



PRIME MINISTER

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FORUM ON BUSINESS AND UNIVERSITY CO-OPERATION
SYDNEY - 2 OCTOBER 1986

I am pleased to have the opportunity to share with you some thoughts on ways of achieving greater co-operation between business and our tertiary institutions. After all, progress in this area is crucial to the revitalisation of the Australian economy and ultimately, to the achievement of our common goal of a prosperous, fairer society.

Two years ago I encouraged the Business Council of Australia and the Australian Vice-Chancellors' Committee to meet and discuss ways of achieving closer co-operation in areas of mutual interest. Even at that time it was clear that co-operation between industry and universities would have to be an important element of Australia's industrial revitalisation.

Now, faced as we are by severe economic difficulties created by the slump in our terms of trade, that co-operation has become essential. The progress your two organisations have made therefore is a source of great encouragement. My message tonight, however, is that your achievements to date are but the first of many steps that need to be taken.

The report produced by your joint working party points to the many existing links between business and the universities. It also proposes ways in which those links can be strengthened and extended.

Examples of what is already being done include university-based consulting companies, liaison and advisory units, and research and development centres that concentrate on industrial applications, such as the Julius Kruttschnitt Mineral Research Centre and the Warren Centre.

Business leaders serve on the governing bodies and committees of the universities and contribute their knowledge and experience to developing centres of learning that are relevant to Australia's current and future needs.

I hope that this forum will identify more links, like these, and also see a determination of both of your groups to establish those links.

The challenge now facing Australia is widely understood. As a nation we cannot go on indefinitely spending more than we are earning and financing the difference by adding to our external debt. Not only is there now a wide appreciation of these problems, there is an emerging consensus that the Government's response is the appropriate one.

The recent slump in our terms of trade, which have been declining on average for decades, has served to highlight a structural weakness in our economy: our heavy reliance on primary industries and, until recently, uncompetitiveness in the manufacturing and services sectors.

Growth in world trade has been the engine for post-war global economic development. The most successful economies are those that have placed the greatest emphasis on export-oriented industrial strategies.

Manufacturing and services have been the fastest growing sectors of world trade, yet Australia's share of world trade in manufactures and services has been falling. However, the conditions are now to hand to enable us to strengthen our manufacturing and service industries so that they become more successful on international markets and in competing against imports.

The large and fundamental depreciation of the Australian dollar has boosted our price competitiveness to levels unseen since the 1960s. As I travel around the country it is becoming clear to me that more and more businesses are coming to appreciate the opportunities that are opening up as a consequence of this change.

The Government is determined to ensure that this vastly improved price competitiveness is maintained. This year's Budget and our policy of further wage restraint are vital elements in our strategy.

As a further element in our strategy for economic adjustment, the Government recently convened a meeting between business and unions on work and management practices. The results of that meeting offer the prospect of a widespread improvement in co-operation between management and unions that will be invaluable in boosting productivity and thus in maintaining our competitiveness in the longer term.

At the BCA annual general meeting two weeks ago I announced a series of major initiatives designed to improve the internal workings of our economy, including the easing of export controls on a number of major mineral exports. I also announced a wide ranging review of impediments to trade competitiveness. These measures complement a range of similar steps taken over the past three years to improve Australia's flexibility and capacity to compete.

Of course, a fundamental element in maintaining our competitiveness and converting it into export sales and success against imports is innovation, based on locally-performed research and development.

This does not mean that we will no longer need foreign technology. On the contrary, the challenge is to obtain the best foreign technology and to combine it with the best Australian technology to develop products that embody excellence in design and quality - products that can compete successfully on tough international markets.

First, and most fundamentally, the Government has restored the conditions for profitability. In addition, we have taken a number of initiatives designed specifically to improve the environment for innovation. We have introduced the 150 per cent tax concession for research and development, together with a complementary Grants for Industry Research and Development Scheme.

The Government has recently accepted the thrust of the ASTEC review of the CSIRO. The CSIRO will continue its role in applications-oriented research but will give greater emphasis to the effective transfer of the results to users.

