

Faster than the velocity of money!!!

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FROM THE EDITOR

Welcome to Issue 13 of *EcoNZ@Otago* — the lucky issue!

Since 1998, *EcoNZ@Otago* has been published by the Department of Economics at the University of Otago.

The contents of the previous 12 issues are listed near the back of this issue, and single issues are available on request (our addresses are below).

In addition, 40 of the best articles from Issues 1 to 11 have been updated and revised and published in a book by Pearson Education, available in late July (this year): *Keeping Economics Real: New Zealand Economic Issues*. More information about the book appears at the end of this issue.

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

All the best!

Paul Hansen

What saved the whales from extinction? An economic analysis of 20th Century whaling

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EVERY YEAR environmental activists clash with whalers in the Faroe Islands. Using a traditional form of hunting in which schools of whales are herded into fjords and beached and then stabbed to death, Faroe Islands whalers kill many hundreds of pilot whales each year (Higgins 2000). Although pilot whales are not close to extinction and are not covered by the International Whaling Commission, the public outrage caused by this slaughter reflects the international community's distaste for whaling in general. This has not always been so. Whales had to be pushed to the brink of extinction before international pressure secured a worldwide moratorium against commercial whaling in 1982 (in force since 1986).



(Reproduced with the permission of Cetacea Defence)

Commercial pelagic (i.e., open sea) whaling started in the early 20th Century. As can be seen in Figure 1 (next page), worldwide catches of the main commercial species increased until the start of the 1960s and then declined markedly. This pattern is consistent with an open-access marine resource that is initially abundant but which gets successively over-exploited, species by species.

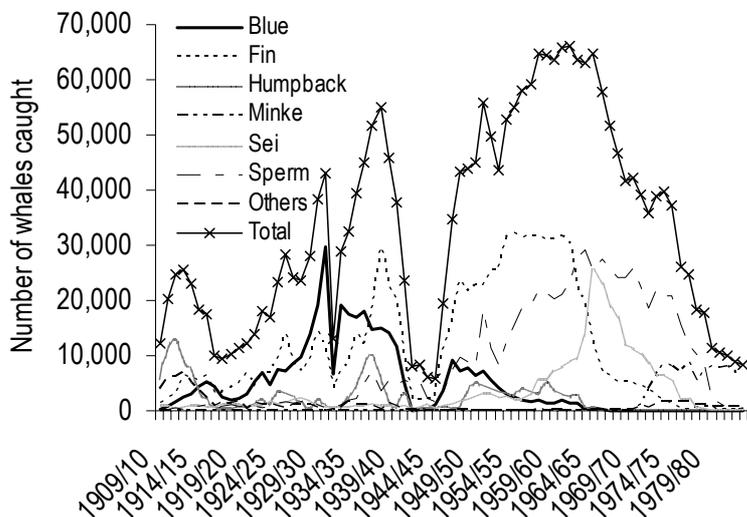
This over-exploitation motivated international efforts in the second half of the century to regulate catches, culminating in the 1982 moratorium. But to what extent were these regulations really the driving force in saving whales from extinction? Our research discussed near the end of the article suggests that the

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regulations largely confirmed the status quo. In other words, a significant reduction in whaling, if not its end, would likely have occurred anyway.

Before discussing this research, we present a brief historical account of the whaling industry and regulations.

Figure 1: Worldwide catches of the main commercial species from 1909/10 to 1983/84



Source: The Committee for Whaling Statistics (annual)

Size does matter

The blue whale, being the biggest species of whale (and of all animals on Earth!) and therefore initially the most profitable, was the first to be targeted by commercial whalers. As blue whales became increasingly scarce, whalers targeted the second biggest species, the fin whale, followed later by the third biggest species, the humpback whale, and so on.

As can be seen in Figure 1, each species' catch data follows similar patterns of increase, peak and decline, but they are increasingly to the right of each other according to their relative physical sizes. The smallest of the commercial species, the minke whale, started being caught only in 1971 and are believed to be fairly abundant — such that they are called the 'cockroaches of sea' by the Japanese, as a justification for killing them.

Thar she blows!

Figure 1 also records that there were two significant falls in the total number of whales caught (all species): in 1931-32 and between 1941-42 and 1944-45. The second drop was during World War II, when nearly all whaling ceased. The first drop was due to an over-production of whale oil,¹ which swamped the market and caused oil prices to fall. To reduce the likelihood of this happening again, whaling companies agreed to quotas limiting the number of whales that could be caught.

Whaling peaked in 1961-62 when 66,026 whales were caught. Thereafter catch figures declined steadily until the International Whaling Commission

¹ Whale oil was used for making soap, margarine and other oil-based products (e.g., lubricants). By the 1960s vegetable oils (e.g., palm, soya, vegetable, kernel, coconut) were increasingly used as substitutes.

approved the moratorium in 1982. During the 72 years covered by Figure 1, a total of 2,497,143 whales were hunted, killed and processed — a figure that reveals the massive scale of global whaling activity.

Whaling regulations

Until 1935, whaling was unregulated under the 'doctrine of the freedom of fishing on the high seas' (even though whales are not fish!). In 1935 a Convention for the Regulation of Whaling came into force, which introduced a quota system based on the Blue Whale Unit (BWU), which equalises the different species in terms of the amount of oil produced from them: 1 blue whale = 2 fin whales = 2.5 humpbacks = 6 sei whales, etc.

Shortly after World War II the International Whaling Convention (IWC) was signed by 15 nations and implemented in 1948. The IWC's main objective of conserving whale populations was to support the whaling industry rather than to protect whales per se. Nonetheless, over the next two decades it became obvious that the IWC did little to prevent the further decline of some species.

