

# Inflation, Deflation and All That

*Address by Mr GR Stevens, Deputy Governor, to Australian Business Economists 2002 Forecasting Conference Dinner, Sydney, 4 December 2002.*

## Introduction

In the formative years of the current generation of economists, inflation was considered to be one of the most pressing macroeconomic problems. That's not surprising, since most of the net rise in prices that has occurred in human history took place between the late 1940s and about 1990, as a plot of any price index in any industrial country would show.

In Australia's case, it was observable during the 1950s that, in periods of business cycle downturn, prices stopped rising but didn't actually fall. This was in contrast to the pre-World War II experience, where price levels did fall during recessions (Graph 1). By the second half of the 1960s, it was even clearer that the price level had acquired a persistent upward trend, and around that time it became normal to look at the price level in its first difference form (i.e., the inflation rate) rather than its level.<sup>1</sup>

**Graph 1**



As all of us here remember only too well, inflation reached nearly 20 per cent during the mid 1970s. Thereafter policies aimed at reducing it, with mixed success at first, but more lasting success in the aftermath of the early-1990s downturn. A number of other countries had more clearly broken the back of serious inflation in the early 1980s; we took a little longer. But in general it could be said that the period of really serious inflation in the western world lasted from the late 1960s until the early 1990s.

1. As a gauge of this I consulted successive RBA *Annual Reports*. Throughout the 1960s, the level of the CPI was plotted in charts. The first time it appeared in changes was in the Report for 1969/70.

The subsequent decade has been a period of low inflation almost everywhere. Most recently, with a global business cycle downturn, inflation globally has declined further, and is currently low to very low in most places. So it is natural to ask whether, after a generation worrying about inflation, we might be faced with *deflation*. Certainly the word ‘deflation’ is used with much greater frequency than it has been for a long time. Its use usually conjures up some vague notion of the Great Depression, which was the last time a widespread deflation occurred. So it is worth examining this in more detail. I want first to be clear what we mean by deflation, then to ask whether it is in fact occurring. Then I want to ask whether we should worry about it, and if so, what we might do to counter it.

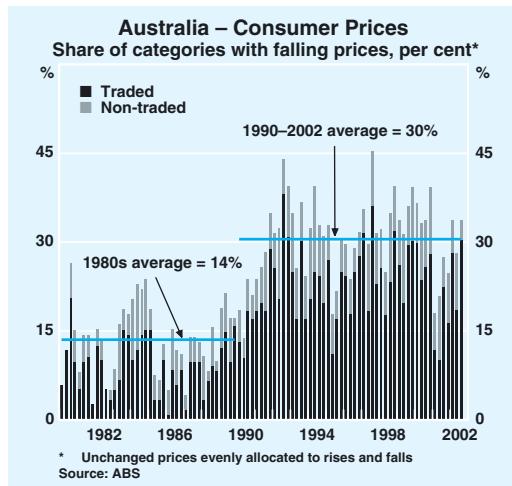
Let me be very clear at the outset, and I will repeat this more than once in what follows, that Australia is **not** experiencing deflation now, and is unlikely to do so any time soon. The issue is an international one much more than a domestic one, but given its prominence it is worth some consideration.

### What is Deflation, and Why would it be a Problem?

Deflation is a generalised and persistent decline in most, if not all, prices for goods and services. More likely than not this, if it occurred, would be accompanied by declines in prices for many real assets and pressure for, even if not the actuality of, declines in wage and salary incomes.

A situation where we observe declines in the prices of *some* products does not qualify as deflation in this sense. It is nearly always the case that prices for some things are falling, while prices for other things are rising. Were we to look at the 100-odd expenditure classes in the Australian consumer price index, we would find that about 30 of them record a decline in any particular quarter (Graph 2). This has been a feature of the low inflation era since 1990. Even in the high inflation

**Graph 2**



period of the 1970s and 1980s, it was normal to see 10 to 15 per cent of expenditure classes recording price declines in any given quarter.

This kind of *relative* price change is the price mechanism at work in the market economy, and is to be distinguished from general deflation where prices of most or all things decline. A simple but useful working definition of deflation, then, is when the prices of enough goods and services decline to cause aggregate price indices like the CPI to record a fall.