Through financial market deregulation and the tax concession for Management Investment Companies, the availability of venture capital has been increased substantially.

Changes have been made to Government purchasing and offsets arrangements, which give higher priority to technology and to industrial development in Australia.

We have established the Australian Trade Commission, which is strengthening the support provided to exporting companies, particularly new exporters and those with high-technology products to offer.

Further initiatives will follow shortly, when the Government receives ASTEC's reports on the Defence Science and Technology Organisation, and on research funding in higher education. We are also awaiting the report of the Inglis Committee on government purchasing.

Clearly, the Government already has done a great deal. Substantial resources have been provided. Given the constant need to restrain public sector expenditure, the ball is now in the court of organisations such as yours to make effective use of these resources.

In the recent review of Australian science and technology policy by the OECD, the highest importance was placed on education and training. The OECD Examiners observed that a system of training programs which stimulated technical training and retraining within individual enterprises would be among the most important contributions of the education and training system to national economic recovery.

They saw the condition of Australian primary and secondary schools as critical for technological well-being. They regarded the tertiary education system as the heart of Australia's scientific and technological effort. They encouraged closer relationships between industry and education and urged greater mobility between the two. And they emphasised that on-the-job training within individual enterprises is of central importance to national technological development.

I would like to take up some of these observations in addressing, in turn, the public and private sector roles in skills development for new technology and innovation.

Public investment in education is considerable and the Government is determined to make the education system more responsive to the needs of the economy and the society generally. Much has been done already. For example, there are now 145,000 more young people under the age of 25 in all forms of post-compulsory education than there were in 1983, an increase of seventeen per cent.

But this is not enough in itself. For example, our retention rates in the final years of secondary education are low by comparison with other developed countries, as are our retention rates in tertiary education.

Australia is now in the early stages of a fundamental economic restructuring - one that will span this and the next decade and extend beyond the turn of the century. We are a nation in transition. We must reshape our attitudes to work, to risk taking, to enterprise and to innovation. In all their pursuits Australians must strive for excellence so that they can meet and overcome the best competition in the world.

But we will not be in the race unless our tertiary institutions become more sensitive and more responsive to the needs of Australian industry. Graduates will need training and analytic skills relevant to Australian industry in transition if the nation is to succeed in revitalising its manufacturing and service industries and if we are to triumph in world markets.

I see the Vice Chancellors' Committee as having an enormous responsibility in ensuring that graduates are given the training and the skills needed by emerging export-oriented manufacturing and service industries.

In particular, our output of science and engineering graduates compares unfavourably, not only with other developed countries, but increasingly with the newly industrialising nations. We continue to meet our needs in computer science, for example, largely by immigration.

It is not just a matter of quantity - of allocating a greater share of tertiary places to these disciplines - but also one of quality. Curricula should be reviewed periodically and systematically along the lines of the current CTEC review of law and engineering to ensure continuing relevance to market place needs.

At the same time, consideration might be given to how universities and the other tertiary institutions can provide students with entrepreneurial experience and skills. In these endeavours our tertiary institutions clearly will benefit from close interaction with the business community.

Employers have generally not been effective as a group in expressing their needs and expectations of the education system. In that regard I am encouraged both by the convening of this forum and the recent series of extensive discussions between representatives of the education sector and employer groups.

Industry has indicated on a number of occasions that its access to Government and its input to decision making in education should be further expanded. I am pleased to announce that the Minister for Education, Susan Ryan, will be contacting business organisations soon to propose the establishment of an Industry Reference Group, with direct access to the Minister. The Government looks forward to the fullest possible private sector co-operation in this and other steps to enhance dialogue.

The Minister will be improving consultative arrangements between the education portfolio and industry, specifically by setting up an Industry Liaison Unit within the Department of Education for day to day consultation.

