New Approaches to Building Markets in Asia

Working Paper Series

Richard Leaver

Long Distance Trade in Iron-ore: Institutionalisation, De-institutionalisation and Market Stability

WORKING PAPER No. 28

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Long-distance Trade in Iron Ore: Institutionalisation, De-institutionalisation and Market Stability

Richard Leaver [1]

ABSTRACT: *This paper takes a half-century perspective on the political underpinnings of a market that has been and will remain central to Asian economic growth, the long-distance trade in iron ore. In the immediate post-war era, bulk commodities like iron ore did not figure large in international trade, and least of all in East Asia. However, the early Japanese decision to rebuild their economy around heavy and chemical industries changed all that, bringing forth (amongst other things) a sequence of high-grade iron ore mines in Australia and Brazil. Since commodities were outside the GATT trade system, this new kind of trade required a new kind of legal instrument to defray the very substantial risks variously posed by the development of mines and markets – to wit, the long-term contract pricing system. Largely ritual annualised conflict around price negotiations notwithstanding, this so-called benchmark pricing system appeared to become institutionalised over the next forty years. But in the last decade, under the impetus of China's massive demand for iron ore, this small-institution has decomposed into shorter and shorter contract terms, with one of the three major suppliers now openly preferring spot pricing as the only method of sale. Speculation in iron ore, previously unknown, has also been on the rise – to say nothing of prices, which treated the global financial crisis as little more than a blip on their radar. Since the value of sales made through this market is now massive, it is arguable that no one has a direct interest in a strategy of dissociation. What is not so clear, however, is whether this new, China-centred order will prove anywhere near as stable as the old, Japan-centred one – especially since the degree of concentration and corporate control on the supply side has also been rising. Whether this 'de-institutionalised' market needs to be 're-institutionalised' – and, if so, how so – are issues analysed in the concluding sections of this paper.*

Introduction

In 2003, without much fanfare, the Chinese steel industry performed another one of its many 'Japan passing' moves of recent times, this time slipping quietly by the Japanese steel industry to claim the title of the world's largest importer of iron ore. The celebrations that might have been expected right then and there emerged in a more vigorous form a few years later when the Chinese asserted their right, as 'brother number one' amongst importers, to lead price negotiations with the iron ore suppliers. As we all now know, the tumult and the shouting that followed this assertion continues to provide lively atmospherics for 'the Ore war' that sometimes occlude significant

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developments on the various fields of battle – the continuing boom in Chinese steel production and the escalation of raw materials prices that it underpins; the domestic political in-fighting for policy control over China's steel sector, and the abandonment of the annualised schedule of price negotiations known as the benchmark pricing system. So what began as a passing move in international trade has brought in its wake a whole new structural form for the global industry that supplies its major input, iron ore.

In the world of steel, there has always been a strong association between the industry leader and the form of market they favour for iron ore. In each of the last three centuries, there has been one passing move that illuminates this association. When the US eclipsed Britain to become the leading steel producer in the 1890s, part and parcel of the move was a revolutionary new structure for the value chain of iron ore supplies built around vertical integration. Similarly, the post-war rise of the Japanese towards the zenith of global steel production went hand in hand with an entirely new method of supplying iron ore, the long-term contract, the ores whose high grade accounted for a large share of this Japanese sectoral success. Compared to these two earlier instances, the Chinese passing move is different in one very fundamental way – namely, that the new and notably more free market that is currently being born in iron ore is being championed not by the Chinese but by their suppliers. As a result, questions about the geo-economic stability of this leadership transition abound, with uncertain consequences over the longer term.

This paper concludes by briefly exploring some of those consequences. But first, it helps to be clear about the problem and the history that underlies it. A short discussion of the American and Japanese passing moves is therefore apposite.