Deflation of that general nature was once a not-uncommon event. For example, in the 19<sup>th</sup> century, it was normal to think of a relatively stable average price level over fairly long periods, but with noticeable fluctuations around the mean over periods of some years – with periods of inflation being followed by periods of deflation. In Australia, up to 1914, deflation occurred in almost half the years for which we have data, an outcome not dissimilar to those seen in other countries (see Table 1). It was really only in the last few decades of the 20<sup>th</sup> century that we became accustomed to the idea that the price level normally rises, even in times of peace, and almost never declines.

Deflation need not be harmful. In cases where exceptionally strong productivity growth accompanies very strong demand growth, the price level can fall even as

**Table 1: Deflation**  
Proportion of years in which CPI fell,  
year-average basis

	1870– 1914	Inter- War	Post War
Australia	45.5	36.4	1.8
Canada	31.8	40.9	1.8
UK	38.6	36.4	0.0
US	25.0	50.0	3.5
Austria	50.0	22.7	1.8
Belgium	43.2	31.8	7.0
Denmark	54.5	45.5	3.5
Finland	34.1	40.9	1.8
France	59.1	40.9	3.5
Germany	38.6	22.7	5.3
Italy	45.5	31.8	1.8
Japan	31.4	36.4	12.3
Netherlands	31.8	54.5	1.8
Norway	36.4	50.0	3.5
Sweden	43.2	50.0	1.8
Switzerland	31.8	50.0	8.8

Sources: 1870–1980 from Angus Maddison (1991), *Dynamic Forces in Capitalist Development*, Oxford University Press, Oxford. Subsequently, national sources.

incomes, profits and economic activity expand. This sort of ‘good’ deflation can, in principle, be seen in the aftermath of some sort of technology breakthrough, or perhaps the opening up of a previously over-regulated or closed economy to the incentives of the competitive market place. No-one is likely to worry much about this sort of deflation, as it will coincide with a feeling of increasing prosperity.

Why might deflation be harmful? The main reason is because of fixed nominal contracting of wages, debts, etc. The real value of a dollar is higher after deflation than it was before. So if you owe a dollar, your debt burden is higher. If you are owed a dollar, or earning a dollar, your real wealth or income is higher. Price changes of this nature, if they are unanticipated, lead to a different distribution of wealth and income than people had banked

on when they made their contracts. Usually, this is disruptive to the economy (not to mention unfair). This is a problem of exactly the same nature as those which arise with inflation, except in reverse. In time, of course, people learn that price changes are occurring, and adjust their behaviour accordingly. But adjusting incomes downward for deflation is typically harder to do than adjusting them upwards for inflation. So percentage point for percentage point, deflation is arguably a bit more painful than inflation.

Harmful deflation typically occurs in parallel to developments in prices for assets and balance sheets. This is usually in the aftermath of a boom accommodated by a big run up in debt, involving a large increase in capacity in response to very optimistic expectations about future sales and profits. When the optimistic expectations cannot be met, it is apparent that firms are over-invested and over-leveraged. They are then under pressure to shore up their balance sheets. Asset prices fall, as firms seek to disinvest. Banks and other lenders find that the quality of their assets has deteriorated, and are tempted to reduce the flow of new credit in order to conserve their own capital. Aggregate demand in the economy declines, and prices for goods and services fall. This is the ‘debt deflation’ described by Irving Fisher many years ago. Depending on the size of the preceding boom, and on the policies pursued during the bust, this process can be exceedingly painful.

In the case where expectations of ongoing deflation become strongly held, moreover, it is possible that some fairly serious problems of economic management can emerge. Expectations that prices will continually fall may lead people to postpone spending, which of course amplifies the deflationary pressure. The rate of deflation might, in extreme circumstances, also mean that attempts to boost growth by reducing interest rates run into the problem that the nominal interest rate cannot fall below zero, which might mean that the real interest rate is too high for the economy’s needs. I return to this below.

## Is Deflation Happening? Might it Happen More Widely?

Deflation is certainly not happening in Australia. For the year just past, the CPI rose by about 3 per cent. Underlying measures rose slightly less than that (Graph 3). About 70 per cent of the items in the CPI basket recorded increases, while 30 per cent of them fell, which as I noted above is fairly typical of the experience of the past decade. In the part of the economy where prices are determined by market forces (as opposed to being subject to direct influence of government), prices for goods rose by about 2 per cent, while prices for services rose by nearly 5 per cent. In the period ahead, our forecast is that inflation will continue to be about where it is now.

