as measured in the World Values Survey, is 24%.

We can conclude, therefore, that there is some evidence that communities and countries with high levels of social capital enjoy better economic outcomes than societies where social capital is lower. It would seem that social capital does matter.

Have the reforms eroded social capital in New Zealand?

Tim Hazledine (1998) has argued that the economic reforms introduced in New Zealand from the mid 1980s have eroded New Zealand's stock of social capital. He suggests that New Zealanders are more self interested, and act less altruistically, now than they did prior to the reforms. Whether this is the case would be quite difficult to establish empirically. Not only would it have to be shown that New Zealand's social capital has fallen over time, but that this is a direct result of the reforms. Unfortunately, quantitative data are not available for New Zealand on variables like TRUST for a long enough period of time to tease out this hypothesis.

How original is the concept of social capital?

One criticism of the concept of social capital is that the ideas it encompasses have all been around for some time. To a large extent this is true. It was noted above that Kenneth Arrow emphasised the importance of trust in the 1970s, well before social capital became a popular concept. In fact, Adam Smith and David Hume had plenty to say about the importance of trust and cooperation in the eighteenth century. However, the fact that ideas have been around for some time does not mean they are invalid, just that the notion of social capital may not be as original as some people claim.

Conclusion

The term social capital gets used a lot in policy debates, but how important is social capital? This article has defined social capital as the extent of trust, norms and networks in a society and argued that markets will work most effectively when social capital is high. Could it be, however, that a heavy reliance on markets erodes social capital? This is a question for the reader to ponder.

Some questions to think about

1. This article gives some reasons as to why trust will improve economic performance. Can you think of any others?

2. How valid a measure of social capital do you think TRUST is? (Think about how easy you would find it to answer the question "generally speaking do you think that most people can be trusted or that you can't be too careful in dealing with people?")

3. Do you think relying too much on markets will erode the level of social capital? Do you think teaching economics students that markets allocate resources efficiently, even when people act out of self interest, will make them more selfish?

Further reading

An excellent book discussing the conditions under which markets work well, including the importance of trust, is McMillan (2002).

See Hazledine (1998) for a very readable discussion of social capital, including his argument that New Zealand's social capital has been eroded by economic reforms.

Useful websites

Lots of useful information about social capital can be found on the *Social Capital Gateway* website: www.socialcapitalgateway.org/

The World Bank also has a web site dedicated to social capital: www1.worldbank.org/prem/poverty/scapital/index.htm

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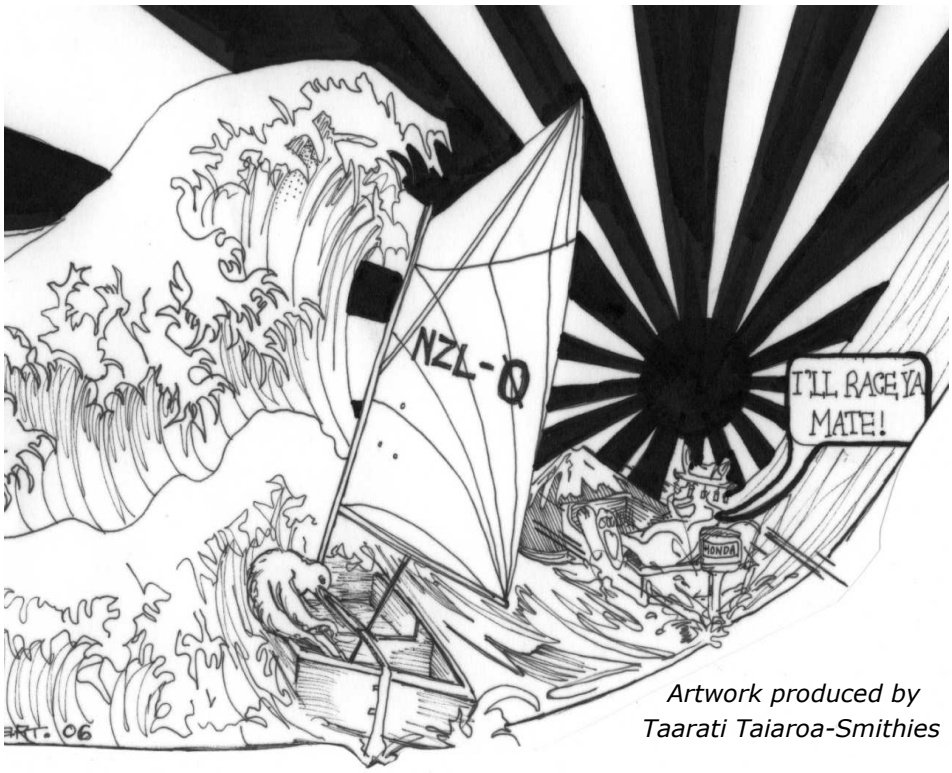
Don’t let the sun go down: What should New Zealand do following the collapse of the Doha Round of trade negotiations?

