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ABSTRACT

Three broad categories were identified among 340 occupations at the four-digit level of the Australian Standard Classification of Occupations: positively/opportunistically engaged in the global economy (conceptual/creative, conceptual/technical); vulnerable (manufacturing, white-collar clerical, blue-collar operative, manual low skill); and insulated (vocational trades and in-person professional, skilled, and low skill). Analysis of Australian Bureau of Statistics data from 1986-2000 using these classifications revealed the following: (1) the Australian work force is 21% positively engaged, 35% vulnerable, and 44% insulated; (2) 62% of males and 47% of females are exposed to global competition; (3) the proportion of insulated and positively engaged workers rose slightly and vulnerable workers fell from 39% to 35%; (4) workers with vocational qualifications were underrepresented among the positively engaged; (5) although part-time and contingent employment grew faster than full time, especially in insulated occupations, the most rapid growth was in full-time positively engaged; (6) strongest growth in positively engaged was among workers 35-54, whereas younger workers declined in this group; and (7) manufacturing occupations have stagnated, whereas some vocational trades experienced continual growth. These two potential paths were discerned: increasing preparation for conceptual/creative and conceptual/technical occupations and/or maximizing job creation in insulated occupations. (Contains 6 tables and 24 figures in the text; appendices include 10 figures of trends by employment group and the classification of 340 occupations.) (SK)

MONASH UNIVERSITY – ACER

CENTRE FOR THE ECONOMICS OF EDUCATION AND TRAINING

# Australians Working in a Global Economy and What This Means for Education and Training

Leo Maglen

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CEET, Faculty of Education, Post Office Box 6,Monash University, Victoria 3800, Australia
Telephone 61 3 9905 9157 Facsimile 61 3 9905 9184 Email ceet@education.monash.edu.au
http://www.education.monash.edu.au/centres/CEET

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CEET, Faculty of Education, PO Box 6, Monash University, Victoria 3800, Australia
Telephone: 61 3 9905 9157 Facsimile: 61 3 9905 9184 Email: ceet@education.monash.edu.au
www.education.monash.edu.au/centres/CEET

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# Australians Working in a Global Economy and What This Means for Education and Training

## 1. Introduction

This report is part of the ongoing CEET program investigating the impact of the emergence of the global knowledge based economy on employment patterns in Australia, (see Maglen, 1994; Maglen and Shah, 1996 and 1998; Maglen and Hopkins, 2000, Maglen, 2001). However, it also represents a significant departure from previous studies, because it looks directly at the nature and extent of the actual and potential participation of Australian workers in an increasingly globalised series of labour markets. We believe this is the first such study in Australia that has explicitly adopted this as its focus.

Taking this approach has involved a re-alignment and extension of the occupational classification system developed for our previous studies under this project. The results, however, are encouraging. We believe they provide an important insight into the opportunities and threats that globalised labour markets are creating for Australian workers. There are, too, important lessons to be drawn out of this study for education and training, particularly for the VET sector.

## 2. Major findings

- Although the degree of exposure of Australian workers to global competitive labour market forces is more of a spectrum than a case of either/or, we estimate that currently about 4.9 million, or fifty six percent of the Australian workforce, could be said to be employed in global labour markets. The remaining 3.9 million, or forty four percent of those employed in 1999-2000, by virtue of the nature of their jobs, their locational character and prevailing technological constraints, were essentially insulated from the direct impact of global competitive forces. Workers in these occupations do, however, depend for their continued employment upon the income patterns, purchasing power and preferences of those who are more directly engaged in global labour markets.

- Those that are competing in global labour markets can be broadly divided between those for whom globalisation has opened up opportunities and those for whom it has posed a threat and has made their jobs more vulnerable. We estimate the former group of occupations to currently account for approximately 21 percent of Australian workers and the latter 35 percent. That is to say, that whilst about a fifth of Australians in work are in a position to take full advantage of being in a global labour market, over one third are threatened by this exposure.

- A much greater percentage of male workers are exposed to global labour market forces than are female workers (62 percent compared to 47 percent). Proportionately more are positively and opportunistically exposed (27 percent as against 14 percent), but more are also in more vulnerable jobs as well ( 36 percent compared to 33 percent).

- As to whether Australians are more or less exposed to global labour market forces, the evidence is mixed. Whilst our study shows that over the period 1986-87 to 1999-2000 the proportion of workers in insulated occupations rose slightly, from 42 to 44 percent, it also shows the proportion positively and opportunistically exposed rising from 19 to 21 percent. Vulnerable occupations, on the other

hand, fell from 39 to 35 percent of the total. Employment grew most rapidly amongst those occupations most opportunistically and positively exposed to global competitive forces as well as amongst those most insulated. The difference, however, was that the strongest growth within the former group of occupations was in full-time employment, whereas the strongest growth in the latter was in part-time and contingent employment. Levels of employment in those occupations that were most vulnerable to global competitive forces stagnated and declined over the same period.

- Employment in the most vulnerable occupations was hardest hit by the recession of the early nineties in Australia, and had barely recovered its pre-recession levels by the end of the decade. In contrast both positively and opportunistically exposed occupations, and those more insulated from global forces, were less effected by the recession, and recovered strongly after it.

- Whilst the majority of workers in the conceptual/creative occupations in 1999-2000 had post-secondary educational qualifications, particularly at the degree level and above, lack of these qualifications did not appear to pose an insurmountable barrier to participating opportunistically and positively in global labour markets. What is noticeable, however, is that workers with vocational qualifications (at the certificate and diploma level) appeared to be under-represented in this crucial growth area of employment. The association between education level and occupation appeared strongest in the professional in-person group of occupations and amongst the trades. With the former, the association was with university qualifications, with the latter it was with basic and skilled vocational certificates and diplomas. It would appear therefore, that VET is not yet a major source of preparation for positive and opportunistic participation in global labour markets, and that its chief role continues to be supplying entrants to either the most vulnerable of occupations or to those that are not directly engaged in global labour markets.

- All fields of study are represented amongst those actively or potentially engaged in global labour markets, although relatively underrepresented were the fields of health and education.

- This study identifies two occupational groups that have the potential to participate in global labour markets most opportunistically and positively. These are the conceptual/creative group of occupations, and the conceptual/technical occupations that are related to them and to a large extent support them. Conceptual/creative occupations employed sixteen percent of workers in 1999-2000 and the conceptual/technical group employed five percent.

- Four distinct occupational groups have been identified as being most vulnerable as global labour markets develop – skilled manufacturing trades, blue collar operative occupations, white collar clerical occupations and manual low skilled occupations. These respectively accounted for four, eleven, eight and twelve percent of those employed in 1999-2000.

- Similarly, the study identified four broad occupational groups that, because of their locational or person-to-person nature, have up until now remained largely outside of and insulated from global labour markets. These are professional in-person occupations, skilled in-person occupations, low-skill in-person occupations, and the locational trades. Respectively they accounted for eight, fourteen, fourteen and eight percent of those employed in 1999-2000.

- Changes in employment patterns over the period 1986-87 to 1999-2000 are fully consistent with Australians increasingly joining or coming under the influence of global labour markets. The fastest growth experienced across the ten broad occupational groups identified by this study was on the one hand in the conceptual/creative group and on the other in the low-skill in-person group. Low and even negative rates of growth were experienced in the most vulnerable areas of employment, particularly in the manufacturing trades and amongst the blue-collar operative occupations.

- Male and female workers are differently exposed to global labour market forces. Employment in traditionally male dominated areas such as the manufacturing trades and the blue collar occupations, have been hardest hit by the growing exposure to competitive global labour market forces. However, male conceptual/creative workers were the major beneficiaries of their positive exposure to globalised markets. Female employment, on the other hand, whilst it has tended to be concentrated in the more insulated areas of the labour market, has everywhere grown at a faster rate than that of male employment. This is particularly evident amongst the conceptual/creative occupations. Whilst coming from a lower base than their male colleagues, females appear to be responding to the opportunities created by globalisation of labour markets at a faster rate.

- Changes in the overall patterns of employment over this period have masked considerable differences between full-time, part-time and contingent employment. Part-time and contingent employment have both grown at a faster rate than full-time employment. However, those most positively and opportunistically engaged in global labour markets have tended to be employed on a full-time basis (indeed on an increasingly over full-time basis) and this is where the most rapid growth has been. On the other hand, much of the growth in employment in insulated areas of the labour market, particularly at the lower skill levels, has been on a part-time and contingent basis. Other traditional areas of full-time employment, for example in the manufacturing trades and in white collar clerical and middle management jobs, have tended to stagnate and decline.

- By far the strongest growth in employment in occupations most positively and opportunistically exposed to global labour market forces has been amongst workers in their middle career years (between the ages of 35 and 54). Whilst those in their early career years (between the ages of 25 and 34) have also participated strongly in the growth of conceptual/creative employment, what is equally striking is that there has been a marked decline in the participation of younger workers (between the ages of 15 and 24) in these occupations. Indeed, employment amongst those in their early and later training years, (that is between 15 and 19, and 20 and 24), has shifted away from full-time employment across the broad spectrum of occupations, but has grown at a rapid rate on a part-time and contingent basis in the low-skill in-person and manual occupations. Whilst much of this change in employment patterns amongst young workers can be explained in terms of their increased participation in full-time and part-time education and training over the period, and their preference for less demanding forms of employment as a means of supporting their studies, what it also shows is that young people, contrary to much of the imagery, are not major participants in the emerging competitive global labour markets.

- Amongst the conceptual/creative occupations, the fastest growth has been, not surprisingly, amongst information technologists and financial specialists.

However, strong growth has also been experienced in the arts, media and entertainment occupations. The weakest growth amongst these occupations has been in those directly related to manufacturing and engineering outside the construction industry. Negative growth was experienced amongst conceptual/creative occupations in the agricultural sector.

- Trends over the period show that whilst employment in the manufacturing trades has stagnated and declined, there has been continued growth amongst some of the locational trades. This was particularly the case in the building and construction trades, in gardening and horticulture, cooking and baking, and electronic servicing.

## 3. Background

### 3.1 Globalisation of the Australian economy

This project follows up on the proposition that if Australia has to compete in a global economy – if more and more Australian firms outside the traditional export industries are having to compete successfully against those operating in other countries - then so too, are more Australian workers.

If the global economy is increasingly a knowledge-based economy then more Australian workers have to be able to compete with knowledge workers globally.

If this is the nature of the world we live and work in then we should be able to see evidence for it in changing employment patterns in Australia.

Since the early to mid 1980s Australia has opened itself up to world competitive forces. This has primarily involved:

- reduced tariffs and other forms of trade protection
- financial deregulation
- floating the Australian dollar
- eased restrictions on foreign investment
- labour markets moving away from central wage fixing to enterprise and individual bargaining etc.
- other micro-economic reforms and the introduction of competition policy
- taxation reform

Over the same period the world economic environment changed. Australia, and its enterprises and workers have had to adapt and respond to:

- rapid technological change – especially in IT and telecommunications and their convergence through digitalisation
- the liberalisation of world trade through the World Trade Agreement
- the floating of all major trading currencies
- globalisation of financial markets and the proliferation of financial instruments
- growing dominance of direct foreign investment over portfolio investment
- changes in the global corporate response (1) - if entities have to compete globally, then they have to be structured globally, hence

the emergence of giant global oligopolies through merger and takeover

- changes in the global corporate response (2) - the adopting of corporate strategies that enhance competitiveness - flatter, less-hierarchical management structures; devolved operational and financial responsibilities; downsizing and outsourcing; leaner and 'smarter' production processes, the phasing out of Taylorist and Fordist work practices, and so on.[1]

All up, employment in Australia now takes place in a different ball-park to what it did fifteen or so years ago.

*Where have the changes occurred? How many have been effected? Who have tended to be the winners - those whose worlds have been opened up by globalisation? Who have been the losers – those who have come under threat?*

### 3.2 What are global labour markets?

For employment patterns in Australia to be seen as the outcome of increasing participation by Australian workers in global labour markets requires acknowledging:

- Australians are increasingly part of the world *supply* of labour - where our strengths, skills, knowledge etc. are pitted against those of people in other countries
- the *demand* for Australian workers is increasingly determined not just by local or national considerations but by global factors, and by global clients and customers
- the *price* Australian labour can command more and more is determined by interaction of global demand and supply – ie Australian wage and salary levels and the costs of employing labour in Australia are increasingly referenced to those applying in other countries, and so cannot get too far out of line with those of our competitors in the rest of the world.

There are, of course, different levels of engagement in global labour markets, and different bases upon which Australians actually, or potentially, compete in them.[2]

For some, probably only a small number, of those participating in global labour markets competition is direct - that is, they sell their labour directly on to the world markets. Consultants, international sportspersons, artists, musicians and other entertainers are examples of this category of Australian worker. Much more likely, however, Australians compete on global labour markets through the goods and services their enterprises produce. This can be very close up, with small Australian-based firms selling services, or goods/services such as software, systems, etc, directly onto the world market. At the other end of the spectrum is where Australians

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[1] There are now many books and articles tracing the rise and nature of globalisation. For perhaps one of the best, see Thomas Friedman *The Lexus and the Olive Tree* (2000).

[2] This analysis confines its attention to the nature and extent of Australian workers' participation in global labour markets, if they remain located, or are at least based, in Australia. A small, but growing, number of Australians participate in global labour markets by relocating more or less permanently to other countries. These include returning migrants, those who are part of the 'brain drain,' mostly to North America and Europe, and those whose global employers have despatched to distant posts in their far-flung empires. Those who do leave in these ways for our purposes cease to be part of the Australian labour force.

are employed in large multi-national enterprises that have based part of their global operations in Australia.

For some, being part of global labour markets involves a lot of international travel, and even temporary relocation to other parts of the world. For many it means that an increasing amount of what they do involves dealing with employers, colleagues, customers, clients, suppliers etc electronically - through telephone, fax and, increasingly, through the internet. Global labour markets are increasingly cyber-markets. For others, however, the global connections may remain at one or more steps remove, as it is the goods and services they help produce that are traded globally.

In thinking about the nature and extent of Australia's participation in global labour markets – the key concept is *substitution* – that is, the extent to which the labour of an Australian worker is a substitute for that of someone located overseas. This depends in large measure upon how similar or different his or her skills, knowledge and attributes are, how wide-ranging and effective the labour market information system in place is, how keen buyers are to employ them and how practical it is for them to do so.

If there is nothing much to distinguish an Australian from a foreign worker, that is, if there is a high degree of substitution possibility, then the cost of hiring the Australian becomes the critical issue – the higher the cost relative to those of their overseas counterparts – the more likely buyers will turn elsewhere.

Enterprises can respond to this either by relocating operations elsewhere – to where labour costs are lower – or by raising productivity in their Australian operations (and hence lowering the cost of labour) by investing in more machinery, the latest technology, more streamlined production processes and so on. All of which could mean they employ less labour. Alternatively they could seek to directly lower labour costs by cutting wages and/or workers' entitlements.

These are the Australian jobs most at threat as globalised labour markets expand, and the workers doing them are most vulnerable

If, on the other hand, there are fewer, or not as close, substitutes for Australian labour, then price is not the only basis upon which Australians compete. Rather it may be on the basis of the quality of the goods and services they help produce, good design, innovative technology, delivery, after sales service, etc. Alternatively, the basis of competition could be more direct with workers going head-to-head on the basis of their skill levels, special talents and expertise, on who is the smarter, cleverer, more innovative, more creative, more flexible, etc.

The fewer the close substitutes for Australian labour services and/or for the goods and services they help produce, the more these workers will, or have the potential to, thrive in global labour markets. These are the ones who are most positively and opportunistically exposed to the emerging global knowledge based economy.

An important corollary to the notion of substitution is that of a *gap in the chain of substitution*. This gap is what separates one market from every other market. The gap can be wide or narrow. Take the example of the humble apple. Apple producers compete with other local apple producers – they are close if not perfect substitutes for one another. But apples are also substitutes for pears, oranges and other fruit produced locally. If the price of apples is too high or the quality too low then buyers turn to other fruit. Apples (and for that matter all fruits) are in turn, substitutes for

other foods and therefore compete with them, in price and quality at some level. And food itself competes in the weekly budget against other household expenditures. The gaps in the chain of substitution, therefore – from apples to fruit to other foods to other household items – determine the size and extent of the markets apples compete in. Similarly, effective handling, storage and transport technologies allow apples in one region or country to compete effectively with apple producers in other regions and countries, if artificial barriers between markets (tariffs and other forms of protection and preferential treatment) are not too high, and if prices are favourable. The freer markets are, the more informative and mobile buyers are, and the fewer the barriers between markets, the bigger and more competitive those markets become.

The same applies to labour services.

The level of exposure of Australian workers to global competitive forces varies considerably. We have already noted the cases where globalisation and rapid technological change (and government and corporate responses to them) have greatly narrowed the gaps in the chains of substitution (possibly eliminating them completely) between Australian workers and those offering the same or similar services in other countries. But there are other areas of employment in Australia that, by their very nature, are somewhat insulated from competition from overseas. There are, in other words, significant gaps in the chain of substitution between them and similar markets in other countries, both on the demand and supply side. These are ones where location is a crucial factor, indeed, where close and personal contact between the supplier of labour services and those demanding them is an indispensable characteristic of the market exchange. Being in Australia – or more likely, being in the immediate neighbourhood – is what matters. The local restaurant, supermarket, building contractor, plumber, television repair service, childcare centre, lawyer or GP, is where buyers in the immediate vicinity turn for their particular services, rather than ones located in Helsinki or Honolulu. Competition between the suppliers of these services and their workers and those in other countries either will never take place, or will only do so if technology changes dramatically, or if the price differential becomes so great as to warrant it.[3]

To summarise - we can identify three broad categories of employment in Australia from the perspective of emerging global labour markets- those occupations which have the potential to participate positively and opportunistically, those for which the opening up of Australia to global labour markets poses a threat, and those that, for locational and technological reasons, are still largely insulated.

### 3.3 The elasticity of demand for Australian labour

Another way of expressing the nature and extent of Australian participation in global labour markets is with the use of the economists' concept of *elasticities*. These are applied to a wide range of situations in which is needed a measure of the *relative responsiveness* of one variable to relatively small changes in another. Elasticities can range in value from zero to infinity.

Four such applications are relevant here:

[3] The exception to this is those Australians working in this country's international tourism and hospitality industry. These are locational in nature and usually involve a high degree of in-person service. However, to the extent to which they are important in the promotion of Australia as a tourist destination and in building and sustaining its reputation for service, these workers are competing with their counterparts in other countries. In that sense they are not insulated from global labour market forces.

- Price elasticity of demand ($\varepsilon_D$);
- Cross elasticity of demand ($\varepsilon_{xy}$);
- Elasticity of substitution ($\sigma_{xy}$);
- Elasticity of technical substitution ($\sigma_{ab}$).

*Price elasticity of demand* measures the relative responsiveness (proportional change) in the quantity of a good or service demanded to a small proportional change in its price. If the good/service has absolutely no substitute then $\varepsilon_D = 0$. That is to say, demand for it does not either rise or fall with its price - its price, theoretically, could go through the roof and demand for it would remain undiminished. At the other end of the spectrum is the situation where a good/service on offer has absolutely perfect substitutes readily available elsewhere. In that situation $\varepsilon_D \rightarrow \infty$: that is, the supplier can only offer the good/service for sale at the prevailing market price, but can sell all he or she offers at that price. Absolutely no market, however, would exist for it at a price even marginally above that. For the most part, goods/services range between these two extremes, and so too, do the elasticities of demand for them. The fewer the substitutes, the lower $\varepsilon_D$ becomes (that is, approaches zero), and the more substitutes that are available the higher $\varepsilon_D$ becomes (approaches infinity).

*Cross elasticity of demand* measures the relative responsiveness of the demand for one good/service (x) to a small percentage change in the price of another good/service (y). Such a measure is useful for determining the degree to which two goods/services are either compliments or substitutes for one another. Those that are substitutes $\varepsilon_{xy}$ is positive ($> 0 \rightarrow \infty$), whilst those that are complimentary to one another in buyers' preferences (as are gin and tonic water, for example) $\varepsilon_{xy}$ is negative ($< 0 \rightarrow \infty$). If two goods/services are neither substitutes or compliments, or are being offered in markets between which there is no connection then $\varepsilon_{xy} = 0$.

*Elasticity of substitution* measures the proportional change in the ratio in which two goods/services (x and y) are demanded to a small proportional change in their relative prices. Substitutability is again the key concern. If the two goods/services can be substituted for one another, and hence buyers are flexible and can vary the proportions in which they buy the two goods/services, in response to their changing relative prices, then $\sigma_{xy} > 0 \rightarrow \infty$. If, on the other hand, they are complimentary to one another but not substitutes, and can only be demanded in fixed proportions, then $\sigma_{xy} = 0$.

*Elasticity of technical substitution* is the same as elasticity of substitution only it is applied to the demand by firms for two inputs (a and b) into their production processes. It can be applied to the inputs of two types of labour (including to labour located in different countries), to labour of any particular type and machines, or whatever. If $\sigma_{ab} > 0 \rightarrow \infty$ managers have the option of varying the proportions in which these inputs are employed, and are therefore more responsive to relative labour costs and/or to the differences in the costs of employing labour and replacing them with machines. If $\sigma_{ab} \rightarrow 0$, this means the proportions in which the two inputs can be employed are more or less fixed, and the possibilities for substituting one with the other as the relative cost of employing them changes are limited.

Table 1 summarises the different values that these four elasticities will have for the three broad areas of employment in Australia that we have identified.

**Table 1: Relationship between elasticities and broad occupational categories in employment in Australia**

| | Broad occupational categories for Australians in a global environment | | |
|---|---|---|---|
| | Positive/Opportunistically exposed | Vulnerable | Insulated |
| Price elasticity of demand for Australian labour | low | high | high or low depending on the nature of the good/service and the level of competition in Australia |
| Cross elasticity of demand between Australian workers and those elsewhere | positive but low (for some it may even be negative) | positive but high | zero |
| Elasticity of substitution between Australian produced goods/services and those produced elsewhere | low | high | zero |
| Elasticity of technical substitution - between Australian workers and those elsewhere | low | high | zero |
| Elasticity of technical substitution - between Australian workers and machines | zero | high | depends upon the nature of the good/service |

## 4. Methodology

This study takes the 340 occupations identified at the 4-digit level of ASCO (version 2) and divides them initially into three broad groups –

- *The positively/opportunistically engaged group* - those occupations that actually, or have the potential to, interact most positively and opportunistically with the global knowledge economy. They are occupations where being located in Australia does not create a gap in the chain of substitution, that prevents Australians from competing effectively with workers with similar attributes located elsewhere, or vice versa. They are occupations, nonetheless, in which Australians have no perfect or very close substitutes located in other countries, so they are able therefore to market the individuality of their creative talents, conceptual capacities, special expertise, etc, and/or can showcase their goods and services of particular quality and uniqueness for which there is a demand in global markets.

- *The vulnerable group* - those jobs that require skills and involve tasks that are easily replicable. Identical jobs are performed or could easily be performed by workers located in other countries Foreign workers are, therefore, perfect or very close substitutes for their Australian counterparts. Being located in Australia, moreover, does not, in itself, afford protection from workers located elsewhere. Similarly, the nature of

the skills and tasks involved do not afford protection from being replaced by machines, or from being rendered redundant through reorganisation of production processes without any perceptible diminution of output. These are the ones most vulnerable in a global labour market environment.

