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Cost Benefit Analysis of the National Career Development Strategy

Department of Education,
Employment and Workplace
Relations

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Executive Summary

As part of the implementation of the National Partnership Agreement on Youth Attainment and Transitions, the Australian Government has allocated significant funding for the establishment of national career development initiatives. The initiatives, known as the National Career Development Strategy (NCDS), will be administered by the Australian Government and will be underwritten by a national approach to implementation.

For the purpose of this research project, Career development is defined as the development by an individual of skills that will support the lifelong process of managing learning and work activities in order to live a productive and fulfilling life.

To assist with the development of a NCDS for young people aged 5-24, the Department of Education, Employment and Workplace Relations (the Department) has engaged consultants to undertake four discrete but interrelated pieces of work. This report presents the outcomes of the fourth and final element of the NCDS Research Project, following on from the supply-side evidence review (Element 1), the demand-side assessment (Element 2) and the draft strategy development (Element 3).

The research question which Element 4 seeks to address is as follows:

Given recommendations developed in Element 3 for improvement to career development nationally and options for a national strategy for career development for young people, develop a cost benefit analysis that shows the advantages and disadvantages to the Australian economy of a particular approach to career development for all young Australians.

The proposed National Career Development Strategy

As outlined in the Element 3 report, *Rationale and options for a National Career Development Strategy*, the draft vision for the NCDS is 'achieving career development excellence for all people through partnerships between individuals, industry, career development professionals and government'.

Underlying this overarching vision are the draft goals for the NCDS:

- Every individual has the opportunity to build the skills required to manage their career throughout their lives.
- There is equitable access to high quality career information, career development services that meet recognised quality standards; and support for those making career decisions and their supporters.
- Career guidance is delivered by highly qualified career professionals with expert skills.
- Future policy and program reform is enabled by a strong evidence base.
- All people understand where to access career development services, and the value of the services.

These goals can be achieved through a number of career development promoting mechanisms, around which the options for the NCDS have been formulated.

Specifically, the mechanisms by which these goals and the vision will be achieved are:

1. Information technology;
2. Face-to-face support;
3. Curriculum;
4. Quality standards;

5. Evidence; and

6. Communication and marketing.

Various constructs of the NCDS, as suggested by the Element 3 work, represent varying forms of government intervention and harmonisation of career development service provision. The optimal level and nature of the NCDS should be considered with reference to both its expected benefit to cost ratio and the broader policy context (i.e. the role of the NCDS among Government's other policy priorities).

Approach to the analysis

A cost benefit analysis typically compares the costs and benefits of one or more 'policy change' scenarios against a 'business as usual' scenario to reveal the incremental impact of each option under consideration. It thereby provides a basis for ranking options based on their benefit-to-cost ratio and providing information to policymakers in relation to their socio-economic worth.

However in this instance, it has not been feasible to conduct a fully-fledged cost benefit analysis. Broadly, the reasons for this are twofold:

- First, the nature of the benefits of career development services and the quality and granularity of the available data do not support a detailed quantitative analysis.
- Second, the options developed in Element 3 are broad-based in nature and are not amendable to a detailed, activity-based costing.

However, the inability to conduct a formal cost-benefit analysis should not be construed as an indication that career development is without its benefits or that the NCDS is unjustifiable on economic welfare grounds. Rather, it highlights the incomplete nature of the current evidence base and, as the final section of this Executive Summary outlines, underscores the need for further research in this important field.

In light of these limitations, the benefits of career development are discussed at a general level – that is, more broadly than any particular option. The benefits are discussed in light of the findings of a literature review which was conducted to determine the value of career development services and the positive outcomes for young people as a result of these services. The analysis also considers the cost of the proposed options, based on a broad benchmarking exercise. Where possible, the individual elements of a proposed option were costed.

Potential benefits of career development services

The literature review conducted in the Element 1 study found several positive outcomes that accrued to the individual as a result of career development services including an elevated level of educational engagement and attainment in learning and enhanced employment outcomes. The review of literature here further highlighted the value of career development services to the individual. Similarly, it pointed to broader economic benefits that flow from well-crafted career development services – namely increased workforce participation and productivity (by virtue of better job-matching) and a range of less tangible impacts such as increased social cohesion, inclusion and tolerance and strengthened social capital.

However, the magnitude of these benefits could not be reliably determined from the available literature. That said, the benefits are potentially large when compared against the costs. Indeed the present value of the benefit stream can conceivably be many multiples of the initial investment given: (1) the volume of people who can benefit from a single intervention – for instance publishing timely labour market information; (2) the period of time over which that benefit accrues, where that intervention is improving a young person's labour market outcomes; (3) the potential upside to improved labour market outcomes is greater in a capacity constrained labour market, similar to what Australia is currently experiencing. The lack of quantitative evidence among existing studies raised the possibility of using data from the Longitudinal Study of Australian Youth (LSAY) to assess the relationship between particular career development initiatives and outcomes for individuals. The LSAY

Cost Benefit Analysis of the National Career Development Strategy tracks young people as they move from school to post school destinations and contains information on career development activities undertaken along this path. A range of econometric analyses failed to reveal a statistically significant relationship between career development activities and students educational and/or workforce outcomes. Above all, this likely reflects inherent limitations in the underlying data.

Rationale for a NCDS

Given the significant level of intervention that currently exists in the market for career development services, the rationale for the NCDS rests not merely on the broader economic benefits (externalities) of career development services (i.e. the impacts on participation and productivity). Rather, it hinges on the sub-optimality of the existing interventions. That is, on the shortcomings of the current arrangements – especially with respect to the quantity, quality (consistency) and equity of service delivery, as identified by Urbis in Stage 2. There is, therefore, a *prima facie* case for increasing and enhancing career development service delivery through the NCDS.

However, the case for the NCDS requires more than simply an identified need. Rather, it must be demonstrable that the NCDS would generate a net improvement in outcomes and – ultimately – economic welfare. That is, it must be demonstrable that the benefits of the scheme outweigh its costs and that the scheme can be implemented in a fashion that these benefits are realised. However, as noted above, a definitive analysis of the net benefits of a NCDS is precluded by the current evidence base, leading to the conclusion that generating a more robust base of data should be a policy priority.

Key conclusions

The review of literature conducted as part of this study supports earlier findings that there are positive returns to the individual as a result of investment in career development. The precise magnitude of these returns cannot, however, be reliably quantified. The report similarly finds that while wider economic benefits in terms of productivity and participation in the workforce can be established in theory, empirically, they are difficult to quantify and demonstrate.

On the basis of these findings, it is recommended that, investing in strengthening of the evidence base to support the economic value of career development will be a valuable guiding principle in the implementation of an NCDS. The lack of understanding about the current provision of services, and the benefits these generate, presents a strong case for further empirically supported research in this area.

Costing the options provided in the Element 3 study suggest that significant cost differentials exist between levels of intervention. It is suggested that, given the current level of understanding of economic benefits, the Government works with key stakeholders to pursue a staged implementation of investment in the Strategy.

Deloitte Access Economics, November 2011

1 Introduction

Chapter 1 – Key Points

This chapter introduces the elements of the National Career Development Strategy Research Project, of which this report is the fourth, and final, element. The chapter discusses the limitations of this study – specifically, the difficulties faced throughout the research project in defining a baseline of current activity. The methodology employed to assess costs and benefits, in light of these limitations, is defined in broad terms and expanded upon in later chapters.

1.1 This report

The Australian Government has committed to working with state and territory governments to implement a National Partnership Agreement on Youth Attainment and Transitions to increase the educational engagement of young people and improve their transition to post school education, training and employment. The focus of this agenda is to influence two key drivers of economic growth: productivity and workforce participation.

The Agreement provides funding to states and territories through the Maximising Engagement, Attainment and Successful Transitions (MEAST) project to help develop and implement initiatives which will encourage multiple learning pathways, career development, and/or mentoring.

As part of the Agreement, the Australian Government has allocated significant funding for national career development initiatives that require a national approach to implementation and will be administered by the Australian Government.

To assist with the development of a National Career Development Strategy (NCDS) for young people aged 5-24, the Department of Education, Employment and Workplace Relations (the Department) has engaged consultants to undertake four discrete but interrelated pieces of work:

Element 1 – a literature review of national and international research in career development, including information on best practice career development. The analysis also included an evaluation of existing career development initiatives in all Australian jurisdictions

Element 2 – analysis of career development needs and wants of young people from the ages of five to 24, their parents, teachers and communities. The project was conducted using a survey, a mixture of focus groups and online forums

Element 3 – the development of options for a national strategy for career development, based on the outcomes of Elements 1 and 2

Element 4 (the basis of this report) – an assessment of the costs and benefits of the proposed NCDS.