The **US passing move**

In the beginning, when Britain dominated this basic sector of the second industrial revolution, the steel industry appeared likely to be forever shaped by localised input markets. While Britain did indeed engineer a great age of economic globalisation, long distance trade was, as Landes (1980) and others pointed out, most easily realised in commodities with a high value to weight ratio. In iron and steel, by contrast, bulky raw materials accounted for the lion's share of the final cost, and the competitive desire to minimise transportation costs therefore provided a robust reason for sitting production around raw materials, particularly coal. So strong was this logic of localisation that the control of high-grade raw materials, especially proximal ones, frequently seemed like something worth fighting for.[2]

However, the rise of the US systematically violated this iron rule of localisation. In the first instance, the root cause of America's competitive edge in steel came from the high-grade iron ores of the Mesabi region in northern Minnesota. These ores were at a considerable distance from the nascent US steel industry springing up in Pennsylvania close to coal – a factor that would hitherto have priced them out of the market. However, possibilities for low cost transport of this high grade ore were simultaneously emerging on the Great Lakes system, where cheap rates on steel-hulled bulk freighters (detailed in Foord 1898) encouraged the North American steel industry to liberate itself from the tyranny of proximity that prevailed in Europe. Henceforth American steel producers were free to locate to the east and south of the Great Lakes in a broad swathe of regions

[2] In these days, when there is much speculation about 'war for oil', it is apposite to recall that there was once an equivalent amount of talk about 'war for iron ore'. For a timely reminder of how this raw material was previously seen a possible *casus belli* in Europe, see Berglund (1919).

that were closer to either their coal supplies or their final consumers. Capping this off was a pronounced surge in the pace of vertical integration within the industry as the emerging key player, U.S. Steel, prodded in part by Rockefeller, moved to capture rents across the value chain by internalising commodity markets (see Misa 1995: 160 – 63, and also Mancke 1972). The end product was a fearsome American lead in global steel production coming out of 'Steel Valley', which in turn induced a quantum leap in US manufactured exports featuring, most distinctively, the intensive use of natural resources (detailed in Irwin 2003). Here, then, lay the makings of the economic component of America's rise to global hegemony.

While cheap American steel and the cheap manufactures derived from it were making their mark on the world, the American model of market integration did not travel far. It had no noticeable impact on Australia, for instance, where steel production was just getting under way. Here the big problem remained more traditional – namely, the problem of seemingly poor endowments of, and widely dispersed location of, necessary natural resources. Over the ensuing decades, a 'mini-max' concentration of steel production did emerge around Port Kembla and Newcastle in NSW and Whyalla in South Australia, with the iron ore deficiencies in the former counter-balancing the shortage of coal in the latter to the mutual advantage of both (Zimmermann 1951: 687). And all the time, the threat of iron ore exhaustion hung over the head of the sector as a whole, eventually producing the embargo on exports on the eve of World War Two (whose anti-Japanese origins are analysed by Tsokhas 1995). In due course, this restriction survived those hostilities and the immediate post-war decades, only being lifted in 1960.

By this time, Europeans had finally caught up with the benefits of American-style 'continentalisation' of steel production through the rollout of the European Coal and Steel Community. By then, however, it was too late: the benefits of continental scale were themselves about to be overwhelmed by a new and superior model sporting truly international scale that was driving the re-constituted Japanese steel industry. The implications for Australia, on the verge of abandoning the iron ore embargo and 'discovering' the Pilbara, would be enormous.

Japan: quantity plus quality

Japan, of course, was a country whose prospects in steel were doubly handicapped under traditional location theory since it had no significant endowments of high-grade metallurgical coal or iron ore. Indeed, the attempt to relieve these bottlenecks was an important (if not entirely successful) part of the rationale for its imperial experiments in northern China in the early twentieth century (see Rodgers 1948). When, after World War Two, those experiments were terminated, both occupation authorities and (later) the World Bank advised against any attempt to base post-war reconstruction around steel. That advice, however, fell on deaf ears, for nascent civil governments had already selected 'heavy and chemical industry' as the focus for Japan's initial re-industrialisation. Their radical solution, ably discussed by Ciccantell and Bunker (2005), was to import the needed ores from the highest quality mines – and bring the imports home in the new dry bulk carriers of massive scale that were beginning to emerge from Japan's shipyards. By themselves, as Lundgren (1996: 7) notes, the ships alone brought down freight rates by some sixty per cent over the ensuing decades. The economics of these Japanese moves were, in a relative sense, aided and abetted by contrary developments around Lake Superior, where higher grades of ore were on the verge of exhaustion and

steelmakers were adapting to lower grade taconite (see Isard and Capron 1949: 119). By seizing this cluster of changes, global scale was able to trump continental scale.