- *The insulated group* - those jobs that through their very nature are localised in extent, given current price levels and prevailing technology. Location in Australia, in other words, for the time being at least, constitutes a gap in the chain of substitution between Australian workers in these occupations and those providing the same, or very similar, services in other countries. They are, therefore, largely insulated from direct global competition. Similarly, the personal and/or customised nature of the services they provide give them a measure of protection from the threat of replacement by machines.

Note that these cannot be watertight compartments. There are inevitable grey areas - variations within job categories as well as between them. Moreover, categorisations cannot remain constant. What is required to successfully compete can change quickly in such a dynamic environment as the global knowledge based economy.

Note also that these broad categories are not dissimilar to those first suggested by Robert Reich back in the early 1990s - that of symbolic analysts, routine production workers and in-person service workers. These formed the basis of CEET's previous studies in this project, but, as stressed in the Introduction, the focus and rationale of the occupational classification employed in this report has shifted.

These three categories are further subdivided into the ten occupational groupings shown in Table 2, by adding the further criteria of the nature and level of the skills involved. Details of the categorisation of the 340 occupations into these ten groupings are provided in Appendix 2.

**Table 2: Occupational Categories in Global Labour Markets**

**A. Positive exposure occupations**
1. Conceptual/creative
2. Conceptual/technical

**B. Vulnerable occupations**
3. Manufacturing trades
4. White collar clerical
5. Blue collar operative
6. Manual low skill

**C. Insulated occupations**
7. Locational trades
8. In-person professional
9. In-person skilled
10. In-person low skill

**Positive exposure occupations**

*1. Conceptual/creative occupations* - these are occupations that call for the application of information, knowledge, reason and creativity in the research into and the development, design, production and delivery of sophisticated products and

services, and their successful financing, management and marketing. The major occupational categories within this grouping are shown in Table 3, and their listings are shown in Appendix 2.

**Table 3: Sub-Categories of the Conceptual/Creative Occupational Group**

Accountancy
Agriculture
Arts, media and entertainment
Civil works, construction and urban planning
Economics and other social sciences
Education/ academia
Engineering
Finance
General Management
Imports and Exports
Information Technology
Management Consulting
Manufacturing
Physical Sciences
Sales and Marketing
Other

2. *Conceptual/technical occupations* - these are occupations that call for the application of information, knowledge, training and experience to a range of high level technical tasks, often in a supporting or complementary role to conceptual/creative occupations. Examples include cartographers and surveyors, technical sales representatives, airline pilots, medical and science technicians, engineering associates, safety inspectors, librarians, personnel managers, etc

**Vulnerable occupations**

3. *Manufacturing trades* - these are high skill occupations that are centred primarily on the manufacturing sector. They employ such workers as metals, textiles, clothing and footwear tradespersons, engineering tradespersons, vehicle making and assembling tradespersons, millers, butter and cheese makers and confectioners, graphic pre-press tradespersons, glassblowers, boatbuilders, jewellers, etc.

4. *White-collar clerical occupations* - these are medium level skilled occupations, primarily associated with office work. They include, for example, office managers, clerks of one sort or another and their supervisors, typists, word-processing and data entry operators.

5. *Blue-collar operative occupations* - these are semi-skilled occupations located principally in the manufacturing, agricultural and mining sectors and in the utilities and the construction, transport and distribution industries. They include, for example, mobile plant operators, machinists, chemical, petroleum and gas plant operators and supervisors, vehicle assemblers, crane and train drivers, miners and scaffolders.

6. *Manual low skill occupations* - these include a wide range of low skill manual occupations, located across all industry sectors, and cover such workers as labourers, cleaners and caretakers, process workers, store-persons, fishing-hands, garbage collectors, etc.

**Insulated occupations**

*7. Locational trades* - these include high skill occupations outside the manufacturing sector, and which service primarily local, neighbourhood or regional clientele. The subcategories that have been identified and the occupations included within each are listed in Appendix 2 to this report. They are the building and construction trades; automotive repair trades; electronic servicing trades; electricity supply and distribution trades; telecommunications installation and maintenance trades; horticultural trades; food preparation trades; other trades nei.

*8. Professional in-person occupations* - these include all the professions that primarily require in-person or face-to-face dealing with clients, patients, pupils parishioners, etc. They include, for example, lawyers, medical practitioners, dentists, school teachers, social workers, ministers of religion, etc

*9. Skilled in-person occupations* - these include a wide range of medium to high skill (but not professional) occupations that primarily require in-person or face-to-face dealing with the public, and with clients, customers, passengers, patrons, etc. They include, for example, police and prison officers, nurses and ambulance officers, travel agents and flight attendants, retail managers, sales representatives, hoteliers, club and resort managers, head waiters, croupiers, hairdressers, beauticians and fitness instructors.

*10. Low-skill in-person occupations* - these occupations are at the lower end of the skill spectrum, but still primarily require workers to deal effectively in-person and face-to face with customers, patrons etc. They include, for example, receptionists, sales assistants, barpersons, waiters, bus and taxi drivers, ticket collectors, domestic housekeepers, etc.

Unpublished Australian Bureau of Statistics (ABS) data drawn from its *Quarterly Labour Force Surveys* for the years 1986-87 to 1999-2000 allow these ten occupational groups to be cross-classified by sex, age group and hours worked per week. Unpublished data drawn from the ABS *School to Work Transition Survey* for 2000 allow additional cross-classifications by highest level of educational attainment and field of study. Details of these variables are contained in Table 4.

**Table 4: Variables used in cross-classifications with occupational categories**

**Sex**

1. Male
2. Female

3. Both

**Hours worked 1986/87 – 1999/2000**

1. Fulltime
   - a. Regular — 35 to below 45 hours per week
   - b. Overtime — 45 and over hours per week
   - c. Total — 35 and over hours per week
2. Part-time
   - a. regular — 16 to below 35 hours per week
   - b. contingent — 1 to below 16 hours per week
   - c. total — below 35 hours per week

**Age groups 1986/87 – 1999/2000**

1. Early training years — 15 to 19
2. Later training years — 20 to 24
3. Early career years — 25 to 34
4. Middle career years — 35 to 54
5. Later career years — 55 and over

**Highest level of educational attainment - 2000**

1. Less than full secondary
2. Full secondary only
3. Full secondary plus current study
4. Basic vocational
5. Skilled vocational
6. Diploma level
7. Bachelor level
8. Post-graduate

**Fields of study - 2000**

1. Business and administration
2. Health
3. Education
4. Society and culture
5. Natural and physical sciences
6. Engineering
7. Architecture and building
8. Agriculture and building
9. Other
10. Not stated etc.

## 5. Results

### 5.1. Exposure to global labour markets

In 1999-2000 an estimated 4.9 million Australians were working in occupations that were actually or potentially exposed to global labour market forces, of these about 1.8 million were in occupations where such exposure presented opportunities, whilst just over 3 million were in occupations that were vulnerable. The remainder of those that were employed in that year, about 3.9 million, were in occupations more or less insulated from competitive global labour market forces.

Figure 1 expresses these numbers in proportional terms, and compares these with the relative composition of Australian employment fourteen years earlier in 1986-87. It shows that whilst Australia's engagement with the global economy grew dramatically over this period the proportion of workers in occupations essentially insulated from this economy actually rose over the period - from 42 to 44 percent. The nature, however, of Australia's exposure changed significantly over the period. Employment in occupations that are positively and opportunistically exposed to competitive global labour market forces increased both absolutely and relatively - from 19 to 21 percent of employment. On the other hand, employment in vulnerable occupations stagnated and declined, and fell from being 39 percent of the total to 35 percent.

**Figure 1.**

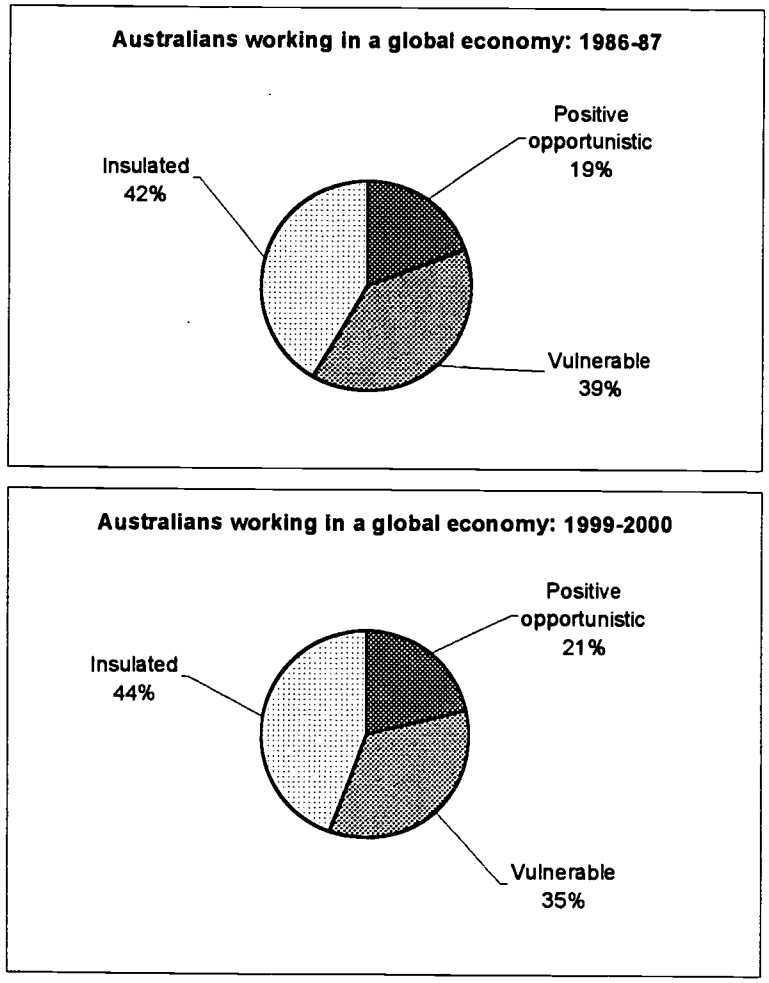


Figure 2

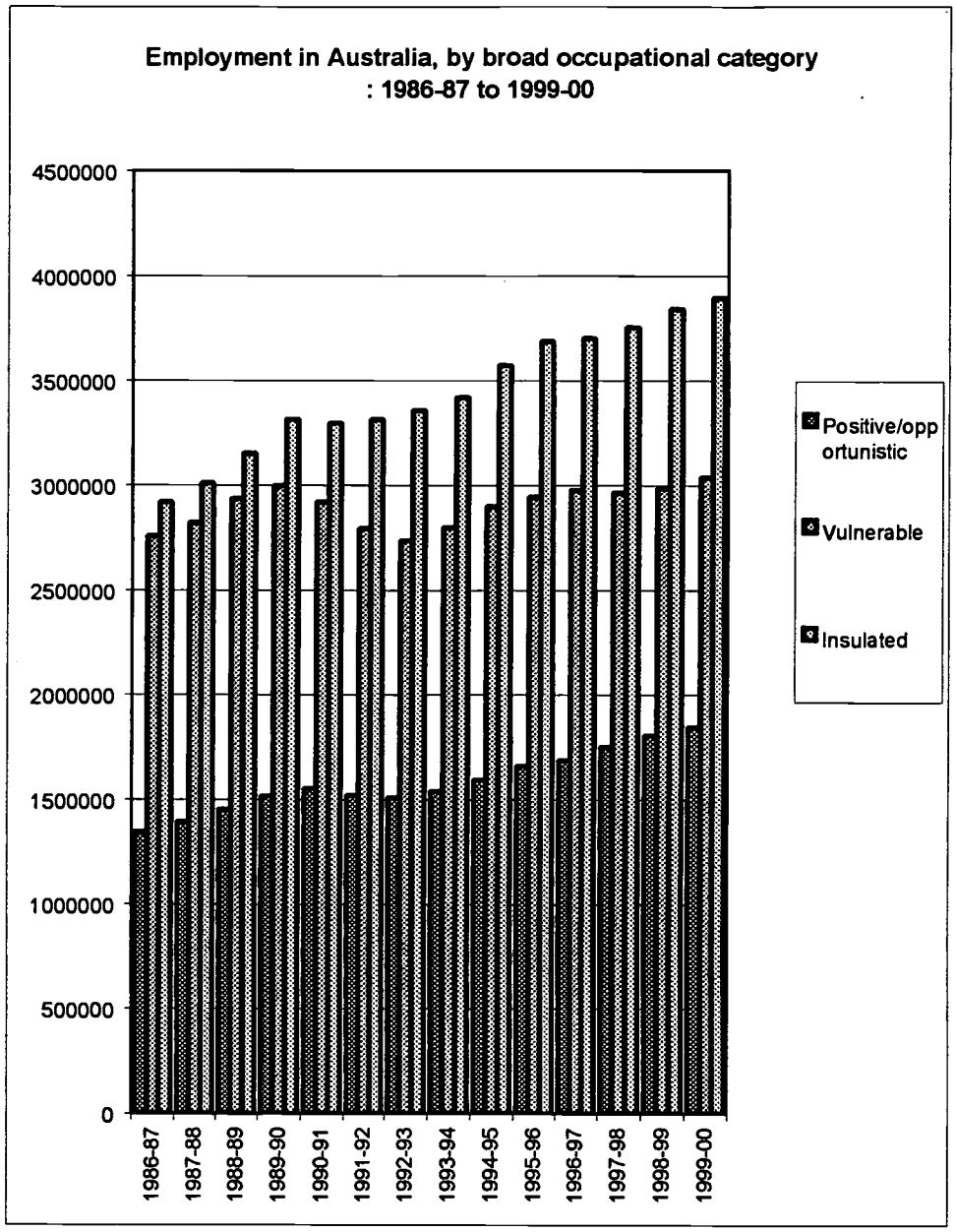



Figure 2 shows that employment in the most vulnerable occupations was hardest hit by the recession in Australia of the early nineteen nineties. It declined steeply from 1990-91 to 1992-93 and whilst it rose after that, had barely recovered pre-recession levels by the end of the decade. Employment in those occupations that are more positively and opportunistically exposed to global labour markets was much less affected by the recession and continued a strong growth over most of the period from 1986-87 to 1999-2000. Similar trends occurred in the more insulated professions.

The exposure to competitive global labour markets differs substantially between males and females. Whilst males are much more exposed to these forces than are females, 63 percent compared to 47 percent, Figure 3 shows that most of this difference is in the extent to which males and females are positively and opportunistically engaged in competitive global labour markets. Twenty seven percent of males in employment in Australia in 1999-2000 was in positively and opportunistically exposed occupations, whereas only 14 percent of female employment was in the same group of occupations. In contrast, the difference between the proportion of males and females in vulnerable occupations is comparatively small - 36 percent as against 33 percent.

**Figure 3.**

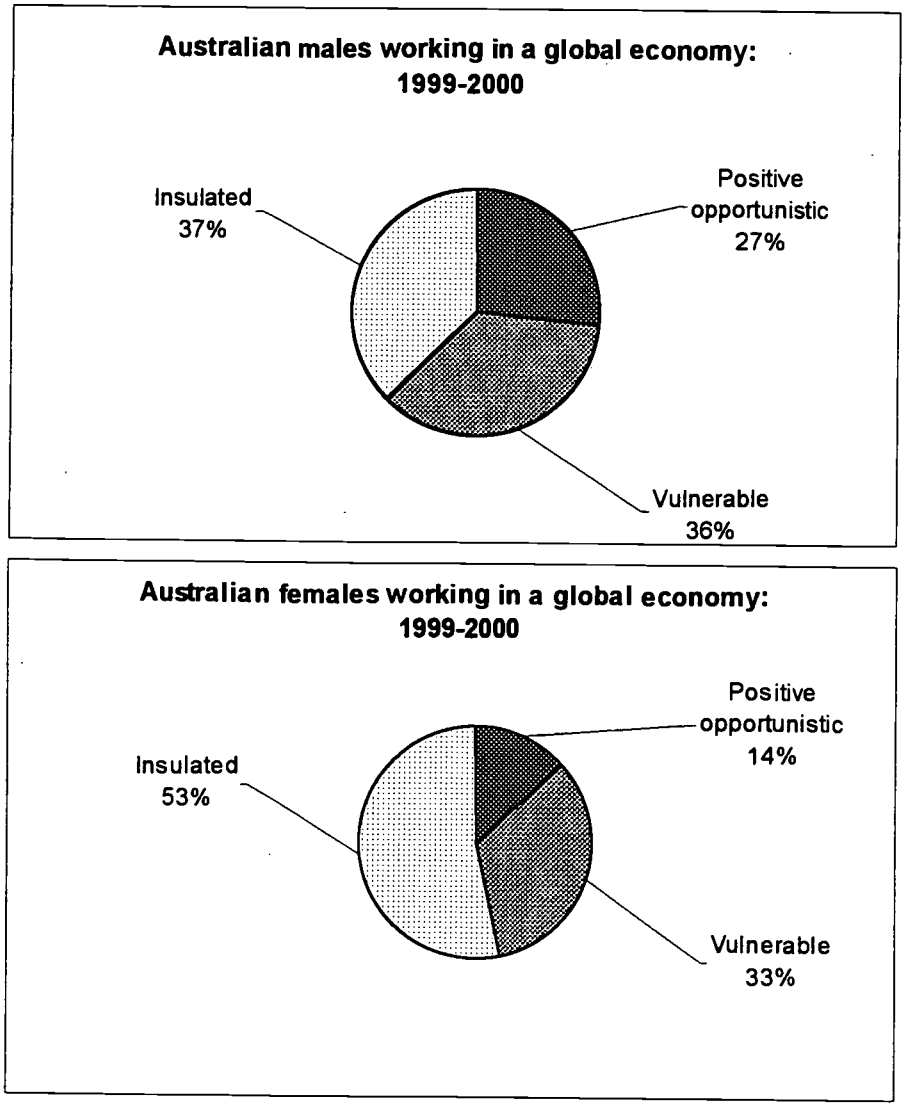
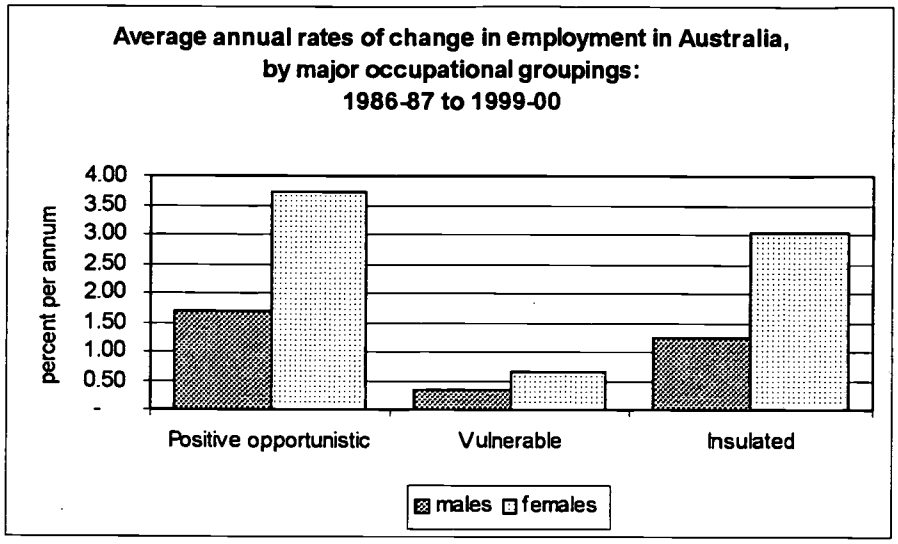
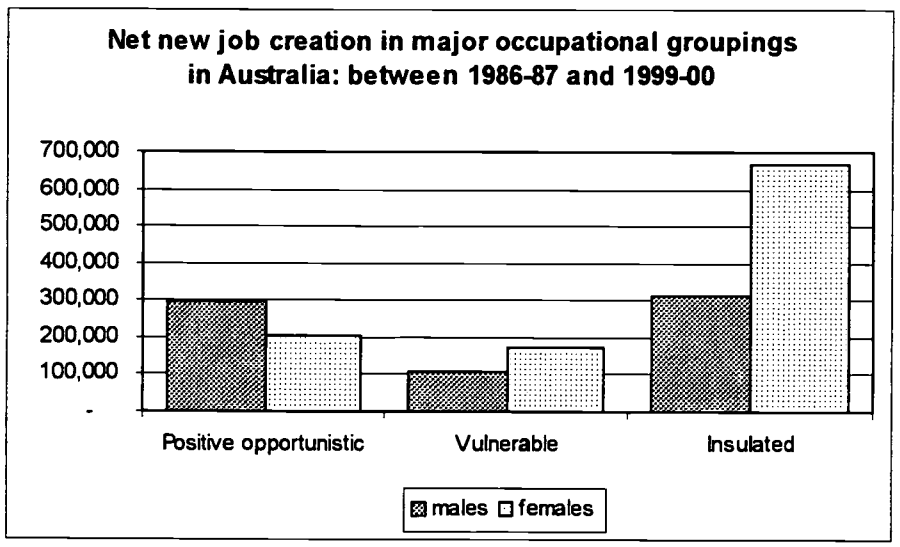


**Figure 4.**

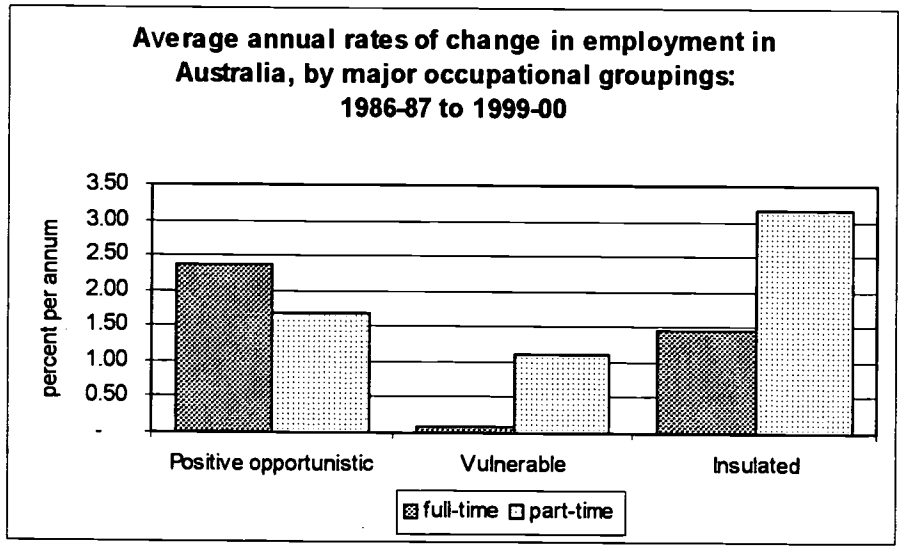



If the degree of exposure of male and female workers to global labour markets differs substantially, so too do the changes that have occurred in their employment patterns in this respect over the period. Figure 4 shows that the much stronger rate of growth in female employment since the mid nineteen eighties, compared to that of males, is reflected in all three broad occupational groupings. The difference in relative growth rates is particularly pronounced amongst the group of occupations most positively and opportunistically exposed to global labour market forces and those most insulated from them. In both instances female growth rates were more than double those of males. However, growth was off two different bases, so that as is evident in Figure 4, the majority of net new jobs created that were positively and opportunistically exposed to global labour market forces were taken by males. On the other hand, the much stronger growth in employment for females in insulated jobs meant that they secured over twice the number of net new jobs created here.