Miles Morgan, Urbis and the Nous Group were commissioned by the Department to conduct Elements 1, 2 and 3 respectively. Deloitte Access Economics (DAE) has been engaged by the Department to conduct Element 4.

Deloitte Access Economics was engaged by the Department to undertake Element 4 of the research project – a cost benefit analysis of the career development options presented in Element 3.

The primary objective of a cost benefit analysis is to compare the respective socioeconomic benefits and costs of each policy option and on this basis to provide an informed judgement of the socioeconomic value of the policies. Conducting a thorough cost benefit analysis is dependent on the quality of the available data and the ability to define a clear base case (business as usual scenario).

1.2 The interaction between Elements 3 and 4

As outlined in the Element 3 report, *Rationale and options for a National Career Development Strategy*, the Draft vision for the NCDS is 'achieving career development excellence for all people through partnerships between individuals, industry, career development professionals and government'.

Sitting beneath the overarching vision are the Draft goals for the NCDS:

- Every individual has the opportunity to build the skills required to manage their career throughout their lives.
- There is equitable access to high quality career information, career development services that meet recognised quality standards and support for those making career decisions and their supporters.
- Career guidance is delivered by highly qualified career professionals with expert skills.
- Future policy and program reform is enabled by a strong evidence base.
- All people understand where to access career development services, and the value of the services.

The Strategy document will seek to provide an overarching governance and leadership framework to facilitate actions that will meet these goals. As a part of this, the Strategy document will outline career development initiatives across the following areas:

1. Information technology;
2. Face-to-face support;
3. Curriculum;
4. Quality standards;
5. Evidence; and
6. Communication and marketing.

Three levels of intervention/reform have been developed around each of these mechanisms in formulating the draft NCDS as part of the Element 3 study. These are:

Option 1 Consolidation and continuous improvement – improve the provision of career development information through the consolidation of current information into a single website with a stronger brand

Option 2 Comprehensive information and benchmark standards – as well as consolidating the currently disparate information, this option suggests redesigning and expanding on that information to better reflect individual information needs

Option 3 Full services, multi-channel service delivery and national standards – in addition to the suggested changes in Options 1 and 2, this option suggests that information should also be supported by the provision of additional career advice and guidance by qualified professionals.

1.3 Methodology

A cost benefit analysis typically compares the costs and benefits of one or more 'policy change' scenarios against a 'business as usual' scenario to reveal the incremental impact of each option under consideration. It thereby provides a basis for ranking options based on their benefit-to-cost ratio.

As discussed in the body of this report, however, research conducted across all elements of this research project was unable to identify clear or sufficient evidence on the return on investment in career development services. That is, it was not possible to reveal whether or not the socioeconomic costs of policy change would be outweighed by its socioeconomic benefits – neither at a high level nor for particular policy options.

An underlying challenge was that none of the four elements were able to identify the counterfactual (business as usual) scenario at any level, and as such the incremental cost or gain to career development initiatives could not be revealed. Compounding this, the options developed in Element 3 are broad-based in nature and are not amendable to a detailed, activity-based costing.

In light of these significant conceptual and analytical limitations, the benefits of career development are discussed at a more general level, that is, more broadly than any particular option. The costs of particular career development initiatives are estimated as cost ranges.

1.4 Report Structure

The report is structured as follows:

Chapter 2 provides context and describes the market failure which would be addressed by the NCDS. It outlines the scenarios under which government intervention is justifiable.

Chapter 3 outlines the broad benefits that are associated with the development of a national career development strategy.

Chapter 4 presents estimated costings of the options that were developed in the Element 3 report.

Chapter 5 presents key conclusions.

2 Context and background: establishing the case for a NCDS

Chapter 2 – Key Points

Together, the four Elements of this project have considered through literature reviews, surveys and focus groups, the case for establishing a NCDS. Elements 3 and 4 of the research project consider the optimal form of this NCDS, given the current under-provision and inequitable distribution of career development services.

This chapter outlines the suboptimal characteristics of the current provision of career development services in Australia, as described in the Element 2 study, and links this to the case for government intervention in this market.

The chapter notes that while the provision of services may be suboptimal; this is not, in itself, sufficient rationale for additional levels of government intervention.

2.1 The current provision of career development services

The provision of career development information, education and guidance in Australia is characterised by various national, state and territory development programs and information services, an industry of career advising professionals as well as other forms of support in education and in-home.

As found in the Element 1 study, Australian Government-funded career development initiatives range from providing benchmarks for quality service provision through the *Australian Blueprint for Career Development*, and the *Professional Standards for Australian Career Development Practitioners*, through to the provision of career information products and resources that support career development practitioners in a range of contexts. Information resources include: *myfuture*, *JobGuide* and *Yr 12 –What’s next*.

In 2009, the Australian Government allocated significant funding for the period 2009-2013 for national career development initiatives administered by the Australian Government.

At a state and territory level, career development services are predominantly funded by education and training departments. In most states and territories, those who have system-level responsibilities for career development service provision are charged primarily with offering support, professional development and resources to those who provide services.

2.2 Suboptimal provision of career development

The Urbis Element 2 work identified evidence of suboptimal provision of career development services in Australia with respect to the quantity, quality (consistency) and equity of service delivery. Urbis’ analysis was founded on the results of qualitative and quantitative research including group discussion, surveys, and interviews with over 5,500 young people, parents, teachers, employers, career practitioners and other stakeholders. The research focused on the career development needs, wants and issues of young people, their parents, teachers and communities at different stages of young people’s lives from age 5 to 24. It found a misalignment between what is currently provided – and the quantity of service provision – and students’ wants and needs.

Key findings of the Urbis study, which highlights gaps in the current career development service provision, are outlined in Box 2.1.

Box 2.1 Key gaps identified in the Urbis Element 2 study

- Young people see themselves as largely responsible for their own career development. Therefore they need access to information through a one stop shop that can assist them, and others

who support them.

- Quality/accessibility in schools is variable.
- Young people want schools to provide more work experience type career development.
- More flexibility is needed to cater for the different developmental stages and rates of development of young people and the different types of service delivery preferred by different young people.
- There is a significant gap for those not in education.

Awareness/understanding of career development is lacking.

- Young people want more advice from people in their industry of interest rather than career practitioners.
- We need adequately qualified career practitioners.
- Career development needs to be more joined up and holistic to help influencers and involve them more in the process.

Overall, the study established that there is market demand for more career education and information than is currently being provided.

2.3 The case for government intervention in light of suboptimal service provision

In the National Partnership Agreement on Youth Attainment and Transitions, the Commonwealth and the States and Territories commit to consolidating and streamlining youth, career and transition arrangements. The Commonwealth commits to working with States and Territories to design and implement these new arrangements in a way which allows flexibility of delivery in schooling and training sectors, removes duplication and overlap and complements and adds to current policies and programs – making it easier for young people to get the assistance they need, as they require it.¹

As outlined in Chapter 1, the Australian Government's overarching policy objective in providing funding for the development of the NCDS is to increase the educational engagement of young people and improve their transition towards post-school education, training and employment. As noted elsewhere in this report, the achievement of this policy objective would generate benefits both for students and, moreover, for the economy more broadly, via its impact on two key drivers of economic growth – being productivity and workforce participation – and social inclusion. Indeed, these broader economic benefits provide the primary motivation for government involvement in the sector.

¹ National Partnership Agreement on Youth Attainment and Transitions (2009), accessed online: http://www.coag.gov.au/coag_meeting_outcomes/2009-07-02/docs/NP_youth_attainment_transitions.pdf, last accessed 21.10.2011

Given the significant level of intervention that currently exists in the market for career development services, the rationale for the NCDS rests not merely on these broader economic benefits, (i.e. the participation and productivity impacts), but on the sub-optimality of the existing interventions. That is, on the shortcomings of the current arrangements – especially with respect to the quantity, quality (consistency) and equity of service delivery, as identified by Urbis in Stage 2. There is, therefore, a *prima facie* case for increasing and enhancing career development service delivery through the NCDS.

