



**Industries Assistance Commission**

**THE IMPACT PROJECT**

by

Chairman, Industries Assistance Commission

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It is expected that this phase of the project will be finalised early in 1977.

#### Phase 3

In the third phase, two further kinds of outputs will be produced:

- Long term 'snapshot' views of the economy 15, 20 and 25 years in the future. It is here that the long run impact of changing demographic variables, such as fertility rates, will show up.
- Time paths for major variables in the economy tracked year by year over a five to ten year horizon which are able to take account of major short run disturbances in the economy.

It is planned to complete this phase of the study by the end of 1977.

#### Post-Development Phase

After completion of Phase 3, IMPACT will have an on-going role and any developments thereafter would be enhancements or modifications which may become necessary to accommodate changing circumstances and extended uses of the model.

PART 3 EXPECTED COMPLETION DATES FOR SEGMENTS OF THE PROJECT

IMPACT IS AN ON-GOING PROJECT. THE INITIAL DEVELOPMENT, WHICH HAS THREE PHASES, WILL BE COMPLETED BY THE END OF 1977. ON COMPLETION OF EACH INTERMEDIATE STAGE, OUTPUTS APPLICABLE TO POLICY ANALYSES WILL BECOME AVAILABLE.

In the absence of any unforeseen setbacks or delays, a full operational version of IMPACT will be available by the end of next year.

The development of the model is planned in three phases and output will become available at the completion of each phase.

Phase 1

Completion of this phase will provide the basis for studying the effects, one year ahead, which could be expected to occur in the economy as a consequence of changes, including policy induced changes. It will be possible to address such questions as:

Given the absence of major short-run disturbances in the economy what would be the effects in one year's time of changes in, for example, tariffs on particular industry categories, export prices, aggregate private investment or aggregate personal consumption, on, for example, gross production by industry, imports and exports, wage relativities and unemployment in particular occupational categories, industry profitability and relative prices of goods and services?

It is expected that this phase will be completed and available for use in the participating agencies by the end of this year, provided there are no further delays in compilation of the 1968-69 Input-Output tables.

Phase 2

Completion of the second phase will enable the type of questions described above (and discussed in more detail in Part 1, Section 2(111) of this paper) to be answered year-by-year for a five to seven (and possibly ten) year horizon in the form of linked annual 'solutions'. Again, the analyses would abstract from major short-run disturbances in the economy.

FOR GENERAL RELEASE

The attached paper on the IMPACT project has been prepared, at the Government's request, by the Chairman of the Industries Assistance Commission following the Cabinet's decision to approve continuation of the project. The paper is based on a report prepared for the Government in consultation with other agencies participating in the project.

Its purpose is to explain why the IMPACT project is being undertaken.

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integrated segments of a general purpose analytical tool based on compatible data systems and modelling designs. Thus the analysis undertaken in separate policy fields would be compatible and comparable on a valid basis - and the prospects of achieving sound and coordinated policies would be enhanced.

In summary, the IMPACT project offers the opportunity to develop a tool of policy analysis to achieve better informed and better coordinated advice in related areas, without impinging on the exercise of independent professional judgements of individual agencies. It also provides an opportunity to achieve substantial savings in the public and private costs of providing the necessary data and in the costs to Government of the research inputs to such policy advice. The alternative is to continue with a fragmented approach which must inevitably exacerbate the problem of policy coordination and add to the public and private costs of preparing advice for the Government.

### 2.3 THE CONTRIBUTION OF IMPACT TO DECISION-MAKING IN THE PRIVATE SECTOR

IMPACT will improve the quality of the information on which advice to the Government is based. More rational, consistent and better coordinated advice should result. This will help to create an environment conducive to more informed decision making in business.

Because the focus of IMPACT is heavily on Australian industry structure and its relationship to changing social and demographic conditions, the domestic labour market and international trade, it will be particularly appropriate for evaluating policies which bear directly on the business sector in general and on individual groups of industries and workforce categories in particular. Thus, output from the model will enable businesses and other organisations to make their own independent assessments of the future environment in which they will be operating and plan their initiatives accordingly. They will also be able to make better informed assessments of the efficacy of Government policies which affect their activities and thus be better equipped to influence the direction of future policies.

Finally, the costs to the community in general, and to business in particular, of providing information to the Government for policy purposes will be less under the coordinated approach being followed with IMPACT than would be the case if each agency of the Government were to continue with separate and fragmented analyses of the same basic issues.

initiatives (followed by corrective measures) would be more government intervention in the private sector than would otherwise be required, and a more uncertain economic environment which would be inimical to private investment initiatives. Because IMPACT is an economy-wide model which explicitly takes account of important economic, social and demographic inter-dependencies, it will cast light on the potential medium and longer-term conflicts which might flow from the choice of certain policy options; and it can be used to indicate, for example, the extent to which future policy options might be closed off as a consequence of a particular course of action taken now. In these contexts, IMPACT has direct relevance to the work of other agencies and can make a useful contribution to more effective policy coordination.

