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NATURAL RESOURCES AND THE AUSTRALIAN ECONOMY
J. Helliwell
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NATURAL RESOURCES AND THE AUSTRALIAN ECONOMY *
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NATURAL RESOURCES AND THE AUSTRALIAN ECONOMY

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FIRST DISCUSSANT: Prof. Ken Clements, Univ. of Western Australia

In recent years resource development issues have been at the very forefront of the discussion of public policy in Australia. Important aspects of this discussion include:

(i) The extent to which other sectors gain or lose from resource development.

(ii) The economic benefits to the country from undertaking large-scale resource projects.

(iii) Taxation of resource industries.

(iv) The interrelationship between resource exports and protection.

Much of this discussion has been very superficial and far from convincing analysis. All too often the debate has been blinded by the problem of the day and has ignored the previous experience in Australia and elsewhere. I am happy to say that John Helliwell's paper does not follow this tradition; I find the paper to be a serious and fairly comprehensive piece of research. In my view the paper is less contentious than some of the other papers prepared for this Conference. In what follows, I present an overview of and comments on the paper.

There are three main themes of the paper:

(i) To place the recent experience in proper perspective, the paper traces the evolution of the resources sector in Australia over the past 120 years.

(ii) An extensive discussion of the economics of a booming export sector, comprising of new mineral exports. This is known as the 'Gregory Thesis' in Australia and the 'Dutch Disease' or 'De-industrialization' elsewhere. This discussion includes a survey of both the theoretical and empirical literature on this topic.
(iii) Microeconomic issues relating to resource developments. These include electricity pricing, provision of infrastructure, resource taxation and Federal-State financial relationships.

The Evolution of the Resources Sector

The objective of this section is to make two simple, but fundamental, points: That Australia is a resource-dependent economy; and that a key characteristic of the resources sector is its volatility.

This can be clearly seen from Helliwell’s Fig. 2.3 (reproduced here) which gives the share of GDP accounted for by mining and agriculture. In 1861 mining generated about 15 percent of GDP and agriculture about 10 percent. After a decline over the next 30 odd years, mining then recovered in the early 1900’s to reach a peak of about 10 percent; agricultural output at that time accounted for 14 percent of GDP.

Over the ensuing 80 years, agriculture followed a general downward trend, with a share of about only 7 percent in 1981. The mining share was more or less stable from the 1920’s until the mid-1960’s, when it took off with the growth of iron ore exports to reach 7 percent in 1981 - the same as agriculture.

With this historical perspective, it is clear that the resources boom of the late 1960’s was quite modest, as was the projected boom a decade later. Some of these projections involved a doubling of mineral exports in the 1980’s. Even increases of such a magnitude would not be particularly dramatic in comparison with previous experience and, therefore, could be expected not to create undue pressures over the longer term.
FIG. 2.3
RESOURCE PRODUCTION IN THE AUSTRALIAN ECONOMY
1861-1981/82.

In the context of Fig. 2.3 in the general discussion of the paper at the Conference, John McLeod posed the question, Why the focus on mining? Why was mining chosen to be the only individual industry to be singled out by having almost a whole paper dedicated to it? It is highly pertinent to raise such questions in view of the fact that mining currently accounts for only 7 percent of GDP. McLeod's objective in asking these (rhetorical) questions was to draw attention to the concept of the mining industry. He pointed out quite correctly that Fig. 2.3 deals only with the direct contribution of mining to the economy, while the indirect contributions from the industries supplying mining may be as big or larger. When we take a more comprehensive perspective of mining, the 7 percent share could be expected to be substantially larger.

The other aspect of Fig. 2.3 to note is the volatility of resource production. A key characteristic of resource industries in Australia is boom and bust. This is simply a fact of life for industries relying so heavily on world markets to sell their output. Unfortunately, this fact of life was ignored a couple of years ago. At that time, the government, industry and unions all seemed to think this period was about to herald an unprecedented boom. As is well known, these unrealistic expectations lead to a "cargo cult" mentality and a wages explosion which substantially damaged the Australian economy.

Another dimension of the importance of resources in Australia is exports. As can be seen from Fig. 2.5 of Halliwell's paper, on average mining and agriculture account for about 70
FIG. 2.5
RESOURCE AND NON-RESOURCE EXPORTS OF AUSTRALIA
1861-1981/82.

percent of exports. Helliwell makes the point that "there are probably no other industrial countries with such a complete specialization in natural resource exports".

The declining importance of trade since 1950 is also worth noting. Between 1950 and 1981 exports fell from 29 percent of GDP to less than 15 percent. This is a dramatic fall even when we allow for the fact that the early 1950's were record export years. The falling trade share is in marked contrast to what happened in most other industrialized countries over this period. They became more dependent on trade, while Australia became less dependent.

The Effects of Increased Mineral Exports: The Gregory Thesis

In the mid-1970's Bob Gregory asked, What will be the effects of the projected increase in mineral exports on (i) Australia's traditional exporters, the farmers and pastoralists, and (ii) the import-competing sector?

The higher exports create an excess supply of traded goods, and to eliminate this their relative price must fall. This relative price is the price of traded goods in terms of home goods, which can be identified with the real exchange rate. Accordingly, the higher mineral exports has the effect of appreciating the real exchange rate. This real appreciation squeezes both the traditional exporters and the import-competing firms.
This process is illustrated in my Fig.1. On the vertical axis we give the price of importables (P) in terms of home goods (P), while on the horizontal we have the relative price of h exportables. Along the HH schedule the market for traded goods is in equilibrium - the trade balance is zero (or a constant). The schedule is negatively sloped because an increase in P/P stimulates exports which, to maintain equilibrium, has to be accompanied by an increase in imports, an increase which is brought about by a reduction in P/P. Points above HH represent a trade surplus; points below a deficit.