However, the case for the NCDS rests on more than simply an identified need. Rather, it must be demonstrable that the NCDS would generate a net improvement in outcomes and – ultimately – economic welfare. That is, it must be demonstrable that the benefits of the scheme outweigh its costs and that the scheme can be implemented in a fashion that these benefits are realised. However, for a number of reasons, a definitive analysis of the net benefits of a NCDS is precluded by the current evidence base.

To the extent that career development services improve labour matching (Chapter 3), the under-provision of such services may result in increased levels of misaligned employer-employee and student-course pairings. While a perfectly matched market is simply a theoretical concept, and difficult to both measure and achieve in practice, approximating compatible employee-employer and student-course relationships is important in achieving government's overarching goals of productivity and workforce participation.

The relationship between career development services and improved productivity and participation in the workforce, however, has been difficult to establish through literature reviews alone. The Miles Morgan, Element 1 study concluded that 'concrete and empirical research into knowledge of outcomes of career development services is still very much in its infancy'. The report did, however, find evidence of increased educational engagement and attainment as well as strengthened pathways for young people of disengaging from education, training or work. The DAE literature review similarly found a paucity of literature pointing towards the greater economic value of career development services (Appendix A). A discussion of the potential economic benefits of career development activities is presented in Chapter 3.

The rationale for government intervention, and more specifically, the optimal magnitude and nature of the suggested NCDS, is discussed in this paper with reference to the outcomes of a survey of potential benefits (Chapter 3) and costs of suggested interventions (Chapter 4).

3 Economic Benefits

Chapter 3 – Key Points

This chapter details the literature review and empirical studies undertaken to reveal the benefits of career development activities, both to the individual and to the wider economy. The chapter concludes that while benefits are established in theoretical models, empirically quantifying these benefits is difficult, both as evidenced in literature and in empirical work.

3.1 Expected benefits

Before seeking out information on the benefits of career development services, it is informative to have a working hypothesis of the types of benefits that are expected to be found (see Box 3.1).

Box 3.1 Benefits that may stem from an improved career development model

Benefits start with the individual

In a practical sense, career information, education and/or guidance may help contribute to a person's career development by supporting individuals to take responsibility for, and manage, their learning and career directions across their lifespan – recognising that career development is integral to the success of the individual making the right decisions about their career path.

Indeed, benefits start with the individual, and essentially relate to the probability of progressing along particular career development pathways with and without intervention. A more beneficial pathway will involve minimal: disengagement from education or work; churn between educational settings in preparation for work; turnover in work.

Benefits may be improved or realised as a result of intervention

Depending upon the likelihood of an individual progressing along a more beneficial pathway – under an 'intervention' scenario as compared to the *status quo* – and depending upon how much more beneficial that pathway is – in terms of participation, productivity and avoided costs – a benefit can be estimated. A benefit period will apply, accounting for the likely profile of these returns over time.

Benefits can accrue to the wider economy

However, the total return to improved career development is only partly captured by the individual, with a significant flow-on effect accruing more broadly. From an economy-wide perspective, there are strong links between improved participation, earnings and/or marginal product and improved economic outcomes. This can manifest in a variety of ways, but is most comprehensively captured through headline economic metrics such as Gross Domestic Product. Improvements against these measures ultimately translate into gains in economic welfare; the overarching aim of public policy.

Beyond productivity benefits, there are likely to be a number of less tangible gains that are not able to be quantified. Where at the private level these may accrue to the individual in the form of improved job satisfaction and wellbeing, and potentially improved health, life expectancy and quality of life, at the public level such intangible benefits may include:

- Increased social cohesion, inclusion and tolerance;
- Reduced crime rates;
- Strengthened social capital;
- Increased quality of civic life (active citizenship, civic and political participation); and
- Increased participation in community services.

As a base case, 'business as usual' scenario was not able to be defined in any element of the research project, the incremental benefits of each specified option could not be defined. Instead, the benefits of career development more broadly than any particular option are discussed qualitatively in this chapter.

3.2 Literature review

A literature review was first conducted to determine the value of career development services and the positive outcomes for young people as a result of these services. The review also sought to establish the need for a national career development service.

The literature review was supplemented by econometric modeling using data from the Longitudinal Surveys of Australian Youth (LSAY), with the aim of revealing any quantifiable relationships between access to career development services and educational and employment outcomes.

Miles Morgan conducted a literature review in Element 1 and found several positive outcomes that accrued to the individual as a result of quality career development services. They found that career development services:

- increased educational engagement and attainment in learning;
- increased self-awareness and self-confidence;
- increased goal/future awareness and orientation relating to the labour market and its links to education and training;
- strengthened pathways for those young people at risk of disengaging from education, training or work; and
- enhanced employment outcomes.

Miles Morgan concluded that "concrete and empirical research into knowledge of outcomes of career development services is still very much in its infancy".

DAE conducted a secondary literature review with the aim of identifying detailed benefits to relate to each of the suggested options and to justify the need for a national approach to career development more broadly. As such, the purpose of expanding the literature review conducted in Element 1 was to find evidence of broader economic benefits of career development services, of the nature described in Box 3.1. The outcomes of the DAE literature review are summarised in Appendix A.

The review, similar to the findings in Element 1, pointed towards the value of career development services to the individual, however, failed to establish the benefits of these services in any meaningful way. The link to broader economic benefits was better documented at a theoretical level, but not well supported by empirical evidence. As such, there is a demonstrable need for the development of a stronger evidence base to identify best practice career development interventions.

3.3 Quantitative approach and findings

The lack of evidence among existing studies meant primary research was required. To this end, data from the Longitudinal Survey of Australian Youth (LSAY) was sourced and analysed to assess the relationship between particular career development initiatives and outcomes for individuals.

The LSAY tracks young people as they move from school to post school destinations and contains information on career development activities undertaken along this path. Limitations of the dataset include its strong focus on work experience and, conversely, a lower level of focus on other forms of career development. Further, the dataset does not allow the user to distinguish the quality of career services accessed.

The results of the empirical analysis are summarised in Table 3.1 below and are expanded upon, in detail, in Appendix B.

Table 3.1 Summary of empirical analysis

Relationship between career advice and:	Tests applied	Summary of results
Had completed and / or participated in post-school education	Descriptive statistics as well as a Probit analysis	Summary statistics suggest an individual who participated in work experience ² in year 10 is no more likely to complete or participate in formal post-school education than an individual who did not participate. The Probit model found no statistically significant relationship between individuals completing work experience and the probability of them completing or participating in post-school education
Probability of looking for work at the age of 25	Descriptive statistics as well as a Probit analysis	Summary statistics suggest it is unlikely that participating in work experience significantly reduced the probability of an individual looking for work at 25 While the Probit yielded a significant relationship, it is unlikely that this result is robust. Several relevant variables are omitted from this equation and are likely to drive bias in the results.
Was satisfied with their job and / or career at 25	A number of summary statistics and partial equilibrium estimation procedures have been applied in order to test whether a relationship exists	Summary statistics indicated that there is very little difference between the distribution of job satisfaction between individuals who have undertaken work experience and those who haven't. The Probit analysis did not find any significant relationship
How long an individual had spent looking for a job	A partial equilibrium estimation has been applied in order to test whether a relationship exists	Some forms of career advice were significantly related to the time spent looking for a job. When taken together, however, receiving career advice was not significant.

After controlling for a number of exogenous factors also expected to affect job/career/education outcomes – such as gender, Indigenous status, state and education achievements – there was not sufficient statistically significant evidence to suggest that career advice has an impact on education or employment outcomes for either cohort.

Preliminary bivariate correlation analysis further substantiated the finding that there was unlikely to be a robust relationship between career advice and job/career/education outcomes, given the available data.

² Work experience is taken to be a proxy for career advice, in the absence of other career development explanatory variables.

However, the conclusions that can be drawn from this analysis are limited in that:

1. the quality of the available data is limited, in particular the earlier years did not track career advice or counselling – only participation in work experience – which represents only one component of a suite of career development activities that in turn constitute comprehensive career development support; and

2. even where data on career counselling is available, there is no capacity to determine the quality of the advice. That is, ‘good’ advice cannot be distinguished from ‘bad’ advice.

The exploration of alternative relationships such as reduced churn in educational settings would face similar challenges in linking back to career development strategies specifically, and therefore have not been pursued.

Accordingly, these results should be viewed as further support for the need to develop additional and more robust evidence in relation to career counselling and its impacts on individuals and the economy.