Nor is deflation happening, by any normal definition, in North America or Europe. The US CPI rose by about  $1\frac{1}{2}$  per cent over the past year. Goods prices declined by about 1 per cent, partly as a result of the strength of the US dollar, but services prices rose by over  $3\frac{1}{2}$  per cent. In Europe, the CPI rose in core terms by a bit over 2 per cent, with goods prices up a little over 1 per cent, and services

prices by over 3 per cent. The lowest rates of price increase are occurring in Germany and Belgium, with inflation of about 1 per cent in both cases. So there is no deflation here on average, or even in the lower tail of the distribution.

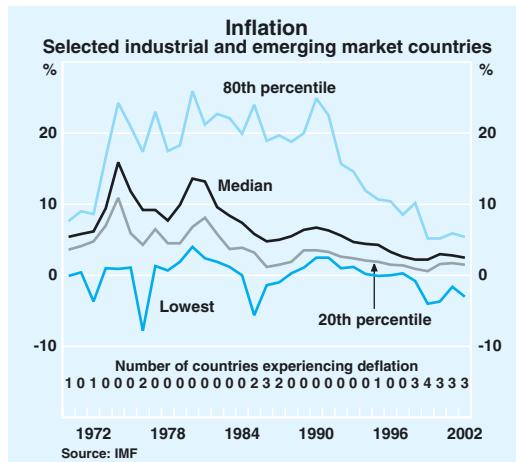
Rates of price increase are, however, pretty low around the world. Graph 4 shows some characteristics of the set of inflation outcomes for a group of countries, 48 in all, classified by the IMF as advanced industrial countries or emerging market countries. The median inflation rate here is about  $2\frac{1}{2}$  per cent, which is down from about  $6\frac{1}{2}$  per cent in 1990. The 20th percentile inflation rate in this simple unweighted distribution is about  $1\frac{1}{2}$  per cent – i.e., one country in five in this sample has inflation of  $1\frac{1}{2}$  per cent or lower. The 80th percentile inflation rate is about  $5\frac{1}{2}$  per cent, compared with about 25 per cent in 1990.

Given the central tendency for inflation to be this low, it is not surprising that, when we look to the lower tail of the distribution for this broader group, we find that a handful of countries have deflation. Interestingly, they are all in Asia.<sup>2</sup> The graph shows annual average inflation rates which hide some of the short-run dynamics. But one can count about five countries in Asia whose annual CPI

**Graph 3**



**Graph 4**



- Argentina was in deflation prior to the collapse of the currency board arrangement early this year, but that has now been followed by the rather more familiar problem of inflation, accompanied by a host of other serious difficulties.

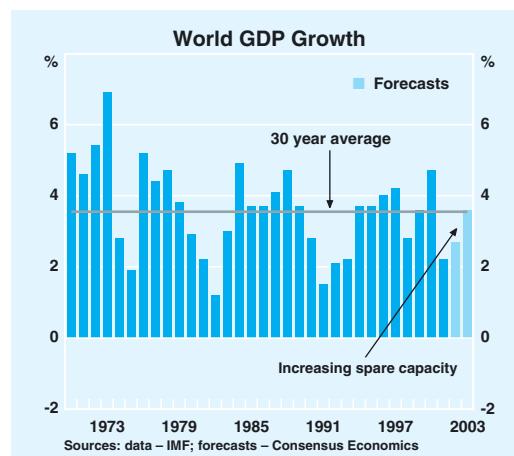
inflation figures are now, or at some point within the past year have been, below zero. These are China, Japan, Hong Kong, Singapore and Taiwan.

One could debate in each individual case what the proximate causes of this are, and whether it is 'good' deflation or bad. China's deflation is arguably a candidate to be classified as 'good' deflation, since it seems to be associated with rapid overall growth and rising living standards. Hong Kong's deflation is partly necessitated by the peg to the strong US dollar, though of the cumulative decline of about 13 per cent in Hong Kong's CPI since mid 1998, about half is due to declining rents, which is more associated with the decline in housing values after the earlier boom there. Of course, Hong Kong has an impressive capacity to adjust to these shocks, but even so it is a painful process. There is no doubt that Japan's deflation is of the bad kind. Various factors are at work in the other countries.