One practical example of how IMPACT can aid in policy coordination is in the area of Government activity covered by the Department of Environment, Housing and Community Development (DEHCD). DEHCD's expenditures, particularly its investment programs, have very long lead times. If these expenditures are to proceed at a rate consistent with the need to avoid major dislocations, it is necessary to take a longer term view of the economy and the effects of changes in Government policy. For such assessments, selective forecasts are not enough - it is necessary to have an economy-wide model, such as IMPACT, so that evaluation of the consequences of alternative policies can be made in a proper perspective. If this is not done, policy advice will be less well informed and the chances of medium through longer-term dislocations (e.g. excessive public sector-private sector competition for materials and labour, or excess capacity in the construction sector as a whole) will be correspondingly greater.

The IMPACT study will also have 'spin off' benefits for other agencies. For instance, in the area of urban and regional policy it would be possible to construct a regional sector to complement the IMPACT model, whereas it may be difficult to justify the cost of a separate approach which would require significantly more resources. The extension of IMPACT in this way would not require a great deal of resources and, equally important in the context of policy coordination, such extensions would co-exist with IMPACT as

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## 2.2 THE CONTRIBUTION OF IMPACT TO GENERAL GOVERNMENT POLICY DEVELOPMENT

IMPACT WILL PROMOTE BETTER COORDINATION OF POLICY ADVICE AMONG AGENCIES WHICH HAVE RESPONSIBILITIES IN RELATED ECONOMIC AND SOCIAL FIELDS. IT ALSO PRESENTS AN OPPORTUNITY TO IMPROVE THE OVERALL QUALITY OF POLICY ADVICE, WHILE REDUCING THE TOTAL COST OF DATA AND RESEARCH INPUTS.

The IMPACT project has significance beyond the needs of the participating agencies. It will provide a comprehensive framework for systematic study and analysis of issues which fall within the ambit of other agencies with policy advising functions in related economic and social fields. Recognition by the participating agencies that the IMPACT model will have application beyond their particular areas of interest underlines the 'open shop' approach which has been adopted during its development (i.e. wide circulation of working papers, seminars, etc.). The participating agencies agree that any other agencies of the Government which have something to contribute to, and/or would benefit from, the development of IMPACT should be welcomed as participating parties.

In the wider context of general Government policy development, IMPACT is an example of inter-agency cooperation which demonstrates that it is possible to break the rigid demarcation of functional responsibilities within the bureaucracy and bring the combined skills and insights of different agencies to bear on common problems. Such joint institutional initiatives enhance the prospects of coordinating policy advice which is research or information based in areas where economic and social factors interact. This cooperative approach also reduces the pressure to expand existing research units, or create new ones, which is the alternative and practiced institutional response when changes indicate a need for new or expanded analyses of policy issues.

The availability of IMPACT to other Government agencies should also contribute to better policy coordination across-the-board. Without adequate coordination, it is more likely that decisions taken in one area will generate unforeseen problems in other areas which, in turn, will have to be tackled separately. Clearly, the net effects of such a series of uncoordinated policy

among the biggest and most consistent users of statistical data, the savings to the ABS could be substantial.

Second, because IMPACT requires compatible data concepts, classifications and systems, it is consistent with the Bureau's function of fostering the use within Government agencies of compatible data systems and achieves a major advance in this direction.

Third, development of the IMPACT data base system within ABS provides an operational integrated economic-social-demographic data base which will be available to other users for similar studies. This indicates potential for further cost savings in the ABS.

Fourth, involvement of ABS staff in the development of IMPACT will increase the capacity of that organisation to provide advice and services to other agencies in these modern analytical techniques which are assuming increasing importance as policy aids world-wide.

#### SUMMARY

Related areas of national policy, such as those dealing with industry development and employment, interact. Advice which serves as a basis for Government policy decisions in these areas should take account of this interaction. A major deficiency in the advice flowing to Government generally, however, has been the lack of a comprehensive economy-wide framework which would make it possible to co-ordinate advice in the light of the interaction between economic and social factors. This has been particularly important in the case of advice from those agencies participating in the IMPACT project, which are especially concerned with the dynamic relationships between industry and trade policies, population trends and employment.

Without such a framework it is not possible to analyse systematically and comprehensively the effects which might be generated in related areas by a policy action in a particular area. For example, to make reliable estimates of likely manpower needs for different types of labour it is essential to take account of developments in Australia's industry structure induced by Government decisions in the field of industry policy. Similarly, decisions in the field of industry policy should be taken with a knowledge of their likely consequences on employment and the labour market. Finally, the timing of policy actions in both fields should be coordinated and harmonised as far as possible with actions in the field of monetary and fiscal policy.

#### Nature of IMPACT

IMPACT, which will provide such a systematic and integrated framework, is a medium to long term model of the Australian economy being developed jointly by four government agencies responsible for providing factual or policy advice to the Government on closely related areas\*. The agencies involved are:

- the Australian Bureau of Statistics;
- the Department of Employment and Industrial Relations;
- the Department of Industry and Commerce; and
- the Industries Assistance Commission

In addition, the Department of Environment, Housing and Community Development has recently agreed in principle to join the project as a fully participating agency.

\* The Department of Immigration and Ethnic Affairs also co-operates with the participating agencies through an exchange of data and information.

Although not in itself a policy study, IMPACT will provide a comprehensive framework for policy studies of the Australian economy, which will assist the agencies in arriving at their independent judgements about the advice they provide to the Government on the likely effects of policy actions in the areas of industry development, business investment, employment and international trade. The purpose of IMPACT is to provide a basis for such improved advice in a way which avoids fragmented, incompatible and perhaps even contradictory approaches to the same problems by the different agencies.

