With WTO accession, increasing trade liberalisation and many developing countries seeking to enter new export markets, the role of economic modelling has grown. Like computer simulation modelling for cropping, economic modelling provides decision makers with an understanding of complex scenarios, based on real issues.

Being carried into a new era: a street scene in China.

THE WORLD LEADS CHINA IN A NEW DIRECTION

By CLAIRE MILLER

Trade liberalisation in China is forcing a policy rethink about how to achieve food security and reduce rural poverty in the world's most populous nation. China to date has equated food security with self-sufficiency, and pursued policies to that end.

In the past, China has experienced famines and struggled to finance large food imports. These concerns have been used to justify agricultural protection, subsidies and monopolies in the name of self-sufficiency and equitable distribution. However, food security is not the same as self-sufficiency. A three-year collaborative project funded by ACIAR suggests that policies aiming for total self-sufficiency are costly, do little to reduce rural poverty and do not necessarily improve food security.

The project involved researchers at the Australian National University and the China Centre for Economic Research at Peking University in Beijing. The researchers analysed the policy implications for food security of China joining the World Trade Organisation.

WTO membership will lead to structural adjustments across all economic sectors. Some activities inevitably will be reduced, with a loss of employment, lower asset values and reduced income. Agriculture and agricultural employment is expected to be one of those sectors negatively affected, but counter-intuitively, the reforms may also increase, rather than decrease, food security.

The researchers defined food security as whether households have sufficient income to maintain an adequate diet. They acknowledged that a nation as populous as China will always have to produce most of the food its citizens eat, but their models suggest that aiming for total self-sufficiency stifles economic growth and perpetuates rural poverty when analysed from an economy-wide perspective.

Modelling shows the main factors in reducing rural poverty, as in most developing nations, will be the scope for rural households to earn off-farm income, and for people to take advantage of new employment opportunities in industries with a comparative advantage.

In China's case, trade liberalisation is expected to create more jobs in light manufacturing, services, transport and other sectors, offsetting reduced employment and income from a more efficient, less protected agricultural sector. Dislocated agricultural workers will be able to take advantage of the jobs growth in other sectors, while rural ▶

'Achieving Food Security in China: Implications of WTO Accession.' Paper presented by Ron Duncan, Emeritus Professor, School of Economics, Australian National University to the 48th Annual Conference of the Australian Agricultural and Resources Economics Society, Melbourne, 11-13 February 2004.

households can increase their total income through greater opportunities for off-farm work.

Trade reforms will also cause consumption to switch away from home-produced goods in favour of imports. This will cause the relative prices of the home-produced goods to fall and become more affordable to a growing urban working class.

The research indicates that the success of the trade reforms will depend on policies outside agriculture as much as structural reforms within the sector. For instance, the Government has discouraged people from moving off farms into urban centres, partly out of concern about the problems associated with increasing urbanisation such as congestion and pollution.

However, the restrictions on movement have led to an oversupply of rural labour, compounding the widening income gap between city and country, and coastal and inland regions. The restrictions may also be retarding economic growth, especially in the inland provinces, which are the least industrially developed, least urbanised and least attractive for investors.

Researchers X. Wang and R. Duncan found a positive correlation between urbanisation, economic growth and rural incomes. Their modelling indicated that each percentage point increase in urbanisation boosts provincial economic growth rates by 0.37 percentage points above the already high 7 to ten per cent growth rate.

The important message from the research is that macro-economic and other non-specific agricultural policies will do much to help rural households maximise the benefits of trade reforms.

Non-agricultural policies include supporting urban development and private enterprise in inland regions, with better planning and infrastructure to cope with larger populations. Monetary policy and capital controls should also be gradually and cautiously relaxed to promote non-agricultural jobs growth.

In agriculture, there will be a need to abandon price supports and regional self-sufficiency policies, and to reform marketing and distribution monopolies. ■

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HELPING TO FIGHT THE FLAB IN FIJI

The name 'Fiji' conjures an image of idyllic beaches and a healthy, open-air lifestyle – which might be the case for thousands of tourists who flock to the popular Pacific island each year. However, daily life can present a very different scenario for many native Fijians and Indo-Fijians.

Changing lifestyles and diets have led to a growing health problem with significant personal and social costs, and no easy answers – obesity.

Obesity in Fiji results from a unique mix of social, cultural and economic factors, according to Dr Phillip Hone, senior lecturer in Economics from the School of Accounting, Economics and Finance at Melbourne's Deakin University.

Dr Hone presented a paper, 'Food Choice and Nutrition in Fiji', to the 48th Annual Conference of the Australian Agricultural and Resource Economics Society, held in February earlier this year in Melbourne.

In the paper, he pointed out that obesity was not a new problem for Fiji, but changes in the types of food now commonly consumed, coupled with a significant shift from rural to urban lifestyles, has meant that a substantial – and growing – number of the 800,000-strong population can be classified as overweight or obese. This is leading to an increase in diseases such as cardiovascular disease, diabetes, hypertension and some cancers.

The most recent national survey in 2001 indicates that obesity is more prevalent among females than males, Fijians than Indo-Fijians, and urban dwellers than rural dwellers.

"Over time, people are tending to move from relatively low paid, physically demanding lifestyles in the country to relatively highly paid, sedentary lifestyles in the city," says Dr Hone. "As their incomes grow, they can afford more food and they are tending to shift their consumption pattern away from [traditional] foods with high nutrient density towards higher calorie foods [such as refined cereals and sugar products]."