At the point of Japan's industrial rebirth, Australian elites and masses were both deeply in thrall of all things British. National exports, still largely agricultural, were as always concentrated on the UK market half a world away, and Japan was a country best remembered as an implacable wartime enemy. Within twenty years of that most unhelpful beginning, however, the rise of trade in bulk resources had not only made Japan into Australia's premier export market, but done so to such an extent that it routinely delivered massive 2:1 trade surpluses in Australia's favour. So impeccable was the timing of this rise, indeed, that one wonders about the fate of the Australian dollar through the troubled times near the end of the fixed exchange rate regime were it not for this Japanese sustenance.

The quantitative aspect of the growth of Australia's resource trade with Japan is generally well known. In 1950, only 3·9 per cent of Australia's exports went to Japan – a very modest ten per cent of the United Kingdom's share. But over the next quarter century, expanding trade in coking coal and iron ore completely overturned this picture, with the ratio of Japanese to UK exports standing at 5:1 in Japan's favour (Lougheed 1987: 21). In this context, however, the main point about the rise of Japan as a purchaser of Australian bulk commodities concerns its impact in a qualitative sense. It induced conservative Australian governments to abandon their strong inclination towards pro-British preferential trade in favour of the principle of non-discrimination.

Long memories in Tokyo caused their new civilian governments to recall Canberra's infamous trade diversion episode of 1936 (see Sissons 1976) and also the previously mentioned iron ore embargo of 1938 – both 'incidents' in which Japan was on the receiving end of Australian-made commercial discrimination. Consequently, on the cusp of the rise of the resources trade that would feed their reconstructed steel industry, Japanese authorities initiated commercial talks with Canberra that drew attention to the principle of equality of treatment in trade, the foundational principle of the GATT trade system. These talks commenced at a time when wheat and agricultural commodities were the backbone of Australia's exports to Japan. So the thin edge of a multilateral normative wedge was, as described by Pitty (2001: 235 – 46) delicately inserted into Australian trade policy by the 1957 Treaty on Commerce, and later complemented in relation to matters of foreign investment by the 1976 NARA treaty (which did many other things besides).[3] When, therefore, resource trade volumes between Australia and Japan exploded, then so, too, did the strength and importance of that wedge of multilateral principles. Hence, in a most unlikely manner and from a totally unexpected corner, began the rise and rise of the policy attachment of Australian governments to commercial multilateralism, an orientation that is now routinely regarded as Australia's 'first-best' policy choice in trade affairs.

Norms alone were not sufficient, however, to define exactly how these new markets would be instituted as day-to-day practice. At this lower level of abstraction, two things were clear. First, the GATT offered no guidance at all for iron ore trade, especially when it washed its hands on the liberalisation of international trade in non-manufactured sectors. Even if it had not, the sheer scale of the proposed new mines and the lumpiness of inputs into Japan's steel industry suggested that arms length free trade would produce unstable markets that would be dangerously exposed to political gambits from both the producer and consumer ends (a conclusion reached by Smith

[3] For a rare and recent assessment of the much-neglected NARA Treaty, see the special issue of the *Australian Journal of International Affairs* (2006) commissioned for the Treaty's thirtieth anniversary.

(1979) and others). Second, the North American practice of vertically integrated iron ore trade was unacceptable for different reasons in both Japan and Australia. In Japan, postwar governments seeking high-speed growth wanted to maximise the rate of reinvestment in domestic industry, and to this end, they virtually prohibited the overseas investment of capital at this stage. The new Australian mines were not, therefore, going to be built with Japanese money. In Australia, this same conclusion was reached by other, more politically obtuse, reasoning – namely, that Australians would not be willing to live with high levels of Japanese foreign investment in the burgeoning resource sector. Memories of the war made trade with Japan contentious enough, but the idea of Japanese ownership of Australian resources was simply beyond the pale. So vertical integration did not offer a possible method for instituting the new regional market in iron ore at this time.