Niven Winchester
<nwinchester@business.otago.ac.nz>

Māori legend asserts that Maui and his brothers brokered a deal with the sun so that it would stay in the sky longer. In the wake of the latest set-back in multilateral trade talks, New Zealand must again make sure that the (rising) sun continues to shine.

ON MONDAY 24 July 2006, Pascal Lamy, World Trade Organisation (WTO) director general, suspended the latest round of multilateral trade negotiations. Initiated in the capital of Qatar in late 2001, the Doha Round of trade talks, among other objectives, aimed to reduce farm tariffs and subsidies in developed nations such as the EU and the US. Although designed to help poor nations, New Zealand, an agricultural exporter, would have benefited significantly if the Doha negotiations were successful.

A key reason for the breakdown in negotiations was that the EU and US governments caved in to the demands of domestic farm-lobby groups. Specifically, the EU was not prepared to slash tariffs on agricultural goods and the US offered only modest reductions in farm subsidies.[1]



Artwork produced by Taarati Taiaroa-Smithies

What is the prognosis for trade liberalisation?

Although this is not the first time the Doha talks have broken down – trade negotiations faltered in Cancun in September 2003 only to be revived in Geneva the following year – the latest failure is a major set-back for multilateral trade liberalisation. It is now unlikely that there will be enough time to reach an agreement before George Bush’s trade-promotion authority expires in June 2007. With trade-promotion authority the US congress can either approve or reject an agreement. Without it, congress can request amendments. Given growing protectionist sentiments in the US, it is highly likely that any substantial agreement would be bashed into submission by congressional tinkering.

The Economist (14 July 2006) concluded that at best it looks likely to be years before the sun rises again on multilateral trade talks. This prospect provides an additional incentive for nations to thrash out regional free trade agreements (FTAs) whereby groups of nations get together and agree to eliminate or lower tariffs on some or all of each others’ exports.

This article argues that *The Economist’*s analogy has particular relevance for New Zealand: if regional trade agreements are to be the main vehicle for trade liberalisation, securing a trade deal with Japan, Land of the Rising Sun, should be New Zealand’s number one priority. This is because Japan, the world’s second largest economy, is the destination for around 12% of New Zealand’s exports and imposes heavy restrictions on agricultural imports, particularly for dairy and meat products.[2] Additionally, a statement released by Prime Minister Helen Clark and her Japanese counterpart, Junichiro Koizumi, following a meeting in Tokyo on 2 June 2005 hinted that a New Zealand-Japan FTA is a possibility.

[1] This is not to say that the EU and the US would suffer a loss from the removal of their own trade distortions. Both nations would, in fact, gain from such reforms. Winchester (2004) outlines why changes in trade policy that (on aggregate) increase national income, but hurt a small section of society, may be blocked.

[2] Although New Zealand would also gain from the removal of its tariffs on Japanese products (see Richardson, 2004), as New Zealand tariffs are low, these gains would be relatively small. Accordingly, this article focuses on the changing fortunes of New Zealand exporters.

Those pesky Australians

Australia's trade negotiations add urgency to the need for a New Zealand-Japan trade deal. Australia and Japan agreed to conduct a joint feasibility study in April 2005. The scoping study is expected to be completed in October 2006 (six months ahead of schedule) and Australian Foreign Minister Alexander Downer is confident that negotiations can begin in early 2007.

An Australia-Japan FTA will give Australian exporters a price advantage over their New Zealand counterparts. This will cloud New Zealand's sunshine as this nation's most significant exports to Japan (by value) include dairy commodities and meat products and Australia is a major player in Japanese markets for these products. For example, New Zealand and Australian dairy products account for, respectively, 20% and 29% of total Japanese imports of this commodity.

