

# 1000 days to get it right for every child

## *The effectiveness of public investment in New Zealand children*



- A report prepared by Infometrics Ltd  
for Every Child Counts



He Mana tō ia Tamaiti  
Every Child Counts

He Mano Ra  
1000 Days To Get It Right For Every Child

## He Mana tō ia Tamati/Every Child Counts

He Mana tō ia Tamati/Every Child Counts is a coalition of organisations and individuals formed in 2004 and led by Barnardos, Plunket, Unicef, Save the Children and Te Kahui Mana Ririki.

We believe that a positive, economically sustainable future for New Zealand is only possible if —

- Children are placed at the centre of government policy and planning
- Child poverty is eradicated
- Child maltreatment is reduced
- Every child is given a good start in their early years
- The status of children and of the child-rearing roles of families, whānau, hapū and iwi are increased.

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### Notes:

Cover illustration: OCC/Barnardos Photovoice project 2009 [www.occ.org.nz](http://www.occ.org.nz)  
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## Foreword

New Zealand is one of the most poorly performing countries in the OECD in terms of outcomes for children (28th out of 30 countries). We also have one of the lowest rates of public investment in children in the OECD (less than half the average public spend per child under the age of 6 years). Furthermore, the investment we do make ranks as one of the least effective.

Does it matter? Well, yes, it matters on several scores. First, it matters because our poor and ineffective investment results in many New Zealand children living lives that could be much better. Second, it matters because our population is aging. It is, therefore, essential that our children grow into fully productive contributors to society as mature individuals capable of engaging in positive social relationships, being good parents, and well educated and trained participants in the labour market. Finally, it matters economically.

Every Child Counts commissioned the respected independent economic consultants, Infometrics Ltd. to undertake a study of this last point - the economic cost of our low public investment rates. They found that a tentative estimate of the cost of poor child outcomes in New Zealand is approximately 3 percent of GDP (approximately \$6 billion). That figure represents potentially avoidable expenditure on public health, welfare, remedial education, crime and justice.

The fundamental conclusion affirmed in the report is that the first years of a child's life are critical for optimal development and that investment therefore should be focused here. Not only are children at their most vulnerable to the damaging consequences of deprivation, but the first three years are the period of unprecedented social, cognitive, and physical growth. This conclusion is congruent with the conclusions and recommendations of the recent Gluckman report on reducing social and psychological morbidity during adolescence.

Infometrics also found that internationally there was wide variation in the effectiveness of the public spend on children. The countries that spend the most per child also achieve the best outcomes. Strikingly, however, the Netherlands achieves comparable outcomes for approximately half the spend per child of the big spending countries. Clearly their programmes are more effective. They also have much lower rates of child poverty. Every Child Counts has already commenced investigation of what the Dutch are doing. Incidentally, New Zealand spends a little more than half of what the Netherlands spends per child.

Every Child Counts offers this report as a contribution to public discussion. Children's issues are coming into increasing public focus as a consequence of public disquiet at the distressing incidence of child maltreatment and deaths, the re-emergence of poverty-related disease and poor child health indicators, a growing awareness of the long term consequences of child deprivation, high rates of truancy and educational under-achievement, the correlation of many of the child outcome indicators with ethnicity and regional disparities, and the need to re-organise our welfare programmes.

As a consequence of the higher profile now being given children's issues there is a danger that the subject becomes politicised. We believe this would be a tragedy and doom us to continued failure in improving children's outcomes. In the 1970s the hot political issue was provision for the aged. Today, we rank as one of the best performing nations in the world in terms of aged poverty. This result can be attributed in no small part to the emergence of a cross-party accord in relation to national superannuation. Children's issues would be best served by a comparable cross-party accord.

In 2009 the OECD itself suggested the framework on which such an accord could be based –

- Invest early in children's lives;
- Concentrate on improving the lot of vulnerable children;
- Design interventions for children that reinforce positive development across their life cycle and across a range of well-being outcomes;
- Regularly collect high-quality information on children's well-being that is nationally and internationally comparable; and finally,
- Continuously experiment with policies and programmes for children, rigorously evaluating them to see whether they enhance child well-being, and reallocating money from programmes that don't work to those that do.