In looking at industry's responsibility in the development of technological skills, I want to emphasise that industry cannot absolve itself of its own direct responsibilities for education, training and retraining. Industry cannot expect the education system to produce a finished product, totally tailored to its needs. Indeed, it is essential that educational institutions provide a strong basic training, upon which particular skills can be superimposed.

I think we all acknowledge that in some industries there needs to be a substantial change in the attitude of management towards the workforce and its skills. The production workforce has a central role to play in improving innovation and productivity. In Japan, for example, it is estimated that more than sixty per cent of all innovations come from the shop floor.

The skill and motivation of the workforce is an obvious and key factor in business competitiveness. The workforce should not be seen simply as an unavoidable cost to be reduced wherever possible. The challenges ahead of us call for the workforce to be regarded as a vital resource for future success.

I am aware of several companies which have developed a constructive relationship with the workforce, one which has enabled real improvements to be made especially in work practices and product design. But, unfortunately, there is evidence that Australian management on the whole does not interact well with the workforce and does not seek to involve the workforce in product development, quality control and related aspects of innovation and productivity improvement. For example, the OECD Examiners observed that technical co-operation between workers and management, which is common in countries such as the Federal Republic of Germany, Scandinavia and Japan, is rare in Australia.

The recent Business Council paper on work practices recognises resistance to the introduction of new technology as a major source of restrictive practices and workplace rigidities. But it also recognises the importance in this respect of greater emphasis on training and on the development and utilisation of skills - and concedes that management has not paid sufficient attention to these matters.

Deficiencies in knowledge and education can sometimes do more to obstruct innovation and productivity improvements than shortcomings in technology and lack of investment.

Turning specifically to the question of research and development, Australia devotes about one per cent of its gross domestic product to expenditure on R&D. This is a very low figure when compared with the leading OECD countries. Not only large countries such as the US and Japan but also countries with more comparable sized economies, such as Sweden and Switzerland, currently devote around three per cent. Even so, these countries are seriously questioning whether they are investing enough public and private resources in research and development. Japan, in particular, is moving to significantly increase its basic research effort to support increased industrial growth.

In Australia's case the level of public sector investment in research and development is broadly comparable with that in most OECD countries, but the private sector compares most unfavourably. It is therefore hardly surprising that our industrial products have lacked the competitive edge, to mention one aspect that improved product quality and design can provide.

Fortunately, there are encouraging signs that this situation is changing. However, it remains the case that industry investment in research and development is only a fraction of that in the countries to which I just referred.

Public investment in research and development is substantial and now exceeds one billion dollars a year. Some seven hundred million dollars of this is spent in the higher education sector, primarily in universities and increasingly in the institutes of technology and some other colleges of advanced education.

The Government also provides substantial support for basic funding of the CSIRO, through funding of medical research where real increases in Government effort have been maintained over recent years in spite of difficult budgetary circumstances, and through funding of other programs in the industry and science portfolios. In the medical research field, Australia has a well-deserved international reputation and a record of new product design which unfortunately has not always been followed in any significant way by local development of such products. Significant opportunities remain for those who wish to take advantage of them.

The excellence and world standing of much of the scientific research conducted in Australian universities is not questioned. This is particularly true when the best researchers have the resources to build strong multidisciplinary teams and have the infrastructure and equipment necessary to sustain the effort.

A good example is the success of the Special Research Centres Scheme, for which the Government has recently extended support. Centres such as the Joint Microelectronics Research Centre and the Adelaide Centre for Gene Technology have attracted industry funding and stimulated greater university-industry research interaction.

To link these research functions to the commercial world, all universities now have a commercial arm, usually a separate company, which acts as a broker between the university's researchers and companies which can develop, manufacture and market their ideas.

Let me take a few of the success stories. The "bionic ear" was developed at Melbourne University and commercialised, with the aid of Government public interest grants, by Nucleus Ltd. The device provides hearing for people who are profoundly nerve deaf. The current world market is estimated at 220,000 units. But further technical refinements could make it applicable to lesser degrees of deafness, with substantially increased market prospects. Sales are expected to be around \$5.5 million in 1986, rising to \$50 million by 1990.