The slope of the ray from the origin OR gives the relative price of the traded goods P/P. The initial overall equilibrium is at E.

The additional mineral exports mean that equilibrium in the market for traded goods now obtains with a lower relative price of exportables (as traditional exports must decline) and/or a lower relative price of importables (as imports must rise). The HH schedule thus shifts in towards the origin to H'H'. The new equilibrium is given by F, which involves a reduction in the relative price of the two traded goods in terms of home goods.

It is to be stressed that what is required is an adjustment of relative prices, not an adjustment of the price level, nor the

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1 This is an application of the general apparatus introduced by Rudiger Dornbusch in "Tariffs and Nontraded Goods", Journal of International Economics 1974, 4:177-85. See also G.L. Murray, Distributional Implications of a Resources Boom (Ph.D Thesis in progress), Macquarie University.
nominal exchange rate. The initial excess supply of traded goods simply requires a reduction in the price of traded goods relative to home goods. As home goods are mainly services, which are labour intensive, we can identify their price as being roughly equal to wages. Thus the required adjustment is for wages to rise relative to output prices for the traditional exporters and for the firms in the import-competing sector.

To further emphasise the required relative price adjustments, they can be translated into import tariff charges. As far as Australian manufacturers are concerned, the effect of the export boom is exactly equivalent to a reduction in import protection. This reduced protection causes $P/P_m$ to fall, so that the ray OR in Fig. 1 rotates clockwise to OR'. This generates the same relative price of imports at G as at F. Conversely, for the farmers the effect of the boom is equivalent to increased protection which shifts OR counter-clockwise to OR''.

To summarize, the effect of the boom in mineral exports is to squeeze the farmers and the manufacturers as wages rise relative to output prices. The miners have only natural enemies according to this analysis.

Many extensions of Gregory's analysis have now appeared. One extension, highlighted in the paper, relates to saving behaviour. If the additional income generated by the new minerals production is entirely saved, as it would be if the owners of the mines treated it as a return of capital and not a return to capital, then there is no pressure at all on the real exchange rate.

What is the likely magnitude of the Gregory effect? According to Gregory, mineral exports are equivalent to a
doubling of import tariffs, as far as the rural exporters are concerned. From the viewpoint of manufacturing industry, the growth of mineral exports is estimated to be equivalent to a tariff reduction in excess of 25 percent.

To shed further light on this question, Helliwell examines the results of simulations of export expansions in four multisectoral models of the Australian economy. These simulations all relate to the production phase of a mining boom, rather than the investment phase. Because the resources boom of the late 1970's/early 1980's never got past the investment phase, these simulations are not well suited to analysing the recent experience.

In any event, what these results show is that when the models are run under conditions of full employment, the output of the rural sector falls as a result of the mining boom; manufacturing output also falls, but by less than rural. Alternatively when real wages are held fixed and employment is allowed to vary, the export boom raises output in all industries except in the rural sector and part of the manufacturing sector.

Helliwell interprets the size of the output changes projected by these models to be quite modest, certainly much less than those calculated by Gregory. Even for the rural industries, the output changes are small in relation to the variations they typically experience on account of climatic conditions. Thus when the more comprehensive general equilibrium interactions are allowed for, the Gregory effect is very much dampened.
This can be related back to Fig. 2.3 of the Helliwell paper. A very crude interpretation of the Gregory Thesis is that the mining and agricultural GDP shares should be negatively correlated: A mining boom crowds out the farmers. This means that the sum of agriculture and mining, as a percentage of GDP, should be more stable than the two components. The evidence in Fig. 2.3 clearly shows that this is not the case. The Gregory Effect does not show up in this 120 years' experience. Such an analysis is obviously incomplete because there are other factors affecting rural production that need to be taken into account. But none the less, it does confirm the general findings from the GE models that the economy-wide effects of increased mineral exports are likely to be quite modest.

Microeconomic Issues

The topic I wish to focus on here is the role of fiscal equalization. Fiscal equalization involves Commonwealth payments to the States which take account of differences in the capacity of States to raise their own revenue. The payments also take account of variations across States of the cost of the provision of government services. This principle thus involves smaller payments to States well endowed with minerals, to offset their higher-than-average income from royalties. At the same time, larger States with widely dispersed populations receive higher Commonwealth payments to allow them to provide a standard level of government services.

The potential undesirable effects of fiscal equalization on incentives and efficiency are quite clear cut. If high royalty States receive lower payments from the Commonwealth, they will be
less eager to collect their own revenue. Alternatively, States may be tempted to collect their resource revenues in hidden form, such as the Queensland rail freight charges. Helliwell puts the dilemma faced by the States very well in saying: "A revenue-conscious policy may make the goose fly to a nearby State, if not to another country, while if the golden eggs are successfully collected their value may be subtracted from revenue-sharing entitlements".

On the expenditure side, fiscal equalization has further undesirable effects on incentives. There is no reason at all why taxpayers in general should subsidize people living at Woop Woop where the cost of providing the standard level of government services is higher.

One of the few major omissions from this excellent survey is the link between import protection and exports. In Australia this link cannot be overemphasised. My own work shows that something like 70 percent of all protection acts as a tax on exporters, the farmers and the miners. Roughly speaking, this tax is transmitted to exporters by an increase in wage costs. It may be that this tax is sufficiently high to mean that much mineral processing and the like is not viable in Australia.