Given these mutual exclusions, greatness came to be thrust upon the long-term contract as the institutional backbone for this embryonic resource trade. Multi-year commitments to purchase, whose first steps have been detailed by Boyce (2001), were rolled out for the initial Hammersley mine and quickly extended across the three other licensed projects in the Pilbara. The long duration of these opening contracts – between ten and sixteen years – were critical in allowing local miners to raise their development costs through debt financing with domestic and/or international banks. A third way was therefore charted around the dangerous shoals of GATT-style free markets and vertical integration.

In quick order, as Mohan and Berkowitz (1988) have shown, the high quality of raw material inputs was soon proving to be an important part of the profitability of Japan's reconstituted steelmakers. It was therefore no surprise that the power of Japan's fearsome steel cartel stood resolutely behind the contact pricing system. In the beginning, the cartel had a primary interest in ensuring that high quality Australian suppliers got up and running; hence, as Smith (1978: 117) notes, the initial contacts fixed both annual tonnages (with a ten per cent range for annual adjustments) and prices (within a seven and a half per cent margin of variation). But from the beginning it was also clear where the whip hand lay, for the Australian miners involved in negotiating those margins found themselves repeatedly dealing with the very same Japanese official who spoke for his country's steel industry as a whole (see Sexton 1993). By the time that the first round of contracts had run their course, Japan's interests in iron ore supplies were shifting to Brazil where, in spite of higher transport costs, possibilities for broadening the market were now more seductive than the absolute level of prices (Byrnes 1994: 91). The contract periods available to established Australian mines therefore reduced to one year, so creating the benchmark pricing system that has, until recently, been regarded as the norm for the industry.

China: quantity minus quality

By contrast, China's rise within this Japanese-designed international market for iron ore has been, if anything, even more quantitatively spectacular – so much so that analysts have regularly struggled to anticipate its speed. In 1995, to take one pertinent example, the East Asia Analytical Unit (EAAU) in Canberra's Department of Foreign Affairs and Trade made a comparative study of the Australian and Chinese iron and steel industries which concluded that Australia's iron ore exports to China would grow by one hundred and fifty per cent in the next decade (East Asia Analytic Unit 1995: 81). Being a bureaucratic product of the 1989 Garnaut Report, the EAAU had never been backward about coming forward when projecting the course of Australian exports to Asia. But in

this event, its best efforts proved altogether too modest, for by 2005 Australia's exports came in at another one hundred and fifty per cent greater still! (see Richmond, Millstead and Wilson 2006: 125).

Along the way, as noted earlier, China passed Japan to become the world's largest importer of iron ore, not to mention the most significant buyer of Australian output. But unlike Japan, this new number one did not slow down; by 2008, China's iron ore imports from Australia were nearly three times larger than Japan's! (see Chart One). Arguably, however, the pinnacle of quantitative achievement was reached the following year when red ink from the Global Financial Crisis was depressing the imports of most countries. But not in China, and not in anything related to steel. On the back of Beijing's massive stimulus programme, recorded iron ore imports surged in 2009 by more than forty per cent (see Chart Two). At this point, China by itself accounted for some sixty eight per cent of total global shipments of iron ore, with the lion's share of those marginal spoils accruing to Australian exporters (New 2010: 175). In a quantitative sense, therefore, Canberra's view of the rise of China has arguably been even more impressive than its image of the rise of Japan four decades earlier.

What is not nearly so impressive, however, are the qualitative changes that China's rise has brought to the market. On paper, the official Chinese position continues to favour the indefinite continuation of the annual benchmark pricing system, with China simply taking over Japan's mantle of lead negotiator on the purchasing side. In practice, however, China's passing move has imprinted certain 'Chinese characteristics', so to speak, on the demand side of the iron ore market that qualify this commitment. The most fundamental of these Chinese characteristics is the radical deconcentration associated with China's massively proportioned steel industry. For instance, China's largest firm, Baosteel, has a marginally larger output than Nippon Steel in Japan, although it produces only six per cent of national output as opposed to Nippon Steel's thirty one per cent (see World Steel Association 2010). Beijing's official goal is to have its ten largest producers supplying sixty per cent of the domestic market by 2015 (as opposed to their current share of forty four per cent). But even if this were achieved, it would still be a low figure for domestic concentration by any reasonable international comparison. Furthermore, Beijing's attempts to create a united front for the industry through the China Iron and Steel Association (CISA) have been actively resisted by an industry where much of the impetus for growth comes from provincial-level planners and entrepreneurs. Compared to Japan's highly cartelised steel industry, it is therefore paradoxical that China, the last of the great 'centrally planned' economies, has induced a de-concentration of demand-side market power as the by-product of its 'peaceful rise' in this key sector.