But standing back from the individual cases, there is something of a pattern. While this hardly amounts to widespread deflation, or a deflationary spiral, it is clear that instances of falling prices are now a little more common, and tend to be a little more persistent, than used to be the case.

Nor is the process of declining inflation necessarily finished. According to IMF forecasts, the world economy grew by less than average in 2001 and is doing so again in 2002, while 2003 is forecast to see roughly average growth (Graph 5). In other words, crudely measured, global spare capacity is increasing, and will remain elevated next year. Short of some inflationary shock occurring on the supply side, it would not be unreasonable to expect global inflation on average to decline over the next year or two. So a year or two from now, average inflation could be very low indeed, and there could easily be more countries in the lower tail of the distribution of outcomes that experience deflation. For the major countries apart from Japan, deflation does not seem to be the most likely outcome, but a dip below zero for the inflation rate is, perhaps, within the distribution of possible

Graph 5



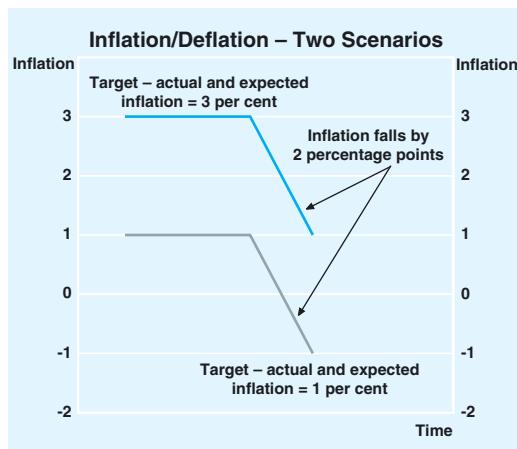
outcomes in some cases. So even though this outlook could not be classed as general deflation in a global sense, there will probably be enough instances of deflation around that people will be talking about it for a year or two.

## Should we Worry about Deflation?

I have already said that it seems unlikely that anyone will worry much about 'good' deflation, given that it is part of a story of rising prosperity. It is obviously the other kind of deflation that people worry about. This is a symptom of a sick economy, where profits are poor and hence prospects for near-term growth are relatively weak, unless consumers or government can be induced to expand their spending more quickly than they have been doing to date.

But to the extent that this kind of deflation is a symptom of a problem of weak demand, it is more that weakness which should worry us than the deflation *per se*. Imagine two scenarios (Graph 6). The first is one where inflation has been, and is expected to remain, at a steady 3 per cent. Everyone's behaviour is fully adjusted to that expectation. Then, as a result of a period of temporary demand weakness, inflation falls to 1 per cent. The

### Graph 6



second is one where inflation has been, and is expected to remain, at a steady 1 per cent, with everyone's behaviour fully adjusted to that expectation. Then, as a result of a period of temporary demand weakness of the same extent as that in the first scenario, inflation falls to -1 per cent. Apart from the absolute numbers, these two cases are identical. Should we worry about the latter more than the former, simply because the zero line has been crossed?

On a first pass, it is not clear that we should. Both outcomes are caused by weak demand, which should worry us equally in both cases. Both have inflation 2 percentage points lower than anticipated – which means that income and wealth are behaving differently to people's expectations. That is disruptive and is of equal concern in each case. In both cases, the outcome is, of course, cause for action to expand demand. There may be sufficient nominal rigidity around zero that the adjustment to a temporary period of unexpectedly low inflation is more awkward in the second case. If true, this is a reason not to aim at inflation of only 1 per cent to start with – but that's another story. But apart from that, a temporary drop below the zero line due

to a cyclical period of demand weakness in an otherwise healthy economy is not obviously cause for much more concern than crossing the 2 per cent line would be in the other imaginary economy here.

At least, that is so provided that the drop is temporary, and that expectations about future price changes remain well-anchored at a bit above zero. But what happens when expectations about ongoing deflation take hold? That is different. Here is the scenario which I think people worry most about: not the kind of mild temporary deflation which is a *symptom* of a period of short-term economic weakness, but the kind of deflation which might itself be a *cause* of further economic weakness in future. The reason they get so concerned is the possibility that it may not be easy to escape from such a situation.

