

Supply-side inflation in commodities, producer pricing power, and forestry

John Walker¹

The World has contended with higher oil prices and higher metal prices, and now it faces the prospect of higher food prices. These three scarcities are supply driven: in this decade, oil has gone from \$10 to over \$70 a barrel; copper from 60c to \$3.60 a pound; corn from \$1.60 to \$3.50 a bushel - and one should probably contemplate a fourth scarcity, water - and labour.

Contrast this decade with the declining commodity prices over the previous period, 1980-2000, that fed off gloomy predictions by the worthies of the Club of Rome who, looking back at the rebuilding of Europe and Japan after WW2 and the consumptive passions of a new middle class, foresaw shortages if not the Four Horses of the Apocalypse. Such predictions drove the last great resource boon of the late 1970s that resulted in supply outstripping demand and so twenty lean years for those in the resource sector (Figure 1). Instead of the shortages predicted by the Club of Rome the world got two decades of ever-cheaper food, fuel, lumber, metals, paper and plastics - exaggerated by the peace dividend as, for example, gigantic Soviet era mines dumped their military stockpiles on world markets.

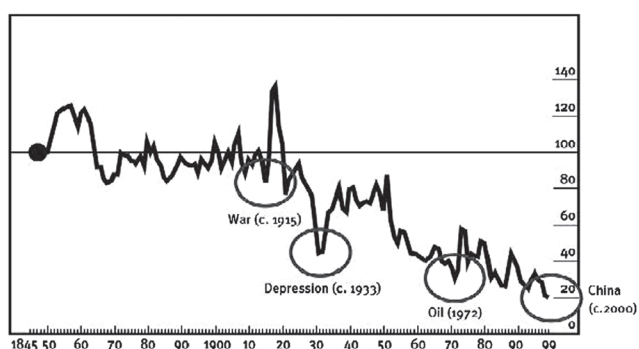


Figure 1. The Economist commodity-price index, in real dollar terms inflation-adjusted by the US GDP deflator (1845-1850 = 100). The long-term trend is down. Superimposed on this are significant periods - 10-20 years - when prices go counter-trend.

Oil and the base metals

By the end, Big Oil would only consider projects that returned 15% on \$20 oil: however Big Oil conceded greatly increased government ownership were prices to rise to "ridiculous" levels - like \$45. Paradoxically with such contracts Big Oil's net production falls as prices rise because the government's share of available output increases: the same volume of oil is produced, but less is sold on the company's account. In 2002, Lee Raymond (CEO Exxon Mobil) said \$40 oil was ridiculous: "there's

no shortage of oil" and were oil prices to spike to such levels then "Exxon Mobil and the other majors would bring on so much new production from Russia and Venezuela that prices would fall back to \$25". There is no bright future for Big Oil which controls less than 10% of global reserves. Nowadays they must compete at all times with subsidised State Oil Corporations expanding internationally, in regions where governments cannot be trusted to uphold contracts, and they must exclude themselves from nations that are offside with liberal sentiment.

By the end, mining companies largely ceased exploring or opening new mines. As prices fell marginal mines were closed, and existing production was focussed on creaming the highest grades. In 2005 copper producers were still requiring their operations to be economic throughout the business cycle, with the hurdle for new investment being around 100-80c/lb. In 2005, Phelps Dodge hedged to cover the possibility of copper falling below 0.954c/lb in 2006; and, also, agreed to sell forward part of its production at \$1.632/lb versus the eventual average spot price of \$3.05/lb. Consequently Phelps Dodge took a huge loss on its forward contracts: it effectively sold ahead of time some of its copper at a significantly lower price than the eventual spot price. Foolish? Why expect them to foresee copper rising from 60c to \$1.80 a pound, let alone \$4.00 a pound? Psychologically, in the commodity business people were not capable of trusting a powerful counter-trend of rising prices as it was beyond their experience (Figure 2). For 20 years it had paid to be conservative and hesitant.