The question now being raised is can a government influence personal choices in food consumption and exercise? Dr Hone believes it is almost impossible to reverse the pattern of less physical activity coupled with a higher calorie intake, but there are steps that can be taken to moderate the rate of obesity growth and the cost of obesity prevention.

One of those measures is education and information. There is an active campaign to educate Fijian school teachers in nutrition principles, and the study of basic nutrition is part of the syllabus at government schools. The government also funds nutrition field staff operating at the local community level, supported by the National Food and Nutrition Centre.

Then there are policies such as taxes, tariffs, import duties, research funds and government subsidies for local producers that can influence food prices. Dr Hone's study indicates that price is an important factor underpinning food choice. He points to the 2001 survey on food preferences in Fiji. The study found that Indo-Fijian families lived on a predominantly rice and flour-based diet because of a liking for the products and perceived value for money. For Fijians, cassava (a starchy root-vegetable), rice and bread were the most frequently consumed staples because of perceived value and ease of preparation.

"In developing countries, people on constrained budgets are sensitive to changes in relative food prices," says Dr Hone. "This sensitivity needs to be considered when government is reviewing food, taxation and agricultural policy settings. However, the relationship between food intake, obesity and disease is complex and care needs to be taken in assessing public intervention."

The health-related costs associated with obesity are high, especially for countries like Fiji where public capital is scarce. Diverting more funds to treat conditions like diabetes and heart disease means less money for other health programs, education, law and order.

Dr Hone believes the cost of obesity prevention can be reduced through careful policy analysis, and that the effort will pay off. He says the potential magnitude of the obesity problem is enough to suggest that the return from such analysis could have a substantial impact on Fijians' quality of life. ■

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Dr Hone is one of the organisers of a nutrition workshop to be held in Suva, Fiji, from June 28-29.

KEEPING THE REEF FISH TRADE HEALTHY

By HELEN EVA

Under threat: a marine biologist inspects coral reefs damaged by illegal fishing. Photo: **AAP**

The live reef fish trade in the Asia-Pacific is as sensitive and delicately balanced as the marine environment upon which it depends. Factors such as over-fishing, harmful harvesting techniques, regional economic setbacks and disputes between suppliers are all impacting on this relatively new and specialised market.

And while the trade has created income-generating opportunities for many countries, the benefits have come at a cost to future ecological, economic and social sustainability.

Keen to address these issues, ACIAR funded a project on the Pacific trade in the 1990s and has also funded a number of mariculture (aquatic farming) projects of live reef fish species in Indonesia and Vietnam. A related ACIAR-supported project to conduct an economic analysis of the trade will begin soon.

A paper, 'Economic modelling of the live reef fish trade in Asia-Pacific', was presented at the 48th Annual Conference of the Australian Agricultural and Resource Economics Society held earlier this year in Melbourne. The authors were Dr Elizabeth Petersen, Research Associate from the University of Western Australia; Mr Geoffrey Muldoon, Research Associate from the CRC Reef Research Centre at James Cook University in Townsville; and Dr Brian Johnston, Visiting Research Fellow at the Australian National University.

They presented a picture of a valuable, but disjointed, industry in need of a cohesive approach to supplying the main live reef fish markets of Hong Kong, mainland China and Taiwan. The authors pointed out that, while live fish have long been traded throughout Southeast Asia as a luxury food, fish captured on coral reefs did not enter the trade until the 1970s, and it was not until the 1990s that many Pacific countries began supplying the major markets.

Since then reef fish have become highly sought for their taste and texture.

As a high value-to-volume fishery, the industry has flourished over the past few decades, with Hong Kong imports alone worth about US$350 million a year. It is estimated that 60 per cent of the international trade goes to Hong Kong, with as much as 50 per cent of this being re-exported to southern mainland China. About 20 countries in the Asia-Pacific region now supply these markets, with China, Thailand, the Philippines, Australia, Malaysia and Indonesia being the dominant sources.

However, as demand remains steady, there are concerns about supply and the lack of regulations and data in many of the trading countries.

Over-exploitation of coral reefs has now become a major threat to reef fish numbers, particularly when large numbers of reef fish that have gathered for spawning, are harvested.

Concern about this overfishing has seen some growth in farmed or maricultured reef fish, with up to 40 per cent of the live fish trade now relying on this source. But with more and more wild fish being caught before reaching maturity, and grown-out in cages until they are market size, fish-farming is also contributing to the decline of wild populations.

There is also an environmental risk from the use of cyanide to stun fish so they are easy to catch. It is illegal, but widely practised, and potentially fatal for coral.

The use of cyanide also contributes to the high mortality rates during shipment to markets. Up to half the catch is dying before it reaches the retailer. Most deaths are attributed to the use of cyanide, overstocking cages, feeding practices and disease.

With as many as five links in the chain from fisherman to retailer, the industry is also beset by social disruption, arising mainly from disputes over resource access and use, distribution of benefits and the use of destructive fishing practices.

The new ACIAR-supported project for an economic analysis of the trade will more fully explore theses issues.

Reef fishers and managers should then benefit from information on supply and demand, cost analysis and risks.

ACIAR mariculture projects – and mariculture industries in general – will benefit from information on consumer preferences; and information on fishing practices and ways of improving market performance will be provided to key decision and government policy makers. ■

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