The first signs of dramatically collapsing populations came in 1962. The IWC responded by introducing some restrictions, but it was only in 1973, after the whale had become politically significant (and the subject of public protests), that the IWC abandoned the BWU quota system. With further public pressure on the IWC, and as conservationist organisations encouraged non-whaling countries to join the IWC to increase the number of members in favour of halting commercial whaling, a moratorium was achieved in 1982.²

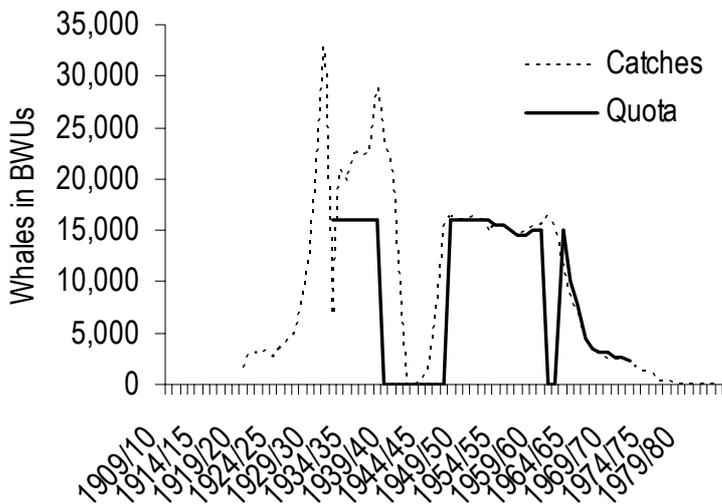
How effective were the regulations?

In 1932 an initial quota for pelagic Antarctic whaling of 16,000 BWUs was set, which remained unchanged until 1954 and was lowered in successive years thereafter until the BWU system was abolished 1973. Figure 2 (next page) shows annual whale catches in BWUs, thereby enabling direct comparisons with the quota. As can be seen, after World War II catches followed the quota very closely, giving the impression that the regulations were effective.

However, with collapsing populations in 1962, it is more plausible that BWU quotas were set far too high from the start, mimicking feasible catches rather than imposing stringent restrictions. Especially after 1962, actual catches were consistently below the quota, indicating that the IWC merely codified the chosen catch path. The main effect of the IWC may have been to smooth catches over time, rather than allowing a large increase followed by a large fall — as was the case before World War II.

² Under IWC rules, aboriginal (or indigenous) subsistence whaling is permitted in the Faroe Islands, Greenland, Russia, St Vincent & the Grenadine Islands and the US. Norway continues to catch minke whales commercially. Whaling for scientific purposes is also undertaken by Japan, Norway and Iceland (International Whaling Commission 2004).

Figure 2: Pelagic Antarctic whale catches and quota



Source: The Committee for Whaling Statistics (annual)

An econometric model of whaling

Game theorists have argued, in general, that self-enforcing international environmental agreements may not be able to improve substantially upon the status quo when the number of countries sharing the resource is very large (Barrett 1994). Therefore international whaling regulations might be expected to have had relatively little effect on whaling.

We tested this hypothesis by econometrically modelling the main determinants of whale catches between the early 1950s and 70s (Schneider & Pearce 2004). Possible determinants of the number of whales caught included: the GDP of whaling nations (representing their levels of development and 'tastes' for whaling), the price of whale oil, the prices of substitutes (e.g., vegetable and mineral oils), whale populations, measures of environmental activism, and whaling regulations. Of these, we found that the GDP of whaling nations and whale populations respectively were the main determinants of whale catches, whereas whaling regulations had very little effect.

Why might GDP be an important determinant of whale catches? At relatively low levels of income, the demand for whales (dead ones) increases with income as they are used as a source of oil mainly for producing food (see footnote 1). However, beyond a certain income level, higher incomes are associated with rising public demand to stop killing whales due to their recreation (e.g., whale watching) and conservation values, including their perceived importance for environmental biodiversity.

Conclusions

The whaling industry was based on the unsustainable 'harvest' of a species that was ultimately pushed to the brink of extinction. Notwithstanding the creation of the IWC, the usual 'Tragedy of the Commons' (i.e., over-exploitation) occurred due to whales being, in essence, a 'common property resource',³ as well as the difficulties of enforcing whaling regulations.

³ Common property resources are resources that it is difficult or impossible to prevent others from consuming (e.g., catching whales) and that other people's consumption prevents you from doing the same (catching the same

Our research suggests that rather than regulations, it was rising GDP (i.e., economic growth) that saved whales from extinction, implying that, to some extent anyway, economies can 'outgrow' environmental over-exploitation. This lends some support for the 'Environmental Kuznets Curve' hypothesis that environmental degradation proceeds as an inverted 'U' shaped curve when measured against real per capita incomes (GDP), both across countries and over time (Panayotou 1997).

Some questions to think about

1. As referred to in the econometric results discussed above, why would the size of whale populations have affected the numbers caught? Conversely, how might the population affect the birth rate?
2. Why is enforcement of whaling regulations, as imposed by the IWC, likely to have been difficult?
3. Sketch an 'Environmental Kuznets Curve' (i.e., environmental degradation plotted against real per capita income, as an 'U' shaped curve), as referred to in the Conclusion, and relate it to whaling.

Useful websites

The International Whaling Commission is at www.iwcoffice.org The West Coast Anti-Whaling society is at www.anti-whaling.com Greenpeace's (anti-) whaling site is at whales.greenpeace.org/whaling. Cetacea Defence is at www.cetaceadefence.org/

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whale twice). In other words, consumption is 'non-excludable' and 'rivalrous'.

Business compliance costs: *BIG* or *small*?

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Prior to 1984, New Zealand was one of the most highly regulated economies of the developed world, but major deregulation has occurred since then. Nonetheless, nowadays, there is a widespread perception that a new wave of regulations is imposing high *compliance costs* on New Zealand businesses. These costs are acknowledged by the Government as being a serious constraint on entrepreneurship and economic growth (Ministerial Panel 2001).

THIS ARTICLE explains what compliance costs are and why they may reduce entrepreneurship and economic growth, and then discusses a recent study by University of Otago researchers that quantifies compliance costs.