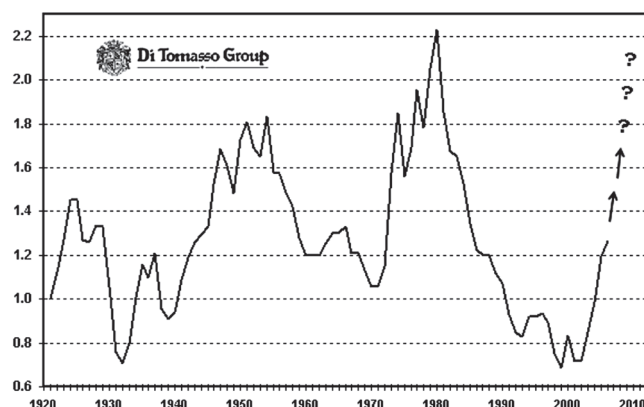


Figure 2. The US Commodity Research Bureau uses differently weighted indices of commodity prices. This and Figure 1 show the same 'big picture'. This inflation-adjusted, equally-weighted grouping of markets shows occasional and dramatic counter-trends when prices can double. Both indices are grossly underweight on oil. The equally-weighted commodities are: cocoa, coffee, sugar, orange juice; corn, soybeans, wheat; cattle, hogs; cotton, copper; platinum, silver, gold; crude oil, natural gas, heating oil.

¹ School of Forestry, University of Canterbury

Difficulties in increasing production have provided producers with considerable pricing power and greatly improved margins. With oil, the issue is not Peak Oil but peak oil production and the shortage of the premium light, sweet crude. Lifting production is not simple. Forcing a well to over-produce requires excessive water-injection or there is the risk of pressure dropping and gas pockets forming in the reservoir, either can permanently strand some oil. With base metals, as prices rise miners take the opportunity to profitably extract lower grade material but this means that with fixed production capacity the quantity of metal produced declines: paradoxically higher prices result in less metal. Further, with oil and metals it is simply not possible to rapidly ramp up production: their suppliers can't supply. Twenty years of under investment in infrastructure, in bulk shipping, in drilling rigs, even in tyres for jumbo trucks means that where a few companies are now willing to reinvest they are constrained by their suppliers who have had to be equally cautious. Our log trade caught the backlash as the shortage of bulk carriers became apparent very early this decade. Many were/ are due for decommissioning being build in the late 1970s in response to the last commodity boom: at the turn of the century a third of bulk shipping was more than 20 years old.

Ironically, while cash flows for metals and oils are at their highest in decades companies have found it cheaper and preferable to obtain new reserves by stock market takeovers rather than by looking for more in remote and politically insecure parts of the world where governments now want a much greater share of the rewards without bearing the historic risks and costs of exploration and development. Industry consolidation has replaced capital investment as the path to survival and has brought a discipline on new supply not seen in the late 1970s. Further, new greenfield operations - where lead times of 5-10 years are normal to permit, finance and build - are still considered to be inadvisable as such production is likely to come on stream just when the market will be about to turn down again for another long lean spell. Unless... unless there are 10-20 good years ahead.

Forests differ from industrial commodities in that abundant spare capacity can quickly cool prices. There will never be a sustained shortage because given a compelling offer immature forests will be felled. For example the last price spike around 1994 flushed out timber regardless of age, showing that demand can be met rapidly and opportunistically any time anywhere from fragmented owners throughout the world. Forestry will not see the imbalances in supply and demand found with oil and metals although monetary inflation will give lumber prices a lift. But like other commodities, for two decades forestry has been a wretched business. It has been hard not to lose money in forest products companies quoted in North America. But, one cannot feed indefinitely on negation - better a trip to the vomitorium to cleanse unneeded or obsolete assets. This divesting and restructuring is what NZ does best...

However, is it reasonable to expect this new divisiveness in New Zealand forestry - of owner, manager and contractor - to perform any better than before? Effectively the TIMOs are a branch office economy with a narrow and focused horizon.