Occupations most positively and opportunistically exposed to global labour market forces tend typically to be fulltime in nature, and the growth in employment in these occupations, as evidenced in Figure 5, has been most strongly fulltime. Fulltime employment in the most vulnerable occupations virtually stagnated over the period between 1986-87 and 1999-2000. The only growth that did occur in these occupations was of a part-time and contingent nature. What is also evident from Figure 5 is that most of the growth in employment in occupations insulated from global labour market forces was also of a part-time and contingent nature.

**Figure 5.**



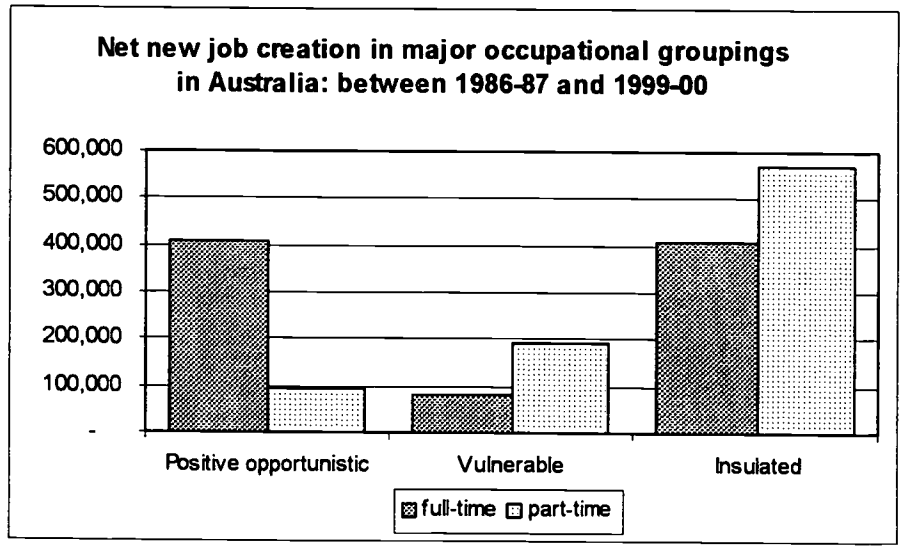
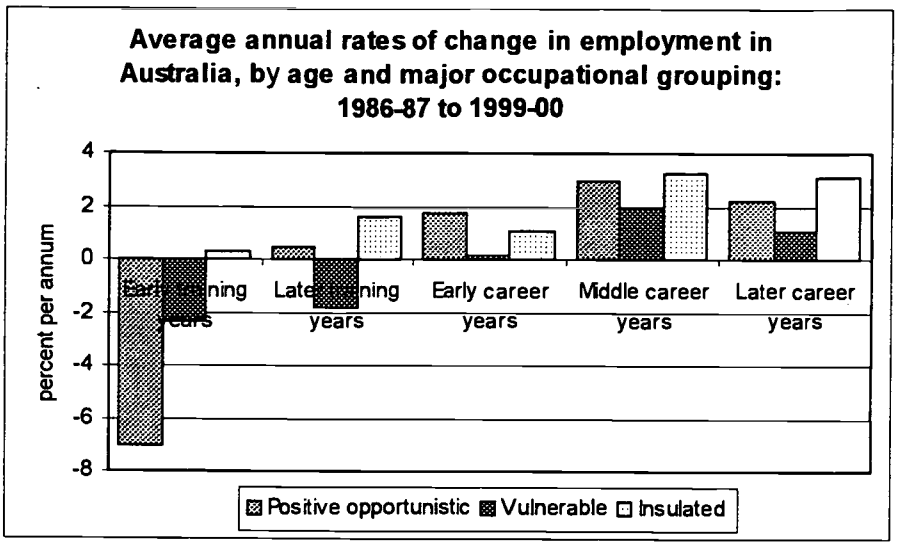
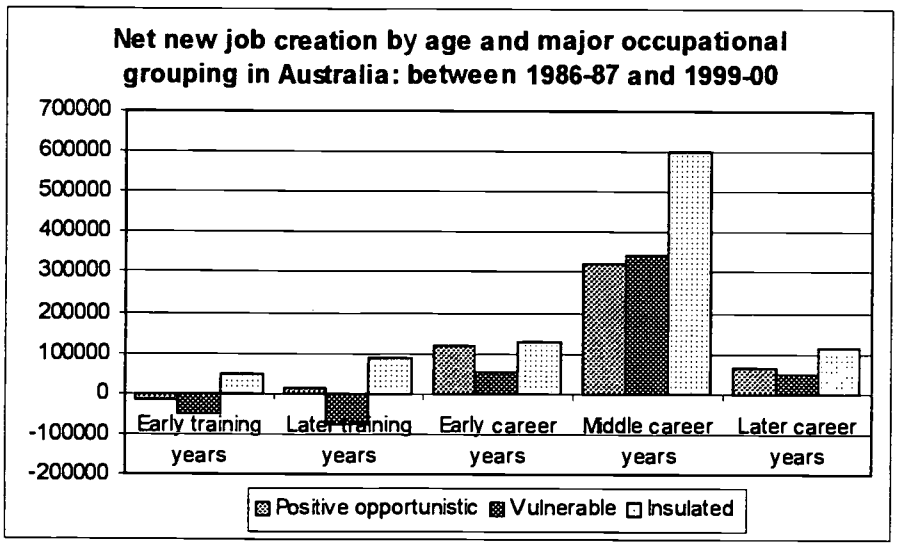



Figure 6

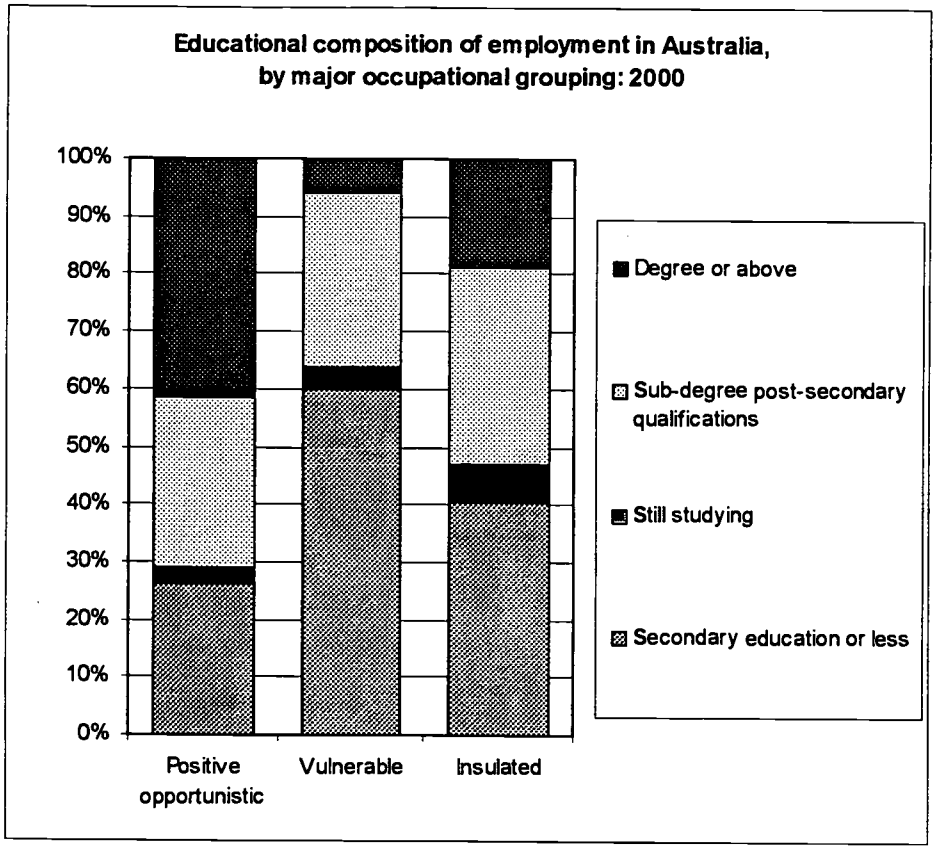



The Australian workforce has aged since the mid nineteen eighties, as the so-called 'baby boomers' have moved through their working lives. Over the same period economic and social changes have seen a greater participation of women, especially older women, in the workforce. Along with these changes has been the growth in full time and part-time education and training and the prolongation of entry into the workforce. The latter has meant that for many young people work is not the main game, rather it is a means of funding their way through their studies. These changes are reflected in Figure 6. It shows that the strongest growth, both absolutely and relatively, in employment over the period 1986-87 to 1999-2000 has been in the middle career years of 35 to 54. What Figure 6 also shows, however, is that over and above these demographic changes, there have been noticeable differences in the extent to which Australians at different stages of their working lives, have participated in global labour markets. In this respect, what is most striking is the low and declining level of participation by young people in their early and later training years (between the ages of 15 and 25). However, not only has the number of young people entering vulnerable areas of employment declined over the period, but perhaps more surprisingly their participation in occupations more positively and

opportunistically exposed to global labour market forces has also declined. Their participation in employment has increasingly concentrated in the more insulated occupations. What is more, that participation has been increasingly within the lowest skill categories of those occupations, and more and more on a part-time and contingent basis. What is clear from Figure 6 is that, up to this point at any rate, older workers, especially those in their mid career years, have been at the vanguard of Australia's most positive and opportunistic participation in global labour markets.

**Figure 7**



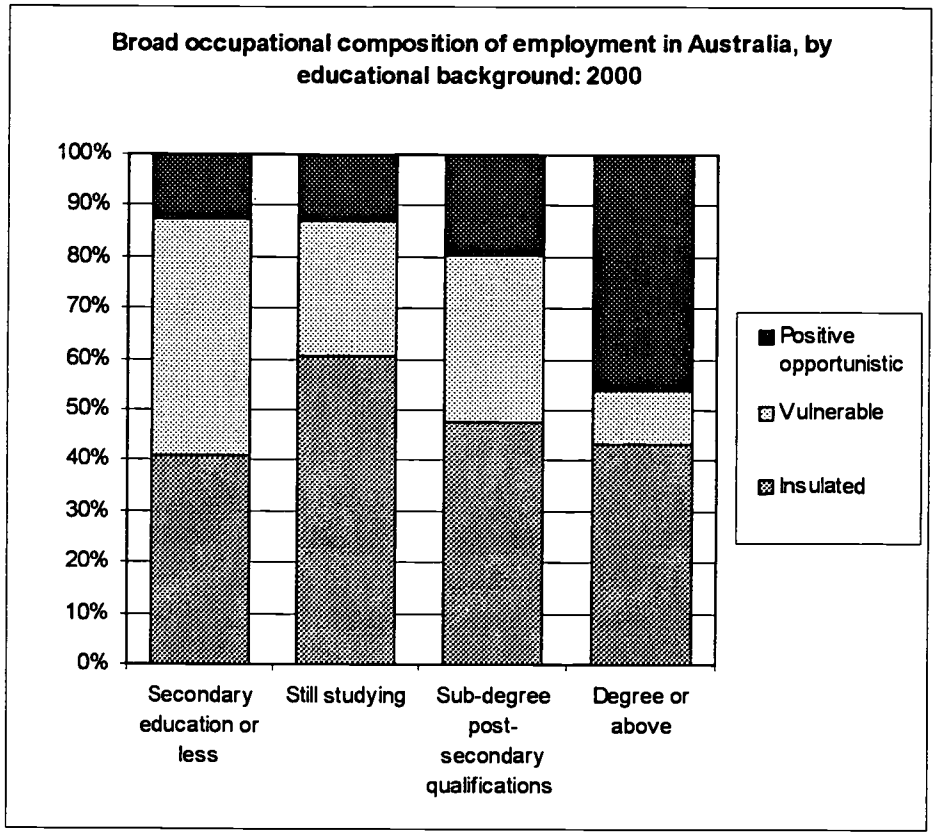

Figures 7 and 8 show that there is some relationship between educational qualifications and the nature and extent of Australian workers' exposure to global labour markets. Figure 7 looks at this relationship from the perspective of the educational background of those in the three broad occupational groupings. It shows substantial differences between them. Whereas, on the one hand the majority of those in vulnerable occupations have low levels of educational qualifications (about 60 percent have no post-secondary qualifications in 1999-2000) the great majority (over 70 percent in 1999-2000) in the positive/opportunistic group of occupations, did have. The difference between the two occupational groups is most marked in the representation of those with degrees and above in their ranks. In 1999-2000 those with university qualifications accounted for over 40 percent of those in occupations most positively and opportunistically exposed to labour market forces but only 5 percent of those in the most vulnerable occupations.

What is also noticeable in Figure 7 is the more or less uniform representation across the three broad occupational groups of those with post-secondary qualifications at

the sub-degree level (that is, those who have certificates and diplomas as their highest qualification). As this level of education qualification broadly corresponds with the VET sector, it shows the general pervasiveness of this level of qualification across broad areas of employment.

Figure 8 both reinforces this picture but also highlights a range of differences. It looks at the relationship between education and occupation from the perspective of the broad occupational groups those with different levels of educational qualifications are employed in.

**Table 8**




From this perspective we can see that the labour market experiences of those with sub-degree post secondary qualifications are more akin to those with lower levels of education (those with secondary education or less but who are not studying) than they are to those of workers with university qualifications. Whereas almost fifty percent of university graduates find employment in occupations most positively and opportunistically exposed to global labour market forces, only about twenty percent of those with VET level qualifications do so. This compares to the roughly thirteen percent of workers with no post-secondary qualifications working in the same occupations. On the other hand, whereas only about ten percent of university graduates are employed in vulnerable occupations, over thirty percent of those with VET qualifications are exposed in this way.

## 5.2 Occupational composition of employment in Australia in 1999-2000

This section of the report takes a more detailed look at the composition of the Australian labour force in 1999-2000 using the ten-way occupational classification described in Section 4 and set out in Table 1.

Table 5 shows that in 1999-2000 there were over 1.38 million Australians working in conceptual/creative occupations. This constituted 15.8 percent of those in employment in that year, and was therefore the largest single occupational category. However, if this group of workers represents our spearhead into global labour markets, it was almost counter-balanced by the 1.23 million (14 percent of the total) who were employed in the most insulated and lowest skilled group of occupations. The juxtaposition of these two occupational groups is further contrasted by the fact that whereas the former is male dominated, and mostly requires full-time employment, the latter has a high concentration of female workers and the highest rate of part-time and contingent employment of all occupational groupings.

Table 5 shows that employment in conceptual/creative occupations represents about three-quarters of those that are most positively and opportunistically exposed to global labour market forces. Those working in conceptual/technical occupations, often in support of or in a complementary role to conceptual/creative workers, make up the remainder.

What is also noteworthy in Table 5 is how low a proportion of total employment high-skilled manufacturing trades represent. At 3.8 percent of the total they represent the smallest of the ten occupational groups identified. Twice as many are employed in the locational trades. What is also interesting about this group is they have the highest full-time employment rate of all occupational groups and along with locational trades, by far the lowest representation of female workers.

**Table 5. Composition of employment in Australia, by occupational grouping: 1999-00**

| | Number | Percent | Percent full-time | Percent female |
|---|---|---|---|---|
| Conceptual/creative | 1,384,157 | *15.8* | *79.6* | *26.2* |
| Conceptual/technical | 460,946 | *5.3* | *74.4* | *35.1* |
| Manufacturing trades | 331,118 | *3.8* | *80.1* | *5.6* |
| White collar clerical | 1,005,703 | *11.5* | *55.2* | *79.0* |
| Blue collar operative | 678,107 | *7.7* | *77.0* | *11.1* |
| Manual low skill | 1,020,521 | *11.6* | *49.5* | *36.3* |
| Locational trades | 698,664 | *8.0* | *77.1* | *5.3* |
| In-person professional | 732,257 | *8.3* | *61.7* | *67.8* |
| In-person skilled | 1,238,064 | *14.1* | *63.4* | *54.7* |
| In-person low skill | 1,228,038 | *14.0* | *37.3* | *67.7* |
| **Total** | **8,777,573** | ***100.0*** | ***63.0*** | ***43.6*** |

Figures 9 and 10 show the clear differences in occupational patterns between males and females and between part-time and full-time work as indicated in Table 5.

Differences in employment patterns between males and females, and hence in the nature and extent of their exposure to global labour market forces, are shown in Figure 9. The biggest employment disparities that are apparent are in conceptual/creative occupations and in the manufacturing and locational trades, which are male dominated, and the white collar clerical, in-person professional and in-person low skill occupations which have much higher concentrations of female workers.

**Figure 9**

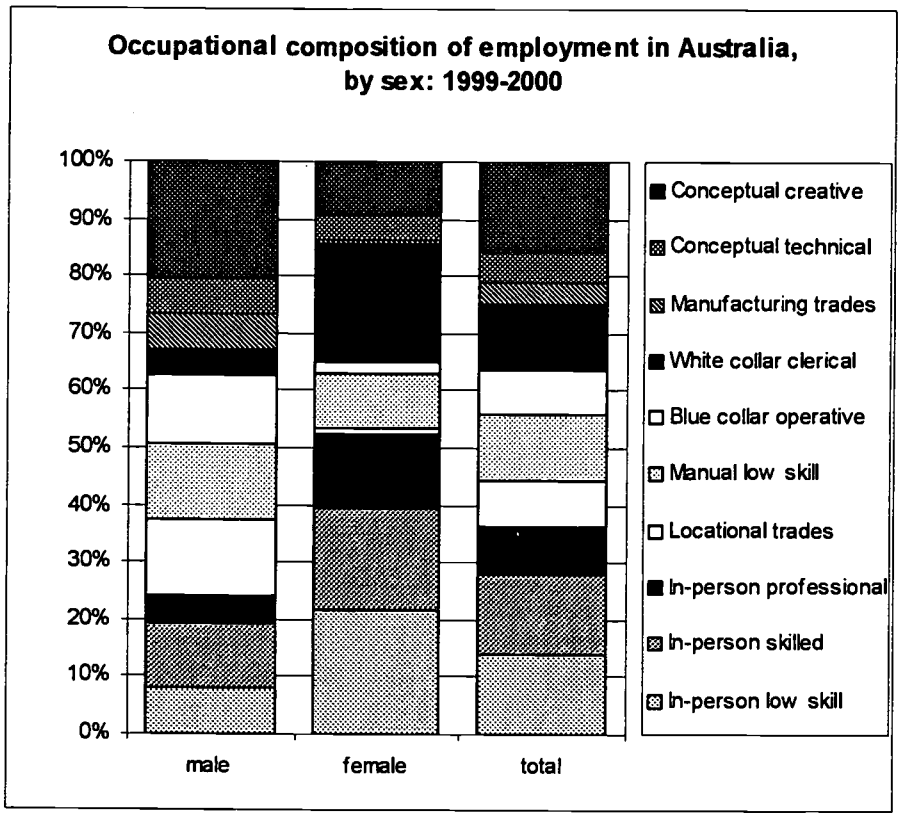
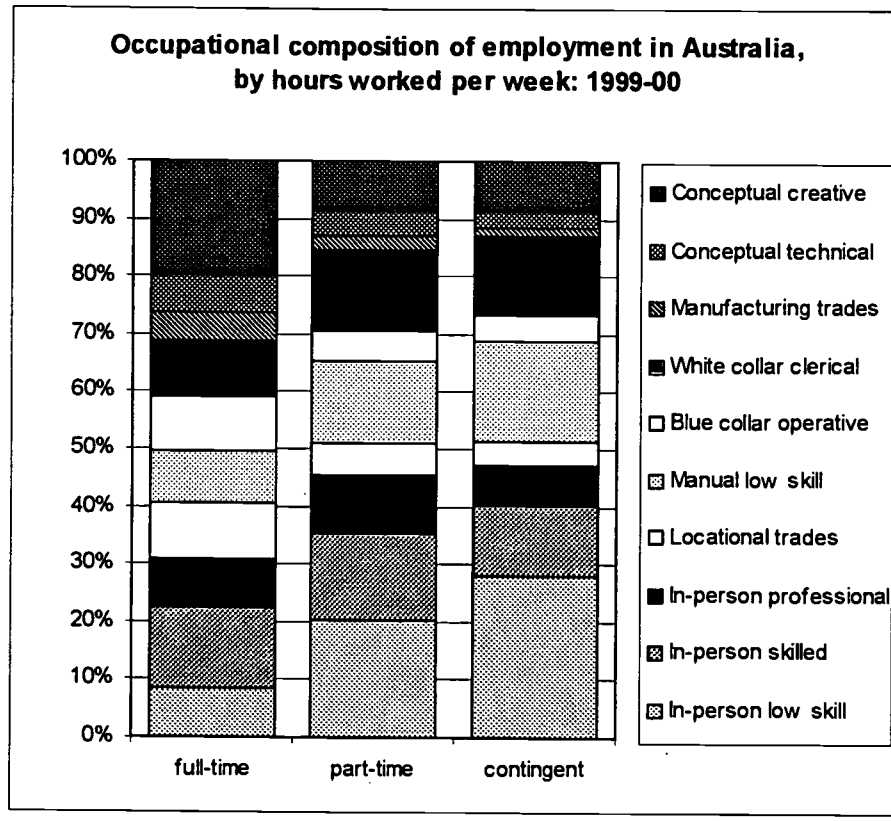


Figure 10




Conceptual/creative occupations are a much more important source of full-time employment than part-time or contingent employment. Indeed, conceptual/creative occupations accounted for twenty percent of all full-time work in Australia in 1999-2000. The other significant area of full-time employment was in in-person skilled occupations. In contrast, as indicated in Figure 10, low-skilled occupations of the manual, but especially the in-person variety, are major sources of employment on a part-time basis and an even greater source of employment on a contingent basis. All other occupational groups display a spread of employment by hours worked per week.