#### Implications for public policy

The development of the IMPACT framework on this co-operative basis will:

- improve the range and quality of information available to the Government about the likely effects of a particular policy action in one area on other areas. For example, a decision to change tariffs or investment policies can be expected to have direct, but uneven, effects on employment in import competing (and other) industries;
- ensure that the individual agencies, in preparing advice for their Ministers, are able to take account of the dynamics of economic, social and demographic inter-relationships;
- enable the participating agencies to achieve greater co-ordination by jointly examining problems which each have been studying separately, often in a fragmented way;
- place the Government in a better position to pursue related and interacting policies which are in harmony;
- achieve continuing economies in the costs of servicing policy research (annual savings, initially \$125,000, will increase substantially over time);
- reduce the costs to business and private citizens of providing the data inputs necessary for informed public policy advice and decision making;
- help create a business environment in which investment and other private initiatives are better informed.

DIEA considers that IMPACT will provide a valuable tool to assist in analysing a range of issues in the field of immigration policy. For example, insights obtained from the IMPACT model on probable shortfalls in the labour supply of particular Australian industries would be taken into account in advising the Government on the nature and magnitude of future annual migrant intakes. Conversely, indications from IMPACT of the areas of industry in which labour supply is expected to exceed demand would alert the Department to potential problems of absorbing migrants into the workforce.

IMPACT would also provide a basis for studying the role of migrants in industry development, both as a source of labour and as consumers of final outputs. In this way it would improve present knowledge of the contribution migrants make to economic growth and thus the basis on which the efficacy of programs can be assessed for purposes of policy advising.

In the longer term, DIEA expects that the economic-demographic modelling techniques of IMPACT will improve the quality of demographic projections, because the socio-economic factors which influence demographic trends are imbedded in the model.

#### (e) The Australian Bureau of Statistics

The Australian Bureau of Statistics (ABS) envisages that major and enduring benefits will flow, both from the development of IMPACT as a joint project and from its own participation in that development.

In addition to providing basic data required by government agencies, the ABS has responsibilities to advise and assist these agencies in technical statistical matters and to ensure that the methodologies they use accord with sound statistical practices. It is also an important function of the ABS to encourage inter-agency coordination in the collection and use of statistics. The ABS considers that the IMPACT project will benefit it in the performance of these functions in five principal ways:

- First, substantial and continuing savings in the costs of providing data will result from the coordinated approach in IMPACT. This is because the ABS will not have to supply each of the participating agencies with separate and varying presentations of the same basic data to support their independently conceived analyses of the same general policy issues. Since three of the participating agencies (DIC, DEIR and the IAC) are



- a retraining strategy which would assist persons displaced by specific structural change, and who would not be readily employed elsewhere;
- the likely consequences to the labour force of a change in the distribution of the education budget between different streams;
- the likely impact on the labour market of a change in policy on overseas purchase of major defence or telecommunications equipment;
- the effects on fertility of Australian women resulting from introduction of equal pay and other incentives for increased participation in the labour force.

DEIR seeks savings of 'in house' costs and greater returns through the IMPACT project than could have been achieved through its own efforts. The Department's manpower forecasting capacity, established principally as a result of initiatives in 1972 by the then Minister for Labour and National Service, the Hon Phillip Lynch, was proceeding along a development path using external economic and population forecasts to assess the environment within which the labour market may be operating. IMPACT, which takes account of the dynamic interaction of labour supply and demand, and demographic and economic influences, will improve the bases for these studies.

By participating with the other agencies in the research and development of IMPACT, DEIR hopes eventually either to reduce the need for resources in this area or to free more resources to interpret the output and extend the coverage of models such as IMPACT and to integrate the resulting analyses into related qualitative information for use in departmental policy formulation.

(d) Department of Immigration and Ethnic Affairs

The recently established Department of Immigration and Ethnic Affairs cooperates with the IMPACT project, but it is not providing resources to work directly on the study. Under informal arrangements it provides statistical data and general advice on migration issues, and it receives copies of all IMPACT working papers. DIPA representatives attend IMPACT management meetings. The Department has expressed a desire that these informal arrangements should continue.

Implications for Private sector

Because IMPACT will improve the quality of the advice to Government in related areas of policy, better co-ordinated policies should result. Business will be less likely to receive conflicting indications of the future environment in which it is expected to operate. In addition - because IMPACT focuses heavily on industry structure, the labour market and international trade - it will be particularly appropriate for evaluating the effects on individual industries and workforce categories of policies which bear indirectly on the private sector. Thus, it will enable business and other organisations to make better informed assessments of the future environment in which they will be operating and of the efficacy of policies which affect their activities.

The project is being developed on the basis of an 'open shop' approach. Working papers dealing with both its technical structure and the information generated by its use will be widely available. This has important implications for the capacity of private sector interests, and the community generally, to evaluate the advice flowing to the Government from bodies such as the Industries Assistance Commission and to participate more effectively in the process of public policy formulation.

Timing of outputs

IMPACT is an on-going project. The initial development has three phases which will be completed by the end of 1977. On completion of each intermediate stage, outputs applicable to policy analysis will become available.