The results from simulating various liberalisation scenarios using a model of global production and trade are reported in Table 1. Figures for the first simulation reveal that New Zealand would be worse off by around $520 million ($125 per person on average) each year should Japan and Australia engage in free trade in all commodities except rice and sugar.[3] The fall in New Zealand welfare is largely due to Australian goods squeezing out New Zealand products in Japanese markets. Notable changes in New Zealand exports shipped to Japan are simulated for meat and dairy products, which both fall by more than 50%.

Interestingly, additional simulations (not reported) show that New Zealand would not gain much from a New Zealand-Japan FTA if an Australia-Japan agreement was already in place. This is because a New Zealand-Japan deal would merely maintain New Zealand exporters' competitiveness with Australian producers.

Benefits from other trade liberalisations

The next three scenarios reveal the significance to New Zealand of trade with Japan. The second simulation indicates that if countries had agreed to what many commentators thought would result from the Doha trade talks, each New Zealander would (on average) be better off by around $224 per year.[4] The next simulation suggests that the much talked about New Zealand-China FTA would benefit each New Zealander by about $67 annually. Simulation (4) indicates that the annual net benefit per person from all FTAs involving New Zealand recently signed or likely to occur in the near future is around $87.[5]

So the loss to New Zealand from an Australia-Japan FTA would be more than half the gain to this nation that would have eventuated if the Doha talks were successful; is more than three times the benefit from free trade with China; and would wipe out the benefits from all of New Zealand's regional trade negotiations this millennia more than two and a half times over. These numbers provide food for thought for New Zealand policy makers.

A silver lining?

Ironically, the reluctance of many developed nations to free up trade in agriculture – the same attitude that sunk the Doha talks – may prevent New Zealand from suffering a large loss due to an Australia-Japan FTA. The Japanese Department of Agriculture has been described as a protectionist hornet's nest (*The Australian*, 3 August 2006). If farm-lobby groups in Japan are successful in maintaining agricultural tariffs, New Zealand will be largely unaffected by an Australia-Japan trade deal.

Another potential saviour is a proposed 16-nation East Asian free trade bloc involving Japan, China, India, South Korea, Australia, New Zealand and the 10 ASEAN nations. However, although the East Asia Summit was formed last year as a precursor for an eventual 16-nation FTA, due to the size of the proposed trade bloc, discussions will probably last for many years. If Australian producers are able to gain brand loyalty from Japanese consumers, a short-term price advantage awarded to Australian exporters, due to a gap in completion dates between the Australia-Japan and East Asian FTAs, may result in New Zealand firms facing long-term losses.

Table 1: Net annual benefit to New Zealand following various liberalisation scenarios

Liberalisation scenario	*$, million*	*$ per person*
1. Australia-Japan FTA	-521.18	-125.68
2. Multilateral trade liberalisation	928.47	223.89
3. New Zealand-China FTA	278.54	67.17
4. All current FTAs involving New Zealand	359.01	86.57

Source: Author's own simulations.

[3] Tariffs on rice and sugar are maintained as these goods have been excluded from other FTAs involving Japan.

[4] Winchester (2005a) also estimates the benefits to New Zealand resulting from various trade agreements. Estimates reported in Table 1 differ from those presented by Winchester (2005a) as calculations in Table 1 draw on updated information.

[5] Regional trade deals considered include New Zealand-Chile-Singapore, New Zealand-China, New Zealand-Malaysia, New Zealand-Thailand, and New Zealand-Australia-Association of South East Asian Nations (ASEAN) FTAs.

Conclusion
The apparent failure of the Doha Round of trade negotiations has dealt a cruel blow to New Zealand – on a per-capita basis New Zealand stood to gain more than most nations from the removal of barriers to trade in agriculture. The looming Australia-Japan FTA is set to deliver another sucker punch. Numbers presented in this article suggest that New Zealand's trade negotiating resources would be best used to secure a trade deal with Japan.

Some questions to think about
1. Why would reductions in EU and US farm subsidies benefit New Zealand?

2. How might the benefits to New Zealand from a New Zealand-China FTA change if strong growth in the Chinese economy continued?

3. Do you think an increase in the number of regional trade agreements worldwide will make it more or less difficult for future multilateral trade negotiations to succeed?