## Figure 11

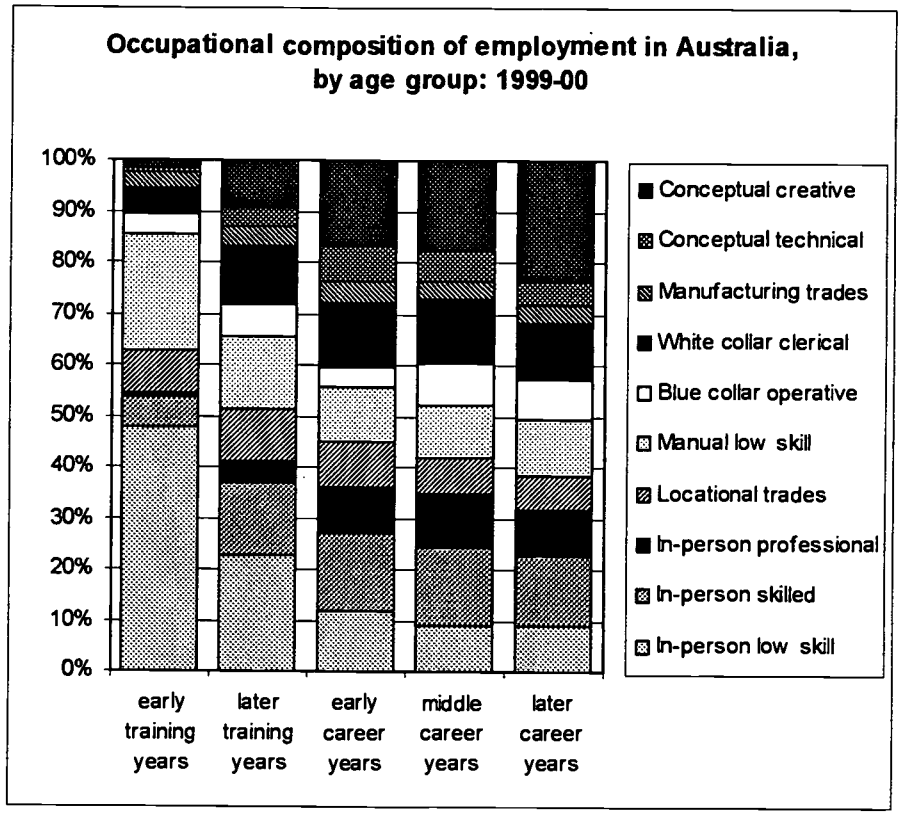


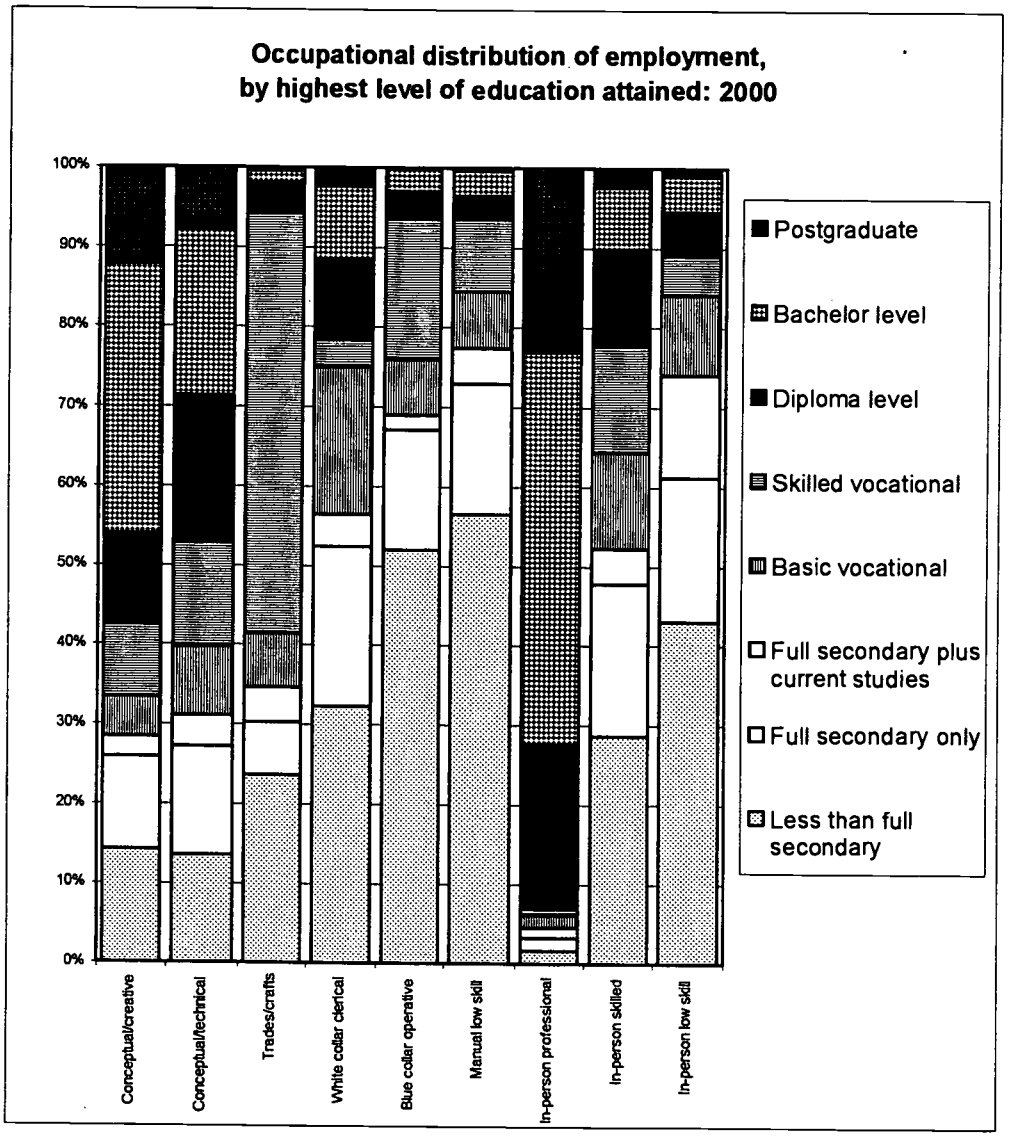

Figure 11 shows how the occupational composition of employment in Australia varies with age group. What is strikingly clear is how relatively insignificant employment in the conceptual/creative occupations are in the younger age groups, but how progressively more important they become in the middle to later career years. What is equally striking is how relatively important employment in low-skilled occupations of the both in-person and manual variety, are for those in the early and later training years, and how progressively less important they are once people move into their career years.

As has already been noted there are some clear explanations for these patterns of employment. For those young people who are still studying on both a full-time and part-time basis, employment , especially on a part-time and contingent basis, in undemanding, low-skill occupations, is attractive as a source of income. For those young people who leave school early without either completing secondary education, or undertaking any further training, these are also generally the only jobs that are available to them. In either case, young people represent a readily available source of low-paid labour in these insulated and vulnerable occupational areas.

What is also apparent from Figure 11, is that contrary to popular conception, participation in globally competitive labour markets is being led by more mature workers, rather than by younger workers. The importance that is being increasingly placed on education and on experience means that for many, entry into global labour markets on a positive and opportunistic basis is delayed considerably.

Figures 12 and 13 show the composition in 1999-2000 of Australian employment in the broad occupational groupings identified by the highest level of education achieved. Note that in both figures the two skilled trade occupational categories have been amalgamated, for presentational purposes. The educational composition of the two groups were virtually the same

**Figure 12**

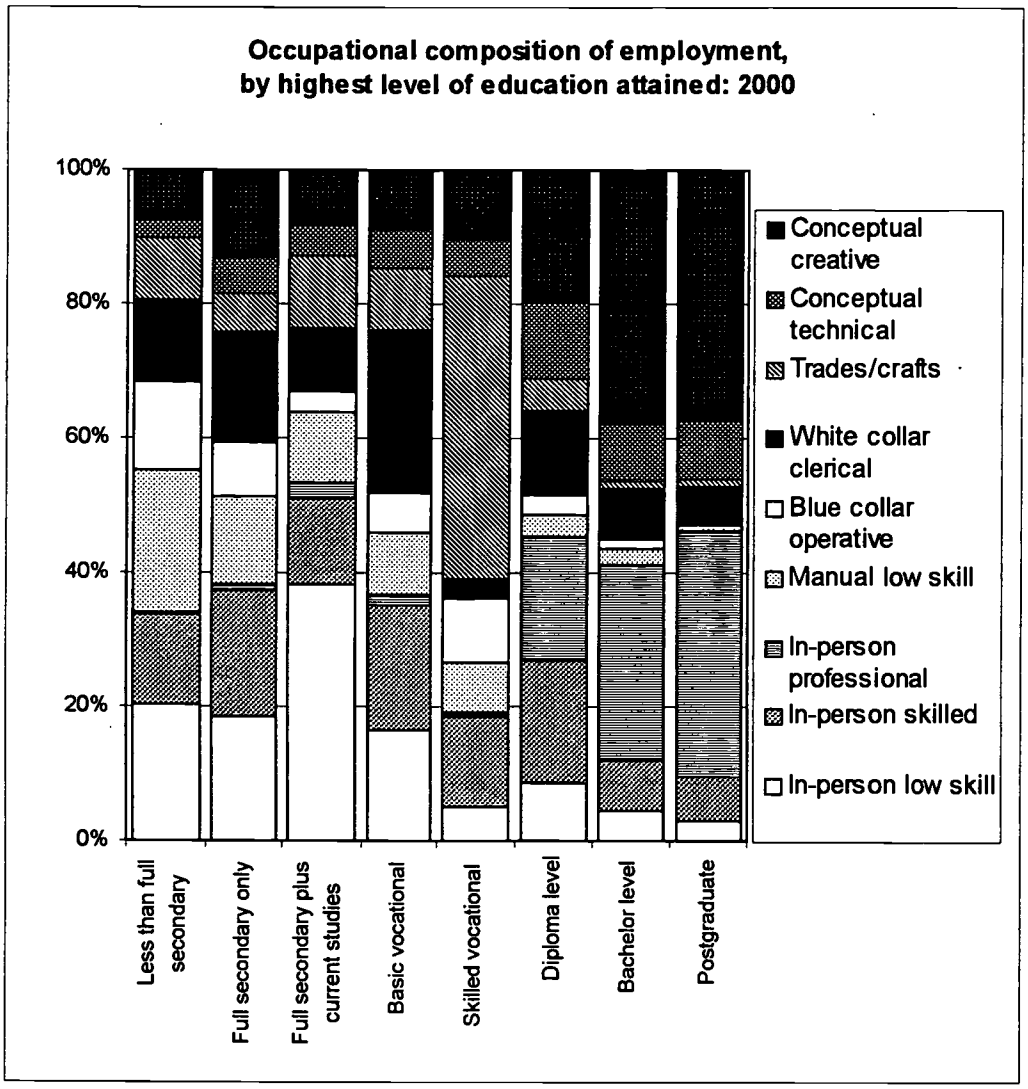



In Figure 12 the relationship between education and occupation is seen from the perspective of the educational composition of those in each of the occupational groups. It shows that whilst workers with all levels of educational background are represented in every occupational category, there are also significant differences in the educational composition between occupational groups. It shows for example, that the two trade categories, manufacturing and locational trades groups, are dominated by workers with skill vocational qualifications, and that conversely, there are few in these categories with diploma level qualifications and only a very small minority with university qualifications. The in-person professional group of occupations on the other hand, are dominated by those workers with diplomas,

degrees and post-graduate qualifications. The occupational category with the highest degrees of concentration with poorly educated workers are the blue collar operative group, and the low-skill manual in-person group.

It is noteworthy, however, that whilst the majority of those working in the conceptual/creative occupations and a large proportion in the conceptual/technical occupations, have diplomas or better as their highest qualification. There are still a sizeable number in each of these positively and opportunistically exposed occupational groups with educational qualifications below the diploma level.

**Figure 13**




In Figure 13 the orientation of the relationship between education and occupation changes to that of showing the spread of workers with different educational backgrounds across the occupational categories identified. What is clear from Figure 13 is how much university graduates are concentrated in just two areas of employment – in the conceptual/creative occupational group and in the in-person professional occupations. Figure 13 also shows that not much more than one in two workers with skilled vocational qualifications found work outside the two trade groups of occupations.

## Figure 14

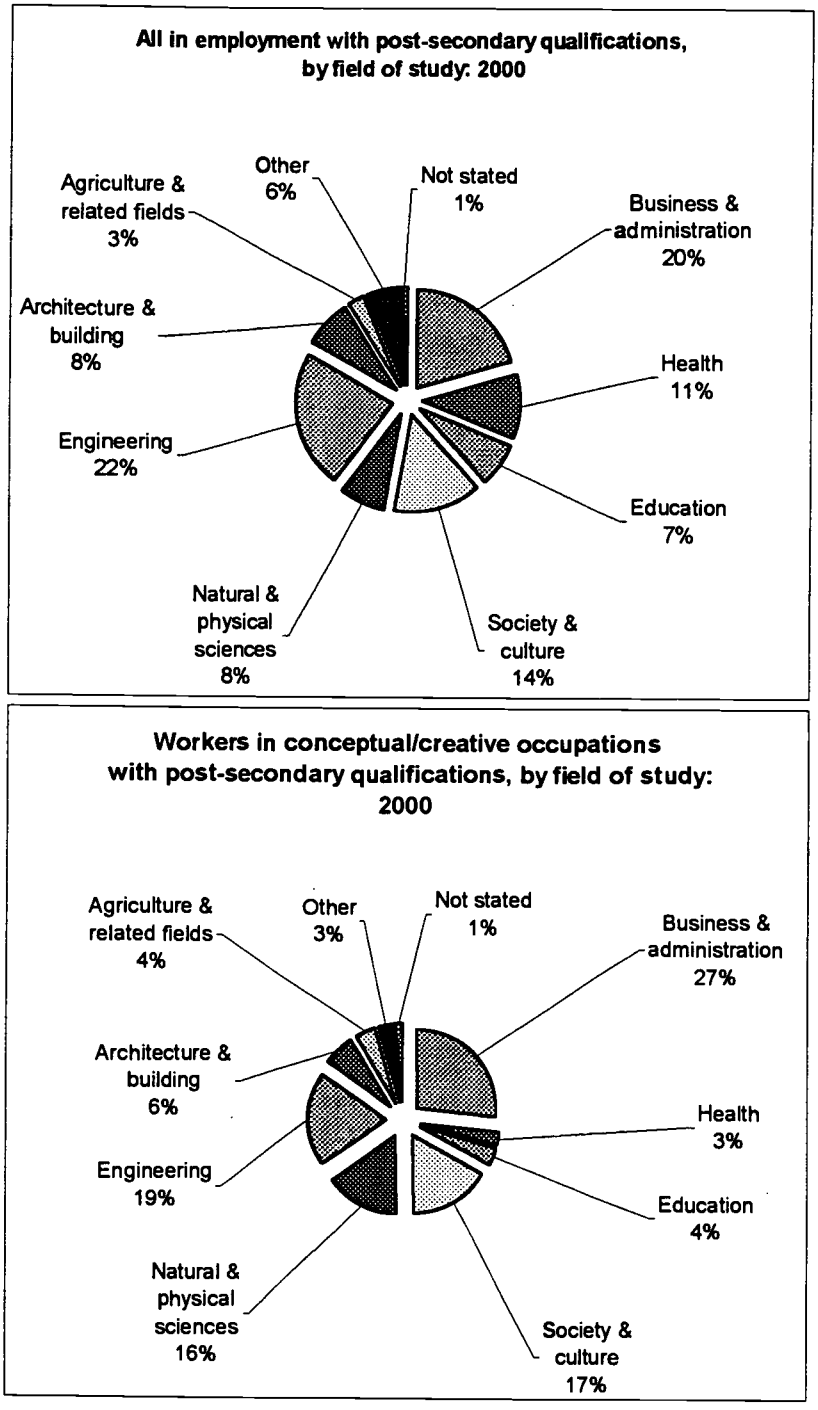



Figure 14 shows the fields of study of workers in all occupational groups with post-secondary qualifications in 1999-2000. It shows that engineering (which includes the technical trades) and business administration together account for about 42 percent (22 percent and 20 percent, respectively) of the total. The natural and physical sciences, on the other hand, account for about only 8 percent, and between them, education and health, about 18 percent.

Figure 14 compares this with the distribution of fields of study amongst those workers with post-secondary qualifications working in the conceptual/creative occupations.

Amongst these workers, engineering qualifications are comparatively less important (down to 19 percent) but business and administration qualifications are even more important (up to 27 percent). The proportion whose field of study is in natural and physical sciences was also comparatively more important (16 percent) but those with health and education qualifications accounted for a smaller percentage (7 percent).

## 5.3 Changes in the occupational composition of employment in Australia between 1986-87 and 1999-00

This section of the report analyses changes in employment in Australia across the occupational categories between 1986-87 and 1999-00.

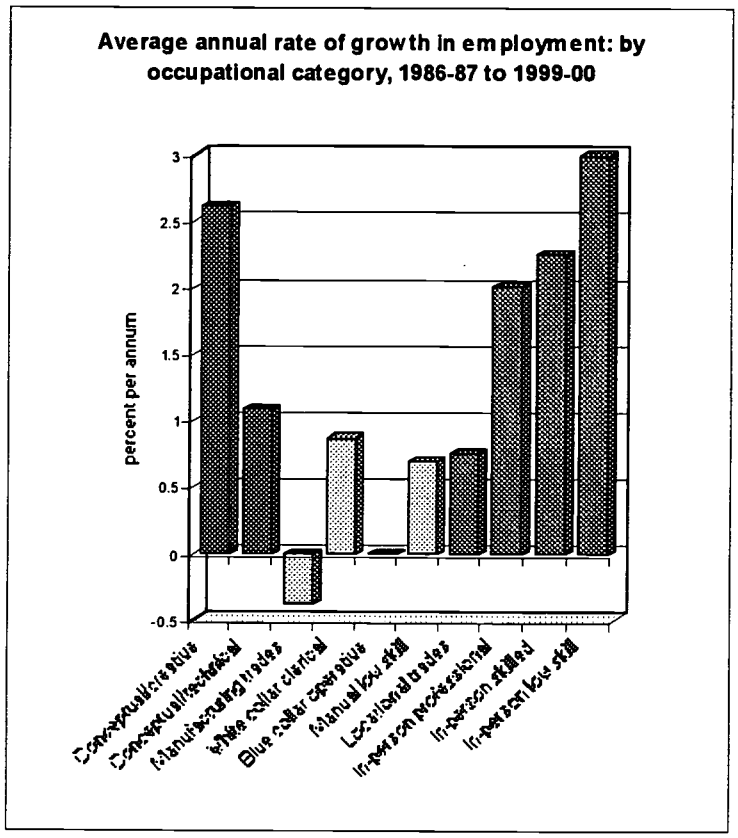
**Table 6. Changes in the composition of employment in Australia, by occupational grouping: between 1986-87 and 1999-00**
(percent)

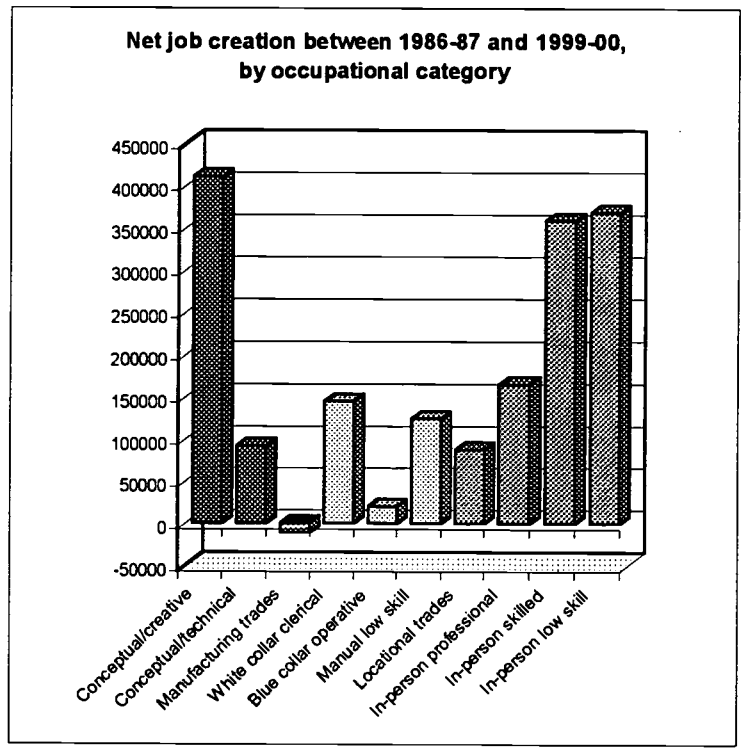
| | 1986-87 | 1999-00 | net new jobs |
|---|---|---|---|
| Conceptual/creative | 13.9 | 15.8 | 23.3 |
| Conceptual/technical | 5.3 | 5.3 | 5.2 |
| Manufacturing trades | 4.9 | 3.8 | -0.6 |
| White collar clerical | 12.3 | 11.5 | 8.2 |
| Blue collar operative | 9.4 | 7.7 | 1.1 |
| Manual low skill | 12.8 | 11.6 | 7.1 |
| Locational trades | 8.7 | 8.0 | 5.0 |
| In-person professional | 8.1 | 8.3 | 9.3 |
| In-person skilled | 12.5 | 14.1 | 20.4 |
| In-person low skill | 12.3 | 14.0 | 20.9 |
| **Total** | **100.0** | **100.0** | **100.0** |

Table 6 compares the occupational composition of employment in Australia in 1999-00 with that in 1986-87. It shows that all four vulnerable occupational groupings declined in relative significance over this period. The only other occupational grouping to decline in relative significance over this period was that of the locational trades. Conceptual/technical occupations and in-person professional occupations remained virtually constant in relative terms. The other three occupational groups, however, grew quite substantially in relative terms. The strongest growth of all occupational groups in terms of net new jobs created (the difference between total job numbers in 1986-87 and those in 1999-00) was the conceptual/creative group of occupations. It accounted for about 23 percent of all net new jobs created over this period. Between them, however, in-person skilled and in-person low-skill jobs accounted for over 41 percent of net new job creation over the period.

Figure 15 expresses the changes that occurred in employment over the period in terms of the average annual growth rate in employment in each occupational category and in terms of the number of net new jobs created between 1986-87 and 1999-00. It reinforces the picture already presented in Table 6, but whilst conceptual/creative occupations accounted for the greatest number of net new jobs created, the fastest rate of growth was in the in-person low-skilled category.

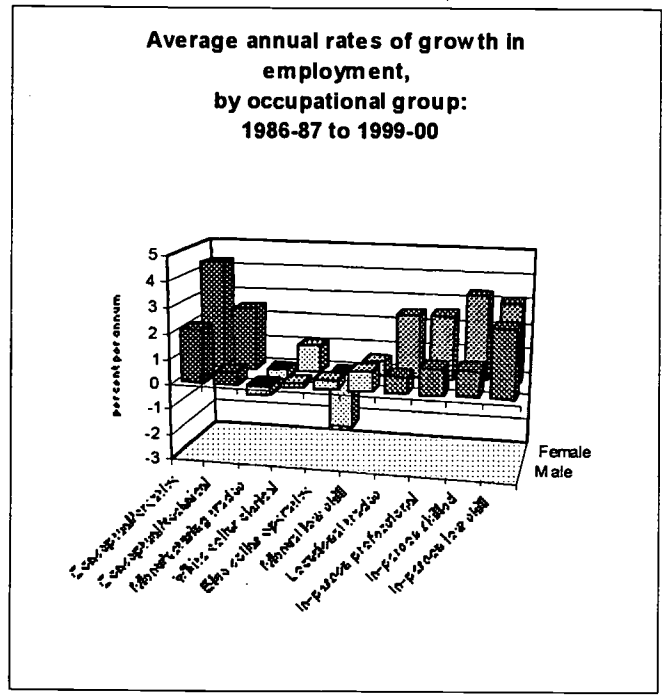
Figure 15



What is also clearly evident in Figure 15 is the marked difference between the experience of the occupational groupings in the three broad categories. Clearly employment in the most vulnerable occupational groups did not perform as well overall as employment in either those occupational groups most positively and opportunistically exposed to global labour market forces or those most insulated from them. The worst performing areas of employment were clearly the manufacturing trades which actually declined over the period and the blue collar operative occupations which remained stagnant.