Let's be clear. This is not a call by Every Child Counts for immediate increases in the public spend on children. It is a call for a fundamental look at what's happening for children, the communities they live in, the supports they receive from government and how New Zealanders work together to grow healthy children.

In addition to an agreed plan of public investment in children we also need to introduce child impact assessment of new policy and programmes. Unless such assessments of new initiatives are undertaken there will continue to be unforeseen adverse consequences for children. There are various mechanisms available for undertaking such assessments, the assessments themselves are inexpensive and the benefits real.

We know this report will be of interest to anyone concerned about the current status of tamariki/ children in Aotearoa New Zealand and the need to create a more secure, productive future for our nation.

*Murray Edridge*  
*Chairperson, Every Child Counts*

## Key messages

There are five key messages that emerge from the literature review and economic analysis undertaken by Infometrics Ltd. They are —

- |                   |   |
|-------------------|---|
| Key message no. 1 | The first one thousand days of a child's life are critical in determining whether or not that child will be a healthy, mature and productive adult.   |
| Key message no. 2 | The economic cost to the New Zealand economy of poor child outcomes is of the order of 3 percent of GDP (approximately \$6 billion). This includes increased health, welfare, remedial education, crime and justice expenditure and lower productivity.   |
| Key message no. 3 | New Zealand public investment in children is both low and relatively ineffective by international standards.  |
| Key message no. 4 | The Netherlands provides an alternative model of comparatively modest, but highly effective public investment in children.  |
| Key message no. 5 | There is international unanimity that deprivation is a primary risk factor in early childhood resulting in poor outcomes in adulthood. Deprivation includes inadequate family income, poor quality housing, inability to access health services, educational opportunities and reduced social engagement. |
| Key message no.6  | Any solution requires long term action plans not subject to short term electoral cycles and adversarial politics.   |

## Executive summary

### 1000 days to get it right for every child

#### *The effectiveness of public investment in New Zealand children*

The effectiveness of public investment in New Zealand children underlines the economic cost resulting from inadequate investment in young children. Using a human capital framework, the report documents the economic impacts of poor child outcomes. The focus is solely economic and does not address political, social equity or child rights implications of child outcomes. It is entirely evidence-based and draws upon a wide range of international literature.

Drawing on OECD data, Infometrics find that child outcomes in New Zealand are typically almost twice as bad as outcomes obtained in Denmark, which is the best performing of thirty OECD countries. Greater levels of investment in early-years education, health and poverty reduction are warranted by economic analysis of positive impacts, but are not in themselves sufficient. Firstly, it should be observed that economic growth and prosperity typically improve child outcomes. Secondly, the effectiveness of early childhood policies, programmes and interventions vary considerably from one country to another.

Not only is New Zealand one of the poorest performing countries of the OECD in terms of child outcomes, but its results for every dollar spent is among the least effective. North European countries such as Denmark achieve the best outcomes with the highest rates of per child public spend. The Netherlands achieve a startling result. Although they spend only a fraction per child of the Nordic countries they achieve nearly comparable child outcomes. In other words, their programmes are very effective and much less costly. It needs to be borne in mind, though, that their public expenditure per child is nearly twice that of New Zealand's.

In the chapter on the impact of poor child outcomes the report draws upon international studies that highlight the critical importance and vulnerability of the first years of a child's life. Poor early childhood experiences such as deprivation, inadequate housing, poor parenting, exposure to violence and so forth generate long term social and economic costs including costing the economy between 2 percent and 4 percent of GDP. Multiple studies are cited throughout the report to show the correlation between successful early life experiences (a loving, language rich, consistent and economically secure environment) and higher education, income and health levels. Household income and maternal education are associated with child wellbeing and health. Positive and negative experiences in these areas can become intergenerational and therefore successful interventions can be powerful investments that produce economic multipliers.

Chapter three explores who is at risk and notes that the international literature is unanimous in giving primacy to deprivation among the risk factors. There is considerable discussion concerning the causative mechanisms, its correlation with poor parenting and its impact at different stages of childhood. The report

concludes that not only is deprivation a cause of poor outcomes in adulthood, but it is also a critical indicator of other likely causes such as stressed or inept parenting, family structure and parental employment status. Deprivation causes the greatest damage during the early years of childhood.