Insights of this type from IMPACT will also provide a basis for more informed assessments of future job prospects for particular occupational groups, which can be used to assist in the placement and vocational guidance functions of DEIR.

Of particular assistance in preparing policy advice will be IMPACT's ability to test the sensitivity of desired policy outcomes to different strategies in related policy areas. Some examples of the use of IMPACT for this purpose envisaged by DEIR are:

- . Both NEAT and immigration affect the structure and size of the labour force. IMPACT will provide a framework for assessing the consequences in the labour market which would occur as a result of changes contemplated in the NEAT or immigration programs.

- . A high or low tariff stance can be expected to affect the demand for labour in different industries. By providing estimates of the likely changes in demand for different industry groups, IMPACT can assist in assessing the usefulness of NEAT in overcoming any resulting labour market imbalances.

- . Alternatively, the likely impact of a particular NEAT program under different tariff scenarios could be estimated.

One of the most common uses by DEIR of IMPACT is expected to be the assessment of initial impacts and subsequent diffusion through the demographic-economic system of a single policy change. Some examples of policy changes and their implications of interest to DEIR are as follows:

- . the likely effect of changes in tariffs on employment in particular industries concerned;
- . the displacement, by occupation, likely to occur as a result of an overall industry employment change;
- . the likely absorption of displaced persons of different occupations elsewhere in the labour force;

to accrue from their establishment. The model will permit assessments to be made of industries in terms of their likely long-term viability in the Australian context, given a particular scenario of demographic change. When IMPACT is fully developed, it will also provide the basis for assessing the probable impact on individual sectors within industry and commerce of proposed policies in varied fields - migration; education and technical training; the encouragement of technological change; and so forth.

DIC had already commenced independent studies of some of the major problems which can be addressed within the IMPACT framework when the joint study was initiated. The Department considers that it would have had to assign considerably more resources to this work had it not been able to share complementary skilled resources with the other agencies in the joint project. IMPACT will provide the Department with a tool for comprehensive policy analyses, and it will also result in real savings in scarce professional resources.

(c) Department of Employment and Industrial Relations

The main benefit of IMPACT to DEIR is expected to come from its ability to assist in preparing policy advice on the wider implications of specific issues. In particular, it will aid DEIR in preparing policy advice on the desirable composition of Government funded manpower programs such as the National Employment and Training System (NEAT). It would also contribute to a more effective integration of manpower policy in respect of immigration and education as a result of informing DEIR on the potential labour supply in the skilled, technical and professional areas. Some examples of the anticipated output of IMPACT which will be useful in these processes are:

- estimates of the likely future size and structure of the labour force by occupation and industry;
- estimates of the likely future size and age and sex composition of the population;
- estimates of likely flows through the education system into the labour force by age, sex and vocational stream;
- likely changes to the population and labour force resulting from different immigration intakes;
- likely changes to the structure of labour force resulting from different NEAT policy options.

PART 1 THE PURPOSE OF IMPACT

1.1 WHY THE PROJECT IS BEING UNDERTAKEN

IN PREPARING ADVICE FOR THE GOVERNMENT IT IS ESSENTIAL TO UNDERSTAND AND TAKE ACCOUNT OF THE INTERACTION BETWEEN ECONOMIC, SOCIAL AND DEMOGRAPHIC CHANGES.

A major problem in providing advice to the Government has been to identify the nature and extent of the inter-dependencies and interaction between industry development and economic and social (including demographic) changes. There has been no systematic basis for examining these in the Australian context.

In the past decade there have been significant changes in the Australian economy - in the structure of industry, the patterns of international trade, in the spending and saving habits of the population, in the age, sex and skill composition of the workforce, and in the general social environment. Insights into the likely effects of such changes are essential for the formulation of policy advice to governments. For example, demographic changes of the kind foreshadowed in the First Report of the National Population Inquiry<sup>1</sup> (the Borrie Report) will have widespread medium and longer-term economic and social consequences which need to be understood and taken into account in future policy advice - particularly in the fields of manpower, migration, industry development and international trade. For example, a reduction in immigration coupled with an aging workforce and the tendency for younger people to defer entry into the labour market may reduce the supply of unskilled workers who traditionally find employment in labour intensive industries. In some cases such industries already require high levels of assistance against import competition, and if they had to compete for labour in a contracting (and more expensive) market the resulting increased costs would further erode their competitive position against imported products. Such industries may therefore have to contract to some extent in the longer-

<sup>1</sup> Australian Government, National Population Inquiry (W.D. Borrie, Chairman), Population and Australia - A Demographic Analysis and Projection, (Canberra: Australian Government Publishing Service, Canberra 1975), Vols. 1 & 2, pp. xxxiv and 760.

term unless they receive increasingly higher levels of assistance or can achieve technological break-throughs which enable them to substantially outstrip the productive efficiency of their overseas competitors. It is important that producers within these industries are able to plan their investment decisions with a knowledge of the likely consequences that demographic changes will have on their future business environment.