The combination of rising demand with radical demand-side de-concentration has, in turn, enhanced the market power of the major iron ore exporters where, as always, the three largest producing firms control between sixty and seventy per cent of the internationally traded market. Massively impressive though this figure is,[4] a string of proposed but aborted developments inside Australia – the November 2007 buy-out of Rio by BHP; the February 2009 proposal for a joint venture between them in Pilbara-based production – constantly threaten to push effective control higher still, creating a never-ending sequence of nightmares for the Chinese steel industry. The cumulative result of this decisive tilt towards 'producer power' has been three fold: the destruction

[4] It dwarfs, for instance, the share of the largest three producers (Russia, Saudi Arabia and Iran) in the world oil market, which presently stands at thirty per cent. Even OPEC's collective share of global oil supply is currently less than fifty per cent.

of the annual benchmark price system; the provision, under the protection of Chinese sovereignty, of an opening for an amply-dimensioned speculative market in iron ore; and the quick retreat of contract periods down to quarterly sales, a contraction so rapid that the daily spot market now looms as the possible end-point.

The quiet victory of national interests?

Chinese authorities largely have themselves to blame for the first two of these developments. Opportunities to demonstrate real leadership of the benchmark pricing system foundered on two shoals – a protracted Chinese domestic debate over whether CISA or Baosteel should lead their pricing team; and a premature moment of hubris when CISA demanded price reductions beyond those already agreed with the Japanese, seemingly for trophy purposes. Consequently, after a full year of Global Financial Crisis without the benefit of a negotiated annual price for iron ore, the major producers, led by BHP Billiton, simply declared the old benchmark pricing system surplus to requirements and began wheeling out new, quarterly contracts in their place.

Similarly, as Krugman (2008) once noted, speculation was hitherto largely unknown in iron ore – until, that is, a prominent place for it was incubated inside the China market. Compared to the 'single desk' importing practices of the Japanese, too many Chinese firms were licensed to import iron ore during the good times – perhaps more than five hundred at the peak. This expansion took place at a time when domestic spot prices were invariably much higher than contract prices, so creating opportunities for importers with access to cheap contracts to profit from speculation on the domestic Chinese market. This particular configuration of the market also provided the incentive structure for the corrupt selling practices of Stern Hu and his colleagues (detailed in Leaver 2010). Intermittently, in 2006 and again in 2010, Chinese authorities clamped down on the number of domestic importers and, in their most recent campaign, on importers with nothing more than financial linkages to the iron and steel industry. The paradox that lurks here is that the recent demise of annual contracts and the shrinkage of contract periods (discussed below) will increasingly call forth a socially necessary role for arbitrageurs of some kind. The recent interest of Chinese authorities in establishing a futures market, and of western finance houses in creating a swap market (reported respectively by Freed (2010) and Zhang Qi (2010)), are two different expressions of this same conclusion.

As for the shrinkage of contract periods: this commenced in the second quarter of 2010 when BHP Billiton aligned the two other (and larger) exporters behind the idea of quarterly contracts. The more perceptive analysts immediately noticed that BHP actually favoured something else, namely spot market sales only,[5] and the industry therefore began talking about a 'rainbow' of pricing option where the spectrum was anchored by BHP at one end (favouring spot sales) and Vale, the large Brazilian exporter, at the other (favouring quarterly contracts); Rio Tinto, which was long on talk about flexibility, occupied mid-ground (see Tang 2010). But spot prices were already starting to fall when BHP declared quarterly contracts the new normal, and this immediately put those shorter contracts under pressure as buyers moved to take advantage of lower spot prices.