What are compliance costs?

When the government passes a new law or imposes a new rule or regulation affecting business, the costs to businesses of responding or adapting to the change are known as compliance costs. Such costs stand apart from taxes and fees and can be either monetary costs or time costs.

For example, the amount of time a business owner spends doing her GST return is a compliance cost, as is any money she pays someone else, such as an accountant, to do her GST return for her. However, the amount of tax paid is not a compliance cost (it is still a cost, but it is not a compliance cost).

Other common examples of compliance costs in New Zealand include the monetary or time costs involved in doing PAYE and income tax returns, complying with Health and Safety regulations, negotiating employment contracts with unions or with individual staff, obtaining resource consents and filling in forms for Statistics New Zealand.

What are their economic effects?

The effects of compliance costs depend on whether a particular compliance cost is *fixed* or *variable*. In other words, it depends on whether the cost is independent of the number of workers the firm employs or the quantity of output it sells (a fixed compliance cost) or, alternatively, whether the cost increases with the number of workers or the firm's sales (a variable compliance cost).

Some compliance costs are more-or-less fixed. For example, the amount of time taken to write a health and safety policy for the work place does not increase much with the size of the firm or the number of workers it employs. For firms with a set of computerised accounts in place, the amount of time taken to do GST returns is also not likely to vary with the firm's size.

Fixed compliance costs do not affect the decisions the owner of the firm makes about whether to employ more people or to expand the business. This is because such decisions are based on *marginal* costs; and fixed costs, in general, do not affect marginal costs.

Nonetheless, as fixed costs are the same for small and large firms alike, they will erode the profits of small firms proportionately more than of large firms. If fixed costs are high enough they may prevent firms from starting up, and may also lead to

existing firms exiting the industry in the long run. Therefore fixed compliance costs can discourage employment and economic growth.

Instead of being fixed, many other compliance costs vary with the number of employees a firm has. For example, the more workers a firm employs, the more time is likely to be taken to deduct PAYE and student loan repayments (for workers with student loans) from workers' wages and to sort out their holiday pay (and to arrange cover when they are on annual or parental leave). For each extra worker that is hired an employment contract must be negotiated, which can also be time consuming.

Clearly, variable compliance costs do affect a firm's marginal costs. Accordingly they affect the decisions the owner of the firm makes about whether to employ more people or to expand the business. Therefore, albeit through a different route to their fixed counterparts discussed above, variable compliance costs can also discourage employment and economic growth. Moreover, being part of marginal costs, variable compliance costs will, to some extent, be passed on to consumers in the form of higher prices.

How high are compliance costs in New Zealand?

A 2003 study by Business New Zealand concluded that firms employing between 1 and 5 workers spend 313 minutes (over 5 hours) per week on compliance (KPMG 2003). This estimate was obtained by asking firms how much time they spent on compliance in the previous 12 months.

A study by the author of this article and colleagues from the University of Otago's Departments of Economics and Marketing used a different method (Alexander, Bell & Knowles 2004). In addition to asking small firms about their experience with compliance costs in the past, they asked them to keep a diary and record the amount of time and money they spent on compliance at the time the cost was incurred. Twenty-five firms were involved in the survey, from five different types of business: cafes, motels, garages, hair-dressers and small engineering firms.

First, the firms were interviewed about their attitudes to compliance costs and asked which ones they had faced over the previous 12 months. Of the 25 firms that took part in this stage of the survey, eight thought compliance costs were a major issue, 11 thought they were a minor issue, and four thought compliance costs were not an issue at all (and two firms did not answer the question). This highlights that not all firms see compliance costs as a problem.

Of the eight firms that thought compliance costs were a major issue, one stated that it had not taken

on additional workers because of the compliance costs involved and another firm argued that compliance would make it think again before buying another business.

The compliance costs most commonly encountered during the previous 12 months related to taxes, employment relations, health and safety, checking and filing ACC premiums, filling in Statistics New Zealand questionnaires and filing returns with the Companies Office.

Firms were then invited to take part in the second stage of the study, which involved keeping a diary for three months, recording as they went along how much time was spent on compliance. Eighteen firms saw this part of the study through to completion. The results are shown in Table 1. As can be seen in the table, on average, firms spent 64.6 minutes per week on compliance, which is considerably less than in the Business New Zealand survey mentioned earlier.

An obvious question to ask is whether spending one or two hours a week on compliance is a lot of time or not. There is probably no correct answer to this question. To someone running a business, one or two hours may well be a significant intrusion into the working week, even though it is only a small proportion of the week.

Table 1: Minutes spent on compliance per week, by firm type

Firm Type	Mean	Median	Minimum	Maximum
Motels	74.3	77.5	22	120
Cafes	56.8	55.5	6	110
Hair-dressers	86.0	53.0	46	159
Engineering	80.0	109.0	21	110
Garages	35.0	38.5	10	53
All Firms	64.6	49.5	6	159

The third stage of the study involved a follow-up interview with the firms, of which 13 participated. The information obtained from the second stage of the survey and the follow-up interview was used to calculate how much money was spent on compliance, in addition to the time costs discussed above. Examples of money spent on compliance include paying an accountant to assist with tax returns, or paying a subscription to an organisation you are required by law to belong to (e.g., garages must belong to the Motor Trade Association if they want to issue Warrants of Fitness).

The results are reported in Table 2, where the first row is for all compliance costs and the second is for all costs other than payments to accountants. Clearly, payments to accountants make up the bulk of monetary compliance costs. The wide variation across firms in their costs (ranging from \$13.46 to \$464.05) highlights that different firms have very different experiences with compliance costs. The mean of \$110.19 per week is not an insignificant amount and suggests that the monetary cost of compliance is more important than the time cost.