Section 4 of this report was deleted prior to publication as it contains personal information, business information and/or information currently under consideration by the Australian Government

5 Conclusions

The research question which Element 4 sought to address the following question:

Given recommendations developed in Element 3 for improvement to career development nationally and options for a national strategy for career development for young people, develop a cost benefit analysis that shows the advantages and disadvantages to the Australian economy of a particular approach to career development for all young Australians.

The key conclusions of Element 4 of the NCDS Research Project are summarised below.

The outcomes of Element 2 demonstrate that there is reason to believe that **there is suboptimal provision of career development services in Australia**. Specifically, there is variable quality and under-provision of career services, and this under-provision is inequitably concentrated in areas of the population experiencing socioeconomic disadvantage.

Given the significant level of intervention that currently exists in the market for career development services, the rationale for the NCDS rests not merely on the broader economic benefits of these services (i.e. the participation and productivity impacts), but on the sub-optimality of the existing interventions. That is, on the shortcomings of the current arrangements – especially with respect to the quantity, quality (consistency) and equity of service delivery, as identified by Urbis in Stage 2. There is, therefore, a *prima facie* case for increasing and enhancing career development service delivery through the NCDS.

The review of literature conducted as part of this study, support earlier findings that there are positive returns to the individual as a result of investment in career development. The report finds, however, that while wider economics benefits in terms of productivity and participation in the workforce can be established in theory, empirically, they are difficult to quantify and demonstrate. **On the basis of these findings, it is recommended that investing in strengthening of the evidence base to support the economic value of career development will be a valuable guiding principle in the implementation of an NCDS.** The lack of understanding about the current provision of services, and the benefits these generate, presents a strong case for further empirically-supported research in this area.

Costing the options provided in the Element 3 study suggest that significant cost differentials exist between levels of intervention. It is suggested that, given the current level of understanding of economic benefits, the Government works with key stakeholders to pursue a staged implementation of investment in the Strategy.

Various constructs of the NCDS, as suggested by the Element 3 work, represent varying forms of government intervention and harmonisation of career development service provision. The optimal level and nature of the NCDS should be considered with reference to both its expected benefit to cost ratio and the broader policy context (i.e. the role of the NCDS among Government's other policy priorities). Given the lack of evidence in relation to the benefits generated by current service provision and, moreover, the options put forward in this report, it is not feasible to conduct a fully-fledged cost-benefit analysis or, therefore, to put forward a recommended option. Again, this reinforces the case to **develop a stronger evidence base in this field to as to effectively inform future policy decisions.**

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Sweet (2010) *Transitional outcomes: the impact of context and institutions*, a report prepared for the COAG Reform Council (Provided by Miles Morgan)

Sweet et al (2009) *Making career development core business*

The Sutton Trust (2010) *The mobility manifesto: a report on cost-effective ways to achieve greater social mobility through education*

Watts (2005) 'Career guidance policy: an international review', *Career Development Quarterly*, accessed online: <http://www.entrepreneur.com/tradejournals/article/136113360.html>, last accessed 1 August 2011

Appendix A: Literature review

Source	Discussion
<p>Sweet (2007) <i>the benefits of Australian career development services: towards a national research strategy</i>, a report prepared for the Career Industry Council of Australia (CICA)</p>	<p>Discusses the need for a national career development program and recommends approaches for a national research strategy</p>
<p>Sweet et al (2009) <i>Making career development core business</i></p>	<p>Highlights the lack of reliable Australian data and research into career development services.</p>
	<p>Aims to identify best practice in the provision of career development and reviews the current implementation of career development programs</p>
	<p>“Direct evidence of the positive impact of career development programs does exist, albeit in limited forms. More common is evidence of its positive impact upon the skills of young people that are related to successful transitions, including more positive attitudes towards careers, self-awareness, knowledge of possible pathways, and improved job search and entry skills”.</p>
	<p>Summarises studies by the OECD (2004), CICA (2007) and Bezanson (2008), which show that career development services can: 1. Lead to people having a more positive and confident attitude towards their future career options 2. Increase knowledge and understanding of education and employment opportunities 3. Increase self awareness 4. make people more confident in their career decision making and improve their career exploration skills and 5. improve job search and interview skills</p>
<p>Sweet (2010) <i>Transitional outcomes: the impact of context and institutions</i>, a report prepared for the COAG Reform Council (Provided by Miles Morgan)</p>	<p>Discusses literature on program initiatives intended to improve young people’s transition outcomes from school to work.</p>
	<p>Indicators of the effectiveness and impact of these transitions are rarely available.</p>

Source	Discussion
<p>Phil Jarvis (2003) <i>Career management paradigm shift: prosperity for citizens, windfall for government.</i></p>	<p>Factors that can be shown to have a positive relationship or influence on the outcomes of the transition between school and work are referred to as predictors.</p> <p>Predictors include socio-economic status, GSP, location, employment, skill structure, location student achievement.</p> <p>Factors that show the success or otherwise of the transition between work and school are referred to as transition outcomes. These include educational participation, tertiary qualifications, literacy skills, employment, unemployment and activity, and the transition duration between education and work.</p> <p>Conducts a macro analysis on the potential benefits of implementing comprehensive and coherent career development service provision in Canada – presents potential savings in health care, education, social services, justice system and increased tax revenues.</p>
<p>Hughes and Gration (2009) <i>Literature review of research on the impact of careers and guidance-related interventions.</i></p>	<p>The potential benefits of a comprehensive career development system in Canada is estimated to be in the vicinity of \$16.55 billion Canadian dollars each year (quoted by Miles Morgan).</p> <p>This report informs Hughes and Gration’s (2009) <i>Evidence and impact</i> report below. It aims to produce a practical resource to inform and support the impact and assessment of careers education, information, advice and guidance (CEIAG) interventions within Integrated Youth Support Services (IYSS) in England.</p>
<p>Hughes and Gration (2009) <i>Evidence and impact: careers and guidance-related interventions</i></p>	<p>Gives detail and discussion of the online resource built as a result of the above literature review.</p>
<p>Sikora and Saha (2011) <i>Lost talent? The occupational ambitions and attainments of young Australians, NCVET.</i></p>	<p>Used 1998 LSAY cohort to determine the extent to which students lowered their occupational and educational expectations in high school, and whether career plans in high school were directly related to occupational attainments in early adulthood.</p>

Source	Discussion
<p>Brimrose, Barnes and Hughes (2005) <i>A systematic literature review of research into career-related interventions for higher education</i></p> <p>The Sutton Trust (2010) <i>The mobility manifesto: a report on cost-effective ways to achieve greater social mobility through education</i></p>	<p>Their analysis employed an over-time change in student plans. The central finding of the report is that occupational expectations which are formed in high school have a positive effect on the chances of securing high-status employment upon entry into the labour force.</p> <p>Early occupational goals matter in their own right even when educational plans and the likelihood of university completion are held constant.</p> <p>This finding vindicates the potential positive influence of vocational counselling programs which foster ambitious goals. Students benefit from programs which encourage early thinking about future careers because there are negative effects of students who set their goals too late and don't have clear educational and occupational expectations</p> <p>A review of research into career-related interventions in higher education institutions in the UK, and (2008) 5-year longitudinal study in the UK</p> <p>Reports on the Boston Consulting Group's cost-benefit analysis for the establishment of an independent careers and education advice solution in the UK, which estimated a positive return on investment of 7 to 1 (for every pound spent the return would equate to 7 in terms of increased lifetime savings).</p> <p>By creating more informed labour market participants, effective career development services can contribute to the efficiency of the market and reduce the costs involved in labour market failure, such as welfare costs.</p> <p>Provides policy recommendations and suggests the development of new pilot programs</p>

Appendix B: Outcomes of LSAY data analysis

Approach

LSAY uses a representative sample of young Australians to collect information about education and training, work, and social development, to better understand young people and their transitions from school to post-school destinations. For the purposes of this study responses from the 1995 and 1998 cohorts were used, as they provided complete datasets (i.e. participants are now aged over 25).

The 1995 cohort did not explicitly ask survey participants whether they received career advice, so as a result we used responses to the question regarding work experience in Year 10 as a proxy (on the basis that students received practical information on the role in which they undertook work experience). However, additional information on career advice was available through the 1998 cohort, with survey participants recording whether they received any of 11 different forms of career advice (e.g. from a school counsellor, from the internet, from a further education body). Work experience was also included in the 1998 cohort analysis for consistency.