[5] This view of BHP's preferred marketing strategy has been strongly associated with the rise of Marius Kloppers as CEO. As he became fond of saying, BHP favours 'the market price of the day, every day' for all its commodities (quoted in Macdonald-Smith (2010)). Whether he is so certain when the market begins to fall remains to be seen. See the following note for preliminary evidence of a change of heart.

Like all rainbows, this one therefore proved to be ephemeral. According to BHP, spot purchases jumped by ninety per cent, and were on track to make up fully half of the internationally traded market (see Dines and Kirchlechner 2010). As a consequence, quarterly contracts risked going the same way as annual contracts by proving their irrelevance as a means for moving significant amounts of material. This, as noted above, would be heralded as a great victory for BHP – and perhaps now by Rio, which has given occasional signs that it might be willing to live with spot sales only (see *American Metal Market* 2010). And since Canberra follows the principle that what is good for BHP is good for Australia, then corporate silence on this contraction of contract periods is more than matched from the government quarter – creating an impression in other places that significant Australian national interests are being realised.

Significant elements of that 'quiet victory' assessment – high prices, big volumes, positive record movements in the terms of trade – are well known and need not be repeated here. One can add to the list: most notably, by including the willingness of Canberra's competition authority, the ACCC, to actually approve of BHP's 2007 proposed buy-out of Rio; and its failure to criticize the (arguably) less dramatic Pilbara merger of 2009. The current government has also out-jawed Chinese authorities when that has been necessary. This was particularly notable when CISA's short-fused general secretary Shan Shanghua greeted the new quarterly contracts with a call to boycott purchases from the 'big three'. Australian trade minister Simon Crean showed considerable coolness by simply observing that a boycott was 'a blunt instrument' (*Australian Financial Review* 2010) – and then let the Chinese mills make up their own mind. They voted, as we have seen, with their feet, buying greater proportions out of the spot market that, in turn, served to feed apprehensions about the imminent demise of quarterly contracts.

A**voiding a pyrrhic victory**

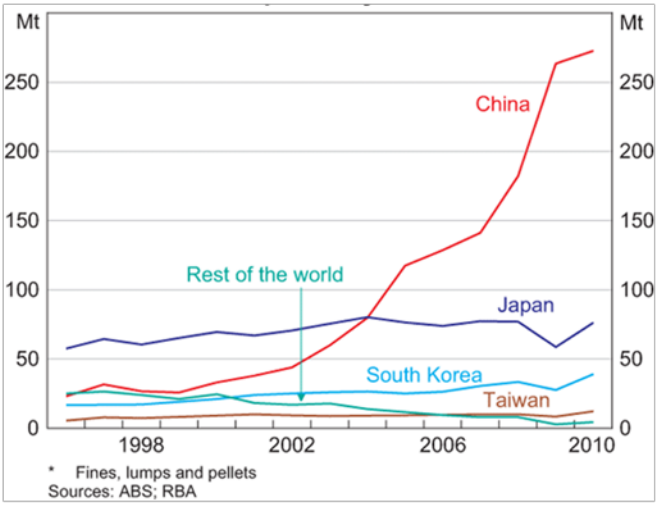
The fact that Chinese mills were willing to keep purchasing in spite of everything does not mean, however, that all is well with current arrangements. There has never been any official Chinese acceptance of, let alone approval of, the dramatic marketplace changes that BHP has wrought. Canberra has come to celebrate them – witness the recent arguments of its new ambassador to China about the new transparency in prices (reported in Guy 2011) – but Chinese authorities have continued to champion the virtues of the benchmark price system. To that end, and apart from CISA's momentary contemplation of a purchasing embargo, it is clear that Beijing has been patiently building up an arsenal of techniques it will need to break supply-side control over the medium term. The arsenal includes the consolidation of previously private stockpiles of iron ore under state control (see Zhao Huanxin and Wan Zhihong 2007), an instrument capable of being wielded with strategic intent; the move against middlemen in the domestic industry, aimed at improving national resilience in this sector (see De Kretser and Heath 2011); and the build-up of Chinese-owned mines outside Brazil and Australia, something made possible at reasonably low cost by China's buoyant foreign exchange reserves (see Zhang Qui 2011). Given its low profile, hands-off, approach to policy, there is therefore considerable potential for Canberra to end up, down the road apiece, pulling a pyrrhic victory out of the jaws of its quiet triumph. And if that were to happen, then the unwinding of today's record terms of trade would make Paul Keating's legendary fulminations of 1986 on banana republicanism (see *Australian Financial Review* 1986) look by comparison as a nursery rhyme.