In chapter four the report examines the international evidence relating to returns on investment in early childhood. The early years are critical due to intense neurological development during those years. It is to these years, therefore, that government policy and public investment needs to be targeted for the best returns. Skills are accumulated early in a child's life, with each level of attainment providing the basis for further growth and development. Early interventions are more successful and have greater payoffs than later interventions. Effective investment in early childhood years will increase the likelihood of productive skills, ultimately increasing individual and economy wide returns while simultaneously reducing calls on the state for benefits and other types of assistance.

It is in chapter four that the report examines the child outcomes (over twenty measures) and investment levels of thirty countries. Infometrics subjects the data to detailed comparative analysis and concludes that New Zealand ranks 28th in terms of child outcomes. They then plot the outcome score against per child public spend for each country. New Zealand spends about US\$14,000 per child, the Netherlands about US\$24,000 and the top spending countries, over US\$50,000. The Netherlands result cries out for further research as they achieve child outcomes comparable to those of the highest spenders.

Regression analysis of the child outcomes for the various countries concludes that concentrating spending on under six year olds would be an effective way of improving child outcomes in New Zealand. A 3 percent increase in expenditure on the under sixes is likely to produce the equivalent of a 10 percent increase in expenditure for all children allocated as at the present.

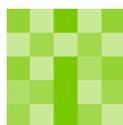
In the fifth chapter the report examines policy design issues. Policy settings that help reduce childhood poverty include free preschool for children of poor socio-economic status (where tax payers get back a greater measurable return than they invest), welfare benefit approaches that do not discourage people from working and coordinated approaches to support in which children are developed within their own family and community setting.

Given fundamental changes in social structures, the report notes that it is family function, not family form that matters. Children can have their emotional, mental and physical needs met in a range of family settings. In single parent household settings, increasing transfer payments, supporting the parent to engage in substantial employment, and the provision of high quality child care may all be important. Quality child care in this context is about creating whole of life time benefits, not a care service for a working single parent. Improved early childhood education access for Māori and Pasifika and low income families is required. Private under-investment in education must be offset by government policies that subsidise education costs.

It is clear that the highest needs and the highest risk children should have priority access to intensive services. The Prime Minister's Science Advisory Committee 2011 report noted that, "... the evidence is compelling that targeted intensive but costly interventions towards the higher-risk sections of the community has a higher rate of social and economic return". Successful investments are not inexpensive, but additional investments must be in the right things. There is little research evidence that spending more on older children produces the same returns as for younger children. Nor is it clear that investments in long term single-parent benefits is positively correlated to improved child well being.

There is no single approach to improving child outcomes. Spending and attention across a range of fronts is required. The idea of a wide ranging portfolio of investments to improve outcomes for children may be a useful concept. Knowing what to invest in requires good information, evidence and analysis. Evaluations are likely to be more meaningful where clear targets were set at the time of introducing a new programme.

Other characteristics of an effective public investment portfolio include a minimisation of conflation or conflict of objectives such as that between meeting social need and labour market participation; a balance between income support and service provision; parent education and employment training; parental leave provision; and policies that facilitate and encourage single parent participation in the paid workforce without being punitive. Access to affordable early childhood education is a critical form of public investment leading to positive returns for good child outcomes.



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## 1. INTRODUCTION AND SUMMARY

This report, commissioned by Every Child Counts, investigates issues that are important for raising the effectiveness of public and community investment in New Zealand children. Although the majority of New Zealand children are well supported by their families, their communities, and by government services, there is also a significant subset of children who miss out on this support. The consequences for these children in terms of personal prospects are severely compromised by a lack of support, particularly in the very early years. Support for these children, and their families, in the early years of life represents a cost effective social investment, as it will address issues before they become serious problems. The counterfactual is that the lack of support feeds through into poorer health outcomes, poorer education and consequent labour market outcomes, delinquency and later criminal behaviour, and other factors that inhibit social integration. In addition to the impact this has on the affected individuals and their families, these consequences also impose a significant financial burden on the rest of society. International evidence suggests that the consequences of poor child outcomes could impose an annual economic burden on society in the order of 3 percent of GDP.

Our discussion of early childhood programmes incorporates the wide range of investment required to achieve optimal outcomes for children in the early years, including health, early childhood education, parenting, recreation and more.