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SECOND DISCUSSANT: Dr Neil Johnston, Dept of Treasury:

Professor Hellwell has provided a comprehensive survey of issues relating to natural resources and the Australian economy. My comments on his paper will concentrate on two aspects:

- those on Section 2 will mainly be by way of amplification of the characterisation that is provided of Australia's dependence on natural resources;
- while those on Section 3 all take the form of a brief case study reviewing the adequacy of the policy response to the most recent resource sector "boom".

RESOURCE DEPENDENCE AND CONSEQUENCES FOR THE AUSTRALIAN ECONOMY

Most of Section 2 is devoted to establishing the quantitative dimensions of Australia's endowment and dependence on natural resources.

There are several additional dimensions that have been considered in two recent papers by Ed Shann that could be given more emphasis in this section of the paper. The points are best made by asking the rhetorical question: does resource dependence have consequences for the Australian economy in addition to its contribution to the scale of economic activity? I make three points:

1. Trade Dependence

Hellwell briefly refers in Section 2.5 to the relatively low share of trade in Australia's GDP relative to other developed

countries. Larry Krause’s Survey paper on “Australia’s International Trade” considers possible explanations of trends in Australia’s international trade at some length and discussion of that general topic is best left to that session.

However, one aspect deserves mention at this point. It is Ed Shann’s thesis that the breadth of Australia’s rural and mineral product base tends to lower the country’s dependence on trade. Of course, as Krause and others point out, a number of factors contribute to a low ratio of trade to GDP:

- these, most importantly, include the relatively lower degree of specialisation in the Australian economy reflecting inward looking protection policies and the natural protection afforded by transport costs - Peter Lloyd has demonstrated that for 1974-75 the average transport costs to Australia exceeded the average cost of duty;
- they also include the size of the domestic economy and the potential which provides for economies of scale and diversity of efficient domestic production.

However, Shann reports regression results which show that these factors are not sufficient to explain Australia’s international ranking in terms of the ratio of trade to GDP. He argues persuasively that the breadth of the country’s rural and natural resource endowment also helps explain the relatively low level of industrial specialisation and hence its low trade dependence.

2. Volatility of Trade

A second recent (unpublished) paper by Ed Shann has examined the contribution of the natural resource sector to volatility in trade receipts and economic activity. He notes that other studies on instability have shown that primary commodities exhibit greater price instability than do manufacturing goods.
The vagaries of seasonal conditions also contribute to considerable instability in rural export volumes, although instability in aggregate rural export receipts can be offset to some extent by diversification across rural industries and by the lower sensitivity of foodstuffs to the international business cycle.

Diversification in resource sector exports can also work to reduce volatility in export volumes, particularly to the extent that they are covered by long-term supply contracts. However, the obverse of long-term supply contracts is a greater tendency to stock and price variation.

Shann’s tabulations indicate that:

- export volumes have tended to become less variable over the past three decades as rural and natural resource exports have diversified; as a result, export volumes exhibited relatively low instability over the period 1970-80 compared with other developed countries;

- over the same recent decade, terms of trade and export prices exhibited relatively greater volatility; so that, on balance,

- export receipts were, if anything, only slightly above average in variability in the 1970’s (compared with relatively high variability in the 1950’s).

3. Growth Performance

As Krause indicates in his Survey paper, not only is the ratio of trade to GDP relatively low for Australia but, as well, Australia’s share in international trade has declined over the post-war period; following a peak of 3 percent in the early post-war period, the share declined to 1.5 percent in the late 1950’s, held steady in the 1960’s and then declined to 1.27 percent in the period 1975-77.

Krause refers to studies by McColl and Nicol, and the
Department of Trade which indicate that the relatively poor trade performance of the Australian economy can be attributed to commodity composition effects. Thus while, as Helliwell's charts illustrate, Australia's natural resource and rural endowments have generated rapid growth at particular times in the country's history, that has not been so of the past decade.

One might well ask how Australia's growth performance could have been improved over this recent period?

Setting aside for the moment the role of macroeconomic policy, a corollary of the Gregory Thesis is that growth could have been encouraged by a more open industry policy and increased industry specialisation. Such a policy would most likely lead to higher imports but that would lead to exchange rate depreciation which would put potential export industries on a more competitive basis. In addition, increased production in the more efficient industries would lead to economies of scale and further improvements in competitiveness.

It should be noted that the trade to GDP ratio has tended to rise steadily since the mid-1970's notwithstanding:

- the introduction of quota protection for some of the more vulnerable industries following the 25 percent reduction in tariff protection in July 1973; and

- broad indications, in fixed weight CPI-based indexes of international competitiveness, that competitiveness as at end-1980 was comparable to that in the early 1970's.4

The ratio of imports to GDP has risen from 10.6 percent in the period 1969-70 to 1973-74, to 14.2 percent in the period 1979-74 to 1982-83; over the same period the export ratio has risen from 13.0 to 14.1 percent. The increased import penetration has been spread across consumption and investment goods and so does not merely reflect the higher import content of resource project investment expenditures.

While the broad CPI-based indexes of competitiveness show no discernible trend over the course of the 1970's there have been pronounced and sustained swings in competitiveness which have been even more severe when measured in terms of relative labour costs.

The severest, that in 1973-74, was not corrected in purchasing power parity terms until 1978-79 and the 5-year adjustment period led to a severe shake-out of the less competitive manufacturing activities that were not protected by quotas and tariffs.