On the other hand, there is also the potential for Canberra to avoid that nugatory outcome – so long as it is willing to abandon the fiction that there is no political friction in the iron ore market. An opening for this abandonment is created by BHP's clear preference for spot market sales; every time it declares this preference,[6] it effectively says that it does not want to be burdened with providing the assurance of supply that comes through longer term contracts. If, therefore, this assurance is to be supplied, and the looming probability of political market failure averted, then it will require bilateral governmental intervention to provide it. As Karl Polanyi rightly insisted, the free market will need to be planned.

Economic self-interest alone ought, one would think, be sufficient to dictate the need for such a shift on the Australian side (see Leaver 2011) – and if not, then the manifest political need to defuse mounting tensions of many other kinds requires the commencement of bilateral dialogue. For instance, one of APEC's designers, Peter Drysdale (2011), has recently called for a treaty-oriented dialogue to cap the tensions arising out of Chinese direct investment in Australian minerals (see also Rollins 2011, and Earl 2011). While there is no doubting the political difficulties presently aggregating around investment, the point about iron ore is that it provides the best (if not the most obvious) site for open bilateral dialogue; as number one iron ore exporter to the world, Canberra automatically has the standing required to talk to the number one importer. There is, then, an equality of status to talks about iron ore that would rarely, if ever, be present in Chinese-Australian talks about any other issue. And that equality of status is, in turn, likely to mean that bilateral support for annualised price negotiations would continue to generate market stability through unstable times.

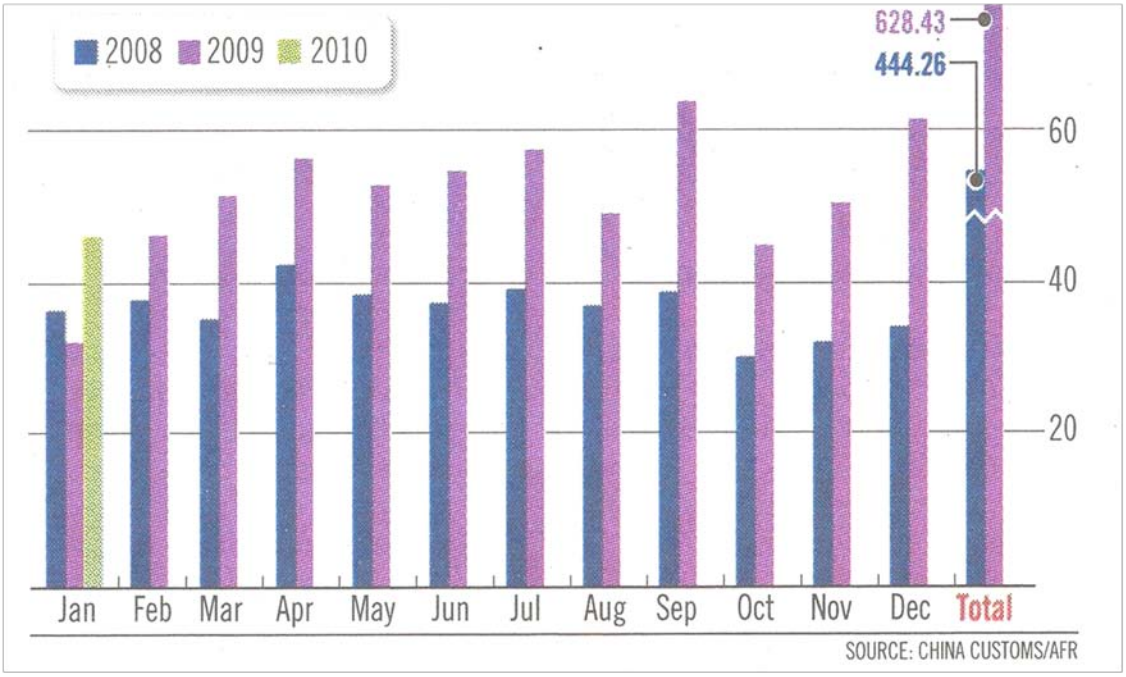
[6] Change is in the air at the time of writing. In early October 2011, with many commodity markets and steel prices both falling, and the global economy once more staring into the abyss of a financial meltdown, BHP formally declared that it was no longer pushing for spot sales and would henceforth be happy with monthly contracts as its only method of sale: see Ayesha De Kretser, 'BHP happy to stick with monthly ore pricing', *Australian Financial Review*, 4 October 2011.