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"...never was any such an event so inevitable yet so completely unforeseen". Alexis de Tocqueville observed of the French Revolution.
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Inflation in the prices of commodities is not just due to worn out and depleted operations. The emergence of Asia had not been foreseen; so just when the ability to supply contracted, demand began to rise. The increasing demand for metals (housing & infrastructure), oil (cars), meat (expectations of a better diet) is some five times more intense with some 40 million a year in Asia joining the middle classes, in contrast to the 80 million during the whole of the 1950s in Europe, the US and Japan, followed subsequently by South Korea and Taiwan.

Biofoolishness, ethanol and meat

Bioethanol creates a new market for crops like corn and miscanthus (USA) and sugar cane (Brazil), while biodiesel drives up demand for canola, oil palm and soybeans in Europe. In the United States, ethanol has become the fuel of choice for populists like Tom Friedman of the NY Times who rail against oil money *"exporting jihadism"*. Compounded by uncertainty over US oil supplies and the desire for cleaner fuels, this has resulted in a demand for alternative sources of energy. Therefore, ethanol is a strategic issue rather than a political one: capping the price of oil puts a shot across the bow of Chavez and Wahhabi Saudis. Even skeptics amongst the presidential hopefuls (Hilary Clinton and John McCain) have had to swallow their doubts, as they need the Iowa Caucus nomination. Desirable or not, the current drive has momentum - at least until November 2008 or until distracted by rising food prices and commonsense (*"it makes absolutely no sense for the US to tax ethanol from Brazil at 54c/gallon and not tax oil from Saudi Arabia"*), while also tiring soils, and further stressing the Ogallala aquifer).

Biofuels are building new constituencies while exposing everyone to new risks: the US has the lowest carryover of grains in decades. For voters in the Mid-West ethanol is a new secular religion. There, grain farmers can lock into current prices creating a wave of sustained prosperity from Saskatchewan (four-times blessed with fertilizers, grains, oil sands and uranium), and down the Mississippi through the Dakotas, Minnesota, Nebraska, Iowa, Illinois, Kansas, Missouri, Oklahoma. The farmers in the US Mid-West are getting hitherto unimaginable prices as to preclude any subsidy, and current high prices for grains and beans are not due to crop failures: the US has had 12 years of benign weather.

For half a century world trade policy has leaned in one

direction - to protect export markets for subsidised food. Now the risk is one of shortages. India has banned the export of wheat, Australia is at the end of a long drought, while rain in the Mid-West has delayed new crop plantings and there has been a staggering decline in bees across parts of Europe, North America and now Brazil - known as "colony collapse disorder (CCD)". This threatens lucerne (alfalfa), an insect pollinated crop, crucial for pasturing and hay in many states. If CCD is a serious problem or there is a poor crop season in the US then higher meat and milk prices are inevitable.

In the US, ethanol used 6 percent of corn crop in 2000 and is projected to take 20 percent in 2007. No wonder Shell will not invest in corn-to-ethanol. According to John Hofmeister CEO of Shell (USA): *"Having 48 letters from the States Attorneys General accusing Shell of price gouging, we don't want another 48 letters accusing us of raising the price of food because of the extensive use of corn and sugar" but instead "Shell will invest in second generation biofuels from nonfood-based cellulose"*.

The story is not just about ethanol. With higher incomes there is a desire for more nutritious, protein-rich food, and affluent diets consume three times more grain than vegetarian diets. Meat consumption in China has tripled in the last two decades. New demand for milk will be dominated by India. The challenge is a settled and ongoing shortage of grains especially where grazing gives way to intensive production.

EROEI of 15:1 and mild inflation

The energy return on energy invested (EROEI) for major oil fields used to be 100:1, although most oil is typically 25:1 and new frontier exploration like the Jack Field deep offshore in the Gulf of Mexico will be lower still. Sugar cane in Brazil is around 8:1. Corn ethanol efficiency may be as low as 1.3:1 (but this ignores the residue - distillers' grain - a protein-rich feed for cattle, so the ratio may be better restated at around 1.8:1). Wood cellulose are probably around 10:1 but it will be 10 years before they make a noticeable contribution. With imagination and technology all processes are aspiring to, or converging on, an EROEI ratio of 15:1. Biofuels from cellulose is an obvious component of New Zealand's energy mix.