Further reading
The role of the WTO in multilateral trade liberalisation is examined by King (2004) and Wooding (2004).

More detail on the effects of FTAs involving Australia, New Zealand and Japan can be found in Winchester (2005b).

Several articles in *The Economist* discuss the Doha Round of trade negotiations. You can find these by entering the keyword "Doha" in the search engine at www.economist.com

Useful websites
Details concerning current and potential FTAs involving New Zealand are available from the Ministry of Foreign Affairs and Trade's web site: www.mfat.govt.nz/foreign/tnd/ceps/cepindex.html

The latest news about the Doha Development Agenda can be found at the WTO's website: www.wto.org

The latest news about regional free trade deals around the world can be found at www.bilaterals.org

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N Winchester (2005b), Chasing the Rising Sun: A computable general equilibrium evaluation of potential Australasia-Japan FTAs, *Economics Discussion Papers* 0523, University of Otago.

P Wooding (2004), International trade and the WTO. In: P Hansen & A King (eds), *Keeping Economics Real: New Zealand Economic Issues*, Auckland: Pearson Education, 162-5.

Sputnik, artificial intelligence and puzzles: An interview with a Nobel Prize winner

Ian King
<iking@business.otago.ac.nz>

Edward Prescott is the W. P. Carey Chair of Economics at Arizona State University and (along with Finn Kydland) was awarded the Nobel Prize in Economics in 2004. He visited New Zealand in May 2006 as part of the Southern Workshop in Macroeconomics (SWIM), held in Auckland and co-sponsored by the Department of Economics at the University of Otago. During this visit, he was interviewed by Professor Ian King, covering his views of economics and of New Zealand's economy. The following is an abridged transcript of the interview.

IK: What got you interested in economics in the first place? Why did you work in economics rather than, say, biology or engineering?

EP: In high school I thought of being a rocket scientist. It was the Sputnik era…

In college they had long laboratories and you had to keep very neat books – lab books. I didn't like that! I guess it was just the orientation there. So I decided: that was it!

I took an interesting course in "engineering economics" – "operations research", and I sort of drifted.

That was the golden age of that field, (operations research), so I went to Case Institute of Technology – now Case Western and got a degree in operations research.

Then I went to Carnegie Mellon. [It was called] Carnegie Tech then. There was a multidisciplinary program that sounded interesting. (It was a small school, by the way, research oriented, a half dozen of the people did the work there for which they got a Nobel prize in Economics, which is quite remarkable. [Laughs.])

I was assigned to Mike Lovell, who was a great teacher and we did joint research together later. And then some of the best minds came there, like Bob Lucas – who was an Assistant Professor – while I was a student. This was class!

I thought about artificial intelligence, which was an exciting field then at Carnegie Tech. Allen Newell, one of the great minds of that field – the father of that field – was there. There were other things to be done that would have been very interesting, [for example] getting into cognitive psychology.

I got into statistical decision theory heavily. A lot of the courses you take come from all over the University. Statistics was in the Mathematics Department and Morris DeGroot was a great statistician. I didn't realize *how* good at the time but – when I go back and look at the stuff he laid out – it was beautiful.

IK: Some of your contributions to research have been in the area of methodology. You've been involved in creating a *new* methodology for research within the discipline of economics, particularly in macroeconomics. To what extent do you think this methodology is specific to economics? Do you feel that it could be used more broadly, say, within the social sciences?

Edward Prescott (left) and Ian King

EP: This basic methodology (using theory and measurement to construct models, then matching up the model on selected dimensions, given the issues you're addressing, given the issues you question, where you have to decide what to abstract from) it's a lot like the way they do it in the applied fields, for example aeronautic engineering.

Now, with the other social sciences … *is there* another social science? Economics is *the* social science! [Laughter.]

On the study of families, some nice facts were collected by the sociologists: they did a lot to collect data and report patterns. Then, as soon as that was done, the economists stepped in and it's become part of *economics*. Now we have models of dynamics with *groups* of people and all kinds of interesting things.

There is [also] *behavioural* science, but psychology is the behavioural and cognitive science – that's big time science.

Economics isn't *everything*, but it is a lot.

IK: Do you feel that economics could inform psychology more than it has, or the other way around?

EP: No. They're different sciences, both important.

IK: Of all the contributions you've made to economics over the years, if you could pick one, what would you most like to be remembered for?