The continuing higher import propensity may reflect delays in still-competitive activities recovering to previous production levels but there is suggestive evidence that the higher propensity also reflects a more outward looking approach in the manufacturing sector. The result is sub-optimal (as it would have been preferable if more protected industries had lost market shares) but the increased specialisation in trade should still contribute to stronger economic growth.
HOW ADEQUATELY DID POLICY RESPOND TO EASE THE STRAINS ASSOCIATED WITH THE LATEST RESOURCES BOOM?

Turning to the second part of my comments let me ask a second rhetorical question:

How adequately did policy respond to ease the strains associated with the latest resources boom?

I am prompted to raise this question by two points made by Helliwell:

. on page 3:

"Regardless of cause, each major boom has been followed by a slump, and each has had important impacts on other industries and the economy as a whole."

. while on page 18:

"The potential role for monetary and exchange rate policies to ease the strains of resources booms is probably overstressed in public policy discussions and understressed in most of the Australian theoretical literature."

One might therefore ask whether Governments are powerless to ease the strains associated with resources booms and the subsequent frittering away of part of the income gains they generate.

If awareness of the policy issues is an essential prerequisite for effective policy action then the evidence of several public documents is that the Fraser Government was well apprised of the strains that would be associated with the most recent resources boom:

. A June 1980 report of the IDC on Economic Strategy, which was subsequently publicly released, pointed to the major policy issues at a relatively early stage in the build-up to the associated investment boom;

. very similar issues were canvassed in the 1981-82 Statement 2 attached to the Budget papers; while

. a third report, compiled by a Working Party of the Departments of Labour Advisory Committee (DOLAC), which was released in 1980, drew attention to the tensions emerging in the demand for skilled labour.
There were significant policy responses on a number of fronts:

- A major plank of the 1981-82 Budget strategy was the judgement that fiscal restraint was needed in order to make room, in both the goods and financial markets, for increased private sector activity, particularly in the resources sector.

- The Loan Council borrowing program in that year was severely curtailed and pressure was placed on public authorities to raise more of their capital requirements from internal sources.

- Following consideration of the DOLAC report, provision was made for increased and more flexible skilled immigration and more flexible arrangements for trade training - possibly the most significant being the introduction of the group apprenticeship scheme.

At the time, these were seen by many observers as wholehearted responses to the perceived policy requirements in those areas.

Why then did the economy weaken so sharply in 1982?

Admittedly the prolonged world recession had much to do with the turnaround in the domestic economy but, arguably, the slump was much sharper than it need have been because of the rapid acceleration in domestic inflationary pressures.

What were the policy shortcomings?

If one takes the view that the acceleration in wage costs in 1981-82 merely reflected demand pressures then the implication would be that the policy response was too late. One might have hoped for a more positive response in the framing of the 1980-81 Budget but the election cycle complicated the setting of policy at that time.

Another complication was that the "boom" started off with the handicap that inflation was still running at an unacceptably high level and inflationary expectations were still extremely fragile.
Some would go further and argue that monetary conditions had been too slack since 1977-78 and that renewed inflationary pressures had, as a result, been building up over the preceding several years. A tighter monetary policy would also have worked to slow down the pace at which economic activity picked up. To that could be added the criticism that has been made by some that inflationary expectations and the recovery were "talked up" at the political level leading to excessive wage claims in anticipation of future real income gains from the resources boom.

Even so, the sharpness of the wages acceleration in late 1981 and early 1982 defies, to my mind, an explanation distinct from an industrial relations explanation. I have yet to see a convincing post mortem explaining the sharp increase in the metal trades awards and the reduction in the standard working week in late 1981. One would have thought the bitter experiences of the mid-1970's would, at least on the employers' side, have had a more lasting impact on public understanding of the economic disciplines that inevitably constrain firms' capacity to pay higher wages.

One can only conclude that public understanding of the direction of the economic forces in train by 1981 was inadequate. Even if the world recession had been much shallower than turned out to be the case, the manufacturing sector would still have been squeezed by the Gregory effect; 1981 should have been a time for extremely cautious wage bargaining in that industry.

I would contend that this is a situation where a less centralised tradition in wage determination would have reduced
the severity of the wages shock:

- even if greater regard for capacity to pay considerations had not restrained the magnitude of some of the early increases in individual awards, a more decentralised system would have tended to slow down the flow-on to other agreements on the grounds of comparative wage justice; and
- slower progression would have allowed more time for the public to assess the viability of the claims being made.

A final criticism that has been made of Government policy is that excessive increases in Government taxes and charges (notably on rail and electricity services) have contributed to the scaling back in resource sector development.

Helliwell on page 10 of his paper quotes the reference by Mark Rayner, Managing Director of Comalco, to the "brief window of opportunity" that has existed for development of the aluminium industry. More recently, Hugh Morgan, Managing Director of Western Mining Corporation and Chairman of the Mining Industry Council has made the same point, noting also the dramatic cost disadvantages in the construction of Australian plants compared with equivalent establishments in the UK, USA and Japan reflecting the comparatively high real wages and low productivity in this country.

As a result of these imposts and cost disadvantages, as well as depressed world prices, the latest survey by the Mining Industry Council indicates an effective after tax rate of return on average funds employed for its members of between 3 and 4

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5 Address to the Geelong Businessmen's Club: "Geelong and Australia's International Competitiveness", October 1983.
percent in both 1981-82 and 1982-83, compared with 8 percent in 1980-81 and 11 percent-plus in each of the preceding four years.

Others in this audience are better qualified than I to comment on the issue of resource taxation and the merits or otherwise of introducing a resources rent tax.