A changing demographic structure of the kind foreshadowed in the Borrie Report would also have a marked influence on the future volume and pattern of demand for goods and services from both the public and private sectors. For example, demand for the products of many industries may contract, or remain unchanged, and for others it may increase at rates considerably lower than in the past. In these circumstances it would be difficult for manufacturers in the affected industries to achieve economies of scale and the Government would need to decide whether they should be allowed to contract, whether they should be given additional assistance to continue production, or should be assisted to adjust to the changing situation.

Declining fertility and an aging population would, for example, affect the average size and age composition of households and reduce the rate of increase in demand for detached housing. It would also reduce the demand for goods and services of the kind required to satisfy the needs of younger people in general and of household formation in particular. The consequence would be a substantial shift in the pattern of public expenditures - and industry would also have to adjust the pattern of its outputs from satisfying the needs of younger people (particularly demands associated with household formation) to one of satisfying the needs of a more mature population. To the extent that future changes in the structure of the Australian population can be foreseen, so too can the attendant consequences be foreseen for the future pattern of public expenditures and for the structure of private industry, provided it is possible to take the evolving supply and demand conditions into account in a sufficiently logical and systematic way.

Industry structure and development are also affected by changes in general economic factors, such as the level of personal consumption expenditure, the level of private investment expenditure, taxation policy, the exchange rate, and the tariff; they are also affected by constraints

in tariffs in a more detailed industry context than that provided by IMPACT, using available ABS data and relatively simple additional computations. In this way IMPACT will provide the framework and the benchmarks to support a variety of more detailed special analyses.

Finally, the development of IMPACT will remove the need to continue with a number of alternative and less comprehensive forms of analyses which have had to be used in the past. To this extent, elimination of the need to continue these less satisfactory forms of analyses constitutes a substantial offset to IAC costs during the development of IMPACT and significant annual savings after the model becomes fully operational.

#### (b) Department of Industry and Commerce

The Department of Industry and Commerce (DIC) is directly concerned with the activities of, and the formulation of policy with respect to, over three-quarters of the hundred or so industries into which IMPACT divides the economy, so that the model is of particular importance to its areas of responsibility.

Foremost among the projects on which IMPACT will be used is that which provided the original impetus for its development - the problem of charting the long-term implications for Australia's industrial structure of major demographic changes. A changing demography can affect a particular industry directly, through changes in the demand for the goods or services produced by that industry and changes in the characteristics of the workforce available to it, and indirectly via the direct and indirect effects upon other industries. The problem is of the highest importance for the development of long-term Government policies towards particular industries, yet so complex that the net effect on a given industry cannot be estimated without comprehensive analyses of the kind a model such as IMPACT will permit.

The IMPACT model would shed light on several other major problems of long-term policy development. DIC would use it, for example, in studying the impact of changes in the level of private investment - a subject of considerable importance at the present time. The Department is of course concerned to promote the development of efficient and economic new industries in Australia; and IMPACT would be used to analyse the effects on other industries of such proposals, the likely availability of skilled labour and other resources needed by the new industries and the export earnings likely

would be induced in these industries under different protective situations; and it will be possible to take into account the extent of structural adjustments which would occur in these industries in the medium and longer-term as a natural consequence of changing population and labour market trends. Similarly, in the case of a reference now before the Commission on the forthcoming multilateral trade negotiations, IMPACT will be used to assess the effects on Australian industry structure of different concessional trading arrangements.

The importance of IMPACT to the Commission will extend beyond the value of its direct outputs in two principal ways:

- First, there are elements of the project which can be used independently for specific analysis. For example, a special import study, which is an essential part of IMPACT, will provide information on, and insights into, the sensitivity of the shares of imports and domestic production in each industry to changes in exchange rates, tariffs and differential rates of inflation between Australia and its trading partners. This will provide a basis for assessing short-term fluctuations in the level of imports which typically generate pressures for temporary assistance and import quotas. This segment of the study will make more widely known and better understood those factors which should influence the timing of the introduction and removal of temporary restrictions against imports. This element of IMPACT will provide a useful input to the Commission's inquiry on the Multilateral Trade Negotiations because it will enable better informed judgements to be made on the extent to which Australia is likely to benefit from trade liberalisation; in particular, it will help to identify the domestic industries most likely to face increased import competition and hence bear the costs of trade liberalisation.

- Second, because an integrated data base (provided by the ABS) is being used for the IMPACT project, its output can be used without problems of incompatibility in data concepts for extended and more specific analyses which draw on more detailed ABS data. For example, it would be possible to examine the effects of changes

imposed on the economy, such as the prices obtainable for exports and the availability of labour of a given type. While changes in these variables affect the economy as a whole, they tend to be unequal in their incidence and effects on particular industries and individuals. There is a need to assess in advance the probable effects of general economic policies, and of social or demographic changes, on particular industry groups. For example, a decision to change tariffs in one area of industry may have particularly adverse effects on related industries: thus it would be necessary to have some appreciation of the direction of such affects in order to decide what complementary action, if any, should be taken.

Failure to take adequate account of the inter-dependencies between economic and social, including demographic, change increases the possibility that policies in one area will be incompatible with the thrust of policies in other areas; and such a consequence would, of course, unnecessarily contribute to uncertainty in the private sector. But the medium and longer-term consequences of a changing economic, demographic and social environment are not readily apparent and need to be studied systematically within a comprehensive analytical framework.