EP: I think it [would be] making dynamic economic theory *quantitative*.

Just look at the way people were thinking in the 70s about these issues, and just how *different* what

Finn [Kydland] and I did was in that "Time to Build" paper.

Macroeconomics used to be: "I want to discover the laws of motion or the variables in the national accounts." Some people [had] some stories and, hopefully, that put some restrictions on some of the equations or laws of motion, but it was *just a little bit* of theory – mostly it was *empirical*.

Economics has become a *hard science* and now we have puzzles, even!

IK: In your view, what do you think are the key puzzles facing macroeconomic theory at the moment?

EP: If you look at exchange rates, they move around too [darn] much! [Laughs.]

Also, there's big excess of volatility of the value of the *stock* market. The work that I've done, relatively recently, with Ellen McGratten dramatically strengthened that LeRoy-Porter-Schiller excess volatility puzzle.

But *most* important, I think it's going to be things tied in with how sovereign states or groups of people can set up systems to get around the *time inconsistency* problem.

There is [also] the issue of why there are these *huge* international *income differences*. Stephen Parente and I have been working on that. We've identified the things that *we* think are important, but, there's some way to go before that becomes *established* theory. I think, before it does, it may be modified, and go off in different directions.

IK: This brings me to my last question: about New Zealand. Some of the work you've been involved in, recently, has pointed to the view that New Zealand has suffered a long period below its long run trend, and I was wondering what you think are the crucial factors here?

EP: New Zealand has lost ground relative to trend. Trend is roughly 2% growth in living standards or productivity every year. The US [for example] has been growing at that rate for the last 140 years, the only big deviation being in the Great Depression.

New Zealand's productivity is low: it's only about 55 or 60% of the US or some of those core countries in Western Europe. The question is, why is that productivity so low? Australia has done a lot better in the productivity game.

When I look at it, [New Zealand] is not a very friendly place for people with entrepreneurial skills who want to make something happen.

Another thing is, savings rates, I think, are low in New Zealand. When I look at the capital output ratio, it's a little bit low in New Zealand. When I look at GNP: it's 8% less than GDP. That means foreigners own 8% of the output of New Zealand. When I look at net investment, half of that is being financed by that current account deficit. That says to me that there's low savings.

I think New Zealand could move the system more to one where people want to save for retirement. Then the savings rate would go way up, and there'd be a lot more funds around here locally. There would be local operators who have to find places to invest, they'd be talking to some of the talented, ambitious, entrepreneurial types that have gone to greener pastures in Australia to tell them to come back and get things going here. Some of these businesses would be successful, they'd become multinationals and there would be more flow of technology.

I suspect there's also some excess of regulation. Recently, there have been some movements in the *wrong* direction with regard to making the labour market rigid. Productivity goes up if people can move from less productive jobs to more productive jobs, because you get more output. If you have a system that locks people to where they are and you don't have mobility, that's not good for productivity.

New Zealand people need to become more productivity oriented. Japan lost a decade of growth, but then Prime Minister [Koizumi] was able to finally overcome the opposition of his party and move in that direction, and productivity has been growing nicely in Japan [over] the last three years. Japan's economy has been beginning to regain a *little* bit of the ground it lost. New Zealand ought to do the same thing.

Background

Kydland and Prescott were awarded the Nobel Prize for their "… contributions to dynamic macroeconomics: the time consistency of economic policy and the driving forces behind business cycles". Two papers are fundamental to these contributions:

F Kydland & E Prescott (1977), Rules rather than discretion: The inconsistency of optimal plans, *Journal of Political Economy* 85, 473-91.

F Kydland & E Prescott (1982), Time to build and aggregate fluctuations, *Econometrica* 50, 1345-70.

In the first, they introduced the problem of "time inconsistency". This arises when decision-makers choose actions both currently and in the future. Future actions, which are optimal from the *current* perspective, may *not* be optimal once we arrive there. People may prefer to *change* the plan on that date. This can lead to suboptimal outcomes, unless the decision-maker can somehow commit to the original optimal plan.