A probit estimation was conducted to analyse whether a number of different job/career/education outcomes were significantly affected by receipt of career advice or work experience. In particular, we examined the effect of career advice on whether a participant:

- was currently looking for a job;
- had completed and/or participated in post-school education;
- had a higher probability of looking for work; and
- was satisfied with their job and/or career at age 25.

In addition, using a multiple linear regression model, the effect of career advice on how long an individual had spent looking for a job was examined.

Career advice and participation in post-school education

Descriptive statistics as well as a probit analysis has been applied in order to test whether a relationship exists between career guidance – proxied by work experience and the probability of an individual participating in some type of formal post school study by the age of 25.

Summary statistics

The probability of a person participating in some form of post school study by the age 25, conditional upon whether they received work experience, suggests that work experience does not contribute positively. An individual who participated in work experience in year 9 is no more likely to participate in some form of formal post school education compared to an individual who did not receive work experience. However, an individual who participated in work experience in year 10 is less likely to complete some form of formal post school education compared to an individual who did not receive work experience. **This suggests that work experience is either unimportant, or contributes negatively to post school study completion rates.**

Probability of looking for work, conditional upon work experience

Cost Benefit Analysis of the National Career Development Strategy

	No Work Exp Yr9	Work Exp Yr9	No Work Exp Yr10	Work Exp Yr10
No post school study participation	13%	13%	11%	13%
Post school study participation	87%	87%	89%	87%

Simple summary statistics neglect the potential impact of omitted variables upon the relationship between our key variables. In order to try to control for omitted variable bias, a probit regression analysis has been undertaken.

Regression analysis

Considering the nature of the dependent variable, a Probit model was deemed most suitable. After controlling for a number of demographic, skill-proxy and education paths it is found that there are **no statistically significant relationship between individuals** participating in work experience and the probability of them participating in post school study.

Individual received work experience in yr 9

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 4457 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.088844	0.218731	4.977998	0.0000
WE96	-0.018046	0.064224	-0.280984	0.7787
CITYSIZE	-0.032289	0.035395	-0.912243	0.3616
CNTRYBRTH	0.179700	0.101777	1.765628	0.0775
HSCERT	-0.093512	0.034116	-2.741003	0.0061
PNTSOCC	-0.126387	0.028942	-4.366941	0.0000
ACMENT	0.253216	0.026272	9.638268	0.0000
ACT	0.057450	0.091666	0.626734	0.5308
NT	0.192875	0.191958	1.004776	0.3150
QLD	0.353291	0.122100	2.893461	0.0038
SA	0.231427	0.136395	1.696738	0.0897
TAS	0.097813	0.240737	0.406307	0.6845
VIC	0.067318	0.096274	0.699231	0.4844
WA	0.137524	0.188980	0.727719	0.4668
McFadden R-squared	0.064925	Mean dependent var		0.906215
S.D. dependent var	0.291562	S.E. of regression		0.285916
Akaike info criterion	0.588289	Sum squared resid		363.2071
Schwarz criterion	0.608399	Log likelihood		-1297.003
Hannan-Quinn criter.	0.595379	Restr. log likelihood		-1387.057
LR statistic	180.1090	Avg. log likelihood		-0.291003
Prob(LR statistic)	0.000000			
Obs with Dep=0	418	Total obs		4457
Obs with Dep=1	4039			

Individual received work experience in yr 10

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 4921 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.177205	0.203843	5.775059	0.0000
WE97	-0.025765	0.057359	-0.449177	0.6533
CITYSIZE	-0.035336	0.033803	-1.045339	0.2959
CNTRYBRTH	0.200113	0.097453	2.053428	0.0400
HSCERT	-0.099244	0.032253	-3.077066	0.0021
PNTSOCC	-0.130907	0.027364	-4.783870	0.0000
ACMENT	0.237872	0.024942	9.537094	0.0000
ACT	-0.036513	0.086795	-0.420674	0.6740
NT	0.113988	0.176380	0.646267	0.5181
QLD	0.331715	0.121018	2.741036	0.0061
SA	0.219954	0.129137	1.703268	0.0885
TAS	0.081573	0.230126	0.354471	0.7230
VIC	0.066288	0.084011	0.789042	0.4301
WA	0.149762	0.183119	0.817838	0.4134
McFadden R-squared	0.059966	Mean dependent var		0.905507
S.D. dependent var	0.292543	S.E. of regression		0.287286
Akaike info criterion	0.593797	Sum squared resid		404.9901
Schwarz criterion	0.612293	Log likelihood		-1447.037
Hannan-Quinn criter.	0.600285	Restr. log likelihood		-1539.345
LR statistic	184.6163	Avg. log likelihood		-0.294054
Prob(LR statistic)	0.000000			
Obs with Dep=0	465	Total obs		4921
Obs with Dep=1	4456			

Individual received work experience in yr 9 or 10

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 5024 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.177781	0.207549	5.674714	0.0000
WE	-0.044704	0.064408	-0.694081	0.4876
CITYSIZE	-0.040048	0.033379	-1.199812	0.2302
CNTRYBRTH	0.211058	0.097034	2.175090	0.0296
HSCERT	-0.096520	0.031244	-3.089200	0.0020
PNTSOCC	-0.128890	0.027140	-4.749053	0.0000
ACMENT	0.240333	0.024529	9.797745	0.0000
ACT	-0.023116	0.084670	-0.273009	0.7848
NT	0.112212	0.175596	0.639032	0.5228
QLD	0.322611	0.113422	2.844357	0.0045
SA	0.208542	0.126488	1.648719	0.0992
TAS	0.076039	0.226502	0.335709	0.7371
VIC	0.056911	0.082694	0.688208	0.4913
WA	0.150543	0.180100	0.835888	0.4032
McFadden R-squared	0.060751	Mean dependent var		0.905653
S.D. dependent var	0.292340	S.E. of regression		0.287004
Akaike info criterion	0.592569	Sum squared resid		412.6814
Schwarz criterion	0.610744	Log likelihood		-1474.534
Hannan-Quinn criter.	0.598938	Restr. log likelihood		-1569.908
LR statistic	190.7482	Avg. log likelihood		-0.293498
Prob(LR statistic)	0.000000			
Obs with Dep=0	474	Total obs		5024
Obs with Dep=1	4550			

Career advice and completion of post-school education

Descriptive statistics as well as a probit analysis has been applied in order to test whether a relationship exists between career guidance – proxied by work experience and the probability of an individual participating in some type of formal post school study by the age of 25.

Summary statistics

The probability of a person participating in some form of post school study by the age 25, conditional upon whether they received work experience, suggests that work experience does not contribute positively. An individual who participated in work experience in year 9 is no more likely to participate in some form of formal post school education compared to an individual who did not receive work experience. However, an individual who participated in work experience in year 10 is less likely to complete some form of formal post school education compared to an individual who did not receive work experience. **This suggests that work experience is either unimportant, or contributes negatively to post school study completion rates.**

Probability of looking for work, conditional upon work experience				
	No Work Exp Yr9	Work Exp Yr9	No Work Exp Yr10	Work Exp Yr10
No post school study participation	13%	13%	11%	13%
Post school study participation	87%	87%	89%	87%

Simple summary statistics neglect the potential impact of omitted variables upon the relationship between our key variables. In order to try to control for omitted variable bias, a probit regression analysis has been undertaken.

Regression analysis

Considering the nature of the dependent variable, a Probit model was deemed most suitable. After controlling for a number of demographic, skill-proxy and education paths it is found that there are **no statistically significant relationship between individuals** participating in work experience and the probability of them participating in post school study.