Another thing to emerge in the follow-up interview was that most firms spend several periods of time each week dealing with compliance, rather than one solid block of time. Some firms pointed out that it was not the amount of time per week they

spent on compliance that was the problem, but the number of time periods. This is important from a government policy perspective. Simply reducing the total amount of time spent on compliance will not satisfy these firms, what is needed is a reduction in the number of tasks they must perform.

Table 2: Direct dollar amounts spent on compliance per week

	Mean	Median	Minimum	Maximum
All costs	110.19	73.44	13.46	464.05
All costs except payments to accountants	47.26	33.76	0	215.00

Conclusion

There is a perception that compliance costs are high for businesses, especially small businesses, in New Zealand. However, when it came to quantifying them, it would seem that firms do not spend as much time on compliance as was previously thought. Nonetheless, many firms perceive compliance as a serious problem, and this perception may well prevent businesses from expanding.

Some questions to think about

1. In general, profit-maximising firms produce to the point where the marginal cost (of production) equals marginal revenue (i.e., $MC = MR$). With reference to this condition, distinguish between the effects on a firm's behaviour of increases in fixed and variable compliance costs respectively.
2. Imagine that there were an increase in a variable compliance cost (thereby increasing the marginal cost of production). What determines how much of this cost increase will be paid by the firm, and how much will be passed on to consumers?
3. Would spending one to two hours per week filling in forms for the government put *you* off starting a business, do you think? Might this depend on the type of business you were thinking of starting?

Further reading

More information about the research that this article is based on is available from Alexander, Bell & Knowles (2004).

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Bilateral trade: Defending the unbalanced

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It was recently reported that US imports in 2003 exceeded exports by a record US\$500 billion (NZ\$700 billion). It was then noted that a quarter of this trade deficit was due to trade with China. By highlighting the imbalance in US-China trade, the report implied that this piece of information in itself was of some significance. But is it really?

CERTAINLY, some Americans feel that this bilateral deficit is a sign of unfair trade practices on the part of the Chinese. Specific complaints that have been made include:

- The Chinese government is preventing its currency, the yuan, from appreciating against the US dollar and so reaching its 'true value'.
- The high proportion of non-performing loans (i.e., ones where the debtor is behind in repayments) held by state-owned Chinese banks is tantamount to a government subsidy for Chinese firms.
- Although the US market is open to Chinese goods, the Chinese are still imposing barriers to American goods.

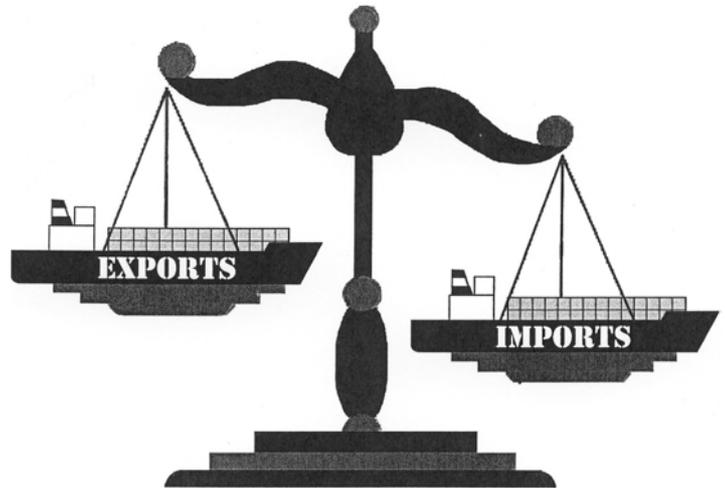
And it's not just obscure Sinophobes who are complaining. The US Commerce Secretary, Don Evans, has warned China that US patience over the trade deficit "is wearing thin" (BBC News 2003). The US government has also been pressuring China to revalue the yuan and has placed import quotas and tariffs on certain Chinese goods. Moreover, a group of US senators from both sides of the House of Representatives are sponsoring a bill that will slap a 27.5% tariff on *all* imports from China unless the yuan is revalued.

Similar attitudes to bilateral trade imbalances can also be found in New Zealand. Reports backgrounding New Zealand's relationship with another country speak brightly of bilateral trade being 'in our favour' when our exports exceed imports, but adopt a more concerned tone when we have a bilateral trade deficit. The following extract from a recent speech by Helen Clark (2003) is also illustrative:

But I have a challenge tonight for New Zealand's exporters. New Zealand has a substantial trade deficit with Germany. For the year to June 2003, the deficit appears to be larger than the value of all our exports to Germany. Clearly we New Zealanders have work to do in the German market.¹

But is this attitude justified? Should we be aiming to prevent trade with individual countries from being unbalanced?

¹ For much stronger examples of the view that bilateral trade deficits are bad, see the Green Party website (www.greens.org.nz). Follow the 'press releases' link and search for comments on free trade deals with China, Thailand and Singapore, as well as the CER agreement with Australia.



Balanced bilateral trade is the exception, not the rule

The balance of trade between two countries results from thousands of independently taken decisions. An individual importer, for example, may choose to buy one country's good over that of one or more others because it offers the best value for money. In making that decision she takes no more account of our overall balance of trade with that country than she would take of the phase of the Moon (or any other piece of irrelevant information for that matter). Bilateral trade transactions are simply not co-ordinated in any way to ensure that they are kept in balance.

If trade *were* controlled such that bilateral trade was always in balance, it would only make us worse off. If forced to import goods from one country simply because we sell a lot to it, we may be missing out on a cheaper or better product produced elsewhere. Similarly, if forced to export goods to a market in order to be able to directly cover the cost of imports from it, we may have to accept a lower price than is on offer elsewhere. To gain the most from international trade, we need to be able to 'buy cheap and sell dear' without restriction.

That this implies trade flows will often be unbalanced follows simply because countries differ in terms of:

- their endowment of natural resources;
- the skills of their workers;
- the capital equipment and technology available to them; and
- the sorts of goods their residents like to consume.