In the second paper, they developed a new methodology for applied macroeconomics. They specified a consistent theoretical dynamic macroeconomic model where agents make optimal decisions at each moment. Thus, rather than postulating *ad hoc* behavioural equations (as was done previously), they *computed* optimal behaviour. Adding random shocks, they could use the model to generate *artificial* data that could be compared with real data. (In the original paper, shocks had real effects on technology. Hence, these are often called "real business cycle" models). They found that this model, appropriately calibrated, performed surprisingly well: accounting for several features of the actual economy. Features that could not be accounted for were interpreted as *puzzles*.

Commentary on the New Zealand economy

Alan King
<aking@business.otago.ac.nz>

The New Zealand economy has continued to slow over the last six months. Its annualised rate of growth since mid-2005 of just 1% implies that the year-on-year growth rate will shortly fall below the current 2% level. Consumption and investment spending are also slowing, but both continue to outpace production on an annual basis. Consequently, the annual current account deficit has continued to widen.

AT OVER 9% of GDP, New Zealand's current account deficit is one of the largest in the world and is clearly not sustainable. However, signs are beginning to emerge that the deficit is unlikely to grow much larger and may begin to shrink later in the year.

In particular, while still growing reasonably strongly on a year-on-year basis, quarterly investment spending peaked around the middle of last year and has eased back in both of the last two quarters. This should slow imports of capital goods. Retail sales have also been stagnating in recent months and sales of motor vehicles, another significant import item, are in decline. Finally, the country's deficit on international investment income (a major contributor to the current account deficit) should eventually ease back as the profits generated by foreign-owned New Zealand firms decline with the slowing economy.

How quickly a turnaround in the current account might occur is complicated by the dollar's fall from last year's peak. While this should help to shrink the trade deficit over time by discouraging imports and giving local firms a greater incentive to sell abroad, the initial effect on the trade balance of the dollar's depreciation should be negative. This is simply because the prices of imports and exports are largely set in foreign currency terms. As the dollar depreciates, the dollar value of both exports and imports should rise in proportion (everything else being equal). But, as imports currently exceed exports by a considerable margin, a given *percentage* change in their values implies that the former will grow by a greater *dollar* amount than the latter, and so increase the trade imbalance.

	Quarter				
	Mar 2006	Dec 2005	Sep 2005	Jun 2005	Mar 2005
GDP (real, annual growth rate, %)	2.2	2.3	2.6	3.1	3.7
Consumption (real, annual growth rate, %)	4.4	4.8	5.2	5.4	5.7
Investment (real, annual growth rate, %)	3.7	3.5	5.5	7.0	8.9
Employment: full-time (000s)	1644	1625	1635	1614	1602
Employment: part-time (000s)	462	462	452	451	451
Unemployment (% of labour force)	3.9	3.6	3.7	3.6	3.8
Consumer Price Inflation (annual rate, %)	3.3	3.2	3.4	2.8	2.8
Food Price Inflation (annual rate, %)	1.8	1.5	1.6	1.1	1.5
Producer Price Inflation (outputs, annual rate, %)	4.0	3.9	4.1	3.0	3.2
Producer Price Inflation (inputs, annual rate, %)	7.2	6.5	6.1	4.7	4.2
Salary and Wage Rates (annual growth rate, %)	3.2	3.1	3.0	2.6	2.5
Narrow Money Supply (M1, annual growth rate, %)	–1.8	–1.8	0.3	0.0	0.7
Broad Money Supply (M3, annual growth rate, %)	9.2	6.7	9.3	8.1	6.1
Interest rates (90-day bank bills, %)	7.49	7.66	7.09	7.03	6.99
Exchange rate (TWI, June 1979 = 100)	65.6	71.9	70.3	71.0	70.7
Exports (fob, $m, year to date)	31,097	30,817	30,770	30,618	31,088
Imports (cif, $m, year to date)	38,169	37,279	36,539	35,793	35,446
Exports (volume, June 2002 [not seas. adj.] = 1000)	996	1020	974	992	1002
Imports (volume, June 2002 [not seas. adj.] = 1000)	1481	1473	1474	1466	1425
Terms of Trade (June 2002 = 1000)	1072	1060	1087	1091	1105
Current Account Balance (% of GDP, year to date)	–9.3	–8.9	–8.5	–8.0	–7.4

Sources: Statistics New Zealand (www.stats.govt.nz), Reserve Bank of New Zealand (www.rbnz.govt.nz)

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Or write to *EcoNZ@Otago*, Department of Economics, University of Otago, PO Box 56, Dunedin.