Individual received work experience in yr 9

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 4457 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.088844	0.218731	4.977998	0.0000
WE96	-0.018046	0.064224	-0.280984	0.7787
CITYSIZE	-0.032289	0.035395	-0.912243	0.3616
CNTRYBRTH	0.179700	0.101777	1.765628	0.0775
HSCERT	-0.093512	0.034116	-2.741003	0.0061
PNTSOCC	-0.126387	0.028942	-4.366941	0.0000
ACMENT	0.253216	0.026272	9.638268	0.0000
ACT	0.057450	0.091666	0.626734	0.5308
NT	0.192875	0.191958	1.004776	0.3150
QLD	0.353291	0.122100	2.893461	0.0038
SA	0.231427	0.136395	1.696738	0.0897
TAS	0.097813	0.240737	0.406307	0.6845
VIC	0.067318	0.096274	0.699231	0.4844
WA	0.137524	0.188980	0.727719	0.4668
McFadden R-squared	0.064925	Mean dependent var		0.906215
S.D. dependent var	0.291562	S.E. of regression		0.285916
Akaike info criterion	0.588289	Sum squared resid		363.2071
Schwarz criterion	0.608399	Log likelihood		-1297.003
Hannan-Quinn criter.	0.595379	Restr. log likelihood		-1387.057
LR statistic	180.1090	Avg. log likelihood		-0.291003
Prob(LR statistic)	0.000000			
Obs with Dep=0	418	Total obs		4457
Obs with Dep=1	4039			

Individual received work experience in yr 10

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 4921 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.177205	0.203843	5.775059	0.0000
WE97	-0.025765	0.057359	-0.449177	0.6533
CITYSIZE	-0.035336	0.033803	-1.045339	0.2959
CNTRYBRTH	0.200113	0.097453	2.053428	0.0400
HSCERT	-0.099244	0.032253	-3.077066	0.0021
PNTSOCC	-0.130907	0.027364	-4.783870	0.0000
ACMENT	0.237872	0.024942	9.537094	0.0000
ACT	-0.036513	0.086795	-0.420674	0.6740
NT	0.113988	0.176380	0.646267	0.5181
QLD	0.331715	0.121018	2.741036	0.0061
SA	0.219954	0.129137	1.703268	0.0885
TAS	0.081573	0.230126	0.354471	0.7230
VIC	0.066288	0.084011	0.789042	0.4301
WA	0.149762	0.183119	0.817838	0.4134
McFadden R-squared	0.059966	Mean dependent var		0.905507
S.D. dependent var	0.292543	S.E. of regression		0.287286
Akaike info criterion	0.593797	Sum squared resid		404.9901
Schwarz criterion	0.612293	Log likelihood		-1447.037
Hannan-Quinn criter.	0.600285	Restr. log likelihood		-1539.345
LR statistic	184.6163	Avg. log likelihood		-0.294054
Prob(LR statistic)	0.000000			
Obs with Dep=0	465	Total obs		4921
Obs with Dep=1	4456			

Individual received work experience in yr 9 or 10

Dependent Variable: POSTSCHPART
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/03/11 Time: 14:01
 Sample (adjusted): 1 13612
 Included observations: 5024 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	1.177781	0.207549	5.674714	0.0000
WE	-0.044704	0.064408	-0.694081	0.4876
CITYSIZE	-0.040048	0.033379	-1.199812	0.2302
CNTRYBRTH	0.211058	0.097034	2.175090	0.0296
HSCERT	-0.096520	0.031244	-3.089200	0.0020
PNTSOCC	-0.128890	0.027140	-4.749053	0.0000
ACMENT	0.240333	0.024529	9.797745	0.0000
ACT	-0.023116	0.084670	-0.273009	0.7848
NT	0.112212	0.175596	0.639032	0.5228
QLD	0.322611	0.113422	2.844357	0.0045
SA	0.208542	0.126488	1.648719	0.0992
TAS	0.076039	0.226502	0.335709	0.7371
VIC	0.056911	0.082694	0.688208	0.4913
WA	0.150543	0.180100	0.835888	0.4032
McFadden R-squared	0.060751	Mean dependent var		0.905653
S.D. dependent var	0.292340	S.E. of regression		0.287004
Akaike info criterion	0.592569	Sum squared resid		412.6814
Schwarz criterion	0.610744	Log likelihood		-1474.534
Hannan-Quinn criter.	0.598938	Restr. log likelihood		-1569.908
LR statistic	190.7482	Avg. log likelihood		-0.293498
Prob(LR statistic)	0.000000			
Obs with Dep=0	474	Total obs		5024
Obs with Dep=1	4550			

Career advice and Job Seeking at 25

Descriptive statistics as well as a probit analysis has been applied in order to test whether a relationship exists between career guidance – proxied by work experience and the probability of an individual looking for a job, between at the age of 25.

Summary statistics

The probability of whether a person is looking for work at the age of 25, conditional upon whether they received work experience, indicates that a statistically significant relationship between these variables are unlikely. There is a 4% less chance that an individual who undertook work experience in '96 is looking for a job at the age of 25. However, 2% greater probability that you're looking for a job if you received work experience in '97, compared to people who did not receive work experience. **On the back of these contrasting results it is unlikely that participating in work experience have significantly reduced the probability of an individual looking for work at the age of 25.**

	No Work Exp Yr9	Work Exp Yr9	No Work Exp Yr10	Work Exp Yr10
Not looking for work	79%	83%	82%	80%
looking for work	21%	17%	18%	20%

Simple summary statistics neglect the potential impact of omitted variables upon the relationship between our key variables. In order to try to control for omitted variable bias, a probit regression analysis has been undertaken.

Regression analysis

Considering the nature of the dependent variable, a Probit model was deemed most suitable. After controlling for a number of demographic, skill-proxy and education paths it is found that there is indeed a statistically significant relationship between individuals participating in work experience in year 9 and the probability of them looking for work at 25 years of age. The direction of the relationship is as expected, meaning that a person receiving work experience will, on average, be less likely to be looking for work, all things equal.

Unfortunately we were not able to develop a very effective model as it only explains 1% of the factors determining the probability of an individual looking for work. All other appropriate variables which may contribute to the model were either extremely poorly answered or suffered from an untenable degree of selection bias. Consequently, our probit model is not capable of controlling for any significant omitted variable bias meaning that the results are no more trustworthy than the results provided by the descriptive statistics.

This last point is evidenced by the fact that an identical model to the one above, using work experience in year 10 as the key explanatory variable indicates that there is a statistically significant negative relationship. This means that undertaking work experience in yr 10 would enhance the probability of an individual looking for a job at the age of 25.

Consequently, despite finding a statistically significant relationship, the finding is unlikely to be stable unless we control for more of the movements in the dependent variable or if we can replicate the result for other cohorts.

Individual received work experience in yr 9

Dependent Variable: LOOKINGWORK
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/02/11 Time: 10:11
 Sample (adjusted): 1 13612
 Included observations: 2437 after adjustments
 Convergence achieved after 5 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.566153	0.266833	-2.121752	0.0339
WE96	-0.187657	0.068515	-2.738913	0.0062
CITYSIZE	-0.058655	0.040549	-1.446519	0.1480
CNTRYBRTH	0.100469	0.104349	0.962822	0.3356
HSCERT	-0.085498	0.052205	-1.637723	0.1015
PNTSOCC	0.033960	0.030729	1.105167	0.2691
TRADE	-0.188227	0.198939	-0.946154	0.3441
ACMENT	-0.004984	0.031658	-0.157434	0.8749
BACH	0.059404	0.062393	0.952097	0.3410
ACT	-0.094068	0.104268	-0.902171	0.3670
NT	-0.075800	0.176792	-0.428750	0.6681
QLD	0.095248	0.149303	0.637953	0.5235
SA	0.086550	0.191162	0.452755	0.6507
TAS	-0.020854	0.331558	-0.062896	0.9498
VIC	-0.056567	0.113085	-0.500217	0.6169
WA	0.141014	0.262122	0.537970	0.5906
McFadden R-squared	0.011086	Mean dependent var		0.185064
S.D. dependent var	0.388429	S.E. of regression		0.387687
Akaike info criterion	0.960481	Sum squared resid		363.8798
Schwarz criterion	0.998551	Log likelihood		-1154.347
Hannan-Quinn criter.	0.974320	Restr. log likelihood		-1167.288
LR statistic	25.88188	Avg. log likelihood		-0.473675
Prob(LR statistic)	0.039283			