So, for example, New Zealand requires much more oil than it can produce domestically. But, if oil is produced in a country with a hot climate, or a population that has a low-dairy diet or a preference for grain-fed beef over grass-fed sheep, then we

would struggle to sell enough wool, butter or lamb to that country to pay for our oil imports.

That unbalanced trade between two countries is a totally unremarkable (and yet desirable) state of affairs can perhaps be more clearly seen by considering your own trading relationships. If you catch a movie at your local multiplex each week, but the multiplex never buys anything from you, then you are running a bilateral trade deficit with this firm.² This pattern of trade could continue your entire life and there will never be any need for you to sell anything to the multiplex in order to 'square the account'. In fact, to suggest that this would be necessary would seem laughable to most people. All you need to do to pay for your tickets is to earn the required cash by selling something to someone (anyone!) else — in other words, you need to run a bilateral trade surplus with another person.³

Unbalanced trade and the international monetary system

What's true for individuals is also true for countries. If New Zealand happens to have a trade deficit with Japan, then (at some point) we can pay for it by running a trade surplus with, say, the UK. And, because of two key features of the international monetary system, it doesn't matter that we need yen to pay for our Japanese purchases while our exports are earning pounds.

For starters, the existence of the foreign exchange market means that we can try to sell the pounds we earned for yen. But, suppose this doesn't work. Perhaps *all* countries are currently running deficits with Japan so everyone wants to buy yen and nobody wants to sell it. Moreover, suppose the Japanese government is trying to prevent the yen's price (i.e., its exchange rate) from rising to clear this excess demand. In this case, we can simply settle our trade deficit with Japan using *reserve assets*.

A reserve asset is defined as an asset that countries around the world have implicitly or explicitly agreed may be used as a means of payment — like an internationally-acceptable form of money. Historically, gold and silver have had this role but, in more modern times, key currencies have had reserve asset status. Currently, the pound, the euro, the Swiss franc and the yen itself have this role to a limited extent, but the world's main reserve asset today (and for the last 60 years) is, of course, the US dollar. So, given the circumstances described above, we should be able to sell US dollars to the Japanese government in exchange for the yen we need to pay our Japanese suppliers. Providing we can continue to receive more US dollars over time (through raising foreign loans or running trade surpluses with other countries), then we can have a trade deficit with Japan forever.

So, how can bilateral trade imbalances be bad if the international monetary system has always been designed to accommodate them?

Unbalanced trade = unfair trade?

Remember the claim at the beginning of the article that trade imbalances reflect unfair trade practices on the part of the surplus country? The previous discussion — which made the point that such imbalances are a totally natural and everyday phenomenon — also means that simply observing a trade imbalance (or even a sudden change in the size of an imbalance) could occur for any number of reasons unrelated to the 'fairness' of trade practices. New Zealand, for example, ran a \$308m surplus with the UK last year, but our market is one of the most open in the world. So, the trade balance isn't a reliable indicator of government interference with trade.

But, suppose the USA were running a trade deficit with China *because of* policies implemented by the Chinese government? Is the US economy harmed (and the Chinese one enriched) by this?

As mentioned above, a specific charge levied against the Chinese is that they have been undervaluing the yuan over the last couple of years (by keeping its exchange rate fixed against the dollar while the latter has depreciated against other key currencies). Hence, it is argued, Chinese goods have become 'artificially' cheap and the yuan should be revalued.

In a sense, having an undervalued domestic currency is like having an export subsidy on everything you sell overseas. But who's hurt by this assistance to Chinese exporters? Sure, American firms competing with imports from China make less profit than if the yuan were stronger (and the prices of Chinese goods, in dollar terms, higher). But — because US consumers benefit from low prices and because, by definition, US *consumption* of the good in question must be greater than its domestic *production* (since some of it is being imported from China) — the gain to US consumers must be greater than the loss borne by US producers.⁴

Another complaint levelled against China is that it has been using 'red tape' and regulations to hinder US goods' access to its own market. If we assume that this is true then, as trade is prevented from taking place, standard economic theory would tell us that the Americans are missing out on some of the gains from trade — but so are the Chinese. If China is using trade barriers to protect domestic producers from more efficient American competitors, then what we have is a 'lose-lose game'.

A final point to note here is that, *if* China's trade surplus with the USA is larger than it *should* be due to its choice of trade policy, then this means that it must be accumulating US dollars faster than it would under free trade. The Chinese then have the choice of either holding these dollars as cash or (more sensibly) using them to buy American financial securities (e.g., Treasury bonds) or other assets. In other words, if the Chinese are buying fewer American goods than they would have under free trade, they must end up investing more in the USA as well. China's greater demand for US financial assets means that Americans can borrow from the Chinese at a lower interest rate than would otherwise

² Balanced bilateral trade in this context would mean that only multiplex employees would be able to see movies!

³ Of course, you might simply borrow the money you need to buy a ticket and this would not involve a trade surplus. However, eventually you'll need to repay the loan and at that point you need to earn more than you spend (i.e., have a trade surplus) in order to do so.

⁴ As many US firms are direct or indirect consumers of imports, there's no reason to presume that there will be a net loss of employment within the US economy either.

be the case. Again, this is a gain for the USA at China's expense.

So, in summary, bilateral trade imbalances are a fact of life. They are not in themselves a sign of 'unfair trade practices'. And even if they were, this does not imply that the country with the trade surplus is gaining at its trading partner's expense. In fact, quite the opposite may well be true!

Some questions to think about

1. If the Chinese Government were explicitly or implicitly subsidising its exporters, who in the USA would be hurt? Who would it benefit? Does it hurt the US economy as a whole?
2. Suppose that China currently has a bilateral trade *deficit* with the USA. Would your answers to the previous question be affected by this change?
3. If the total loss to a small group of US firms from 'artificially cheap' imports from China is smaller than the total gain enjoyed by many US consumers, why is the US government pressuring China to revalue the yuan?