### Conclusions

Our key conclusions are:

- The early years are critical for optimal child development and the realisation of the child's full potential as a loving, socially engaged, well-educated and trained adult, contributing to national social and economic life at their full potential.
- Children in their first years of life are the most vulnerable to the long term damaging consequences of deprivation.
- Deprivation impacts upon child development through the inability to access needed goods and services (including healthcare); through disruption and stress of family life; and through social alienation.
- Effective public investment in the early years of childhood produces measurable improvements in lifetime outcomes for children.
- Resulting reductions in the demand for remedial government services (education, health, criminal justice) and improvements in labour productivity mean that effective public investment in the early years of childhood represents a sound form of public investment.
- International evidence indicates that New Zealand child outcomes are poor compared with other OECD countries. We rank 28th out of 30 countries using OECD data on international performance across 20 dimensions of child outcomes.
- Our analysis indicates that New Zealand children would benefit from a higher



level of early childhood public investment, but this will not be cost effective without improvements in the quality and effectiveness of New Zealand interventions. Policies and programmes must be evidence-based while also providing scope for innovation, especially where that is community-led.

- There are few grounds for complacency, given that poverty rates for younger children are greater than for older children, when the most important physical, psychological and social development is occurring. Using a poverty measure of 60 percent of median household income, 2008 figures showed that 23 percent of children aged 0-17 experienced material hardship, which was particularly concentrated in Pacific populations with 51 percent of Pacific children experiencing hardship, 39 percent of Māori populations and 59 percent of families dependent on benefit incomes.
- Concentrating spending on under six year olds would be an effective way of improving child outcomes in New Zealand. A ten percent increase in public spending on under six year olds yields the same type of improvement in child outcomes as one might expect from a 5 to 7.5 percent increase in average incomes.
- Effective early childhood investment will not only improve prospects for at risk children, but will also have net national economic benefits as the lower social burden resulting from poor child outcomes will reduce the future tax burden imposed on the rest of society and/or improve the affordability of other desirable public services. Savings are likely to be substantial, perhaps as much as 3 percent of GDP.
- Countries that have lower levels of child deprivation and better measures of child outcomes appear to deliver support to at risk children without compromising parental attachment to the labour market.
- The three critical markers of the risk exposure of children appear to be sole parenthood, parental conflict and household joblessness.
- An effective public investment portfolio in New Zealand children will involve both increased spending and more effective spending. It is important to establish a sustainable funding system that encourages both innovation and rigorous evaluation of investment options.
- The effectiveness of child assistance programmes will be influenced by the interaction of a wide range of government policies such as between policies that provide support for at risk families with support and incentives for labour market participation; the appropriate balance between income support and the provision of family support services; the balance between universal and targeted programmes; the appropriateness of programmes that target children or parents; and the need to ensure the cost effectiveness of publicly funded programmes.
- Access to affordable early childhood education is a critical form of public investment leading to positive returns from good child outcomes. For vulnerable children this will be more effective when combined with support and education that enables parents to be involved and also upskill themselves.



## Recommendations

There is a growing consensus on the key policy foundations for improving child wellbeing, which were nicely summarised in OECD (2009):

- invest early in children's lives;
- concentrate on improving the lot of vulnerable children;
- design interventions for children that reinforce positive development across their life cycle and across a range of well-being outcomes;
- create clear, achievable targets for child well-being outcomes;
- regularly collect high-quality information on children's well-being that is nationally and internationally comparable; and finally,
- governments should continuously experiment with policies and programmes for children, rigorously evaluate them to see whether they enhance child well-being, and reallocate money from programmes that don't work to those that do.