What is interesting about the current cycle is that energy prices are driving up grain prices that in turn will drive up meat prices - late 2007 will be the start of payback time. But in Mexico the poor eat an average of 14 ounces of tortillas a day, and workers earning the minimum wage can spend a third of their earnings on tortillas for their family. If the global economy remains strong, inflationary pressures will increase. In real terms, prices for agricultural and forest products are still depressed and could rise more than many would think possible: there is hope for foresters and sheep farmers in New Zealand. A time is returning when tangible assets such as a hectare of pine or a lamb carcass will be

preferred to a wad of dollars.

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"The tortilla is to Mexico City what bread was to Rome, and every emperor except Caligula knew that if bread became too expensive for the urban mob, he was in trouble - and might not be able to count on the loyalty of the Praetorian Guard."
Baubles, bangles and needs (Don Cox).

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The inflation and economic recession of the mid-1970s was as much due to a strong El Niño and subsequent failure of the 1972 Peruvian anchovy catch (used largely as animal feed); and to the failure of the 1972 Soviet wheat crop and the decision by Nixon to sell all surplus wheat (at \$1.65 a bushel) to the Soviets (subsequently sending wheat to over \$5 a bushel). Rising food prices were as much the cause as the quadrupling of crude oil prices following the Yom Kippur war in 1973. Now, as then, will be a wonderful time to own things - including timber.

Pine in context

The pine plantings of the 1970s were a formidable achievement. From them flow the NZ \$3.1 billion in exports and some 22500 people directly employed within the sector today. The justifications for these plantings were as valid as the reasons for building biorefineries in the Mid-West today - in both cases with a mix of private and public finance.

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Decent people caught up in an indecent conceit

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Pine was a Great Idea and timing was perfection. With Treasury on board there was little reason to question the underlying premises. A shared misconception (by no means the worst) arose from misreading trends showing increases in prices for forest products, *c.f.* Figure 3, mirroring other commodities. Rising prices for over 20 years were enough to beguile companies and government into conceptualizing a sustainable trend. Inputting a 1-2% pa price increase in real terms into any valuation seemed credible and cautious... except parabolic trends foreshadow collapse and poorer long-term returns.

With hindsight, the tragedy for forestry has been the poor technical competence of the industry and its intellectual gatekeepers. Undeniably, forestry will prosper in a 'muddling through' sort of way although the changes that are demanded will come from those most resilient to past failures - the farm forester with land and labour, and owners in regions distant from the Central North Island.

Pricing power, the Stan Shih Smile Curve and divisiveness

Stan Shih of Acer visualised profitability along the value chain in the computer industry as a broad smile (Figure 4): the up-stream end represents liquid crystals, CPUs and other high valued electronic components, while the down-stream end has progressed from software and data processing to business content and information services. In

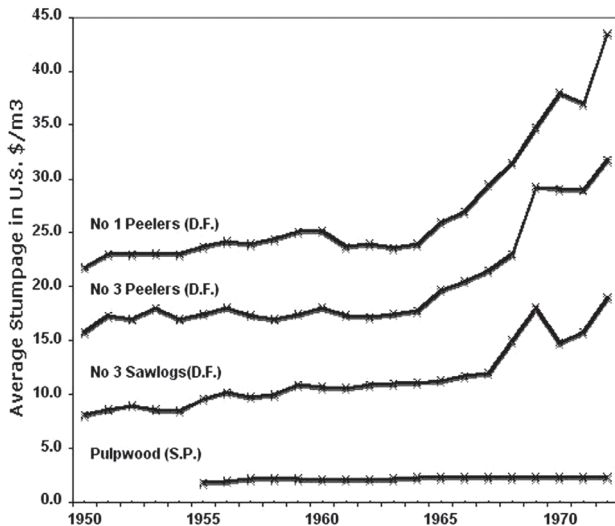


Figure 3. Log sales in the US showed prices rising fastest in higher valued products.

the car industry this curve is partially inverted: assemblers dominate. A struggling General Motors was able to drive its up-stream parts supplier (Delphi) into bankruptcy, while at the extreme right down-stream end its own GMAC finance and insurance services remained by far its most profitable division.