A separate but equally important issue is that of electricity pricing and railway charges. It is worth noting that no electricity authorities are yet charging rates that would provide a commercial rate of return on the funds the public has invested in those activities. A 4 percent real rate of return objective for the SECV is said to be threatening the viability of the Alcoa-Portland project.

There are possibly two arguments for subsidising the aluminium industry:

1. Australian producers are facing increasing competition, in decisions on the location of further production capacity, from LDC's whose governments choose, largely for foreign exchange purposes, to subsidise industries with export potential; and

2. the subsidy would equate to the exchange rate depreciation that would probably result from a more open industry policy; that is, a tariff compensation argument.

Unless aluminium production can be considered to be an essential industry (with significant externalities) - which would not seem to be the case - the first argument ignores the gains that can be made from unilateral reductions in industry protection.

The tariff compensation argument would have more substance to it if it were feasible to apply it consistently across all industries. However, it would then be more practicable to remove existing protection. It is difficult to make the case for
subsidiising aluminium production rather than other unprotected activities, particularly those in manufacturing which would lose their viability if the aluminium industry were to expand to the extent envisaged in some of the early resources boom projections.

In summary, there may well be a case for better coordination between the various taxes and charges that governments (and particularly State governments) impose on the resources industry but there is no justification for the substantial subsidies that are implicit in the current structure of electricity charges.
DISCUSSION FROM THE FLOOR

REPLY BY PROFESSOR HELLIWELL

I would like to thank both the discussants for their very clear presentation. I feel it would be worthwhile to say something here on the macro issues raised by Neil Johnston, as I said relatively little on them in the paper and it may help to give some balance.

The challenging question posed by Neil was: "how suitable were government policy responses in the course of the build up and rundown of the more recent resources investment boom?". He outlined a number of the responses and he described some of their costs and benefits. I would probably stress more heavily than he did the reasons why many of the investments never came to pass.

There is a real risk that those documents which outlined the various pressures that were about to bear, especially those pressures on sectoral labour markets, were themselves partially responsible for the wages explosion. Once there is agreement among some of the key players, including central government authorities, that these kinds of pressures exist, that agreement may legitimise what might otherwise have been merely regarded as hype from those who proposed the projects. Some estimates involved adding up all the proposed projects when most realistic assessments would have held that many or most of the projects would never be built. Even though the statements were sometimes qualified, several public figures became very excited about the size of the investments they foresaw occurring. This created ex ante a view of pressures in a number of factor markets
which in practical terms never would have come to pass. If some of these projects had been allowed to be judged on their own merit, they would have fallen of their own weight before they created the actual pressures in the market. That is a major danger in advance identification: you need to be very clear as to what you are planning for and identify the bottlenecks that will actually occur. Otherwise there is a real danger of simply creating speculative bubbles by the mere action of identifying potential problems.

There is a very real danger that the government can get drawn in as a pro-cyclical element in resource booms. First of all governments cannot do anything about getting rid of the resources booms for the obvious reasons we have seen from the earlier material. What they can do is build up the boom by being drawn into infrastructure investment of the wrong scale at the wrong time (I mentioned some of the electricity supply examples and there are many others). They get drawn by project proposals that in fact will never come to pass in their entirety and end up building a lot of infrastructure at the wrong time. This is not primarily a Commonwealth Government matter; these issues arise mainly at State government level.

At the State government level there is also the question of how they should apportion the timing of the development of resources that are under their own control. To some extent through various export controls, the federal government can also affect the timing. It is tricky to do because the governments get caught up in the same boom and bust mentality that the firms do.
To explicitly adopt a counter-cyclical policy runs into the same kind of problem that Neil Johnston mentioned. By the time government has created some fiscal room, they may be a year or a year-and-a-half out of phase; that may be just about exactly wrong given the way some of the world mineral price cycles and investment cycles work. While accepting the "one year out of phase" judgement that Neil made, I suggest that getting the timing right would not have altered the macroeconomic picture dramatically. For example, if you took the NIF model and put into it those particular smoothing policies, and then shifted them back one year in time, the depth of the 1982 recession would have been smaller by some small fraction of 1%. That is a way of suggesting how relatively restricted is the potential for government policies to smooth out resource booms when resources projects are so large and resource price movements so volatile.

It is clear that many of the supply bottlenecks that arise do so because of rigidities, some of which are due to government policies. With proper foresight enough flexibility can be built into the provision of key government services and policy approvals. Sometimes it has to do with infrastructure limitations and sometimes with the processing of investment applications or of immigration requirements. In the longer term, the broad policy response should probably involve opening up some of these processes simply because governments are not much better than, even if as good as, the firms at identifying where the particular adjustments will need to be made. Where there are things that are directly under the government's control, such as infrastructure,
they can try to make sure they avoid the problems of the boom-bust in their complementary investments, while also ensuring that the inadequacies of those facilities themselves are not going to give rise to bottlenecks that were falsely identified during that last boom period.

RUSSELL MATHEWS, ANU:

Neither the paper nor Ken Clements have got the fiscal equalisation arrangements in relation to resource revenues quite right. I think this has led them into incorrect conclusions about the incentive or disincentive effects of the fiscal equalisation arrangements. What the Grants Commission does in equalising for resource revenues is apply the standard rate of revenue raising to the difference between the standard revenue base and the revenue base of the State being assessed. This means that so far as the State being assessed is concerned, its grant revenue needs as assessed by the Commonwealth Grants Commission, are independent of the revenue effort of that State. It can collect as much or as little resource revenues as it wishes in relation to the resource development taking place within its boundaries.