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Who will pay? The curious case of a new tax on Central Otago land

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In March this year the Queenstown Lakes District Council (QLDC) imposed a one-off tax, referred to as a “development contribution”, of \$6716 on all new residential sections sold in Queenstown and \$8772 on sections in Wanaka, and other councils are considering introducing similar taxes (Jamieson 2004). Land developers are unhappy because they fear the tax will push up the prices that they must pay for already expensive sections. Are they right?



IN ANY CASE, surely land developers will try to pass on the cost of the tax to someone else. But who? Purchasers of the sections (e.g., home buyers) would seem to be the obvious candidates. Instead might it, in fact, turn out to be the original owners of the land (e.g., farmers) — from whom developers buy the land — who end up paying most of the tax?

A little economic analysis should convince us that, at least in places like Queenstown and Wanaka, instead of shifting the tax *forward* onto land buyers, developers might be able to shift the tax *backward* onto land sellers. In other words, it is land sellers, and not land buyers — nor developers — on whom the main ‘incidence’ of the new tax will fall.

The ‘incidence’ of a tax

Economists have for a long time been interested in the market effects of taxes. First, what is the effect of the tax on the allocation of resources — i.e., how does a tax affect the quantity of the product produced and traded? Second, who bears the burden of the tax? The people most negatively affected financially by the tax may not be those on whom the tax is levied.

The answer to this second question describes what economists refer to as the ‘incidence’ of the tax. The general rule is that the people who pay the bulk of the tax are simply those who are the least willing or able to avoid it.

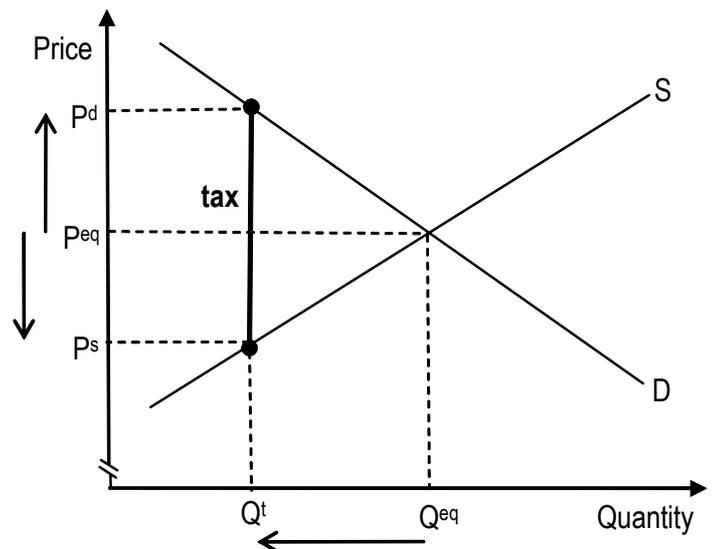
The standard analysis of a tax uses a supply and demand model, as in Figure 1. As usual, the supply curve shows the quantities of the good that suppliers are willing and able to bring to market at every price, which depends on the costs incurred in doing so. The demand curve shows the quantities of the good that consumers are willing and able to purchase at every price. It slopes downward to the extent that consumers receive differing amounts of benefit from consuming the good. The quantity supplied equals the quantity demanded at price P^{eq} , and the market is in equilibrium because no demander or supplier goes away unsatisfied with the amount of trading. In other words, P^{eq} ‘clears the market’.

Now let’s introduce a tax imposed on each unit of the good traded. Irrespective of whether the tax is levied on consumers or suppliers (i.e., which group writes the cheques to the government),¹ the effect of

the tax is to drive a ‘wedge’ between the price that consumers pay for the good (P^d) and the price that suppliers get to keep (P^s). Specifically, after the tax is levied, P^d exceeds P^s by exactly the amount of the tax — i.e., $P^d = P^s + \text{tax}$ (e.g., a tax of \$1 per unit means $P^d = P^s + \$1$).²

This is illustrated in Figure 1. Naturally, the effect of the price paid by consumers rising from P^{eq} to P^d and the price pocketed by suppliers falling from P^{eq} to P^s is to simultaneously reduce the quantities demanded and supplied respectively, such that the quantity traded falls to Q^t (where demand = supply). Clearly, the price change for each group individually is less than the full amount of the tax (but the difference between P^d and P^s is exactly the full amount). Thus the ‘incidence’ of the tax (i.e., who bears it) is shared between consumers and suppliers — as drawn in Figure 1, they share roughly equally in ‘paying’ the tax. The reason is that the slope of Figure 1’s supply curve is roughly equal to the absolute value of the slope of the demand curve; suppliers and demanders in this case are roughly equally sensitive to changes in price.

Figure 1: The effect of a tax in general



the benefits they receive from consuming the good, thereby shifting the demand curve downwards by the amount of the tax. In either case, the result in terms of the effects on the prices the two group pay and pocket respectively is as explained here.

² Clearly, before the tax was introduced, instead of there

¹ A tax on suppliers adds another cost of making a trade, and so the supply curve shifts upward by the amount of the tax. Alternatively, a tax on consumers reduces the value of

In general, therefore, the incidence of a tax depends on the relative slopes of the demand and supply curves.³ As can easily be proved by sketching diagrams analogous to Figure 1, the steeper the demand curve, the greater the incidence of the tax on consumers. Similarly, as we shall see in Figure 2, the steeper the supply curve, the greater the incidence of the tax on suppliers.

A steep demand curve means that consumers are relatively insensitive to changes in price; they'll continue buying the good even if the price rises. Demand in this case is *inelastic*. Similarly, a steep supply curve (*inelastic* supply) means that suppliers are relatively insensitive to changes in price; they'll continue supplying the same quantity of the good even if the price rises or falls. (Conversely, a relatively flat demand/supply curve means that a small increase in price induces a big drop/rise in the quantity demanded/supplied. In this case, demand/supply is *elastic*.)