Chart One
the destination of Australian iron ore exports



from Virginia Christie, Brad Mitchell, David Orsmond and Marileze van Zyl, 'The Iron Ore, Coal and Gas Sectors', *Bulletin*, Reserve Bank of Australia, March 2011, p. 4.

Chart Two
China's monthly imports of iron ore, 2009-09
(in millions of tonnes)



from Ayesha de Kretser, 'Strong ore price tipped for tiger year', *Australian Financial Review*, 23 February 2010.

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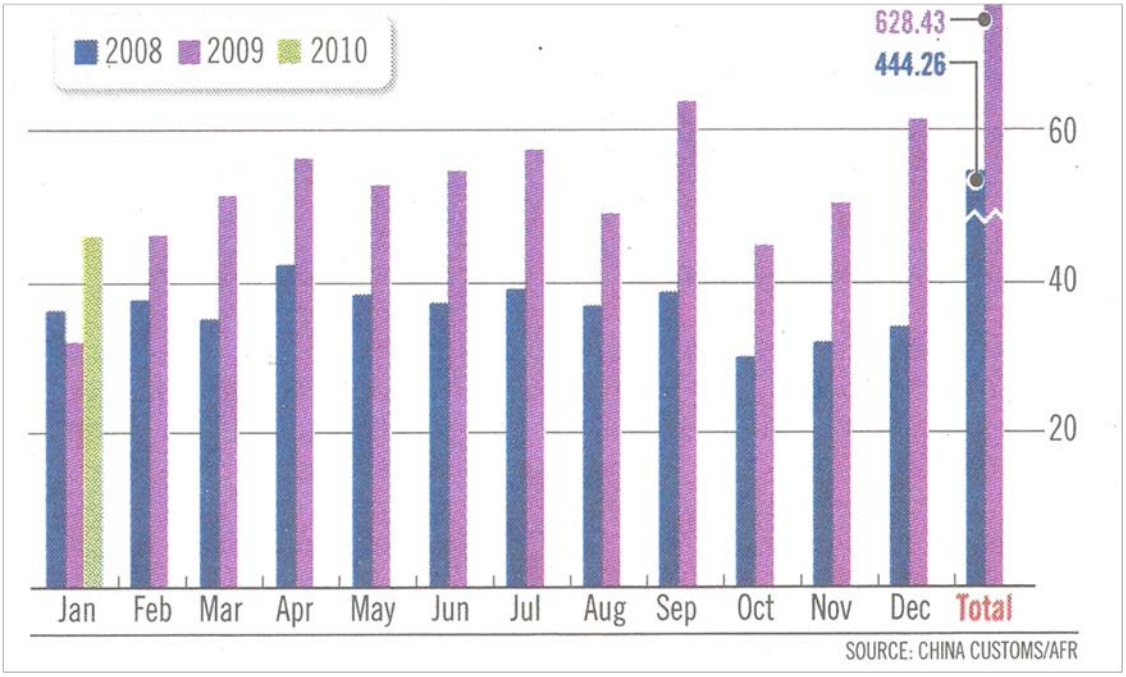
Chart Two
China's monthly imports of iron ore, 2009-09
(in millions of tonnes)



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