The problem now arises not in relation to the revenue effort but in relation to the measurement of the revenue base and ideally we would be looking at the potential revenue base rather than at the revenue base that reflects the production actually taking place from time to time. Subject to one exception which I will mention in a moment, it is not really possible to measure a potential revenue base in relation to mining activities.

The Grants Commission does in fact have to rely on measures
of the revenue base that are related to production actually taking place. But it doesn’t use royalties for this purpose and it doesn’t use quantities of production, it uses a measure of profitability which it has developed from a concept of what it calls "adjusted value added". This is simply value added minus wages and salaries and all the related costs minus also a share of past capital investment. So that it is a profitability measure. As far as possible the Grants Commission does distinguish between different minerals but because of data problems it has been forced to make it’s assessments in three broad categories: black coal, oil and gas, and all other minerals combined.

The effect of all this is that the revenue needs are assessed for each State independently of that State’s revenue effort. So far as that States is concerned it is free to raise or lower revenue to it’s own benefit or at it’s own cost. The one exception I mentioned was in relation to uranium where there was clearly a difference of opinion in the States as to the extent to which uranium should be developed. It seemed at one stage as though some States were going to be actively engaged in mining uranium when other states – for policy reasons – have indicated that they would not do so. The Grants Commission foreshadowed this possibility by indicating that it would not assess revenue needs in relation to uranium for a State that had made a deliberate policy decision not to proceed with development of that mineral.

The other comment in the paper which I think Ken Clements
also endorsed was the incentive for a State to collect its revenues by means other than royalties, for instance by seeking higher rail charges. Another possibility he could have mentioned is by making the mining companies undertake infrastructure development and thereby relieving the States’ budgets to that extent. The Grants Commission takes these matters into account in assessing the revenue needs of the state and to the extent that Queensland has been judged to have a much greater capacity to raise revenues from minerals than the other States, this greater revenue-raising capacity has been taken into account—without removing altogether the incentive for Queensland to still use this device as a means of raising revenue.

JOHN MCLEOD, CRA:

I was quite curious as to why the mineral sector had been picked out for a whole chapter of this Survey and when one looks at what has not been included, it is quite interesting to see the emphasis given to mining. I think part of the reason is the definitional problem we always have with mining and which this paper also has. The strict Bureau of Statistics definition relates to mining itself—i.e., digging stuff out of the ground. It does not include transporting it, processing it or the essential inputs into that production process such as electricity. If you start to add in those sectors mining becomes a much more important economic activity. I thought that perhaps another reason why mining was allotted a separate chapter is that it is the only example Australia has of an internationally competitive industry—but that may be a little too flattering.
The question of electricity generation has come up in recent experience. As Neil Johnston has said, not one venture is showing a commercial rate of return on its electricity generation. He should have excluded from that one privately owned station that is in fact producing a handsome rate of return. What we have really learnt in this period concerns the gross inefficiencies that we have in Australia, both in the public sector and particularly in the transport and construction sectors. The question Neil Johnston should have asked is, what is the right capital sum on which a real rate of return ought to be earned? Is it the most inefficiently publicly constructed and operated plant or is it one that is constructed and operated at acceptable international standards? I think the debate in terms of the real rate of return is quite different if you take an internationally competitive station.

What we are seeing in Australia of course are numbers that are horrifying: Capital cost inefficiencies starting at 20% and rising to as much as 75%. This is not in comparison with low wage countries with which we could not reasonably be expected to compete. This is compared to the United States and the U.K.. If we start off with a capital cost inefficiency between 20 and 75% we need a fair bit going for us elsewhere if we are to get investment in this area. I was disappointed that the paper and in fact the Survey as a whole has not looked at these public sector inefficiencies. The real question is, who should supply this infrastructure, particularly if electricity is such an important ingredient. Why not let the private sector perhaps bid for the
right to produce that input. We have some examples of it in regard to rail freight. There are some privately owned and dedicated railways and a comparison of their efficiency with that of their publicly owned counterparts is particularly embarrassing for the latter.

I think the paper is also a little weak on the regional aspects of the mineral resource developments in Australia. The importance to residents of Western Australia and Queensland of what has been happening in the last twenty years is very great. Also, one should not ignore the bargaining power of the States in extracting the rent from the mineral producers in these areas. The States own the resources and bargain very, very toughly in terms of conditions for development. In the two States I am referring to, the commitment to proceed to processing is very often seen as an important part of the economic rent. Also the commitment to purchase inputs locally (by locally I mean even within regions of the State) are often regarded as very important.

There has been a certain amount of discussion about the wages explosion in this resource boom. Nobody has pinned the blame for that explosion on a certain Premier of a certain State who granted $70.00 a week plus to coal producers in his government owned mines. This morning's discussion of the public sector's role in wage setting was rather weak, particularly as it concerned an area as sensitive as electricity, where the unions are in a strong stand-off position with the general public. There was reference a moment ago to the government's role in
marketing in this area. The less such "assistance" industry gets the more pleased they are because government intervention has so far been nothing short of disastrous.

Let me refer now to tax issues. I know of no-one in the industry who in fact is so wishful of putting forward a view that they should be taxed at a lower rate than anyone else. So far as I am aware they all accept that they will pay more. The royalty system is so well ingrained that I do not know of anyone who is ambitious enough to hope that that would be avoided, nor do I know of anyone who would not expect to pay company tax as everyone else does.

Also, the use of the word "concessional" grates with the industry more than somewhat. This relates to depreciation provisions for the industry. The mining industry has had to produce and finance infrastructure which no other industry has been expected to do. Therefore, if they had to produce it, the mining companies should have been able to depreciate it. "Concessions" is the sort of word that becomes a real concern in this context.