**Figure 16**



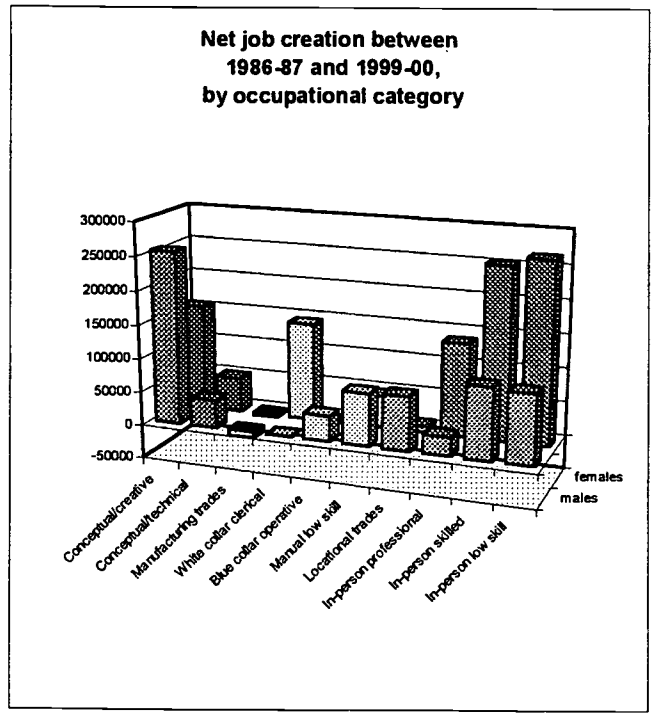
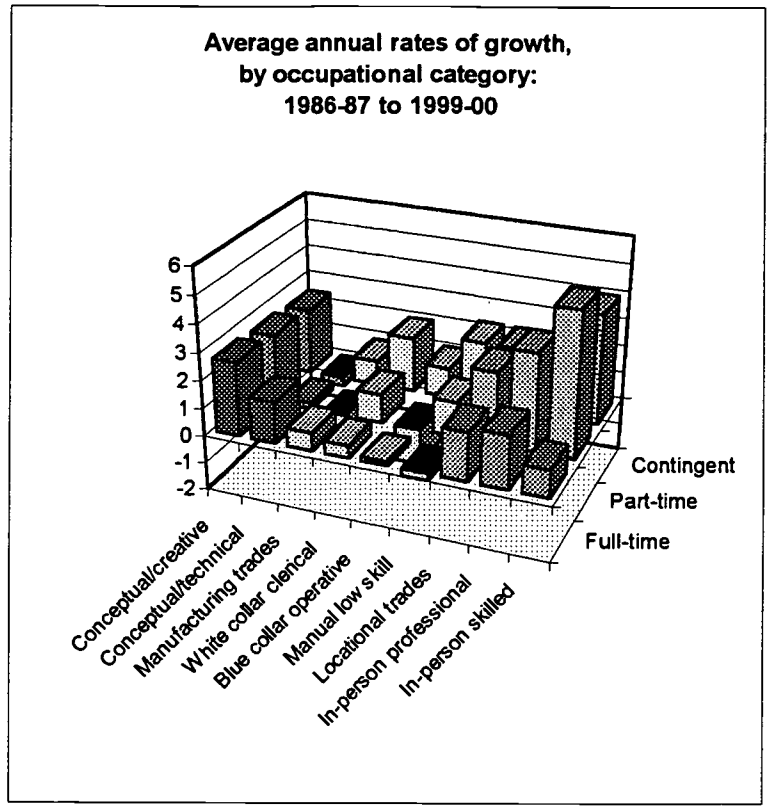
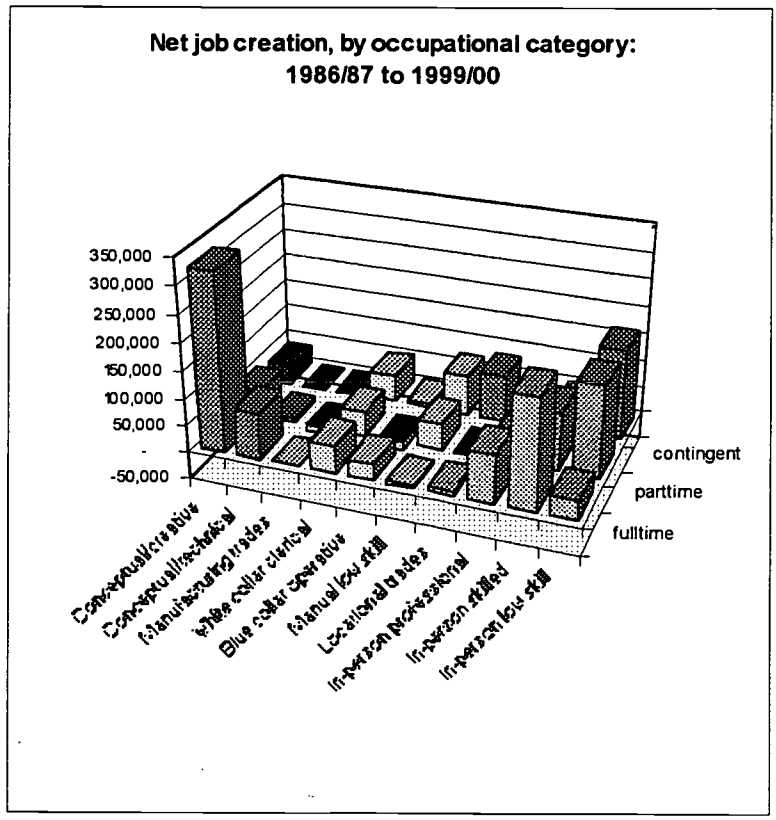



**Figure 17**



The different experiences of males and females in terms of the occupational composition of their employment over the period is illustrated in Figure 16. What is clear that in terms of both average annual rates of growth and the number of net new jobs created over the period, females mostly did better than males. Indeed, the strongest rates of growth in any area of employment over the period was amongst females in the conceptual/creative occupational group. This was not sufficient, however, to translate into a greater number of net job creations amongst these occupations than were created for males. In terms of net new job creation for female workers, the professional, skilled, and low skill in-person occupational groups were by far the most important. Figure 16 again highlights how poorly the vulnerable occupational groups perform as employers for both men and women over the period. The only area in which any significant growth occurred was for female workers in the while collar clerical occupational category.

Comparisons between the relative and absolute growth over the period in employment, on a full-time, part-time and contingent basis in each of the ten occupational groupings, are provided in Figure 17. What is significant is that the standout performance was in full-time employment in the conceptual/creative group of occupations. The only serious rival for full-time employment growth was in the in-person skilled group of occupations. Strong growth, however, was also evident over the period in part-time and contingent employment in the insulated occupations and especially in the in-person low-skilled group of jobs. Again, what is clearly apparent is the poor performance in relative and, in some groups, absolute terms, amongst the range of vulnerable occupations.

## 5.4 Trends in employment over the period 1986-87 to 1999-2000

This section of the report summarises the trends over the period 1986-87 to 1999-00 in employment in the ten occupational groups identified. Figures contained in Appendix 1 of this report show occupational employment trends by gender, by hours worked per week and by age group.

Figure A1.1 shows the trend in total employment in each occupational category over the period. What is clear from this is the strong growth over most of the period in employment in the conceptual/creative occupations but also in in-person low skill occupations. It also shows the clear impact of the recession in Australia in the first few years of the nineteen nineties and the strong recovery in employment in most occupational areas after that. Two areas of employment, however, that in the manufacturing trades and the blue collar operative occupations, remained depressed even during the boom years of the later nineteen nineties.

Differences in the employment trends for males and females are evident in Figures A1.2 and A1.3. What is most striking about employment for males over this period is the dominance of employment and employment growth in the conceptual/creative occupations. Employment in these occupations started off a higher base at the beginning of the period and grew more strongly than any other occupational group. What is also striking in contrast is the sluggish growth in many areas of male employment particularly amongst the most vulnerable occupations. Figure A1.3 gives a completely different picture of employment trends for females in Australia over that period. Two occupational groups shared the lead in female employment over the whole of the period, but whereas at the beginning of the period, white collar clerical occupations were the major employer of females by the end of the period, in-person low skilled occupations employed more females. What is also evident from Figure A1.3 is the strong growth in employment in conceptual/creative occupations and in in-person professional and in-person skilled occupations. The only area of female employment that experienced a decline over the period was amongst blue collar operatives.

Figures A1.4 and A1.5 compare trends in employment on a full-time basis with that on a part-time and contingent basis. It is clear from these figures how much more of an impact economic cycles have on full-time employment compared with part-time employment. The recession of the early nineties is clearly evident in the former but barely discernable in the latter. Two occupational areas dominated full-time employment over the period. The clear leader and the one which rose most steeply, was the conceptual/creative group of occupations. The other area to show strong growth was the in-person skilled group of occupations. What is also readily apparent from Figure A1.4 is just how stagnant full-time employment in the vulnerable occupational groups was over most of the period. Most of the growth in part-time and contingent employment over the period was in in-person low skilled occupations although the manual low skill and white collar clerical groups also were significant areas of fractional employment.

The striking differences in the trends of employment for Australians at different stages of their working lives are evident in Tables A1.6 to A1.10. Figure A1.6 shows the dramatic changes in employment patterns for workers in their early training years (ages 15 to 19). It shows that employment in eight of the ten occupational groups declined over the period. It remained more or less the same level in manual low skilled occupations (save for the recession years of the early nineties) but grew enormously over the period in in-person low skilled occupations (again, except for the recession years). Comment has already been made on the likely causes of these

dramatic changes. Something of the same picture emerges from Figure A1.7 in the employment trends for workers in their later training years (ages 20 to 24). Again, almost all areas of employment either declined or stagnated except for the in-person low skill occupations. What is encouraging, for this group, however, was the increase in employment, albeit off a comparatively low base, in the conceptual/creative occupational group.

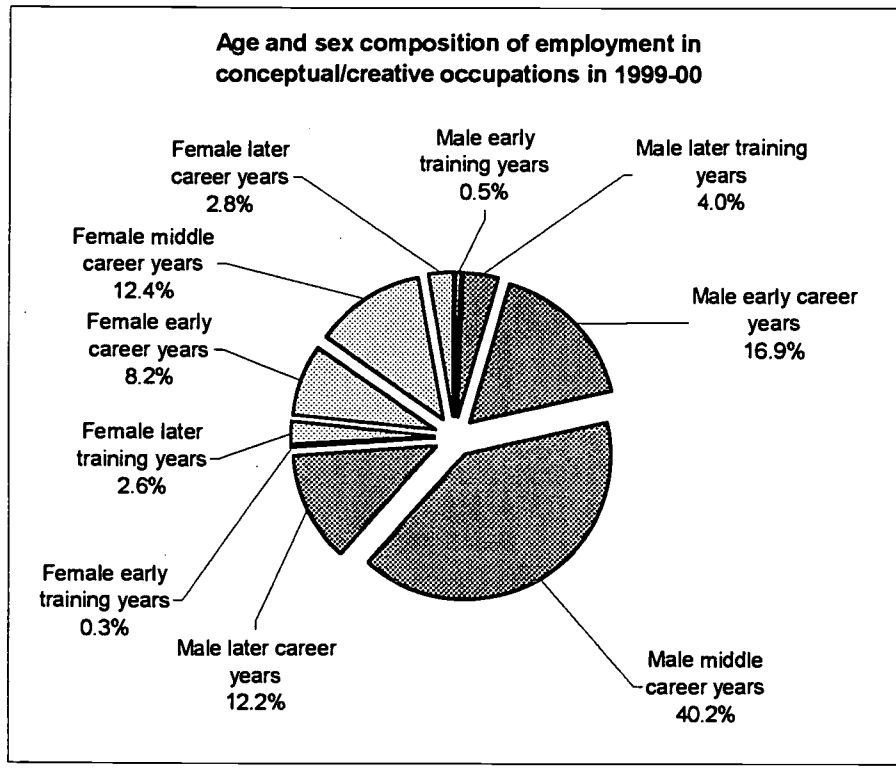
Figures A1 to A10 show the trends in employment for workers in their early career years (ages 25 to 34), middle career years (ages 35 to 54) and later career years (ages 55 and over). The most interesting aspect of these trends is the strong growth in, and the growing dominance of employment in the conceptual/creative occupations amongst these career age groups.

## 5.5 Employment in the conceptual/creative group of occupations

This section of the report provides a more detailed analysis of employment in the conceptual/creative group of occupations – that group of occupations that are most positively and opportunistically engaged in competitive global labour markets.

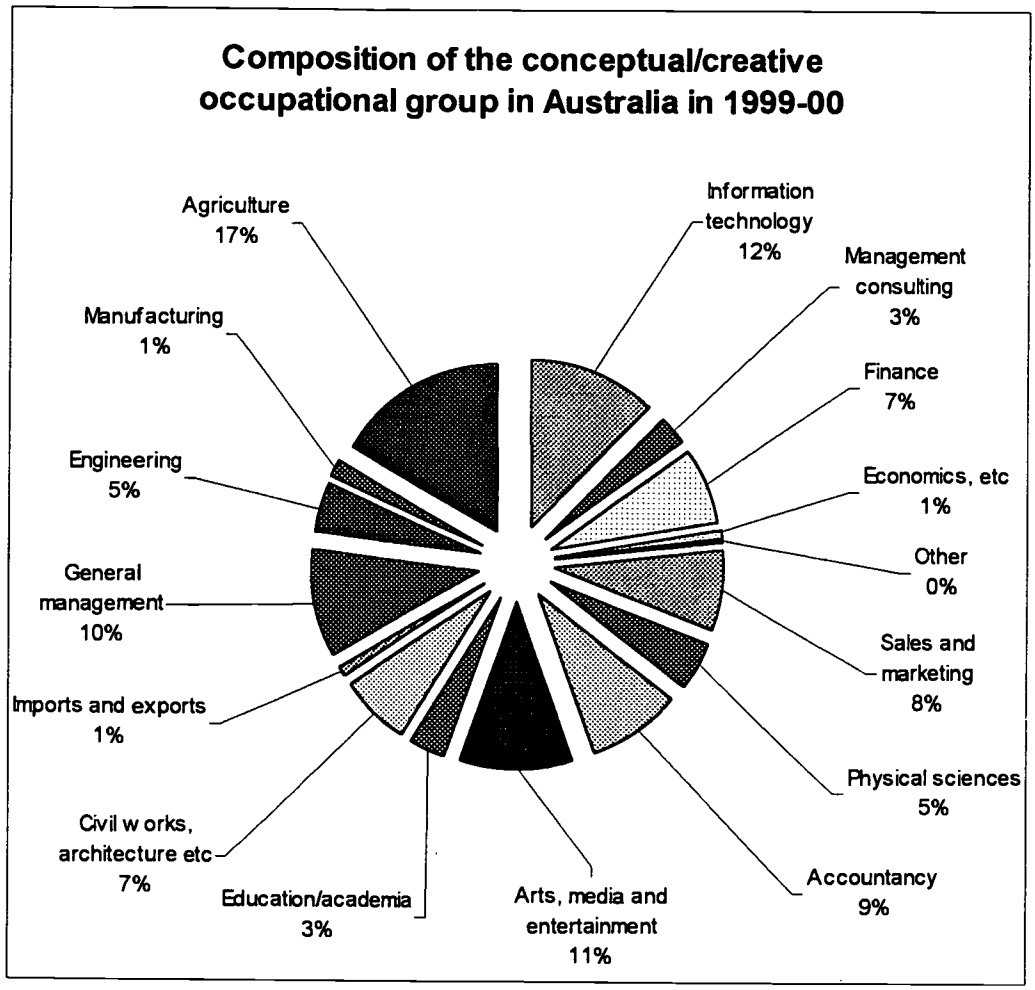
The evidence presented in the previous two sections reveal quite clearly that this has been an area of strongest growth of employment in Australia over the period since the mid nineteen eighties, that it is largely full-time in nature and that although it is dominated by males, especially males in their middle career years, female participation in these occupations is growing rapidly. Figure 18 highlights these patterns and trends. Figure 18 gives the age and sex composition of employment amongst the conceptual/creative occupations in 1999-00. The dominance of males in their middle career years is clearly apparent – there are more of them working in these occupations than there are females of all ages doing so. What is also apparent from this figure is just how small a contribution young males and females in their training years make in this vital area of employment.

**Figure 18**



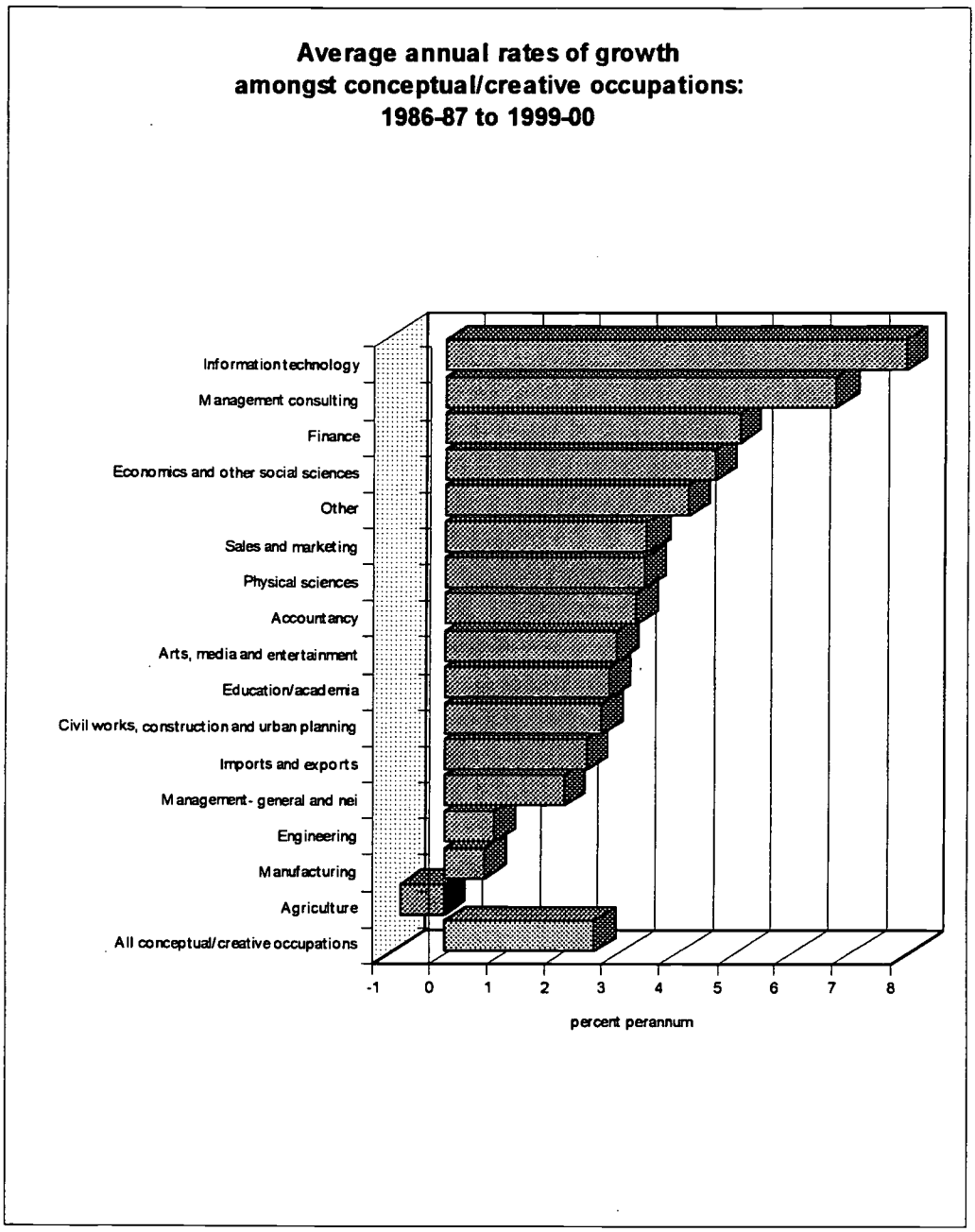

What Figure 18 also shows of course, is that in all age groups beyond the early training years, female employment in the conceptual/creative occupations grew at a much faster rate than males. Employment of both males and females age 15 to 19 in these occupations fell over the period, again for reasons already canvassed. Whereas growth rates in employment of males in these occupations peaked in the middle career years, they peaked in the early career years for females.

Figure 19




Figures 19 to 21 provide a breakdown of the occupational composition of the conceptual/creative category of employment. The composition of the conceptual/creative occupational group in Australia in 1999-00 is given in Figure 19. It shows that the largest single occupational group is the agriculture group made up principally of farmers and farm managers. Other areas well represented, however, in this group of occupations that interact most positively and opportunistically in global labour markets are high level occupations in information technology, the arts, media and entertainment occupations, and general managerial occupations

## Figure 20

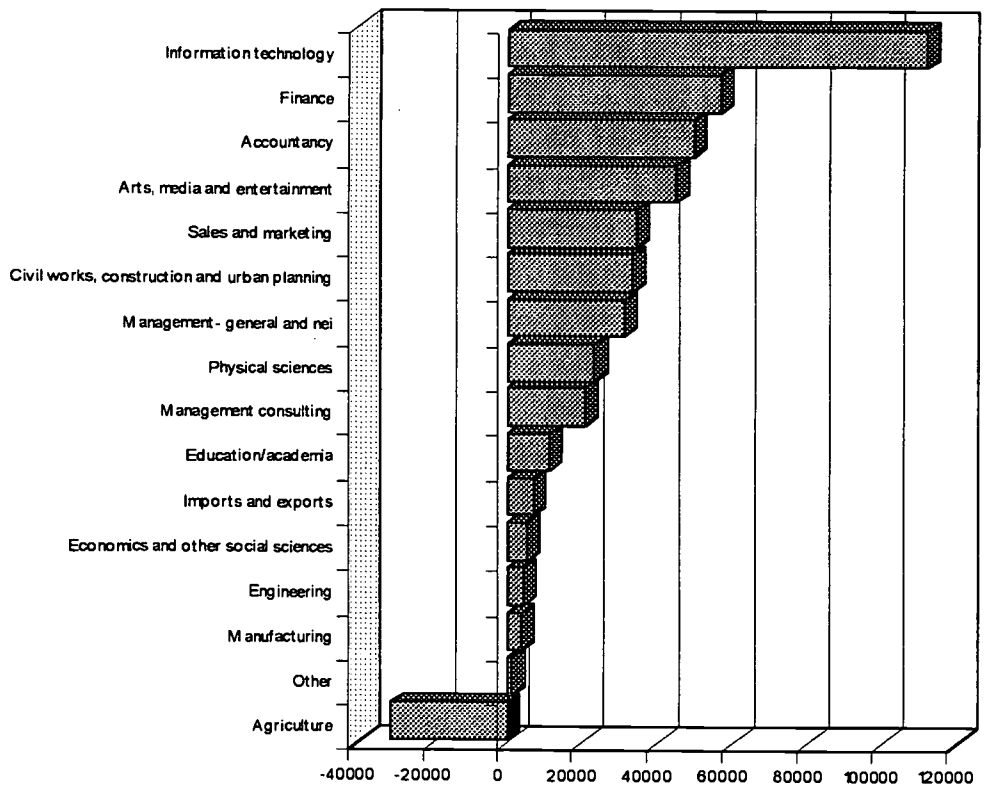



In such a dynamic environment as the emerging globalised knowledge-based economy, it is not surprising that employment in this group of occupations showed a considerable degree of volatility. Figure 20 ranks the occupations within this group by their average annual rates of growth over the period 1986-87 to 1999-00. Clearly the areas growing the fastest are the ones most directly linked into the global economy, that is, occupations in the information technology, management consulting and finance areas. The conceptual/creative occupations which have grown at the slowest rates, on the other hand, are those more associated with the old economy, that is occupations in the engineering, manufacturing and import/export category. Agriculture, our biggest old economy sector and still the largest employer of conceptual/creative workers, actually declined as an employer over this period.