At the University of Melbourne a blood test has been developed for the detection of breast cancer, a major killer of Australian women. The test developed by the Research Centre for Cancer and Transplantation helps the early diagnosis of breast cancer, and in tracking the course of the disease. It was recently licensed to Australian Med-Research Industries and provided the basis for the launch of a public company, Integrated Medical Technologies.

Scientists at the ANU have invented a way of genetically modifying yeast which is being developed with funds provided by the Food Division of Burns Philp. The outcome of this work is expected to be a range of significantly improved biotechnology products that will let the company penetrate increasingly competitive international markets.

The ANU is also finalising agreements with Forensic Science Technology International and Melko Electronics Manufacturing in Victoria to develop new instrumentation and chemical technology for forensic science use throughout the world. The ANU's Forensic Science Research Unit has been working with police forensic science departments in Australia to develop the device.

A number of other exciting developments could be mentioned, like Murdoch University's bromide battery (which has attracted about \$5 million in development funds) and Queensland University's fermentation process for converting sugar to alcohol. Obviously, the research of our universities does provide the basis for commercial development by the private sector.

No doubt the potential exists for much more variation and specialisation in and between our universities. Resources need to be used flexibly so that each university develops a more distinctive character and selectively concentrates its research in key areas.

The Vice Chancellors are the key people in initiating such major changes so that each university perceives its role and manages its research activities.

Bringing together now the various strands of the thoughts I have put to you, I believe that there is an emerging awareness of the value of the substantial public investment in higher education research and the role it can play in our industrial competitiveness. To foster this awareness it is essential that the universities more vigorously make their research skills and activities known to industry and further develop mechanisms which facilitate the flow of information and skills to and from industry.

Interaction between universities and industry also can be assisted by increasing the mobility of research and development personnel in both directions. Institutional barriers can limit this interchange and I hope that you all will work to remove them.

Industry, has, of course, a major role of its own in research and development. However, except in the largest companies, there will continue to be considerable reliance on the public research infrastructure for specific aspects of research expertise. In that way research and development capacity within the individual firms can be supplemented and made much more effective.

This is recognised in some of the proposals and initiatives set out in your own report. The tax concession for research and development is encouraging such interaction. Early evidence suggests that companies are more frequently using university staff as consultants and contracting research to universities.

Increasingly, all companies will have to innovate in order to survive. Greater innovation and competitiveness in Australian industry will demand changed attitudes in corporate management.

These challenges will involve a longer term approach aimed at gaining and improving market share, particularly overseas. They will demand a reputation for promptness, quality and reliability. Significant investment will be necessary in research and development, production systems and marketing.

The recent PA Consultants' technology surveys of management attitudes in Australia underline the change that is required. In comparison with those in leading countries, Australian boards and top management appear to lack strength in both technological and marketing skills. The surveys show limited awareness on the part of boards of the importance of technology, innovation and research and development to their future competitive survival and perceive research and development as a reluctant tactical necessity rather than a key element of their business strategy.

The drive for structural change in our economy involving export orientation will succeed only if large companies make these changes in strategy and attitude and adopt the necessary approaches to innovation and research. Those of you here from the Business Council are in key positions to effect this change.

Similarly, the Vice Chancellors' Committee has the very great responsibility I referred to earlier - to ensure that the allocation of tertiary places, the design of courses and the specialisation in coursework and research between our tertiary institutions, reflects the needs of Australia's emerging manufacturing and service industries.

Let me close by saying that I am convinced Australia has the capacity to compete successfully in the increasingly complex and difficult international trading environment.

But to do so requires a concerted effort from us all. We must discard many of the attitudes and practices of the past and adopt new ones for the future.

The resulting teamwork will involve the closest possible interaction between individual firms and universities. It will require the personal commitment of each of you.

I wish you well in your forthcoming discussions and hope that the current forum will be followed by others in due course. My Government stands ready to join with you constructively in the important task ahead.