Finally, a word about the auction system of mineral leases as a way of collecting the rent, which is so beloved by economists in their literature. Most of the evidence of which I am aware, is based on petroleum experience in North America. The experience with auctions in Australia has not been very encouraging. We have had a couple of auctions here in terms of hard rock development. Unfortunately the winners of those auctions have been unable to proceed with production and anybody
which included, if you like - the rents collected by the government. They received nothing else in compensation. I thought then and I think now that it was a mistake to introduce within a few years a very large and new tax which collected what we economists would call mineral rent and not in some way to pass it directly back to large sections of the community. Instead it was chiefly treated as another source of taxation. It was not directly associated with any government programme to increase the supply of government services or to reduce other income taxes. It is not surprising therefore, that an event that should have been of large benefit to many sections of the economy was not seen in that way by the general public, as the benefits for the economy as a whole from large scale mineral resource development were largely disguised.

The second point I want to briefly touch on is what I shall call the unimportance of natural resource development. Now here I am really developing a local version of the theme which Ted Schultz developed in his Nobel Prize literature when he pointed out that natural resource developments around the world had been the basis of sustained growth in very few economies. He claimed that, talking chiefly about agriculture but also in part about mineral development, that human capital accumulation, development of technologies were far more important than the availability of resources. I contend that is true for an economy like Australia even though it has enormous resources of numerous minerals. I did a calculation recently which showed that over roughly the last decade the mining sector as defined accounted for only 5% or less than 5% of the growth of aggregate GDP. This
decade includes a period in which large scale coal mining and iron-ore projects developed and when the increase in mineral exports was the main source of increase in aggregate exports. That is partly due, as John McLeod has indicated, to the omission of most mineral processing but even if you included all that it would not come out as the main source of growth.

I do think in the discussion so far too much attention has been devoted to the short run stabilisation problems of the mining boom, how to handle it via the appropriate deficit policy or the merits and demerits of flexible exchange rates. We need to think at some stage about a fundamental question, namely whether the mining sector is really going to be a chief source of a more rapid rate of growth for the Australian economy.

The third question I want to touch upon is that of infrastructure, namely whether public or private sector enterprises should provide most of these resources. There has been a very extensive debate about this certainly with railways in Queensland and elsewhere. But it is a particularly important question. Public sector authorities in this country are not subject to a very high degree of scrutiny. They are not subject to the same degree of scrutiny as many government departments in terms of their ordinary accounts and their use of resources. Economists can take some credit for changing this. I think the efforts of Howard Dick and Peter Swan for example in criticising respectively the N.S.W and the Victorian Electricity Commissions were in large part responsible for the concern with the target real rates of return. The 4% real rate of return which someone
could have told them that from the moment they started. The real problem about this is that there is a suspicion in the industry that governments will want to jog backwards. For example, the industry is asked to bid for "moose pasture" (i.e. an area where you have no idea what's there), and I bid one peppercorn and win it. If subsequently I find in this area a product (say cobalt) of which there is a world shortage and there is a very high price for it, we know jolly well that governments in Australia will want to jog backwards and take that off you. There is no question that the Australian history in this area is that government will abrogate agreements, Acts of Parliament or anything at all and the industry is well aware of this. So I really don't think economists ought to put a great deal of faith on collecting the rent at the auction stage of the system.

PETER LLOYD, ANU:

I would like to comment briefly on three issues. The first of these is the income gains from the booming sector; the resource boom problem. Initially when I looked at the economics of the resource boom I found it surprising how depressed everybody was by what should have been a favourable fortuitous boom to the economy. Instead of welcoming a resources boom in general, the public moved away from those who happened to own the rights to develop mines or who had bought shares in the companies that owned the rights. The mood was generally exceedingly pessimistic. A number of circumstances have contributed. An interesting historical point here relates to the article by Bob
Gregory ("Some Implications of the Growth of the Mining Sector", Australian Journal of Agricultural Economics, 1976). I may be the only one in the room who read that in draft form. Initially he did not set out to write a paper on the resources boom; he set out specifically to look at the problems of evaluating the supposedly large effects on unemployment from the 1973 tariff cut. It occurred to him that there were other simultaneous developments in the economy that should bear at least part of the blame. Gregory's own model makes no recognition of what Richard Snape and others have called the income effect - i.e. the outward expansion of the domestic production possibility curve.

I also want to make the point that the management of the income gains and particularly any receipts from taxes, whether they be resource rent taxes or larger receipts from petroleum levies, royalties or other taxes, should be managed carefully. I think one of the features about the past debate of resource rent taxation which has made me unhappy has been that it has not been made clear by the governments of the day, that in various ways at least the great majority of Australian households should stand to benefit if these taxes are managed correctly. As an instance of what I consider to be bad management I will refer briefly to the way in which import parity pricing for petroleum was introduced in 1977-78. The petroleum levy became a major source of government revenue. It was collected by the government and the cost was passed on to the petroleum refinery companies and then ultimately consumers of petroleum products. These consumers had to pay prices which included the effect of the petroleum levies -
mentioned is still very low, much lower than the comparable rate in the private sector which might be 8 to 10%. Before that policy change the rates of return were not regarded as important. Goals were nominated in nominal rates and I think they were of the order of 4 or 5%. We have at least made a substantial impact in emphasising that these resources have an alternative use and that they should be specified in terms of real rates of return. Some years ago the Australian Mining Industry Council did a survey of a large number of mining projects which showed that capital expenditures on infrastructure were considerably more important than capital expenditures on the mine development themselves. I expect that is still the case and all I am really saying is that the study so far, and I think perhaps the project as a whole, has considerably underestimated the importance of associated infrastructure developments.