In the mid-1970s Owen Haylock found a rich lode in the early move into manufacturing MDF, now long commodified. But today, New Zealand forestry is fighting over low margins in manufacturing (growing and primary processing). The task is made harder by a recent divisiveness within a forest - owner, manager and contractor - and because of the multiplicity of forest entities. With little prospect of consolidation - farewell the profits that come to Toyota, an opportunity that goes to the Brazilians, Canadians and Chileans. With no prospect for economies of scale our sawmills will have to innovate, fast: perhaps

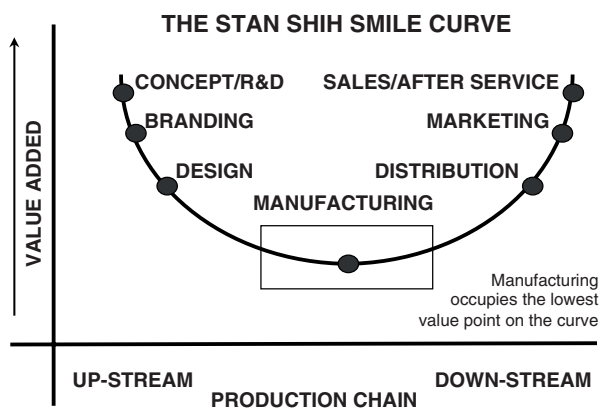


Figure 4. The Stan Shih Smile Curve: popularised by the demeaning notion that "we think" (up- and down-stream) and "they sweat" (in manufacturing - off-shore).

by totally reinventing micro-mills with very high lineal throughputs of low-grade logs. For forest companies it is farewell to long rotations.

A few companies have active strategies for climbing out of the manufacturing trough: Tenon by moving down the supply chain into distribution and warehousing in the United States; CHH has its LVL; Rubicon has it both ways by staying up-stream focusing on forest biotechnology, and down-stream with its holdings in Tenon. For the majority, their future is locked up in manufacturing - someone has to grow and do something with 20-30 million m³/yr of pine - but it is hard to see prosperity in business as usual. Without economies of scale there is no Houdini-like escape and sawmillers need to consider diversifying into a number of niche markets. If forest growers are to obtain an adequate return on capital one route to curtail expenditure is by less thinning and pruning and a drop in rotation age.

Are people willing to stake their future on a 35-yr rotation for NZ pine forests? Even to the most conservative forester the thought ought to be faintly ridiculous. Delusions have consequences.

If niche marketing - particularised, diversified and of high value - is the way forward then the whole industry must get serious about alternative species, and specialist timbers. The best mines are polymetallics, e.g. Zn-Pb-Ag or Cu-Zn. Quirkily, twice as much is spent exploring for and mining precious metals as is spent with base metals. One of the best niche ideas lies in specialist mines, e.g. Lynas Corporation, and two smart NZ foresters are replicating such a business model: think long and hard about speciality timbers and their products.

Those who established our forests had vision and a will to achieve - and they have had their disappointments - and what will your legacy be? In contrast, current policies offer *no light, but rather darkness visible* - for Milton this is not an oxymoron: the flames of hell radiate darkness positively, palpably - and in this context owners confronting poor profitability with a determination to make assets sweat, detached stakeholders (consultants and management companies), and independent-minded small growers and millers with differing priorities do not appear to be the obvious combination to plan a new leap forward - but they are not haunted by past failure.

Let a hundred flowers bloom; let one hundred schools of thought contend.