Taxing 'sin'

Governments are especially attracted to taxing goods for which demand is inelastic, such as cigarettes, alcohol, and petrol. Taxes on these goods — sometimes known as 'sin taxes' — generate large amounts of tax revenue without costing many jobs, and the tax can be rationalised as a way to pay for the 'external' costs that consumption of these goods generates: pollution, health-care costs, and so on.⁴ Consumers pay the bulk of the tax because suppliers are so much more flexible.

Taxing land

Governments also like to tax land ownership. The most common form of land tax, the property tax, is referred to in New Zealand as 'rates' because the tax on each property is a fixed *proportion* of the market value of the property.

The property tax rate, for example, might be 1% of the market value of the land or the land and structure (e.g., a house). So the amount of tax varies with the market value of the property; every property owner pays a different amount of tax.

Rates help local councils pay for a wide variety of local public goods and services. The rationale for charging a tax that varies with the value of the property is that the people who own more expensive land and structures on average value more highly the public goods and services that the council supplies.

As referred to at the beginning of the article, the \$6716 tax ("development contribution") on all new residential sections sold in Queenstown and \$8772 on sections in Wanaka imposed by the QLDC is a little different in that it represents a one-time payment in addition to the annual rates charge. The tax applies to all new sections regardless of their market value. It is intended to raise revenue that the council can use to improve and extend public services to cope with the higher demand that comes with population growth.

being two prices in the market there was just one — i.e., $P^d = P^s = P^{eq}$.

³ So too does the amount of revenue the tax raises for the government.

⁴ The taxing of commodities in developed countries that are in inelastic demand is described in *The Economist* (2004).

The rationale for imposing the tax only on new sections, rather than raising rates on all properties, is that existing residents believe newcomers should pay for the costs associated with growth. The question is, will they?

They aren't making land anymore

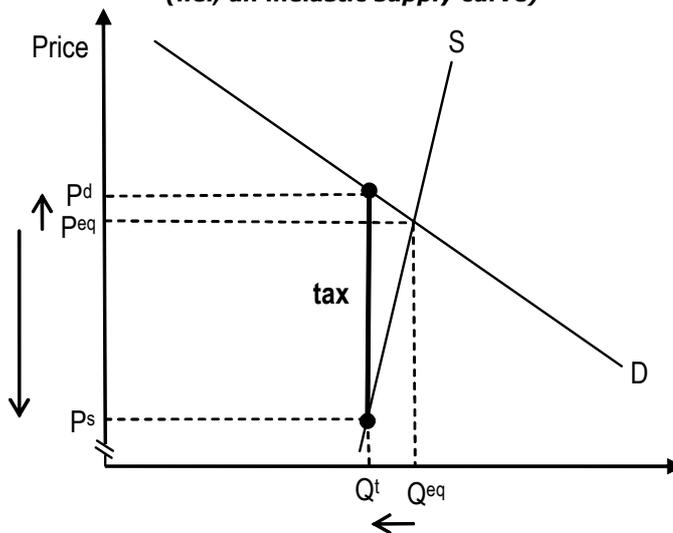
The key to the analysis is that land in Queenstown and Wanaka with great views of the lakes and mountains and that is zoned for development is in highly inelastic supply. Not only is it impossible for much more land to be supplied when prices rise (as Will Rogers put it, "they aren't making it anymore"⁵), but land owners also cannot pick up their land and shift it away when prices fall.

Evidence for such land being in inelastic supply comes from recent reports of section prices beginning to slip (Thomas 2004). Buyers appear unwilling to pay the prices that sections were commanding only a few months earlier.

Another clue is that much of the increase in the past few years in the prices of new houses has been accounted for by increases in the prices of the land on which the houses are built. The cost of building a structure has increased with market pressure on labour and materials, but land owners in and around Queenstown and Wanaka have been the fortunate recipients of substantial windfall gains from land sales.

The analysis in Figure 1 can be modified as shown in Figure 2 by substituting a very inelastic (i.e., steep) supply curve — this time for land in Queenstown and Wanaka. Consistent with the earlier discussion, the \$6716 tax imposed on new Queenstown residential sections (analogously for the \$8772 tax on Wanaka sections) means that land developers must pay \$6716 more (per section) than is pocketed by land suppliers (e.g., farmers) — i.e., $P^d = P^s + \$6716$.

Figure 2: The effect of a tax on land (i.e., an inelastic supply curve)



⁵ This isn't strictly true, of course. Most of the industrial area on Otago Harbour is built on reclaimed land — i.e., shallow areas of the harbour filled in with rocks and soil. And the big island of Hawaii is still growing in land area as volcanic lava flows to the sea. Likewise, land suitable for residential development is not in fixed supply in New Zealand. Farmland near many towns and cities is converted into residential sections as consumers bid up the price of houses and sections.

Thus, although they physically write the \$6716/\$8772 tax cheques, developers in Queenstown/Wanaka do not really pay much of the tax. Instead the bulk of it is borne by the owners of the sections.

Why? Because land owners cannot pick up their land and move it to 'greener pastures' when they are offered lower prices; they have to take what they can get from developers. Developers avoid the tax by considering it as another cost when deciding how much to bid for a section: they start with the market price of a section and then subtract the costs of development, their time *and the tax*. Thus the imposition of a new tax (and any increases in these other costs) means lower bids to land owners.

And, so, rather than it being the newcomers to Queenstown/Wanaka who pay for the costs associated with growth (caused by the newcomers' arrivals), it is in fact the 'locals' (the land owners) who end up paying the bulk of the tax!

Some developers may, however, get caught out if, after they've purchased the land, the government surprises them with an unexpected tax increase. Developing land and selling sections takes time: the developer has to obtain resource consents, arrange for construction of streets and other neighbourhood infrastructure, and market the sections. He has to pay any tax imposed after he has purchased the land. At that point, of course, he is not only a land developer, but also a land owner.⁶ There may have been some developers in Queenstown and Wanaka caught out in this way.