Figure 21 looks at the same range of conceptual/creative occupations, but ranks them in terms of the net new jobs created over the period 1986-87 to 1999-00. The order is not that much different to that shown in Figure 20. Information technology not only was the fastest growing area of conceptual/creative employment, it also created the greatest number of net new jobs. Finance and accountancy also expanded as employers of conceptual/creative workers, as did the arts, media and entertainment area. Again, the old economy areas surrounding engineering and manufacturing, had comparatively few net new job creations, and agriculture, of course, experienced net job losses.

**Figure 21**

**Net job creation amongst conceptual/creative occupations, between 1986-7 and 1999-00**



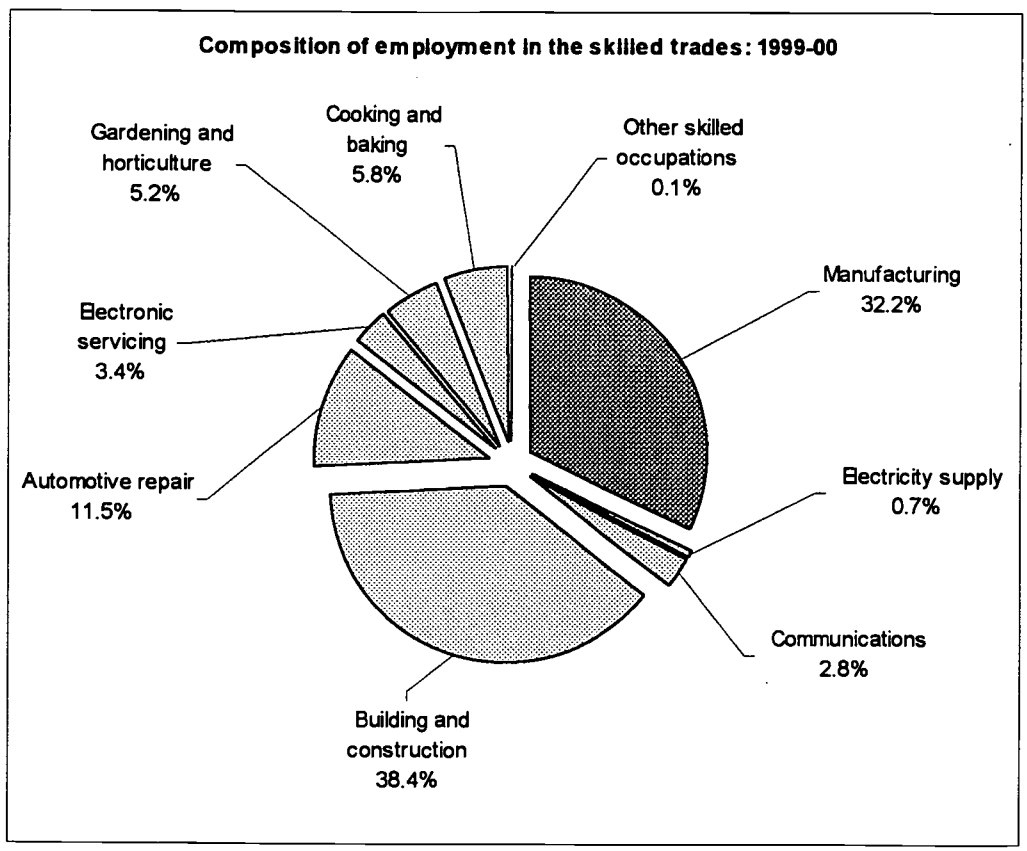
## 5.6 Employment in the manufacturing and locational trades

In this study the distinction has been drawn between manufacturing trades and locational trades. This has been done on the basis that the former are exposed to global competitive forces. In recent times the world has seen many manufacturing activities relocating away from the advanced industrial countries to countries in the developing world where labour costs and employment regulations are generally lower. Australia, as an advanced high-income country, has been just as vulnerable to these changes as have others in Europe and North America. The locational trades on the other hand, are ones by their very nature, that serve the needs of clients more directly and immediately in the environments in which they are located. Because clients and the suppliers of these services have to be in close proximity to one another, employment markets in this area are insulated from global competitive forces.

In this section of the report we compare the two areas of employment, and how they have fared over the period between the mid eighties and the present.

Figure 22 provides a breakdown of the locational trades and compares these with those in manufacturing. It shows that whilst the manufacturing trades constituted about 32 percent of employment in all trades in 1999-00, the largest locational group of trades – those related to building and construction – accounted for a greater percentage (38 percent).

**Figure 22**



Differences in employment changes over the period between the manufacturing and locational trades are a clear indication of how being either exposed to global competitive forces or being vulnerable to global labour market forces or being insulated from them affects the outcome. Figures 23 and 24 summarise the changes that occurred in employment in these two groups of occupations between 1986-87 and 1999-00.

Figure 23 shows that whereas manufacturing trades declined over the period, locational trades, on balance, increased, and that the latter outweighed the former. It also shows, however, that not all locational trades increased over the period. Big reductions were experienced in those specifically related to the electricity supply and distribution industries and to telephone installation and maintenance. The strongest rate of growth (apart from in the miniscule other skills category) were in electronic servicing, gardening and horticulture and food preparation.

**Figure 23**

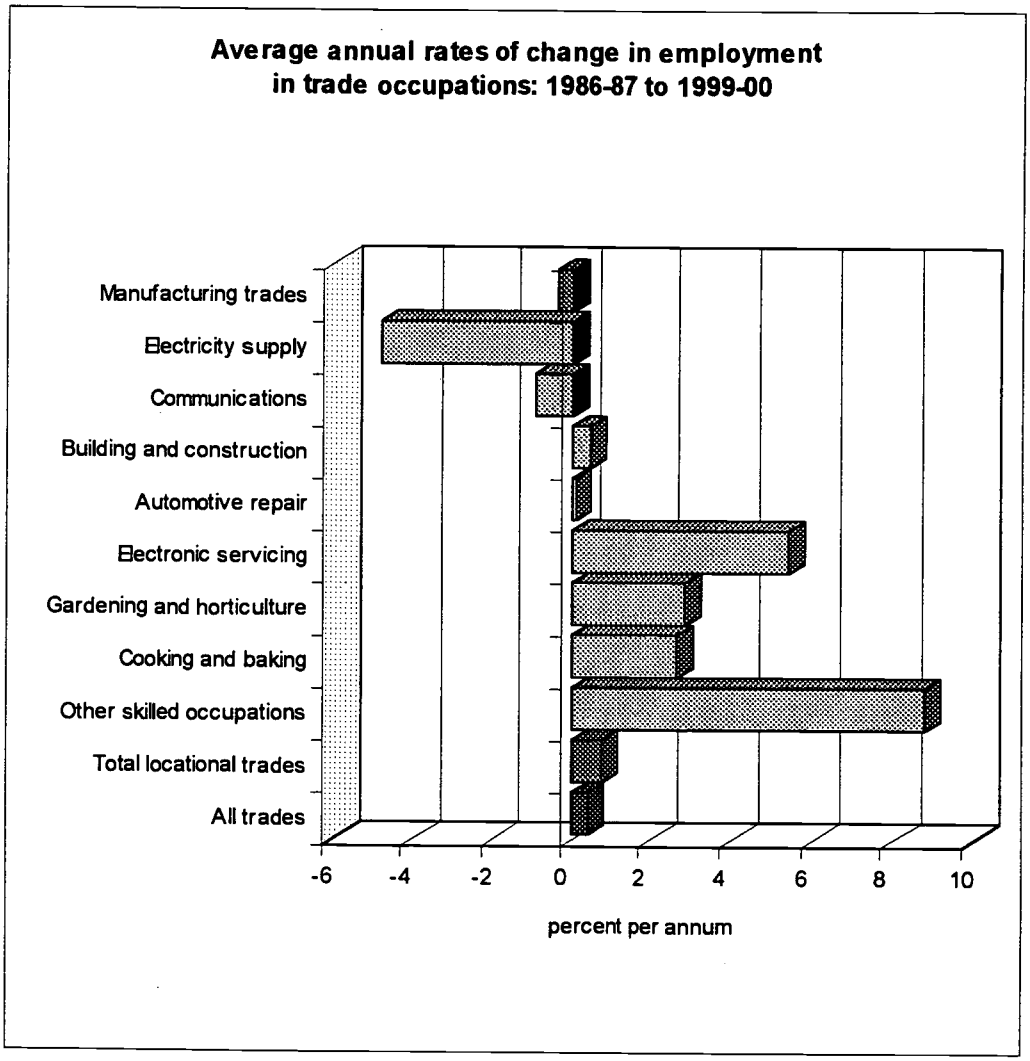
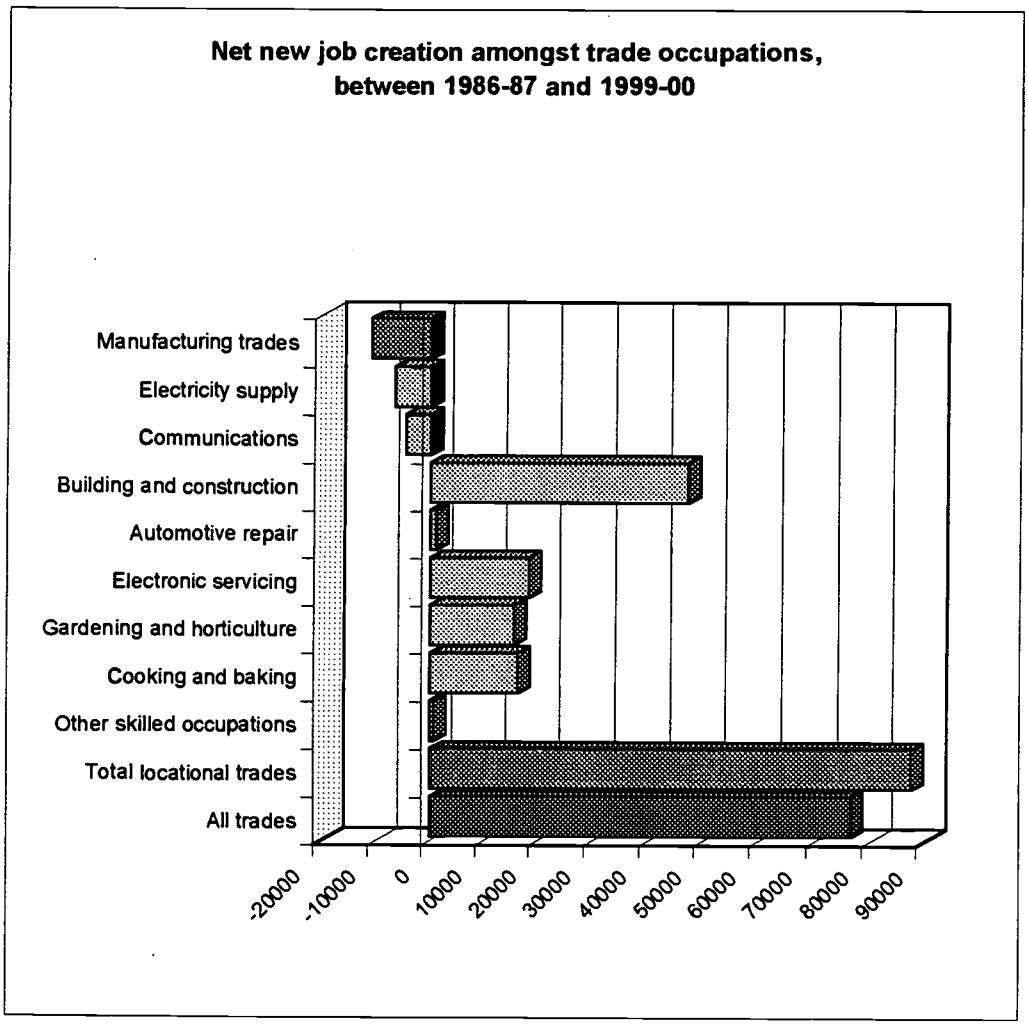


Figure 24 expresses the same pattern of changes over the period in terms of the number of net new jobs created between 1986-87 and 1999-00. It shows that job losses were experienced in the manufacturing trades, electricity supply and distribution and telephone installation and maintenance, but these falls were greatly outweighed by increases in the building and construction industry and in electronic servicing, gardening and horticulture and food preparation.

**Figure 24**



## 6. Conclusions

When viewing employment patterns in Australia, and how they have changed over the last fifteen years or so, from the standpoint of what they auger for the future as the world economy becomes ever more globalised and knowledge-based, a number of alternatives present themselves.

One is that if Australia is to remain globally competitive and, indeed, if it is to avoid becoming globally irrelevant, more and more of its workers must be able, in one way or another, to participate positively and opportunistically in global labour markets. That is to say, they must be employed, or be employable in, those occupations that are essentially conceptual/creative in nature, and/or in those conceptual/technical occupations that either support or are allied to them. For Australians to gain and retain employment in these globally-related occupations, it is axiomatic that they will have to do so on *world best-practice* terms. This poses a tremendous challenge for the way in which we prepare young people for work and in the way in which we continue their training and professional development. The onus is very much, therefore, on Australia's education and training system. In this respect, the evidence presented in this report should be cause for concern for the VET sector. Whilst it no doubt is an important contributor to a number of specific occupations within this group, overall it is not playing nearly as significant a role as the higher education sector.

To be successfully employed in conceptual/creative occupations in many instances, perforce, requires high levels of specific skills and knowledge, but the overriding characteristics of these occupations are their requirements for flexibility, innovativeness, creativity, enterprise, adaptability and the willingness to take risks. It is vital, therefore, that these characteristics be incorporated into curriculum development and teaching practice in VET programs and, indeed, across the board in all levels of education and training – starting with pre-school and primary and going through to higher education. English is the *lingua franca* of global business, finance, communications, scientific research and, indeed, of most areas of the global knowledge-based economy, and so a very high premium is attached to verbal and written fluency in the language. Very high levels of IT literacy are also mandatory in many occupations that are positively and opportunistically exposed to global labour market forces, not just those directly related to IT and telecommunications. Again it is axiomatic that the IT systems and facilities they have at their disposal must be state-of-the art if Australians are to compete successfully on the global stage, and that so too are their education, training and professional development. Whilst the country invests heavily in IT and telecommunications infrastructure, it is in respect to education, training and professional development that we are in danger of not just slipping behind our competitors, but into irrelevance as well.

An alternative focus for the future is upon trying to maximise job creation, to ensure as much as possible all those seeking employment can find it. In this context, preparing people for entry into the conceptual/creative and conceptual/technical group of occupations, will not in itself be sufficient. Currently they only employ about one in five Australians in the workforce, and realistically, they are never likely to provide jobs for everybody. What this study shows is that occupations that are more insulated from the globally competitive labour markets are more capable of creating additional employment opportunities. Most of these are of an in-person nature. Employers place great store on personal characteristics, how well employees present to customers, clients, suppliers, etc, not just on specific job-related competencies The implications of these trends for the education and training sector is that it needs to be able to build up the interpersonal communication skills of those entering the

labour force and those wishing to remain in it. Given also that most of the new insulated jobs that are being created are on a part-time and contingent basis, education and training institutions need to give serious consideration to preparing young people for different interconnections between work and leisure.

What appears from this study to be the least desirable alternative is for the education and training sector to continue to prepare young people for occupations which are increasingly vulnerable to the forces of global labour market competition. The study shows that employment in these areas is either stagnating or in long-term decline, and whilst there will continue to be a need for these occupations and to meet the replacement demand as workers depart from them, neither Australia's globally competitive position nor its capacity to create new jobs is served well by these occupations. Given that many of these occupations have traditionally been a major focus of the VET sector, the trend for the sector to broaden its focus and re-direct its energies should be accelerated.

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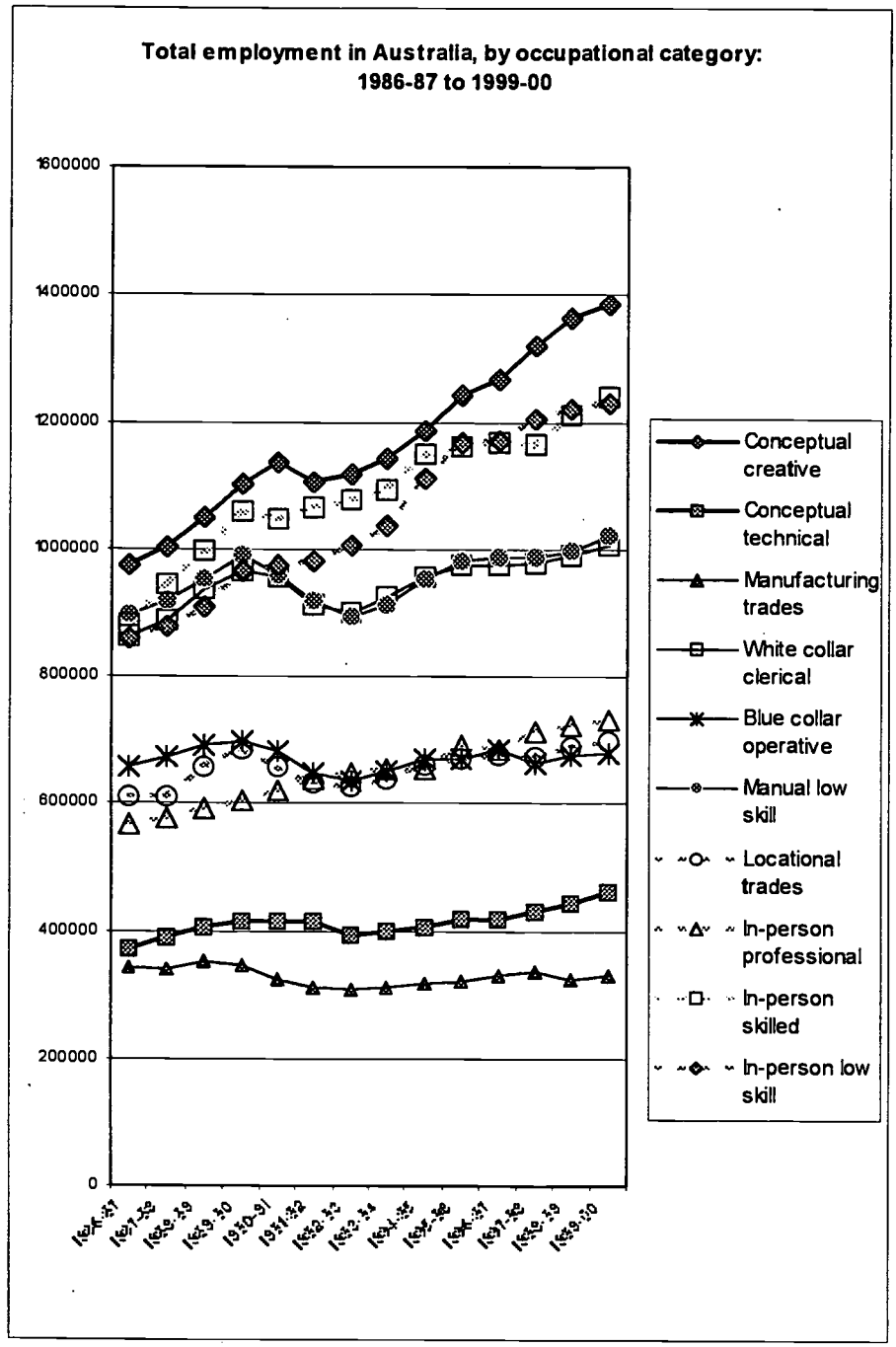
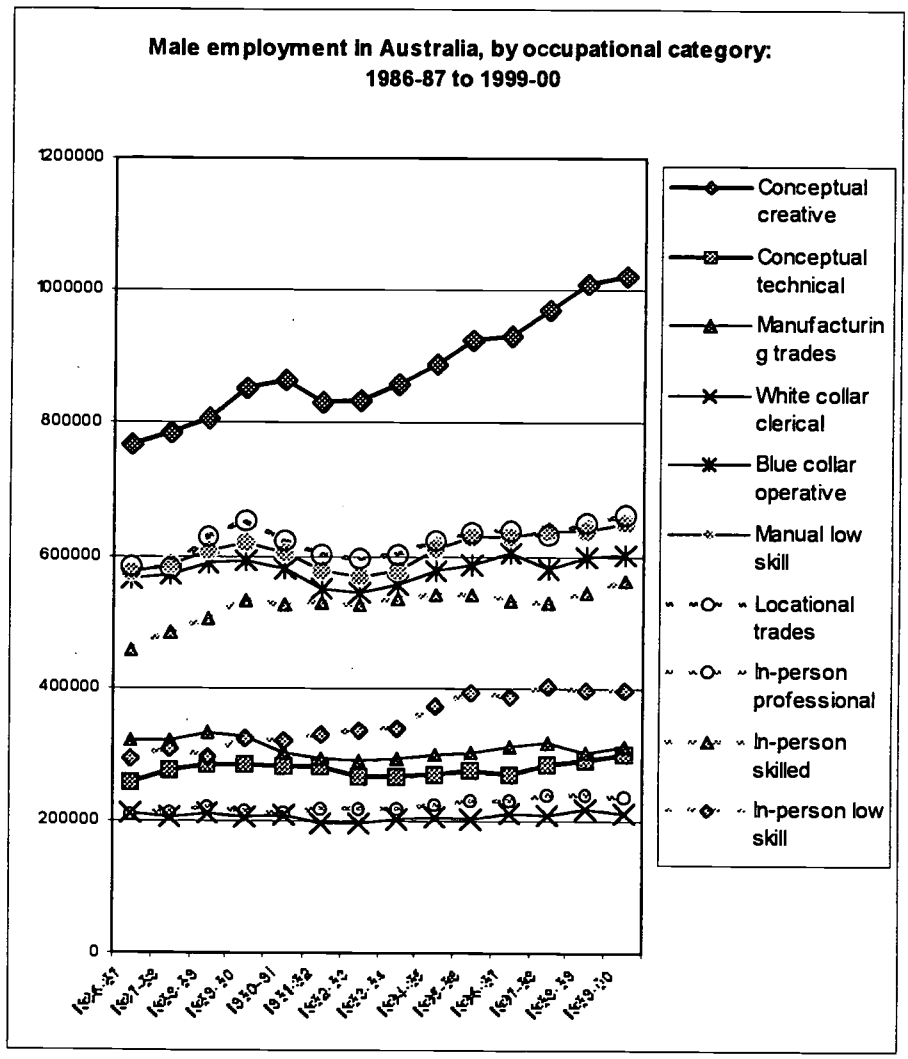
# Appendix 1
# Trends in employment by occupational group: 1986-87 to 1999-00