Forty of the best articles from Issues 1 to 11 have been revised and published in a book by Pearson Education: *Keeping Economics Real: New Zealand Economic Issues*, edited by Paul Hansen & Alan King. See page 10 of this issue of *EcoNZ@Otago* for details.

What does an economist have in common with a Centaur?

David Fielding[*]
<dfielding@business.otago.ac.nz>

Economics is a social science. Economists try to explain and predict the behaviour of individuals and groups, bearing in mind that people usually have scarce resources (for example, time or money), and often have competing or conflicting objectives. The methodological tools that economists use are borrowed both from the humanities and from the natural sciences.

AN ECONOMIST must be as literate as an historian and as numerate as a chemist – the academic equivalent of a Centaur! For this reason, an economics degree is a highly valuable qualification, giving the economics graduate a wide range of skills. Table 1 gives an indication of some relative starting salaries for graduates in different UK university subjects.

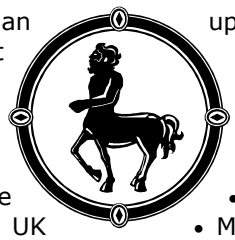

Table 1: Average graduate starting salaries by subject (as a % of the all-subjects average)

Mathematics & statistics	121.2%
Medical & related subjects	110.2%
Physics	109.1%
Economics	105.4%
Biological sciences	103.3%
Languages & related studies	102.1%
Chemistry	98.8%
Financial management	98.8%
Business & management studies	96.0%
Marketing	94.7%
Accountancy	77.1%

Source: These figures are computed from data in *Prospects Today*, Summer 2005 (www.prospects.ac.uk).

Equivalent New Zealand figures aren't available, but the UK university system and labour market are quite similar to those here. (One difference is that most UK undergraduates study courses in a single subject only. Typically, UK economics graduates have completed a BA or BSc Honours degree in three years.) Economists starting salaries are well above the average for all university graduates. Why is this?

Economics is about much more than just business. It is about how individuals and groups make decisions when their choices are constrained. The insights that economics provides are of great importance in helping to understand how businesses operate and how specific markets or the economy as a whole work, but they are often also used to help understand many other kinds of political, social or even biological questions. For example, questions like: Why have health and education standards changed over time? Why do crime rates rise or fall? Will foreign aid work? How should we best manage the natural environment and natural resources?

Consequently, economists can contribute to society in a very wide variety of ways. Because their skills are not specific to a single occupation, they end up working in all sorts of places. For example, economics graduates from Otago are currently employed by the following institutions:

- Department of Conservation
- Ministry for Culture and Heritage
- Ministry of Fisheries
- Ministry of Foreign Affairs and Trade
- Ministry of Health
- Ministry of Education
- Ministry of Research, Science and Technology
- New Zealand Permanent Mission to the Office of United Nations
- Amnesty International
- BBC

Otago economics graduates are also employed in senior academic positions at a number of leading Universities, including City University, London, Australian National University, London School of Economics and the University of New South Wales.

So, economics graduates are well paid, in part at least, because their knowledge and skills have such widespread application. But, while studying economics is valuable in its own right, this value is enhanced by the fact that economics complements many business, arts and science subject areas and so enhances a graduate's chances of a successful career in these other areas. Fortunately, therefore, it is easy to design an economics degree programme that incorporates other subject areas as well.

In New Zealand, an economics degree normally takes three years to complete (four if it's an Honours degree). At the University of Otago, for example, one can major in economics within either the BA or the BCom programme, or in economics and statistics within the BSc programme. If you have a particular interest in another subject – for example politics, languages, physics, mathematics or finance – it can be easily incorporated in your degree as a minor. (A minor subject is one studied to a significant extent, accounting for roughly half as much time as the major subject.) A BCom in economics can easily include a minor in practically any other subject. With the more flexible BA degree, a major in economics can be combined with minors in two other subjects (for example, finance and mathematics) – or a second major in another arts subject – without requiring study beyond the minimum for a three-year degree. Hence, the range of economics degrees that can be designed is almost as wide as the range of applications of the subject itself.

For more information on studying economics at the University of Otago, see www.business.otago.ac.nz/econ/courses/index.html or email economics@.otago.ac.nz for a copy of the *Economics Handbook 2007*.

[*] The author would like to thank Chris Haig and Alan King for helping write this article.