Individual received work experience in yr 10

Dependent Variable: LOOKINGWORK
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/02/11 Time: 10:11
 Sample (adjusted): 1 13612
 Included observations: 2639 after adjustments
 Convergence achieved after 4 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.915446	0.248911	-3.677808	0.0002
WE97	0.111582	0.064155	1.739262	0.0820
CITYSIZE	-0.031585	0.038988	-0.810121	0.4179
CNTRYBRTH	0.089352	0.100732	0.887027	0.3751
HSCERT	-0.059323	0.048793	-1.215816	0.2241
PNTSOCC	0.037827	0.029558	1.279764	0.2006
TRADE	-0.144497	0.177580	-0.813704	0.4158
ACMENT	-0.001808	0.030067	-0.060127	0.9521
BACH	0.046134	0.059946	0.769585	0.4415
ACT	0.007599	0.100394	0.075694	0.9397
NT	0.107546	0.166048	0.647683	0.5172
QLD	0.065420	0.147711	0.442889	0.6578
SA	0.081665	0.178138	0.458438	0.6466
TAS	-0.132937	0.320251	-0.415103	0.6781
VIC	0.076995	0.099961	0.770254	0.4411
WA	0.073610	0.251438	0.292755	0.7697
McFadden R-squared	0.008325	Mean dependent var		0.185676
S.D. dependent var	0.388919	S.E. of regression		0.388424
Akaike info criterion	0.963921	Sum squared resid		395.7396
Schwarz criterion	0.999559	Log likelihood		-1255.893
Hannan-Quinn criter.	0.976824	Restr. log likelihood		-1266.437
LR statistic	21.08623	Avg. log likelihood		-0.475897
Prob(LR statistic)	0.134097			

Individual received work experience in yr 9 or 10

Dependent Variable: LOOKINGWORK
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 08/02/11 Time: 10:11
 Sample (adjusted): 1 13612
 Included observations: 2694 after adjustments
 Convergence achieved after 5 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	-0.916736	0.252877	-3.625226	0.0003
WE	0.112177	0.074275	1.510294	0.1310
CITYSIZE	-0.036850	0.038594	-0.954819	0.3397
CNTRYBRTH	0.095341	0.099687	0.956409	0.3389
HSCERT	-0.070654	0.047915	-1.474560	0.1403
PNTSOCC	0.030519	0.029373	1.039013	0.2988
TRADE	-0.128743	0.176852	-0.727970	0.4666
ACMENT	-0.006476	0.029629	-0.218571	0.8270
BACH	0.041026	0.059452	0.690064	0.4902
ACT	-0.029118	0.098950	-0.294268	0.7686
NT	0.121397	0.165144	0.735099	0.4623
QLD	0.154332	0.140275	1.100211	0.2712
SA	0.142061	0.176115	0.806637	0.4199
TAS	-0.065635	0.318276	-0.206220	0.8366
VIC	0.145146	0.100141	1.449411	0.1472
WA	0.120414	0.248896	0.483792	0.6285
McFadden R-squared	0.007939	Mean dependent var		0.183370
S.D. dependent var	0.387042	S.E. of regression		0.386667
Akaike info criterion	0.957245	Sum squared resid		400.3922
Schwarz criterion	0.992279	Log likelihood		-1273.409
Hannan-Quinn criter.	0.969916	Restr. log likelihood		-1283.599
LR statistic	20.38069	Avg. log likelihood		-0.472683
Prob(LR statistic)	0.157810			
Obs with Dep=0	2200	Total obs		2694
Obs with Dep=1	494			

Career advice and later job satisfaction

A number of summary statistics and partial equilibrium estimation procedures have been applied in order to test whether a relationship exists between career guidance – proxied by work experience and whether and individual is satisfied with the work he/she is performing at the age of 25. These procedures indicate that there is no statistically significant relationship present.

Summary statistics

By simply deriving the probability of an individual being satisfied with the job in which they find themselves at the age of 25, conditional on whether or not they received work experience in year 9, it becomes clear that it is unlikely that there is any relationship between these two variables. The table below highlights the probability of an individual displaying a certain satisfaction for their work conditional upon whether they undertook work experience. It is unlikely that there is a relationship between these variables considering the very little difference between the distribution of job satisfaction between individuals who've undertaken work experience and those who haven't.

Probability of job satisfaction, conditional upon work experience

	JobSat = 1	JobSat = 2	JobSat = 3	JobSat = 4	JobSat = 5	JobSat = 6
No Work						
Exp	36.45%	57.27%	4.55%	1.45%	0.09%	0.18%
Work Exp	38.83%	54.60%	4.98%	1.20%	0.27%	0.11%

However, simple summary statistics neglect the impact omitted variables may have on the relationship between our key variables. In order to control for omitted variable bias, a number of regression analyses have been undertaken.

Regression analyses

Two regression analyses estimation procedures (Probit and Ordered Probit) have been applied in order to test for all possible traces of a statistically significant relationship between our key variables.

Applying a probit analysis to the dataset there is no indication that there is a statistically significant relationship. However, upon applying an ordered probit methodology there are indications that work experience may have some relation to job satisfaction. However, the ordered probability model was unable to pick which agents were less than satisfied with their job. Consequently the ordered probit model acted much like the probit model, but was only able predict successful outcomes.

Consequently, we disregard any notions that a statistically significant relationship exists between individuals who received work experience in year 9, and there satisfaction with the type of work they're doing at the age of 25.

Cost Benefit Analysis of the National Career Development Strategy

Dependent Variable: JOBSATB
 Method: ML - Binary Probit (Quadratic hill climbing)
 Date: 07/20/11 Time: 17:19
 Sample (adjusted): 1 13612
 Included observations: 2328 after adjustments
 Convergence achieved after 5 iterations
 Covariance matrix computed using second derivatives

	Coefficient	Std. Error	z-Statistic	Prob.
C	4.658696	0.508398	9.163476	0.0000
WE96	0.059249	0.118462	0.500155	0.6170
BOSSSAT	-0.249356	0.059345	-4.201772	0.0000
PAYSAT	-0.282233	0.070391	-4.009500	0.0001
PPLSAT	-0.028139	0.069100	-0.407229	0.6838
PROMSAT	-0.047332	0.048949	-0.966957	0.3336
RECSAT	-0.115799	0.063688	-1.818227	0.0690
TASKSAT	-0.903170	0.080924	-11.16066	0.0000
TRASAT	-0.128241	0.052596	-2.438208	0.0148
CITYSIZE	0.102066	0.070364	1.450534	0.1469
CNTRYBRTH	0.082469	0.184397	0.447237	0.6547
HSCERT	0.044544	0.077298	0.576259	0.5644
PNTSOCC	0.007201	0.052193	0.137974	0.8903
TRADE	1.182454	0.803463	1.471697	0.1411
ACMENT	0.024317	0.053576	0.453871	0.6499
BACH	0.086976	0.107100	0.812104	0.4167
ACT	0.302488	0.174173	1.736715	0.0824
NT	-0.103021	0.285686	-0.360608	0.7184
QLD	-0.082831	0.232851	-0.355724	0.7220
SA	-0.026912	0.296975	-0.090620	0.9278
TAS	-0.155375	0.533015	-0.291503	0.7707
VIC	0.148081	0.193702	0.764477	0.4446
WA	0.160111	0.412597	0.388056	0.6980
McFadden R-squared	0.357341	Mean dependent var		0.932990
S.D. dependent var	0.250094	S.E. of regression		0.211115
Akaike info criterion	0.335737	Sum squared resid		102.7331
Schwarz criterion	0.392572	Log likelihood		-367.7974
Hannan-Quinn criter.	0.356445	Restr. log likelihood		-572.3061
LR statistic	409.0174	Avg. log likelihood		-0.157989
Prob(LR statistic)	0.000000			
Obs with Dep=0	156	Total obs		2328
Obs with Dep=1	2172			

Cost Benefit Analysis of the National Career Development Strategy

Dependent Variable: JOBSAT
 Method: ML - Ordered Probit (Quadratic hill climbing)
 Date: 07/20/11 Time: 17:19
 Sample (adjusted): 1 13612
 Included observations: 2328 after adjustments
 Number of ordered indicator values: 6
 Convergence achieved after 5 iterations
 QML (Huber/White) standard errors & covariance

	Coefficient	Std. Error	z-Statistic	Prob.
WE96	-0.091575	0.058209	-1.573198	0.1157
BOSSSAT	0.223023	0.042736	5.218630	0.0000
PAYSAT	0.207822	0.045817	4.535880	0.0000
PPLSAT	0.116644	0.049637	2.349942	0.0188
PROMSAT	0.018758	0.028847	0.650274	0.5155
RECSAT	0.117513	0.049307	2.383294	0.0172
TASKSAT	0.936965	0.081979	11.42940	0.0000
TRASAT	0.099907	0.036726	2.720324	0.0065
CITYSIZE	-0.060539	0.035508	-1.704924	0.0882
CNTRYBRTH	0.024146	0.090636	0.266404	0.7899
HSCERT	0.016810	0.044165	0.380625	0.7035
PNTSOCC	0.016318	0.026670	0.611851	0.5406
TRADE	-0.025781	0.143056	-0.180214	0.8570
ACMENT	0.029539	0.029029	1.017561	0.3089
BACH	-0.085394	0.054851	-1.556839	0.1195
ACT	-0.054578	0.090367	-0.603959	0.5459
NT	0.219017	0.157154	1.393640	0.1634
QLD	-0.187370	0.129501	-1.446864	0.1479
SA	-0.017226	0.163303	-0.105487	0.9160
TAS	-0.134884	0.261514	-0.515780	0.6060
VIC	0.003606	0.094398	0.038200	0.9695
WA	-0.047813	0.238427	-0.200534	0.8411