Some questions to think about

1. Is the one-off charge on new sections a 'fair' way to distribute the cost of public services?
2. With reference to Figures 1 and 2, which scenario (in terms of different price elasticities of supply) will raise the most tax revenue? Also, can you see why sin taxes (as discussed above) are popular with governments in general?
3. The QLDC plans to use the tax revenue to improve public services. How will improved services affect the market for land?
4. What happens if the QLDC decides to include more land in residential zones?

Further reading

For an interesting and accessible history of the property tax in New Zealand, see McCluskey, Grimes & Timmins (2002).

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⁶ Developers try to avoid this problem by purchasing the option to buy land rather than the land itself.

Commentary on the New Zealand economy

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New Zealand's current account deficit has been threatening to break through the psychologically important barrier of 5% of GDP in recent quarters (which many commentators regard as being unsustainable). This situation represents quite a turn around from just two years ago when the deficit was about half its current size.

REASONS FOR the dramatic increase are not hard to find. A buoyant economy and a strong dollar have both contributed to rapid growth in the volume of goods imported. That the value of imports has hardly changed merely reflects the offsetting effect of the higher exchange rate on the New Zealand dollar price of foreign goods.

The dollar's strength has also hit exporters in the back pocket. Although a recovering world economy and a generally favourable growing season have helped boost export volumes, export prices (in NZ\$ terms) have fallen in every single quarter since June 2001, pulling export earnings down.

Is the current account deficit likely to grow much larger? Indications are that it probably will not do so, for several reasons.

First, over recent months the RBNZ has taken steps to slow the economy down a little, raising the Official Cash Rate (OCR) from 5.0% in January to 5.75% by June (with further increases expected).

Second, although still quite strong, the dollar seems to have passed its peak. Recent falls in its value have been reflected in sharp rises in the ANZ

Bank's Commodity Price Index in both April and May (see www.anz.com/nz/tools/newslibrary.asp?Commodity_Price_Index). The decline in export prices seems to have been stemmed.

Third, even if the dollar remains at its present level, prospects for further export price rises are reasonably bright. Most people will be aware of the rise in oil prices over the last year or so, but the prices of most other commodities (including many that New Zealand exports) have also been rising sharply. This is largely thanks to strong growth in demand (in particular, in China) and some difficulties with supply (e.g., Australia's recent drought reduced its wool clip).

The net result so far has been a 9% rise in New Zealand's terms of trade (the ratio of export prices to import prices) in just over a year. The series is currently as high as it has been at any other time in the last 25 years and, based on the ANZ's figures, seems likely to rise at least a little further.

All of this should help exports close the gap with imports, at least a little, over the next year or so.

	Quarter				
	Mar 2004	Dec 2003	Sep 2003	Jun 2003	Mar 2003
GDP (real, annual growth rate, %)	3.6	3.4	3.8	4.1	4.4
Consumption (real, annual growth rate, %)	4.8	4.3	4.2	3.9	4.0
Investment (real, annual growth rate, %)	14.2	11.5	9.2	9.8	6.7
Employment: full-time (000s)	1524	1508	1501	1481	1467
Employment: part-time (000s)	431	431	437	431	428
Unemployment (% of labour force)	4.3	4.6	4.4	4.7	5.0
Consumer Price Inflation (annual rate, %)	1.5	1.6	1.5	1.5	2.5
Food Price Inflation (annual rate, %)	0.5	0.2	0.3	0.0	-0.2
Producer Price Inflation (outputs, annual rate, %)	0.9	1.1	0.7	-0.6	-0.4
Producer Price Inflation (inputs, annual rate, %)	-0.6	-0.1	0.1	-1.9	-1.3
Salary and Wage Rates (annual growth rate, %)	2.2	2.3	2.3	2.3	2.3
Narrow Money Supply (M1, annual growth rate, %)	12.6	9.0	10.8	4.8	3.0
Broad Money Supply (M3, annual growth rate, %)	7.0	5.6	4.8	4.1	6.0
Interest rates (90-day bank bills, %)	5.54	5.32	5.15	5.23	5.81
Exchange rate (TWI, June 1979 = 100)	66.3	65.1	62.2	61.4	60.9
Exports (fob, \$m, year to date)	28,615	28,397	28,730	29,291	30,271
Imports (cif, \$m, year to date)	32,357	31,782	31,944	32,161	32,168
Exports (volume, June 2002 [not seas. adj.] = 1000)	1034	967	939	928	955
Imports (volume, June 2002 [not seas. adj.] = 1000)	1361	1256	1203	1186	1125
Terms of Trade (June 2002 = 1000)	1058	1035	1004	1007	996
Current Account Balance (% of GDP, year to date)	-4.2	-4.2	-4.2	-4.0	-3.3

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

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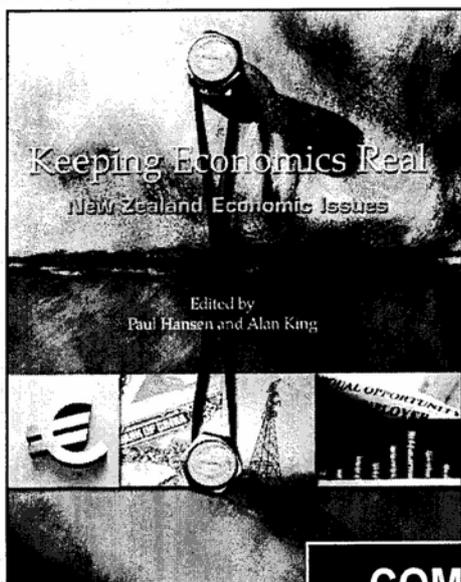
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Forty of the best articles from Issues 1 to 11 have been revised and updated and published in a book by Pearson Education, available in late July (this year): *Keeping Economics Real: New Zealand Economic Issues*, edited by Paul Hansen & Alan King. See the next two pages for more information.



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