To put this at its most stark, imagine an economy in which deflation is strongly expected to continue, at a rate which exceeds the natural real interest rate in the economy – that is the equilibrium return on real capital. In that situation, because nominal interest rates cannot fall below zero, the real interest rate set by the central bank cannot go below the natural or 'neutral' rate. Since conventional monetary policy works in an expansionary direction by lowering interest rates in the financial sector below the neutral rate, it follows that conventional monetary policy is rendered incapable of applying stimulus to an economy in this situation. The real interest rate is too high, which means that policy remains too contractionary, prolonging the deflationary pressure. There is a 'deflation trap', or what we learned about in undergraduate economics as a 'liquidity trap'.

Some have argued that this is the right diagnosis of Japan's situation.<sup>4</sup> The question is: how likely is it that other countries will get into this sort of problem? My view is that it is less likely to occur in most of the other more

3. I am obviously abstracting here from Australian circumstances. If the target inflation rate is  $2\frac{1}{2}$  per cent, then were inflation to fall to -1 per cent, that would be a serious miss of the target. That would be reason for concern – every bit as big a concern as inflation going to 6 per cent – but it is mostly the deviation from the target rather than the negative sign which would be the worry.
4. I am going to skip the issue of whether 'quantitative' measures are of any help here.

dynamic economies of Asia. These countries must have tremendous opportunities for profitable investment in future. On that assumption, the natural interest rate is almost certainly much higher than the present or likely future rate of deflation. So while deflation or very low inflation in these countries is probably a sign of temporarily weak demand, which is something that policy-makers there presumably wish to address, it still does not seem all that likely that they will find themselves in a deflation trap of the kind sketched out above.

What about the US? We have been told for years that returns to capital are high, associated with the stronger productivity growth. For most of the late 1990s, markets certainly behaved as though that was their expectation. If it were still thought that prospective returns are pretty good, then one would be unlikely to worry about getting into a deflation trap. It would take a pretty large, persistently expected deflation rate to spring such a trap. Of course, if there has been an excessive build-up of capital, then returns might be poor for a while, so that the natural rate might be very low during the period it takes for that excess to be worked off. That case can be made for some of the investment in information technology and communications made in the second half of the 1990s in the US and elsewhere. But large chunks of the 'old economy' probably have reasonable, even if not spectacular, prospects for returns, so it does not obviously follow that the US economy is in danger of the kind of deflationary experience which would be very awkward to stop. That is not to say, of course, that US monetary policy can necessarily work miracles to return the US economy to full health and strength in a hurry – that always takes time, even with policy effectiveness. The point is simply that we should not conclude that monetary policy has, as yet, lost all its potency.

Perhaps the case is a little less clear cut in parts of Europe, where various economic rigidities may constrain business profitability in some countries. But many of the countries on the periphery of the euro area, or potential entrants to the common currency, would appear to have strong investment opportunities. If this is at the expense of investment in some of the core countries, that is a matter of adjustment (including in relative price levels, as Charlie Bean<sup>5</sup> recently pointed out). It does not look like a generalised deflation trap.

Widening our perspective to a global one, while we can observe excess supply in many global industries, it is hard to believe that there is too much capital *everywhere*, or that where there is excess there will be no rationalisation. Is the US, for example, satiated with infrastructure in airports, roads, electricity generation, to name a few? Are all the world's emerging markets so satiated? And has the process of innovation and development of new products and markets ground to a halt? That's unlikely. It's more likely that the medium term holds many opportunities for profitable deployment of capital, just in different places to those which were the rage in the late 1990s.

## What to do if Deflation Does Occur?

To summarise the above discussion:

- Deflation is a widespread, persistent decline in the level of prices.
- It is not happening in Australia, nor is it likely to do so in the foreseeable future. It *has* been happening in Japan for several years. It is not happening in the other major countries, though inflation rates are quite low there now, and deflation is a little more common internationally than it has been in the past few decades. It is quite possible

5. See 'The MPC and the UK Economy: Should we fear the D-words?', speech by Charles Bean, Chief Economist, Bank of England, to The Emmanuel Society, London, 25 November 2002 – available at <<http://www.bankofengland.co.uk/speeches/speech182.pdf>>.

that more countries will experience a mild degree of deflation at some point in the next few years, and not entirely inconceivable that one or two of the major countries might be among them.