Studies aimed at assessing the medium and longer term implications of interacting economic, social and demographic change are being undertaken under government sponsorship in most industrialised countries. Australia has lagged behind in this field and, as a consequence, decisions on issues of medium and longer term importance have been based solely on partial and qualitative analysis and have been less well informed than they might have been. IMPACT is being developed to fill this gap.

## 1.2 WHAT IT AIMS TO ACHIEVE

IMPACT WILL PROVIDE A FRAMEWORK FOR COMPREHENSIVE AND SYSTEMATIC ANALYSIS OF THE INTERACTION BETWEEN POLICY INDUCED AND NATURALLY OCCURRING ECONOMIC AND SOCIAL CHANGES AND THUS A BASIS FOR BETTER INFORMED AND COORDINATED POLICY ADVICE TO GOVERNMENT.

### (i) Origins of the joint project

The need for an analytical framework in which to study the policy implications of economic and social interaction has been generally recognised within the participating agencies for several years. The

initiative to develop IMPACT was finally triggered by the release of the Borrie Report, which foreshadowed a decline in the rate of population growth, reduced levels of migration and a slowing-down in the rate of increase in female workforce participation. This report served to focus the attention of the participating agencies more sharply on the policy implications of demographic change in the areas of industry development, protection, employment and migration. As a consequence, and in recognition of the mutuality of interests and concern, the agencies agreed to proceed with the development of IMPACT as a joint project.

(ii) The IMPACT design

The basic element of the IMPACT project is the development of a medium to long-term economy-wide, economic-demographic model. It will differ from many other medium-term models in two respects: first, a large amount of detail will be built into the model structure to facilitate policy analysis both at a relatively disaggregated industry level and on the basis of a disaggregated labour force; and, second, the structure of IMPACT will be unique in that it will integrate three separate approaches to economy-wide modelling, each of these approaches corresponding to a module (or segment) in the structure of IMPACT. The three modules (MACRO, ORANI and BACHUROO) each serve different but inter-related purposes in modelling the Australian economy.

MACRO is a macro-economic module based on a new medium-term model of the Australian economy nearing completion at the Reserve Bank of Australia. Its function is to model the effects OF

- . tax rates
  - . the level and composition of government spending
  - . monetary variables
  - . the overall size of the workforce
- ON
- . aggregate private investment
  - . aggregate personal consumption
  - . the general level of prices.

the potential effects on industry structure of changes in such areas as wage rates, consumption patterns, import and export prices, patterns of overseas trade, the exchange rate, and indirect taxes.

In reporting on particular matters referred to it by the Government the Commission is required to have regard for the effects of its recommendations on other industries, employment (particularly in the regional context), consumers and international trading arrangements. Successive governments have urged the Commission (and its predecessor, the Tariff Board) to include in its reports the fullest possible account of the effects of implementing its recommendations. For example, when announcing (on 28 April 1971) the Government's decision to proceed with the present six year review of the Tariff, the then Minister for Trade and Industry said:

"It is clear that the more comprehensively the Tariff Board is able to take into account the significant economic and non-economic factors which the Government itself must take into account, the more valuable its reports will be to the Government. Similarly the more comprehensively the Board is able to support its recommendations with a full exposition of the factual basis and its analysis of the facts, the more informed the Government will be when exercising its judgement and arriving at its decision. It is also evident that the Government needs as clear advice as the Tariff Board can give in its reports to enable the Government to reach judgements on the likely consequences of implementing the Board's recommendations."

IMPACT has been designed to provide a comprehensive basis for analysing the effects of implementing the Commission's recommendations. It focuses heavily on Australian industry structure and its relationship to changing demographic conditions, the labour market and international trade, and the level of disaggregation will permit the simultaneous study of some 100 industry groups and some 12 major and 40 minor labour force occupational categories\*

IMPACT will therefore provide direct inputs to the Commission's ongoing program of industry inquiries. For example, in the case of references such as those now before the Commission on textiles, clothing and footwear, it will be possible to frame recommendations in the light of better informed assessments of the time profiles and magnitudes of structural adjustments which

\* In addition, more detailed studies can be undertaken using the IMPACT framework and ABS data.

'In house' capabilities and enhance its ability to improve the quality of services to all agencies of government, the private sector and the community in general. In this regard it is important to note that the data bases developed to service the IMPACT project will not be captive to the participating agencies but will be available to other agencies of government, research institutions and the business sector.

(11) Benefits Specific to Each Participating Agency

(a) Industries Assistance Commission

In advising on assistance to individual industries and industry generally, the Commission is required to ensure that its recommendations are consistent with the Government's overall economic, social and regional objectives. To fulfil this function the Commission must be able to assess the effects of its recommendations in an economy-wide context. This was expressed by the Minister for Industry and Commerce in the following terms:

"The incoming Government has the view that basic decisions concerning Australian industry - primary, secondary or manufacturing - or in the commerce area, which affect the prosperity of Australia totally and affect employment capacity in any sector, should be regarded by the Government as acts of government policy and concern. To that extent the IAC ought to be looking at the total position, not the singular position. That is the intent of the Government's position."

(Hansard : The Senate, 24.2.76, p.129)

In the Commission's work, analysis in an economy-wide perspective is necessary to an informed understanding of the impact of assistance policies on, for example, industry structure; the industry and regional distributions of employment; the labour market and labour mobility; imports, exports and the balance of payments; and the levels and industry composition of output.