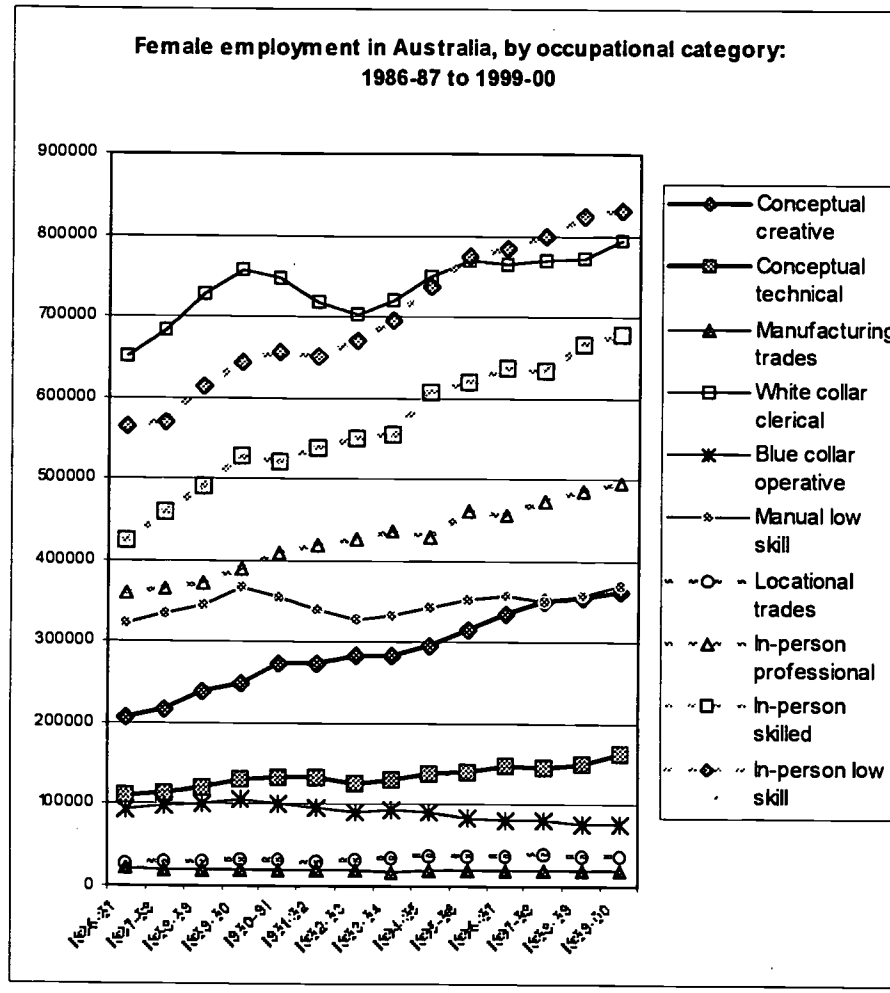
## Figure A1.1



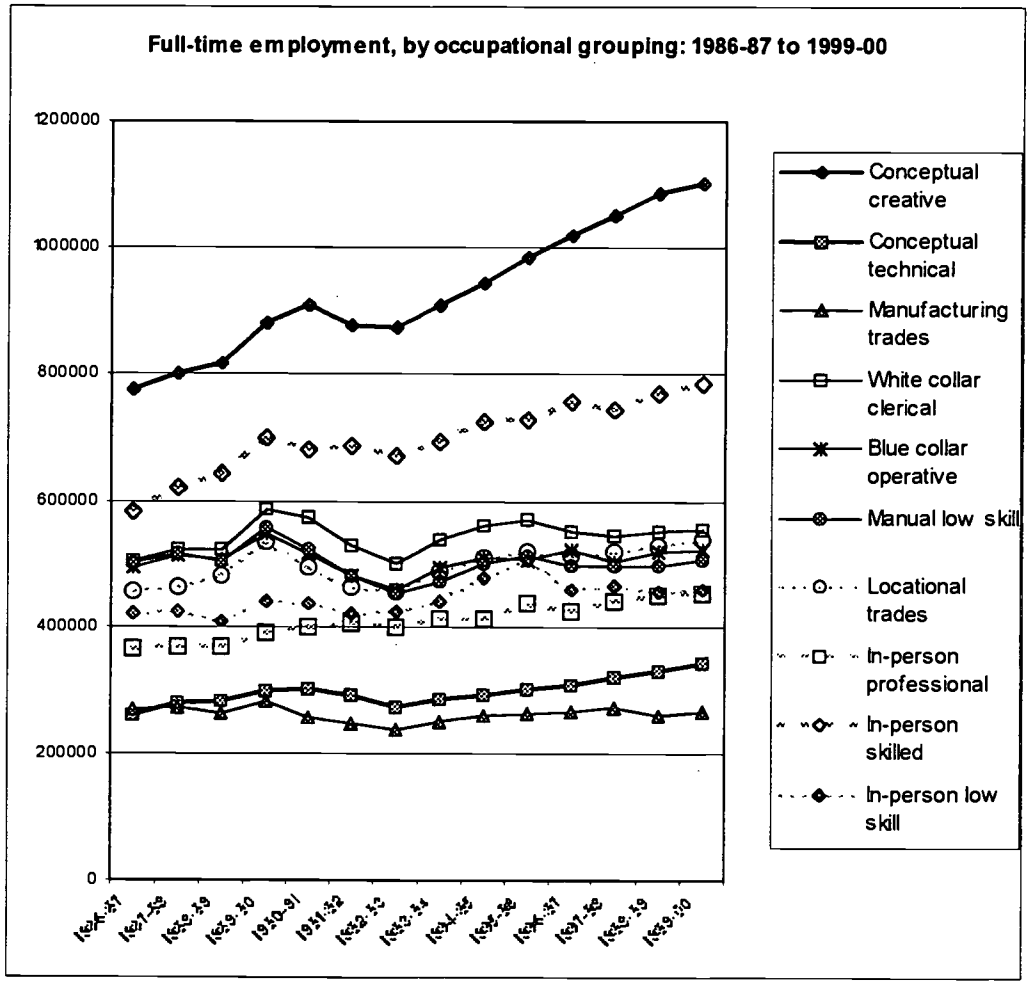
## Figure A1.2



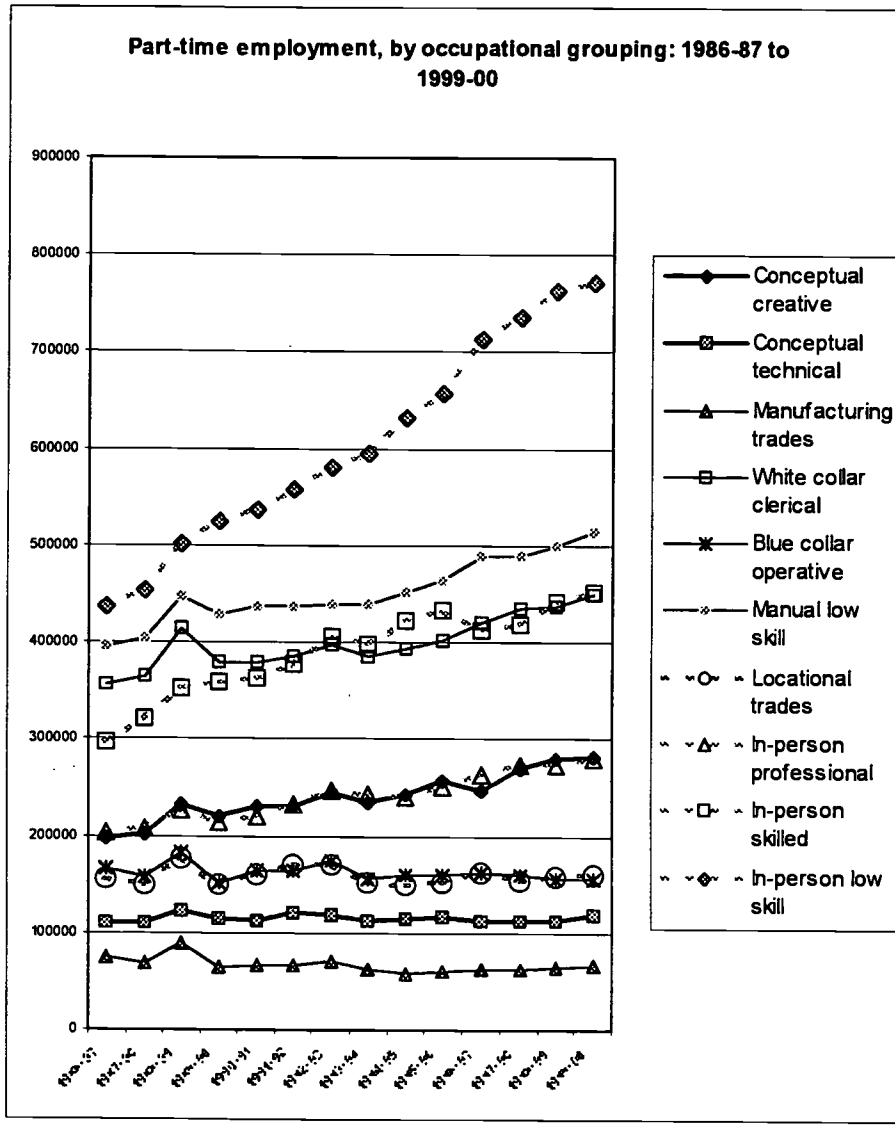
## Figure A1.3


Female employment in Australia, by occupational category:
1986-87 to 1999-00
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

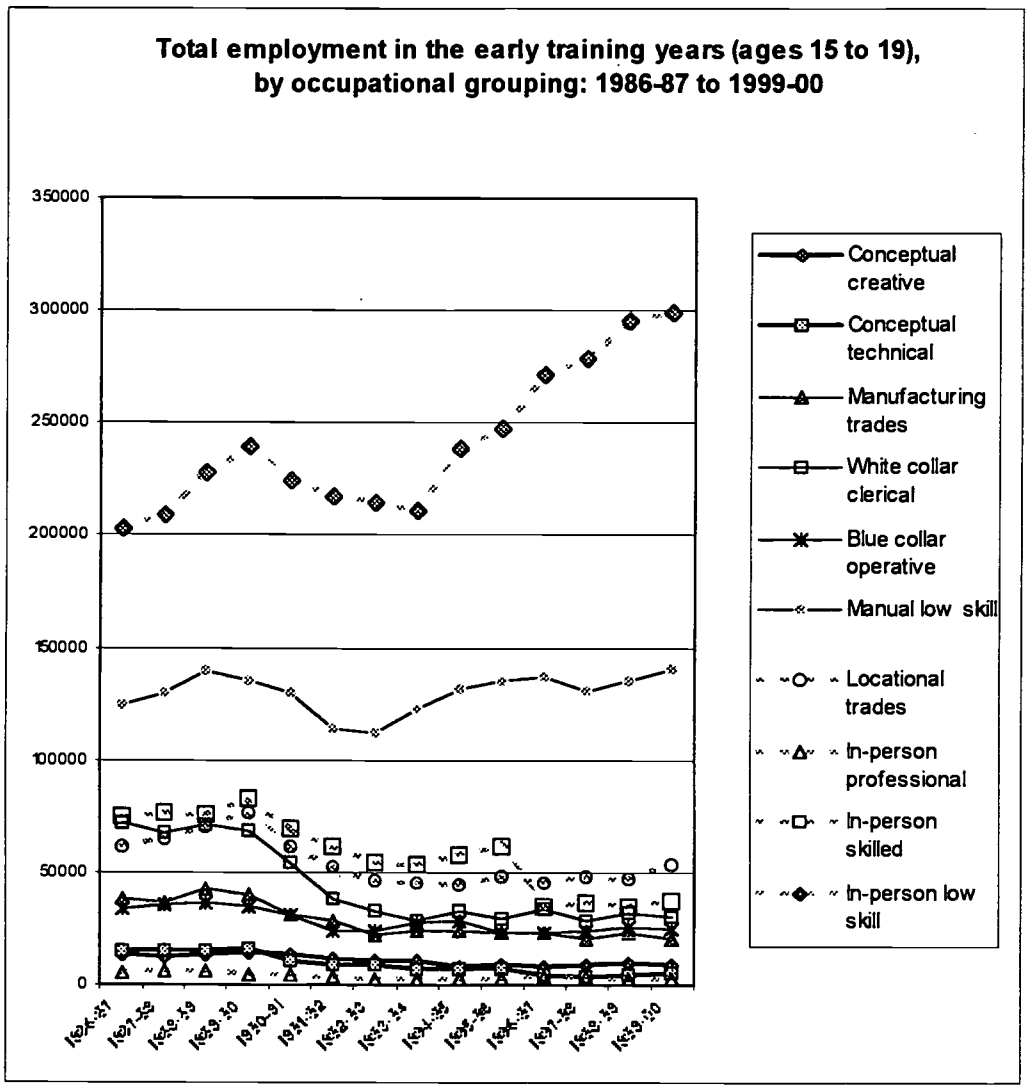
## Figure A1.4


Full-time employment, by occupational grouping: 1986-87 to 1999-00
1200000
1000000
800000
600000
400000
200000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

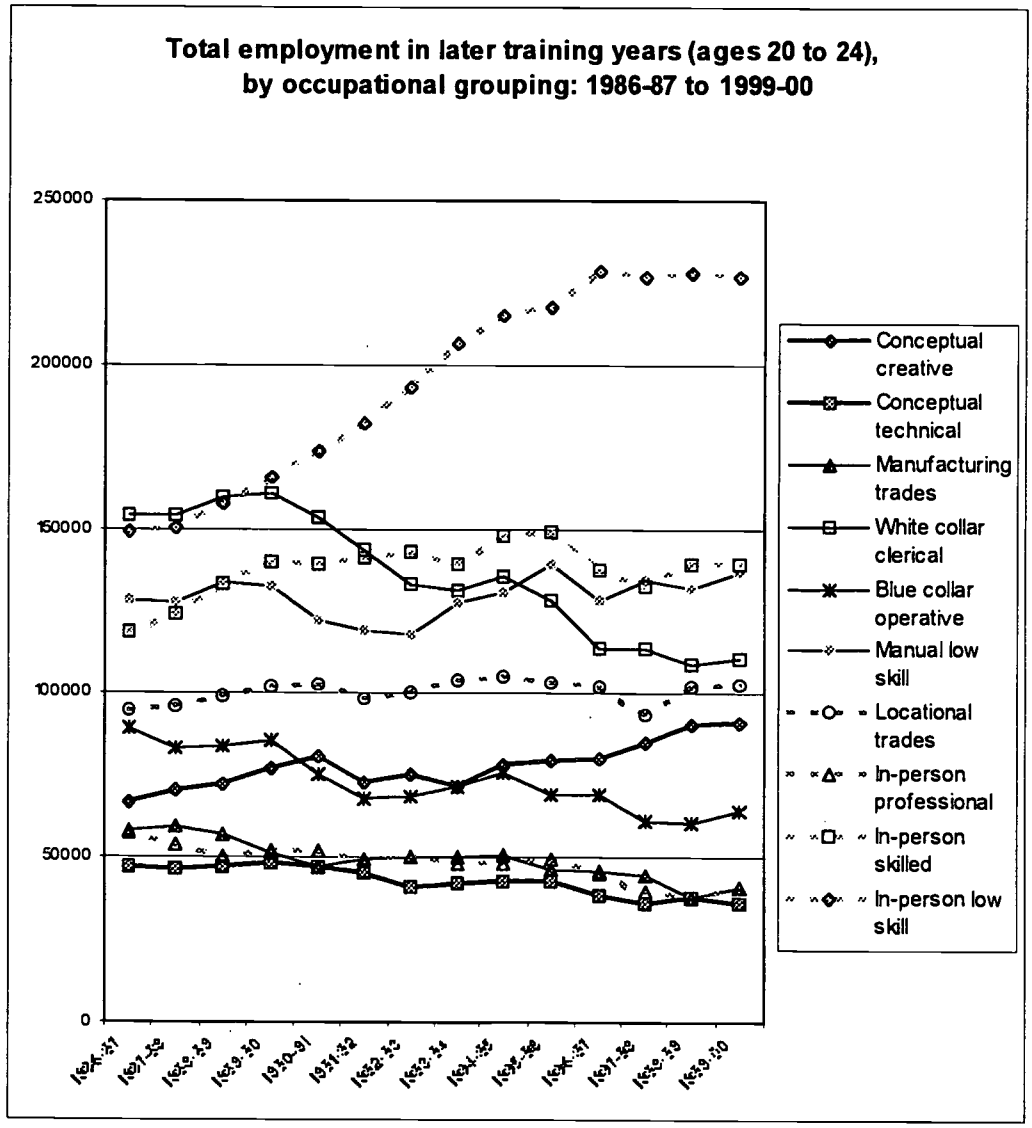
## Figure A1.5


Part-time employment, by occupational grouping: 1986-87 to 1999-00
900000
800000
700000
600000
500000
400000
300000
200000
100000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

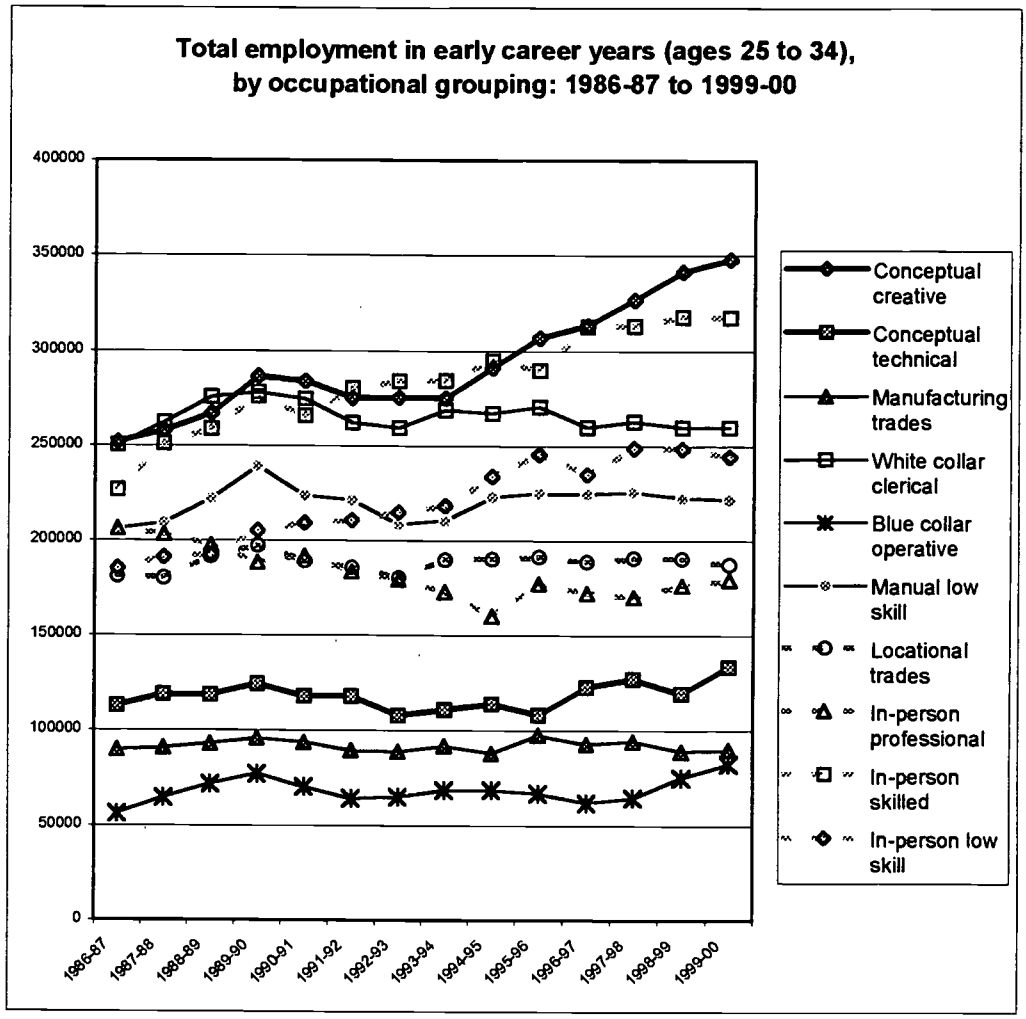
## Figure A1.6



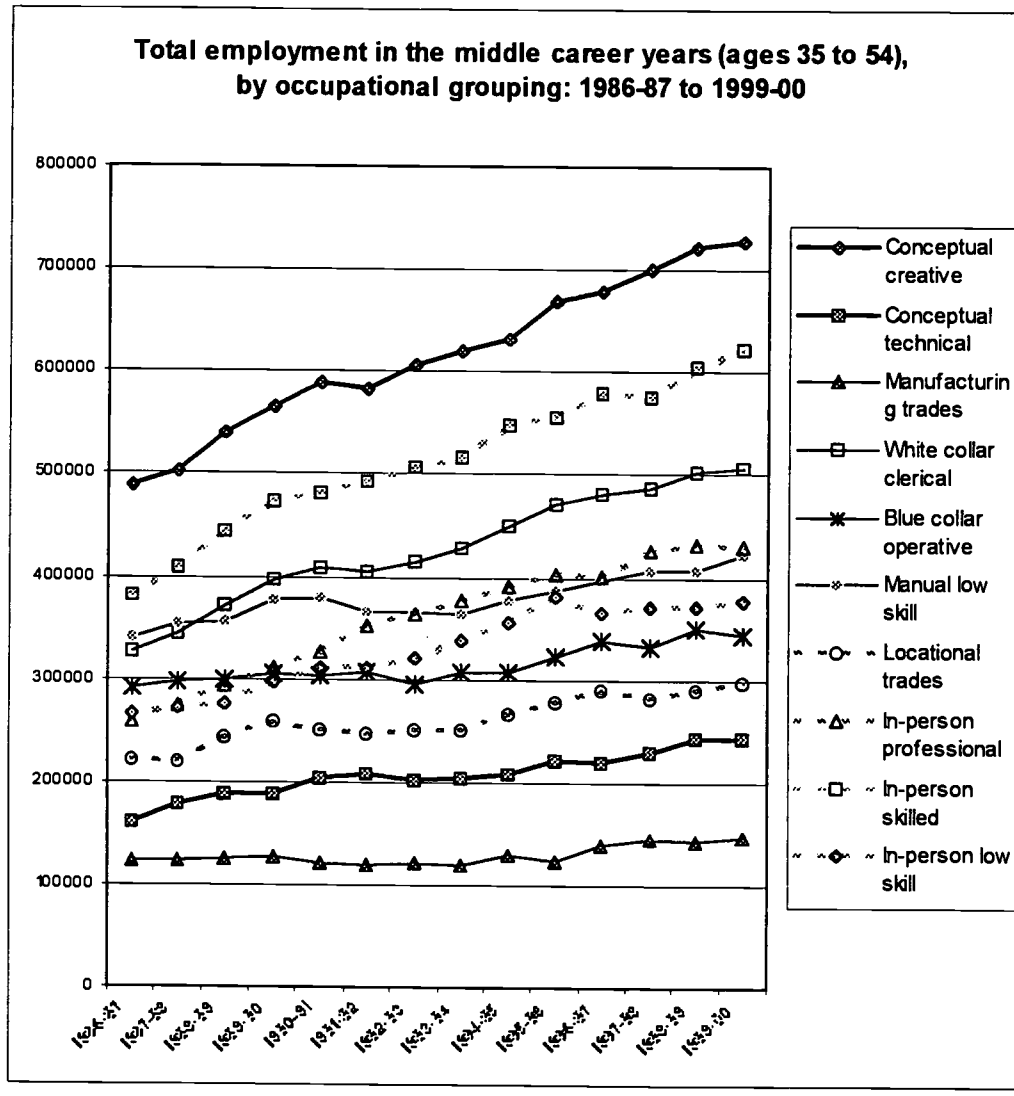
## Figure A1.7


Total employment in later training years (ages 20 to 24), by occupational grouping: 1986-87 to 1999-00
250000
200000
150000
100000
50000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