Hopefully the pine industry recognises the benefits of collaborating, co-funding and learning from or about hardwoods, as this offers everyone a long-term, high-impact opportunity. At the same time such a challenge is profoundly

unattractive as each of us is more company-centred and ignorant than we care to admit. Of course industry should continue to invest in pine - pine has to have a future - and Future Forests and the Solid Wood Initiative deserve far more than half-hearted, perfunctory support. A decade ago the FIC Board endorsed a dream of "*Flying in formation*". It failed because there was no strategy to do more than make a fast growing species into adequately performing products. Where indeed did our market advantage lie?

The biggest shared mistake of the 1970s was the casual acceptance of the view that radiata pine was a versatile species: yet, doing everything does not mean doing everything well. The sector is asking radiata pine to outperform everywhere, and why not as the breeders say that radiata pine is a "plastic" species. Too succeed, the sector is asking our geneticists to deliver a resource that will produce a durable pole crop for the Northland sands, long-fibre around Kinleith, short internode structural, long internode furniture blanks, biofuels, drought resistance for Canterbury, salt tolerance for the Murray-Darling... Dream on. Naïvely, that implies that within a 100 years this vision must deliver a dozen very distinct landraces of pine or "clonal clusters". An alternate starting point is to eschew the broad versatility of pine - it always was a mirage - and at least around the margins bring on a cluster of select species that in particular niche markets will outperform anything that might evolve from radiata pine. By 2050 our forests could yet be 70% pine, 5% Douglas fir, 10% other softwoods and 15% hardwoods.

The versatility of pine is synonymous with mediocrity - radiata pine's only distinctive feature is its ability to grow well anywhere in New Zealand. The pine industry needs a multi-species coalition - with radiata pine still at its centre - yielding a diversity of premium high-valued products, while capturing major new non-wood benefits. At the same time we need to attend to our critical manufacturing base and the way it does business. It has no natural champion, e.g. in the final analysis Tenon's future is not in its remanufacturing plants, it is in its supply chain. Manufacturing will not be reinvented with new kilns and a few four-siders, and by looking at the return for the next quarter. Like those of the 1970s, we must risk creating things that will be a source of pride 10-30 years hence.

In parenthesis.

Cown (in *More on wood quality*) poses two questions:

So what is the problem? Is it the nature of the preferred species (Yes, JCFW) or the attitude of forest managers (Not principally, JCFW)? And Cown immediately goes on to write: For softwood plantations worldwide the same issues exist - juvenile wood has been recognised as a source of problems and described since the early 1960s.

So the answer is simple - and brutal. 40 years of research around the world described the problem but it failed to

address the problem of poor wood quality in softwoods despite Preston in Leeds and Meylan and Probine in Lower Hutt offering a practical solution. Certainly, the problem has not been principally *the attitude of forest managers* who could only respond to signals from research providers; rather it was the poor technical competence of industry's intellectual gatekeepers.

So what is the problem? Is it the nature of the preferred species? A paragraph later Cown implicitly cedes this particular point - the problem lies with either the wood or the gatekeepers, or both:

In fact, on the global scene only short rotation hardwoods have made real significant improvements in quality (mainly Eucalypts in South Africa and Brazil).

The argument in Clausewitz (see NZ Journal of Forestry, May 2007) was that current pine is largely unimproved with regard to its intrinsic properties. This has been broadly recognised only in the last few years and it means that there are good prospects for creating new improved pine breeds. As a corollary, because we failed to deliver improved quality in pine over the last 50 years it means that the delivery of improved eucalypts is only a few years behind - despite years of underinvestment. Indeed if eucalypts can be grown on shorter rotations than pine it is probable that the processing industry could get improved eucalypts before improved pine becomes available - and *Clauswitz* argues that the best of the best in eucalypts will be better than what can be found in pine. Of course our intellectual gatekeepers need to understand what needs to be done (and how) - and to deliver on that that means looking to successful exemplars like Brazil.

Forest managers can legitimately point to the poor technical competence of industry's intellectual gatekeepers with regard to the mediocrity of pine, but they will not be able to absolve themselves of responsibility if they decline to pursue short rotation hardwoods. Quite a challenge but what an exciting opportunity - and it need not be that hard!