Limit Points

LIMIT_2:C(23)	2.767961	0.266267	10.39542	0.0000
LIMIT_3:C(24)	5.203628	0.293645	17.72083	0.0000
LIMIT_4:C(25)	6.197325	0.321452	19.27913	0.0000
LIMIT_5:C(26)	7.203798	0.438337	16.43438	0.0000
LIMIT_6:C(27)	7.989034	0.851952	9.377333	0.0000

Pseudo R-squared	0.237891	Akaike info criterion	1.426696
Schwarz criterion	1.493416	Log likelihood	-1633.674
Hannan-Quinn criter.	1.451007	Restr. log likelihood	-2143.623
LR statistic	1019.897	Avg. log likelihood	-0.701750
Prob(LR statistic)	0.000000		

Prediction Evaluation for Ordered Specification

Equation: ORDEREDUWALL

Date: 07/28/11 Time: 10:42

Estimated Equation					
Dep. Value	Obs.	Correct	Incorrect	% Correct	% Incorrect
1	878	492	386	56.036	43.964
2	1294	1159	135	89.567	10.433
3	118	3	115	2.542	97.458
4	32	5	27	15.625	84.375
5	5	0	5	0.000	100.000
6	1	0	1	0.000	100.000
Total	2328	1659	669	71.263	28.737

Constant Probability Spec.					
Dep. Value	Obs.	Correct	Incorrect	% Correct	% Incorrect
1	878	0	878	0.000	100.000
2	1294	1294	0	100.000	0.000
3	118	0	118	0.000	100.000
4	32	0	32	0.000	100.000
5	5	0	5	0.000	100.000
6	1	0	1	0.000	100.000
Total	2328	1294	1034	55.584	44.416

Gain over Constant Prob. Spec.					
Dep. Value	Obs.	Equation % Incorrect	Constant % Incorrect	Total Gain*	Pct. Gain**
1	878	43.964	100.000	56.036	56.036
2	1294	10.433	0.000	-10.433	NA
3	118	97.458	100.000	2.542	2.542
4	32	84.375	100.000	15.625	15.625
5	5	100.000	100.000	0.000	0.000
6	1	100.000	100.000	0.000	0.000
Total	2328	28.737	44.416	15.679	35.300

*Change in "% Correct" from default (constant probability) specification

**Percent of incorrect (default) prediction corrected by equation

Career advice and time spent looking for a job

A partial equilibrium estimation has been applied in order to test whether a relationship exists between career guidance – proxied by work experience and the number of weeks an individual has spent searching for a job, between the ages of 20 and 25.

Regression analysis

Considering the nature of the dependent variable, an OLS regression was deemed most suitable. Additionally, by running an OLS regression we are able to weight our observations in accordance with the weights specified by LSAY (in this case, the 2009 weights). Consequently we control for attrition within the sample and sample bias compared to the true Australian population.

After controlling for a number of demographic, skill-proxy and education paths it is found that there is a statistically significant relationship between individuals who received particular types of career advice and the amount of time they spent looking for work. The results show that respondents that received career advice option 1 (talked to careers guidance officer), option 3 (received information on how to apply for a job), option 4 (received information about further study) and option 10 (obtained career guidance from the internet) spent a statistically significant lower amount of time looking for work. However, there was no statistically significant relationship with time looking for work and work experience. Also, advice option 5 (used on-line career website or career planning tool) and option 7 (obtained career advice from government agency) were found to have statistically significant positive coefficients.

However, when we aggregate the advice variables to one variable measuring whether respondents received *any* career advice, the advice variable has a positive coefficient. It is unclear what the implications of this are given that a few advice variables are significant, but together they are not.

Dependent Variable: JOBSEARCH2
 Method: Least Squares
 Date: 08/01/11 Time: 14:10
 Sample (adjusted): 65 13619
 Included observations: 279 after adjustments
 Weighting series: WT2009

	Coefficient	Std. Error	t-Statistic	Prob.
C	30.67281	17.57997	1.744759	0.0822
ADVICE1	-31.31600	8.754597	-3.577092	0.0004
ADVICE3	-8.278045	4.789376	-1.728418	0.0851
ADVICE4	-11.04717	6.270208	-1.761851	0.0793
ADVICE5	13.93526	5.330669	2.614167	0.0095
ADVICE6	-11.93233	9.546876	-1.249868	0.2125
ADVICE7	40.45519	9.812251	4.122926	0.0001
ADVICE8	-6.311660	10.20731	-0.618347	0.5369
ADVICE9	-12.39425	15.07428	-0.822212	0.4117
ADVICE10	-26.38935	11.05433	-2.387240	0.0177
ADVICE11	-16.06817	14.87447	-1.080252	0.2810
WE	-3.264851	5.130330	-0.636382	0.5251
SEX	3.354255	5.033399	0.666400	0.5057
SIZE	-0.608526	0.301298	-2.019683	0.0444
ACH_QU	-3.770584	2.016499	-1.869866	0.0626
LANG_ENG	27.54063	6.515364	4.227029	0.0000
INDIG	19.20898	44.72257	0.429514	0.6679
SES	-0.954342	0.293073	-3.256328	0.0013

Weighted Statistics

R-squared	0.450660	Mean dependent var	10.75681
Adjusted R-squared	0.414879	S.D. dependent var	59.45343
S.E. of regression	43.19969	Akaike info criterion	10.43188
Sum squared resid	487081.5	Schwarz criterion	10.66616
Log likelihood	-1437.248	Hannan-Quinn criter.	10.52586
F-statistic	12.59504	Durbin-Watson stat	1.139884
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	-1.663674	Mean dependent var	7.283154
Adjusted R-squared	-1.837170	S.D. dependent var	19.26105
S.E. of regression	32.44311	Sum squared resid	274717.0
Durbin-Watson stat	2.343345		

Cost Benefit Analysis of the National Career Development Strategy

Dependent Variable: JOBSEARCH2
 Method: Least Squares
 Date: 08/01/11 Time: 14:22
 Sample (adjusted): 61 13653
 Included observations: 640 after adjustments
 Weighting series: WT2009

	Coefficient	Std. Error	t-Statistic	Prob.
C	19.04284	6.253144	3.045323	0.0024
ADVICE	12.43108	2.544902	4.884698	0.0000
WE	-3.736834	2.846015	-1.313006	0.1897
SEX	3.458606	2.773096	1.247200	0.2128
SIZE	-0.018718	0.159050	-0.117685	0.9064
ACH_QU	-4.280167	1.189210	-3.599169	0.0003
LANG_ENG	5.478454	1.775671	3.085286	0.0021
INDIG	-3.860619	12.53548	-0.307975	0.7582
SES	-0.738634	0.159787	-4.622606	0.0000

Weighted Statistics

R-squared	0.110519	Mean dependent var	7.598946
Adjusted R-squared	0.099242	S.D. dependent var	41.68322
S.E. of regression	38.34196	Akaike info criterion	10.14493
Sum squared resid	927637.0	Schwarz criterion	10.20767
Log likelihood	-3237.377	Hannan-Quinn criter.	10.16928
F-statistic	9.800299	Durbin-Watson stat	0.183337
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	-0.296249	Mean dependent var	6.054688
Adjusted R-squared	-0.312684	S.D. dependent var	16.00719
S.E. of regression	18.33982	Sum squared resid	212236.3
Durbin-Watson stat	0.805918		

Statement of responsibility

This Report was prepared for the Department of Employment and Workplace Relations (the Department) solely for the purposes of assisting the Department to consider the costs and benefits of various options for designing and implementing a National Career Development Strategy.

In preparing this Report we have relied on the accuracy and completeness of the information provided to us by the Department and from publicly available sources. We have not audited or otherwise verified the accuracy or completeness of the information. We have not contemplated the requirements or circumstances of anyone other than the Department.

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