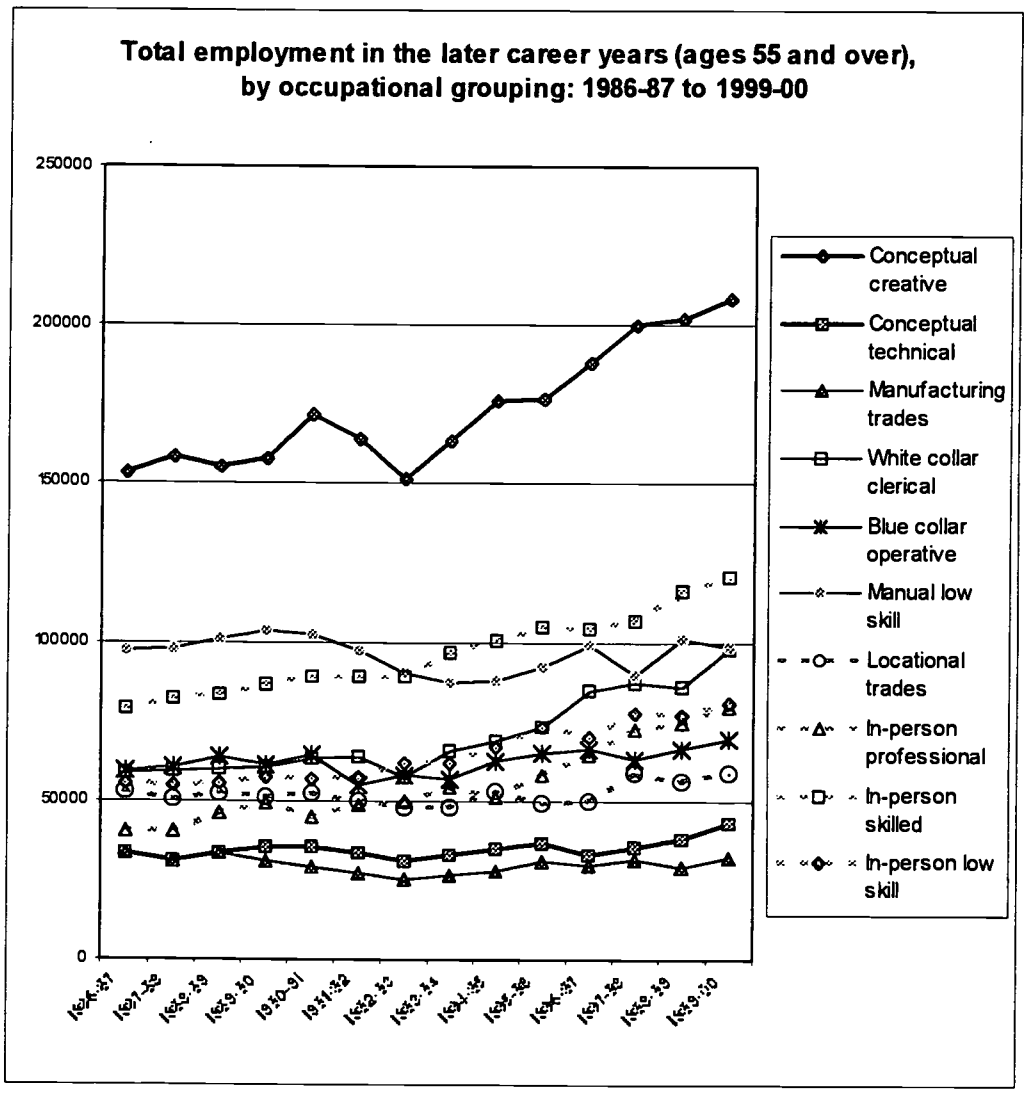
## Figure A1.8


Total employment in early career years (ages 25 to 34), by occupational grouping: 1986-87 to 1999-00
400000
350000
300000
250000
200000
150000
100000
50000
0
1986-87
1987-88
1988-89
1989-90
1990-91
1991-92
1992-93
1993-94
1994-95
1995-96
1996-97
1997-98
1998-99
1999-00
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

## Figure A1.9


Total employment in the middle career years (ages 35 to 54), by occupational grouping: 1986-87 to 1999-00
800000
700000
600000
500000
400000
300000
200000
100000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

## Figure A1.10


Total employment in the later career years (ages 55 and over), by occupational grouping: 1986-87 to 1999-00
250000
200000
150000
100000
50000
0
Conceptual creative
Conceptual technical
Manufacturing trades
White collar clerical
Blue collar operative
Manual low skill
Locational trades
In-person professional
In-person skilled
In-person low skill

# CLASSIFICATION OF THE 340 ASCO (2) OCCUPATIONS

| POSITIVE/OPPORTUNISTIC OCCUPATIONS | |
|---|---|
| 1 CONCEPTUAL/CREATIVE | |
| | **Agriculture** |
| 1311 | Mixed Crop and Livestock Farmers |
| 1312 | Livestock Farmers |
| 1313 | Crop Farmers |
| 1314 | Aquaculture Farmers |
| | **Manufacturing** |
| 1193 | Manufacturers |
| | **Imports and Exports** |
| 1192 | Importers, Exporters and Wholesalers |
| | **Management** |
| 1112 | General Managers |
| 1213 | Human Resource Managers |
| 1222 | Production Managers (Manufacturing and Mining) |
| 1223 | Supply and Distribution Managers |
| 1291 | Policy and Planning Managers |
| 1299 | Specialist Managers n.e.c. |
| | **Management Consulting** |
| 2294 | Management Consultants |
| | **Accountancy** |
| 1212 | Company Secretaries |
| 2211 | Accountants |
| 2212 | Auditors |
| 2213 | Corporate Treasurers |
| | **Finance** |
| 1211 | Finance Managers |
| 3212 | Financial Dealers and Brokers |
| 3213 | Financial Investment Advisors |
| | **Sales and Marketing** |
| 1231 | Sales and Marketing Managers |
| 2221 | Marketing and Advertising Specialists |
| | **Information Technology** |
| 1224 | Information Technology Managers |
| 2231 | Software Designers and Other Computing Professionals |
| 2299 | Other Business and Information Professionals n.e.c. |

| | |
|---|---|
| | **Engineering** |
| 1221 | Engineering Managers |
| 2125 | Electrical and Electronic Engineers |
| 2126 | Mechanical and Production Engineers |
| 2127 | Mining, Petroleum and Materials Engineers |
| 2129 | Other Engineers n.e.c. |
| | **Civil Works, Construction and Urban Planning** |
| 1191 | Project Builders and Project Construction Managers |
| 2121 | Architects |
| 2124 | Civil Engineers |
| 2523 | Urban and Regional Planners |
| | **Physical Sciences** |
| 2111 | Chemists |
| 2112 | Geologists and Geophysicists |
| 2113 | Life Scientists |
| 2114 | Environmental and Agricultural Scientists |
| 2115 | Medical Scientists |
| 2119 | Physicists and other Natural Scientists |
| 2293 | Mathematicians and Statisticians |
| | **Social Sciences** |
| 2522 | Economists |
| 2529 | Historians and Other Social Scientists n.e.c. |
| | **Education** |
| 1293 | School Principals, Faculty Heads and Other Education Managers |
| 2421 | University Lecturers and Tutors |
| | **Arts, Media and Entertainment** |
| 1296 | Media Producers and Artistic Directors |
| 2531 | Visual Arts and Crafts Professionals |
| 2532 | Photographers |
| 2533 | Designers and Illustrators |
| 2534 | Journalists and Related Professionals |
| 2535 | Authors and Book and Script Editors |
| 2536 | Film, Television, Radio and Stage Directors |
| 2537 | Musicians and Related Professionals |
| 2538 | Actors, Dancers and Related Professionals |
| 2539 | Radio and Television Presenters |
| 3322 | Chefs |
| | **Other** |
| 1111 | Legislators and Government Appointed Officials |

| 2 CONCEPTUAL/TECHNICAL | |
|---|---|
| 1294 | Police, Fire and Defence Force Commissioned Officers |
| 2122 | Quantity Surveyors |
| 2123 | Cartographers and Surveyors |
| 2128 | Engineering Technologists |
| 2222 | Technical Sales Representatives |
| 2291 | Personnel and Industrial Relations Officers |
| 2292 | Librarians |
| 2295 | Valuers and Land Economists |
| 2322 | Nurse Educators and Researchers |
| 2391 | Radiographers, Radiation Therapists etc. |
| 2399 | Audiologists, Orthoptists, Orthortists and other Health Professionals n.e.c. |
| 2493 | Education Officers |
| 2541 | Air Transport Professionals |
| 2542 | Sea Transport Professionals |
| 2543 | Environmental and Occupational Health and Safety Officers |
| 2549 | Other Professionals n.e.c. |
| 3111 | Medical Technical Officers |
| 3112 | Science Technical Officers |
| 3121 | Building and Architectural Engineering Associates |
| 3122 | Civil Engineering Associates and Technicians |
| 3123 | Electrical Engineering Associates and Technicians |
| 3124 | Electronic Engineering Associates and Technicians |
| 3125 | Mechanical Engineering Associates and Technicians |
| 3129 | Other Engineering Associates and Technicians n.e.c. |
| 3292 | Project or Program Administrators |
| 3294 | Computing Support Technicians |
| 3393 | Transport Company Managers |
| 3492 | Dental Therapists, Hygienists and Technicians |
| 3991 | Primary Products Inspectors |
| 3992 | Safety Inspectors |
| 3997 | Library Technicians |
| 3999 | Other Associate Professionals n.e.c. |
| 4613 | Wool, Hide and Skin Classers |
| 4992 | Performing Arts Support Workers |
| 5912 | Credit and Loans Officers |
| 5994 | Insurance Risk Surveyors, Investigators and Loss Adjustors |
| 6194 | Other Inspectors, Examiners and Assessors n.e.c. |

| VULNERABLE OCCUPATIONS | |
|---|---|
| 3 MANUFACTURING TRADES | |
| 4111 | General Mechanical Engineering Tradespersons and Supervisors |
| 4112 | Metals, Textiles, Clothing and Footwear Tradespersons and Supervisors |
| 4113 | Toolmakers and Supervisors |
| 4114 | Aircraft Maintenance Engineers and Supervisors |
| 4115 | Precision Metal Tradespersons and Supervisors |
| 4121 | General Fabrication Engineering Tradespersons and Supervisors |
| 4122 | Structural Steel and Welding Tradespersons and Supervisors |
| 4123 | Blacksmiths, Forging Tradespersons and Supervisors |
| 4124 | Sheetmetal Tradespersons and Supervisors |
| 4125 | Metal Casting Tradespersons and Supervisors |
| 4126 | Metal Finishing Tradespersons and Supervisors |
| 4214 | Vehicle Painters and Supervisors |
| 4215 | Vehicle Body Makers and Supervisors |
| 4216 | Vehicle Trimmers and Supervisors |
| 4314 | Electronic Instrument Tradespersons and Supervisors |
| 4511 | Meat Tradespersons and Supervisors |
| 4519 | Millers, Butter and Cheese Makers and Confectioners |
| 4911 | Graphic Pre-Press Tradespersons |
| 4922 | Cabinet Makers and Supervisors |
| 4941 | General Clothing Tradespersons |
| 4942 | Upholsterers and Bedding Tradespersons |
| 4943 | Shoemakers |
| 4944 | Leather and Canvas Goods Makers and Sail Makers |
| 4981 | Shipwrights, Boatbuilders and Repairers |
| 4982 | Flat Glass Tradespersons and Glass Blowers |
| 4983 | Jewellers, Gem Cutters and Polishers |
| 4999 | Other Tradespersons and Related Workers n.e.c. |
| 4 WHITE-COLLAR CLERICAL | |
| 3291 | Office Managers |
| 5111 | Secretaries and Personal Assistants |
| 5911 | Bookkeepers |
| 5991 | Clerks of Court, Law Clerks and Trust Officers |
| 5992 | Court or Hansard Reporters |
| 5995 | Desktop Publishing Operators |
| 6111 | General Clerks |
| 6121 | Typists, Word Processing and Data Entry Operators |
| 6141 | Accounts, Credit and Cost Clerks and Supervisors |
| 6142 | Payroll Clerks |

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|---|---|
| 6144 | Insurance Clerks and Supervisors |
| 6145 | Money Market and Statistical Clerks and Supervisors |
| 6151 | Production Recording Clerks |
| 6152 | Transport and Despatching Clerks and Supervisors |
| 6153 | Stock and Purchasing Clerks and Supervisors |
| 6193 | Personnel Records and Employment Office Clerks |
| 6199 | Other Intermediate Clerical Workers n.e.c. |
| 8111 | Registry and Filing Clerks |
| 8112 | Mail Clerks and Postal Sorting Officers |
| 8116 | Office Trainees |
| 5 | BLUE-COLLAR OPERATIVE |
| 4611 | Farm Overseers |
| 4612 | Shearers |
| 4614 | Horse and Other Animal Trainers |
| 4912 | Printing Machinists |
| 4913 | Binders and Finishers |
| 4914 | Screen Printers |
| 4921 | Wood Machinists and Turners |
| 4929 | Other Wood Tradespersons n.e.c. |
| 4985 | Fire Fighters |
| 4986 | Drillers and Supervisors |
| 4987 | Chemical, Petroleum and Gas Plant Operators and Supervisors |
| 4988 | Power Generation Plant Operators and Supervisors |
| 4991 | Defence Force Members n.e.c. |
| 7111 | Construction Plant Operators |
| 7112 | Fork Lift Drivers |
| 7119 | Mobile Plant Operators |
| 7121 | Engine or Boiler Operators |
| 7122 | Crane, Hoist and Lift Operators |
| 7123 | Engineering Production Systems Workers and Supervisors |
| 7124 | Pulp and Paper Mill Operators |
| 7129 | Other Intermediate Stationary Plant Operators and Supervisors |
| 7211 | Sewing Machinists and Supervisors |
| 7212 | Textile and Footwear Production Machine Operators and Supervisors |
| 7291 | Plastics Production Machine Operators and Supervisors |
| 7292 | Rubber Production Machine Operators and Supervisors |
| 7293 | Chemical Production Machine Operators and Supervisors |
| 7294 | Wood Processing Machine Operators and Supervisors |
| 7295 | Paper Products Machine Operators and Supervisors |
| 7296 | Glass Production Machine Operators and Supervisors |
| 7297 | Clay, Stone and Concrete Processing Machine Operators and Supervisors |
| 7298 | Photographic Developers and Printers |

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|---|---|
| 7299 | Other Intermediate Machine Operators and Supervisors n.e.c. |
| 7311 | Heavy Truck Drivers and Furniture Removalists |
| 7314 | Delivery Drivers |
| 7315 | Train Drivers and Assistants |
| 7911 | Miners |
| 7912 | Blasting Workers |
| 7913 | Scaffolders, Steel Fixers, Structural Steel Erectors and Riggers |
| 7914 | Building Insulation and Home Improvements Installers |
| 7991 | Motor Vehicle Parts and Accessories Fitters |
| 7992 | Product Examiners, Graders and Testers |
| 9211 | Engineering Process Workers |
| 6 | MANUAL LOW-SKILL |
| 7993 | Store Persons and Supervisors |
| 7994 | Seafarers and Fishing Hands |
| 7995 | Forestry and Logging Workers and Supervisors |
| 7996 | Printing Table Hands and Printers' Assistants |
| 8119 | Other Elementary Clerks n.e.c. |
| 8314 | Caretakers |
| 8315 | Laundry Workers |
| 9111 | Cleaners |
| 9212 | Production Assemblers |
| 9213 | Food Process Workers |
| 9214 | Other Food Factory Hands n.e.c. |
| 9215 | Wood and Wood Products Factory Hands |
| 9219 | Other Process Workers n.e.c. |
| 9221 | Hand Packers |
| 9222 | Packagers and Container Fillers |
| 9911 | Mining Support Workers and Drillers' Assistants |
| 9912 | Earthmoving Labourers |
| 9913 | Paving and Surfacing Labourers |
| 9914 | Survey Hands |
| 9915 | Railway Labourers |
| 9916 | Construction and Plumbers' Assistants |
| 9917 | Concretors |
| 9918 | Electrical and Telecommunications Trades Assistants |
| 9919 | Laggers, Crane Chasers and Fence Erectors |
| 9921 | Farm Hands |
| 9922 | Horticultural Nursery Assistants and Garden Labourers |
| 9929 | Other Agricultural and Horticultural Labourers n.e.c. |
| 9931 | Kitchen Hands |
| 9933 | Other Food Trades Assistants n.e.c. |
| 9991 | Garbage Collectors |

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|---|---|
| 9992 | Other Transport Workers n.e.c. |
| 9993 | Handypersons |
| 9999 | Other Labourers and Related Workers n.e.c. |
| INSULATED OCCUPATIONS | |
| 7 LOCATIONAL TRADES | |
| | **Building and construction** |
| 4311 | Electricians and Supervisors |
| 4312 | Refrigeration and Airconditioning Mechanics and Supervisors |
| 4411 | Carpentry and Joinery Tradespersons and Supervisors |
| 4412 | Fibrous Plasterers and Supervisors |
| 4413 | Roof Slaters and Tilers and Supervisors |
| 4414 | Brick Layers and Supervisors |
| 4415 | Solid Plasterers and Supervisors |
| 4416 | Wall and Floor Tilers and Stonemasons and Supervisors |
| 4421 | Painters and Decorators and Supervisors |
| 4422 | Signwriters and Supervisors |
| 4423 | Floor Finishers and Supervisors |
| 4431 | Plumbers and Supervisors |
| | **Automotive repair** |
| 4211 | Motor Mechanics and Supervisors |
| 4212 | Automotive Electricians and Supervisors |
| 4213 | Panel Beaters and Supervisors |
| | **Electronic servicing** |
| 4315 | Electronic and Office Equipment Tradespersons and Supervisors |
| | **Communications** |
| 4316 | Communications Tradespersons and Supervisors |
| | **Electricity Supply** |
| 4313 | Electrical Distribution Tradespersons and Supervisors |
| | **Horticulture** |
| 4622 | Greenkeepers |
| 4623 | Gardeners and Tree Surgeons |
| | **Bakers and cooks** |
| 4512 | Bakers and Pastrycooks and Supervisors |
| 4513 | Cooks |
| | **Other** |
| 3994 | Senior Non Commissioned Defence Force Officers |
| 3995 | Senior Fire Fighters |
| 8 IN-PERSON PROFESSIONALS | |
| 1292 | Medical Administrators and Directors of Nursing |
| 2311 | General Medical Practitioners |
| 2312 | Specialist Medical Practitioners |

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|---|---|
| 2321 | Nurse Managers |
| 2323 | Registered Nurses |
| 2324 | Registered Midwives |
| 2325 | Registered Mental Health Nurses |
| 2326 | Registered Developmental Disability Nurses |
| 2381 | Dentists and Dental Specialists |
| 2382 | Pharmacists |
| 2383 | Occupational Therapists |
| 2384 | Optometrists |
| 2385 | Phyisotherapists |
| 2386 | Speech Pathologists |
| 2387 | Chiropractors and Osteopaths |
| 2388 | Podiatrists |
| 2392 | Veterinarians |
| 2393 | Dietitians |
| 2394 | Natural Therapists |
| 2411 | Preschool Teachers |
| 2412 | Primary School Teachers |
| 2413 | Secondary School Teachers |
| 2414 | Special Education Teachers |
| 2422 | Vocational Education Teachers |
| 2491 | Private Art, Music, Dance and Drama Teachers |
| 2492 | English as a Second Language Teachers |
| 2511 | Social Workers |
| 2512 | Welfare and Community Workers |
| 2513 | Counsellors |
| 2514 | Psychologists |
| 2515 | Ministers of Religion |
| 2521 | Lawyers |
| 9 | IN-PERSON SKILLED |
| 1295 | Child Care Co-ordinators |
| 3211 | Branch Accountants and Branch Financial Institution Managers |
| 3293 | Real Estate Agency Managers and Salespersons |
| 3311 | Shop Managers |
| 3321 | Restaurant and Catering Managers |
| 3323 | Hotel or Motel Managers |
| 3324 | Club Managers |
| 3325 | Caravan Park and Camping Ground Managers |
| 3329 | Other Hospitality and Accommodation Managers |
| 3391 | Sports and Recreation Managers |
| 3392 | Customer Service Managers |
| 3399 | Other Sales and Service Managers n.e.c.. |

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|---|---|
| 3411 | Enrolled Nurses |
| 3421 | Community Service Workers |
| 3491 | Ambulance Officers |
| 3493 | Aboriginal and Torres Strait Islander Health Workers |
| 3494 | Massage Therapists |
| 3911 | Police Officers |
| 3993 | Sports Persons, Coaches and Officials |
| 3996 | Retail Buyers |
| 4621 | Nurserypersons |
| 4931 | Hairdressers |
| 4984 | Florists |
| 5993 | Insurance Agents |
| 5996 | Flight Service Attendants and Directors and Other Travel Attendants |
| 5999 | Other Service Personnel n.e.c. |
| 6143 | Bank Workers and Supervisors |
| 6192 | Library Assistants |
| 6211 | Sales Representatives |
| 6213 | Retail and Checkout Supervisors |
| 6311 | Teachers' Aides |
| 6312 | Family Day Care and Child Care Workers and Nannies |
| 6313 | Community Welfare Aides |
| 6314 | Personal Care and Nursing Assistants |
| 6321 | Hotel Service Supervisors |
| 6391 | Dental Assistants |
| 6392 | Veterinary Nurses |
| 6393 | Prison Officers |
| 6394 | Gaming Workers and Supervisors |
| 6395 | Beauty Therapists, Natural Remedy and Weight Loss Consultants |
| 6396 | Fitness Instructors and Outdoor Adventure Leaders |
| 6397 | Travel Agents, Tourist Information Officers and Tour Guides |
| 6399 | Other Intermediate Service Workers n.e.c. |
| 8311 | Guards and Security Officers |
| 10 IN-PERSON LOW-SKILL | |
| 6131 | Receptionists |
| 6191 | Enquiry and Admissions Clerks |
| 6212 | Motor Vehicle, Caravan and Vehicle Parts Salespersons |
| 6322 | Bar Attendants and Supervisors |
| 6323 | Waiters and Supervisors |
| 6324 | Hospitality Trainees |
| 7312 | Bus and Tram Drivers |
| 7313 | Automobile Drivers |
| 8113 | Switchboard Operators |

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|---|---|
| 8114 | Couriers and Postal Delivery Officers |
| 8115 | Betting Clerks |
| 8211 | Sales Assistants |
| 8291 | Cashiers and Checkout Operators |
| 8292 | Ticket Sellers and Transport Conductors |
| 8293 | Street Vendors and Door to Door Salespersons |
| 8294 | Tele Marketers |
| 8295 | Sales Demonstrators and Models |
| 8296 | Service Station Attendant |
| 8297 | Sales and Service Trainees |
| 8299 | Other Elementary Sales Workers n.e.c. |
| 8312 | Ticket Collectors, Ushers, Luggage Porters and Doorpersons |
| 8313 | Domestic Housekeepers |
| 8319 | Other Elementary Service Workers n.e.c. |
| 9932 | Fast Food Cook |

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