The IMPACT project will provide valuable inputs to the Commission's general reporting function. Because it is an economy-wide model it will support more systematic and comprehensive studies than have hitherto been possible of the effects that different assistance measures would have on industry structure in particular, and on the economy in general. For the same reason, it will provide the means to identify the particular groups of industries which are likely to be induced to re-structure as a consequence of naturally occurring changes in population and workforce trends; and it will also give insights into

ORANI is an inter-industry module. Its function is to identify, in the greatest detail practicable, the implications for different Australian industries of changes originating in MACRO and elsewhere. Aggregate investment and the aggregate level of consumption as determined in MACRO are disaggregated into approximately 100 industry groups in ORANI. Also determined within ORANI for each of these industries are the demand for labour of a dozen different types, the demand for imports of different types, the supply of exports of different types, and the pattern of domestic prices.

BACHURROO is an economic/demographic module designed to keep track of the evolving population and workforce - and thereby to project the size, age structure, and skill composition of the workforce. BACHURROO will interact with ORANI to determine likely future unemployment levels for different occupational groups in the workforce, whilst the total unemployment identified within ORANI and BACHURROO will have repercussions for the general level of activity modelled in MACRO.

The boundaries of each of the three modules as broadly indicated above do NOT imply that projections can be made using one of the modules in isolation. IMPACT is a highly inter-related system and influences occurring in any part of it are, in principle, transmitted right throughout the simulated economy.

(111) The application of IMPACT to policy analysis

The focus of IMPACT is heavily on Australian industry structure and its relationship to changing social and demographic conditions, the domestic labour market and international trade. It is designed to give annual information for five to seven years, tracing out the dynamic interactions of a large number of variables. For more remote future periods (15, 20, 25 years), only 'snapshots' of the economy will be attempted, with no detailed dynamics connecting the intervening periods.

The structure of IMPACT makes it potentially an extremely flexible tool for the analysis of a wide range of medium through long term policy issues. The level of disaggregation is much greater than in models currently in use in Australia, especially with respect to industry groups (about 100) and with respect to the disaggregation of the labour force (about 12 major groups and about 40 minor groups). In principle, the types of questions which can be addressed within the analytical framework of IMPACT would include, for example :

WHAT WOULD BE THE EFFECTS IN ONE, TWO THREE,....., SEVEN YEARS TIME OF CHANGES IN :

- the tariff level on a particular industry
  - the availability of a particular type of labour skill
  - export prices
  - the level of (aggregate) personal consumer spending
  - the level of (aggregate) private investment expenditure
  - different immigration scenarios
- ON
- gross production by input-output category?
  - imports and exports by input-output category?
  - prices of goods and services by input-output category?
  - wage relativities and/or unemployment by occupational class?
  - the balance of trade OR the change in the exchange rate which would be needed to ensure a zero balance on current account?
  - new investment by input-output category?
  - profitability by input-output category?

Policy issues of medium term importance on which IMPACT should be able to provide valuable insights include, for example:

- the effects on industry structure and employment of changes in the pattern of international trade, including proposed exchanges of concessions in multilateral trade negotiations;
- the effects of selective tariff changes on imports, exports and employment by input-output industry category.

Typical of the longer-term issues which can be studied within the IMPACT framework are:

- analysis of the effects of changing demographic factors, such as fertility patterns, on the demand for the products of particular Australian industries, and on Australia's international trade;
- measuring the probable re-distribution of income which would result from changes in the structure and growth of different domestic industries.

The development of IMPACT as a joint project benefits the work of the participating agencies in several important ways:

First, it ensures economies in the use of scarce professional resources; it avoids fragmented approaches to the development of analytical tools required to address the same problems (including overlapping requests to the business sector for information).

Thus it provides the means to lower substantially the public and private costs of preparing policy advice.

Second, it brings together in a coordinated effort the relevant skills and special experience of each agency; this must enhance the quality of the final product and, incidentally, foster closer liaison and cooperation between these agencies.

Third, it will foster the development within each agency of 'in house' expertise in the application of new techniques which are being used increasingly by governments of other industrialised countries and which are widely accepted as a valuable aid in assessing alternative policy options.

Fourth, it will contribute to the presentation of more systematically researched advice to government in related areas of policy in a way which will not cut across the exercise of alternative professional judgements by each agency; rather it will avoid unnecessary disputation and confusion arising from the use of incompatible data and analyses which may not take adequate account of all the important relevant issues.

The fifth agency involved in the IMPACT project, the ABS, sees as a major benefit the avoidance of costly duplication in its services which has occurred in the past, and which would continue if each of the other participating agencies proceeded independently. Involvement of the ABS in its role of providing data services and in terms of its professional contribution of econometric and methodological skills will also foster development of its



example, the effects of such measures on industry structure and employment generally.