ED SHANN, Dept of Prime Minister & Cabinet

The volatility in Australia’s terms of trade is highly significant for macroeconomic policy particularly given the limited flexibility in real wages, or perhaps I should say limited downward flexibility in real wages. It seems to me that is not the point brought up by the paper. It is very difficult to understand the 1972-73-74 experience without looking at the very sharp rise in export prices and in the terms of trade that occurred in 1972-73. That improvement was not just related to the mineral sector; it was in very large part rural sector prices which rose. That was followed by a very sharp fall in export
prices and a sharp reversal in the terms of trade. It was certainly one of the factors which left the level of real wages that occurred in 1972-73 at a unsustainable level. In the absence of flexibility in real wages, the Australian economy is potentially always going to have the difficulties that it has faced with such volatile movements in its terms of trade. It seems to me that is one of the key issues which policymakers in Australia need to address.

I agree with the attempt made in this paper to de-emphasise the sectoral competition that results from resource booms. My view has always been that the literature and particularly the Gregory model has been inclined to underestimate the stimulus that the resource sector can give to tradeables production elsewhere both by allowing importing of factors from abroad and because it helps remove the balance of payments constraint. In an innovative and outward looking economy it is possible for the mineral sector to act as a stimulus to other tradeable sectors. I note with some approval the statement in the paper which says that in early days the agricultural and mineral resources in N.S.W and Victoria were the magnets that originally drew the population in and provided the base for industrial development. It seemed to me that is a very hard conclusion to draw from the Gregory model as a likely consequence of rural or mineral production growth.

JOHN Helliwell:

I am very grateful to Russell Matheus for his further exposition, much clearer than my own, of the treatment of the
revenue base in the equalisation system. He pointed out quite clearly the problems that exist in trying to find a base that keeps for the States the revenue raising capacity. As he mentioned, this requires the use of some fundamental resource base which almost becomes tax on potential revenue. This can force the States to encourage early development in order to increase current revenues - so you can push too hard in that direction as well as not hard enough. The real difficulty is in the Australian principle of such a high level of equalisation. A great deal of pressure is put on the design of these essentially ad hoc, very industry-specific and sometimes even deposit-specific approaches, so that every time a State starts to use a rail charge or an analogue to that, then the system has to take account of it. That poses a great deal of uncertainty for companies, State governments and also the Grants Commission - an uncertainty that is coming from the fiscal framework itself. The efficiency effects are seen by the different parties and attempts are made to accommodate them but a blur exists throughout the process as to what the final outcome will be, which probably reduces the total benefits that are obtained from that resource deposit.

John McLeod noted the importance of going beyond the investments and employments at the pithead to consider downstream processing. For example, I included the Melbourne Institute’s 1980 projections which were made as broad as they could be by bringing in alumina and aluminium as well as much of the related infrastructure. Ideally we would have liked to have re-worked the historical data on the same basis. However, the
infrastructure and downstream investments have probably only become very important in the post war period. There is also an offsetting error that we must recognise. That is, it is the gross output of the resource industries industries rather than value added which is being compared to value added in the economy as a whole. So long as the industries are relatively self-contained that problem is not too important. Thus there is a sense in which my figures understate the size of the industry as they omit some of the infrastructure in the more recent years, but overstate its size by mistakenly including the inputs from other industries. These errors may not be properly offsetting.

The question of who should provide the infrastructure gets back to the fundamental economics. I think everyone who has spoken is arguing that whoever does it should do it efficiently, and the prices charged for the service should be neither concessional nor rent extractive. By and large there are better ways of getting at the revenues that the deposits bear. I shall pass quietly by this question of when special tax provisions for an industry become concessional or extortionate. It is clear everyone probably agrees that major rent producing activities, whether they be in the resource industries or elsewhere, belong in some sense to the State as is the case of natural resources in the Australian context. That raises a special focus for public policy in a way that elsewhere it generally does not.

Peter Lloyd asked why we do not get into the fundamentals of what should be done with resource revenues in the longer term, as well as just the anti-cyclical point. His specific suggestion
I think it is probably the wrong one for the reasons that I mentioned before. I suggest that the important thing for the government to do is to become a dampening agency in the cyclical process. Imagine what would happen if, whenever there was a big increase in the world price of some particular Australian export that gave rise to a very large oil revenue or rent tax, the government immediately spent the money in order to convince the populace that they were right to pay the world price. Such a policy would make the government do precisely what I was arguing they ought not to do— they would have become pro-cyclical and make even bigger the multiplier-accelerator processes that are already operating in the the economy as a whole. In contrast I would suggest that governments should not take the direct line of saying that "to show you it is wise to collect these rents we will give them to you so you can buy a T.V set". It would be better for government to take the contrary line and emphasise in public discussion that these impermanent windfalls should simply be treated as an asset switch. The rents from Bass Strait oil may not always be there and they need to be accumulated now to provide a stable stream of "future revenues. Smoothing the government expenditure effects of resource revenues would not only diminish the macroeconomic consequences of resource developments but would also be likely to increase the microeconomic flexibility of the economy as a whole. It is up to governments to convince their tax payers that governments should be getting resource dependent surpluses and deficits. That has implications for the discussion about what the current structural deficit is for the Commonwealth government. You can
be too constrictive as well as too expansionary by following booms and slumps in resource revenue. Currently the danger is on the one side, two years ago it was on the other side.