- In the majority of cases deflation clearly is a symptom of weakness of demand and output, or would be if it occurred, and is a matter of concern for that reason.
- In relatively few cases is it likely that expected deflation will itself *cause* further economic weakness. Japan is arguably in that position, but few if any of the other countries currently experiencing deflation seem likely to find that the natural rate of interest is so low that policy rates cannot get below it. Whether or not one thinks the zero interest rate constraint is likely to bind in the US or the euro area, were they to experience deflation, hinges on one's view about the outlook for returns to capital. These might be poor in some sectors, but it does not follow that they are that poor across the board.

Having said all that, Japan's experience shows that deflation *can* happen, and so we should still ask: what should be the response of policy-makers given the possibility, or the reality, of deflation?

The first thing to say is that, for most countries, deflation is an outcome which is to be avoided, just like inflation is to be avoided. Stability in the general level of prices, interpreted in practice as a low but positive rate of price increase, is the appropriate goal. Forward-looking monetary policies should be seeking to maintain inflation above zero, just as actively as they look to keep it below some maximum rate. So, to state the obvious, the first order of business is: set out to avoid deflation.

Second, if some deflation occurs unexpectedly, it is not the end of the world. Don't panic. But in most countries it would probably signify insufficient aggregate demand relative to supply. Demand management policies, if they could not pre-empt this situation, should respond forcefully to it *ex post*.

Third, the thing to be avoided most strenuously is a persistent deflation which becomes embodied in expectations. It is in this situation where questions of deflation traps become relevant, particularly in countries where the natural interest rate has come down to very low levels. Policy must work at keeping price expectations from falling too far, just as hard as it worked to get expectations down from excessive levels in earlier times, by articulating goals clearly, and being seen to take action consistent with achieving those goals.

Fourth, if, despite the efforts of monetary policy, persistent deflation does become embodied in expectations and the zero interest rate does become, or threaten to become, a binding constraint, there will be a role for other policies. If there are structural rigidities which reduce the returns to capital, for example, in a deflationary environment, these things will hamper macro policy's efforts to engender recovery. So policies which address any such problems would be important. These would include making sure that excess capacity is rationalised by allowing the failure of the weakest suppliers, so that the most efficient surviving producers can expect to earn a reasonable return.

Further, the active use of fiscal policy to promote recovery would be quite in order in the case of an entrenched deflation, especially in countries where fiscal consolidation had been achieved during the good times. In a situation where investors saw little return to private investment, it is hard to believe there would not be good economic and social returns to various forms of public investment. Hence there would be, in this scenario, a strong case on short-term stabilisation grounds for the government to borrow and invest.

## Conclusion

I am not sure there is any more one can sensibly say about deflation at present. The

fact that we are talking about the possibility of it at all is a remarkable change from only a few years ago. Insofar as that means that the ‘great inflation’ is well and truly finished, that is a good thing, provided of course that we are alert to the new sorts of risks which can emerge.

There is probably a bit too much emotive baggage which is carried about with the word ‘deflation’. For the average country, a short-lived experience with mild deflation, if it occurred, would be not the end of the world, nor even unprecedented. It would just be a sign that there is a problem of insufficient aggregate demand which ideally should have been avoided, but which, failing that, should be addressed quickly. The observed deflation would be telling us the same thing as various real activity indicators: things are weak and the economy needs encouragement to grow.

The bigger concern would be the possibility of a ‘deflation trap’ where conventional monetary policy would become largely ineffective. It seems to me that in most countries this is not all that likely an outcome anyway, but good policies all round should be able to lessen the probability of it further.

Even were a country to find itself in such a situation unexpectedly, it should not be beyond the capacity of policy-makers to devise ways of getting out of it, although they would want to have the full armoury of policies at their disposal.

Australia would be one of the last economies in the world where deflation would be expected. In the remote possibility that it did occur here, we could expect that there would still be plenty of investment possibilities. So unless the corporate and financial sectors’ financial structures had become seriously flawed – something of which there is no sign at present – there would be ample scope for monetary policy stimulus to be effective. In the (even more unlikely) event that that were not enough, a government sector with an exceptionally strong balance sheet would be well-positioned to use fiscal policy to assist the economy, in this extreme situation.

I hope that this has helped us to have a realistic and balanced assessment about deflation, in what ways we should be concerned about it and how it should affect our thinking about policies. Thank you for your attention. ✎