In general terms, the benefits of IMPACT to the work of the participating agencies may be summarised as follows :

- It will provide a comprehensive framework which takes account of the dynamic nature of important economic, social and demographic interactions and will yield insights into the medium and long-term changes in the structure of about 100 industry groups which will occur as a consequence of changing population and workforce trends.
- The IMPACT framework provides a view of the total economy. It will assist the agencies to frame their policy advice within a wide perspective which explicitly recognises the more important implications for other policy areas of initiatives recommended in any given area. Better integrated and coordinated policy advice should result.
- As IMPACT draws most of its data from the integrated data systems of ABS, analyses based on it will be compatible and thus can be related to each other. Additionally, these analyses will be compatible with the whole range of integrated ABS economic, employment and population statistics - so that any secondary detailed studies undertaken to evaluate the efficacy of present policies in the light of anticipated medium and long-term structural change will be comparable. (For example, the ABS integrated economic censuses, which show the regional distribution of employment by industry, could be used in conjunction with output from IMPACT to evaluate the regional implications of medium and longer-term structural changes which are occurring in the economy).

These examples illustrate the general nature of the policy analyses to which IMPACT can be applied. Further details on the potential uses of IMPACT are given in Part 2 of this paper.

(iv) What IMPACT is not intended to do

The agencies involved in developing IMPACT recognise that no econometric model can capture all of the factors which are important in the working of the economy. IMPACT analyses will form only one of the several inputs to policy advice. However, used with proper regard for the assumptions and limitations on which they are based, these analyses can provide valuable insights into the likely effects of different decisions. IMPACT is therefore intended to inform and augment, but not replace, judgement in formulating advice to governments.

In essence, IMPACT will provide a framework for objective and disciplined study of the interaction of economic and social change. It will therefore reduce the need to rely on partial analyses and will thus contribute to better informed decisions. It is not claimed, however, that IMPACT will solve all of the problems which confront Government agencies in developing well informed advice; nor is it suggested that it will be applicable to all aspects of policy evaluation. It will, however, constitute a crucially important addition to the analytical tools which can be used to improve the quality of advice to the Government, particularly on medium and longer-term policy issues in the fields of industry development, tariffs, manpower and international trade.

It is necessary, finally, to emphasise that IMPACT will provide projections rather than forecasts. This distinction is important. Forecasts incorporate judgements about the policy changes which would be made in response to movements in the economy. Their basic purpose is to anticipate what will actually happen at some future period. On the other hand, projections indicate the magnitude and direction of the effects which would result from a particular change and a given policy stance by the Government. For instance, IMPACT can be used to project changes over time in the structure of Australian industries that would result from a changing age structure in the population and workforce in the absence of any policy response from the Government. Such projections may not be realised, because knowledge of them will

often result in policy action which alters the course of future events. This does not in any way diminish the value of making such projections. It serves to emphasise that insights into the likely trend of future events provides a better informed basis for advice on policy action. Since IMPACT can also be used to simulate the probable effects of exercising different policy options, the Government will be better informed about the implications of the policy advice it chooses to implement.

### 1.3 DOES IT DUPLICATE EXISTING WORK?

IMPACT is being developed in a way which makes maximum use of the results of research and experience in relevant fields in Australia and overseas. This is achieved through continuing liaison with individuals and institutions working in the same general areas of research and through the systematic circulation of technical working papers to some 140 governmental, academic and other research agencies and individuals (both in Australia and overseas) for comment and advice. In addition, representatives from academic institutions and Government agencies attend regular seminars on technical aspects of the IMPACT work program. In these ways it is possible to ensure that research efforts are not unnecessarily duplicated, that the best available professional judgements are available to the project, and that issues of potential importance to interested Government and other institutions are made known to the project team.

## PART 2 BENEFITS EXPECTED TO FLOW FROM THE PROJECT

### 2.1 ITS CONTRIBUTION TO THE WORK OF THE PARTICIPATING INSTITUTIONS

IMPACT WILL PROVIDE FOR EACH AGENCY A BASIS FOR BETTER RESEARCHED AND COORDINATED POLICY ADVICE. AS A JOINT PROJECT IT WILL REDUCE THE TOTAL COSTS OF SERVICING POLICY RESEARCH AND, AT THE SAME TIME, INCREASE THE 'IN HOUSE' SKILLS OF THE AGENCIES.

#### (1) Benefits Common to Each Agency

Four of the agencies involved in IMPACT - the departments of Industry and Commerce, Employment and Industrial Relations, Immigration and Ethnic Affairs, and the Industries Assistance Commission - all have responsibilities in areas where there is a need to take account of the interaction between economic, social and demographic factors in order to provide the Government with advice which is compatible and consistent. It is in the work of these four agencies however, that serious problems of coordinating policy advice may arise - for example, in the fields of industry development, tariffs and employment.

It is the agreed view of these four agencies that many of the more serious problems of policy coordination can be avoided if it is possible to make better informed assessments of the medium and longer-term impacts of policy changes on the inter-relationships between industry development, labour supply and demand, and related social issues. Whereas in the past each agency proceeded independently with analytical efforts directed more specifically to their immediate areas of concern, the IMPACT study represents a coordinated attempt to address the problem as a whole - that is, the need for a comprehensive analytical framework which takes account of the dynamics of important economic, social and demographic inter-relationships and thus provides a basis for better informed assessments of the medium and longer-term implications that changes in one area of policy will have for other related areas. IMPACT is applicable not only to analysis of the effects of policies which are developed within the participating agencies: it will also provide a framework within which these agencies can better assess, and thus advise the Government on, the likely consequences of other Government policy measures - for