This seems a sound policy template for improving child wellbeing. New Zealand-specific initiatives that would support the adoption of this template include:

1. Establishing a political consensus that is based on an investment approach to improving child wellbeing. This would entail not just a recognition of the importance and value of early life preventative investments but also a long term funding commitment.
2. Policy development and institutional arrangements that identify and separate the design, funding, governance, management, and service provision roles.
3. A commitment to undertaking research on the effectiveness of specific early childhood interventions within specific communities, and resourcing those communities to identify and deliver solutions.
4. Enabling multi-sectoral responses to child poverty and other family issues, coordinating central and local government efforts, and prioritising action for the youngest children and their families.
5. Research into the approach to early childhood support in the Netherlands and the applicability of Dutch policies to the New Zealand environment.
6. Setting targets, monitoring the impact of policies and resourcing programmes for long-term implementation where they are shown to deliver change.
7. Reviewing the interaction between the social welfare and tax systems in order to minimise the impact of income support for families with young children and parental attachment to the labour market.
8. In terms of child specific initiatives investigation is warranted of factors such as the applicability and potential effectiveness of public private partnership delivery systems, conditional cash transfers, geographical targeting, and the cascaded service model.



## 2. IMPACT OF POOR CHILD OUTCOMES

The importance of early childhood experiences for shaping outcomes throughout life is increasingly recognised. A recent report from the Prime Minister's Chief Science Advisor on the wellbeing of adolescents in New Zealand, for example, devotes large sections to the importance of taking a lifecourse approach to developing policies that impact on child development. That report also strongly advocates the need for New Zealand policy to be better informed by evidence about the efficacy of particular policies and programmes. Such an approach is consistent with trialling new ways of working, including adapting overseas models for the local context, so long as there is adequate monitoring of outcomes to ensure the efficacy of programmes and policies receiving public funding.

This growing body of knowledge increasingly acknowledges both the social and economic benefits arising from children being optimally nurtured. Conversely, there are substantial costs that come with poor early childhood experiences.

International studies indicate that the economic costs of poor child outcomes can be measured in terms of low educational and training success, reduced workplace productivity, and increased public health, welfare and justice expenditures. International studies of these different impacts include:

- Holzer et al (2007) estimate that the costs to the US associated with childhood poverty is equivalent to 4 percent of GDP per year as a result of a 1.3 percent reduction in GDP due to lower productivity and economic output; a further 1.3 percent reduction in GDP due to increased costs of crime; and a 1.2 percent reduction in GDP due to increased health expenditures and poorer health outcomes.
- Hirsch (2008) estimated that public spending to deal with the fallout of child poverty in the United Kingdom, through increases in social services, healthcare, education and criminal justice, ranged from £12 bn to £21 bn (or from 0.9 percent to 1.6 percent of GDP). Further, the annual cost of below average employment rates and earnings levels among adults who grew up in poverty was estimated to impose an additional £13 bn burden on the UK economy. In sum, these estimates suggest that child poverty represents an opportunity cost for the United Kingdom that is in the region of 2-3 percent of GDP.
- The 2009 OECD report, *Doing Better For Children*, indicates that child poverty rates in New Zealand are about midway between those of the UK and the US (using the poverty measure of 50 percent of median household income). In New Zealand 15 percent of children were deemed to live in poor households in 2005, compared with 10 percent in the UK and 20 percent in the US. Applying the results of Hirsch (2008) and Holzer et al (2007) would suggest that the costs of child poverty in New Zealand would be somewhere in the middle of the range of 2-4 percent of GDP. A 3 percent of GDP cost would have been equivalent to \$NZ5.7 bn in 2010.
- Children in families that have been behind on rent within the last year are more likely to be in poor health and have an increased risk of developmental



delays than children whose families are stably housed. The mothers in these families also have a much higher likelihood of experiencing symptoms of depression and being in poor health than mothers living in stable housing (Children's HealthWatch 2011).

- In a New Zealand study, Maani et al (2006) found that domestic overcrowding is related to increases in hospital admission for infectious diseases among children and appears to be one of the transmission paths from poverty to poor health outcomes.
- Emerging research in neuroscience and developmental psychology suggests that poverty early in a child's life may be particularly harmful because the astonishingly rapid development of young children's brains leaves them sensitive (and vulnerable) to environmental conditions. In a US study of children born between 1968 and 1975, for whom adult outcomes were collected between ages 30 and 37, Duncan and Magnuson (2011) found that compared with children whose families had incomes of at least twice the poverty line during their early childhood:
  - a) poor children completed two fewer years of schooling,
  - b) earned less than half as much money,
  - c) worked 451 fewer hours per year, received \$826 per year more in food stamps, and
  - d) are nearly three times as likely to report poor overall health.

In addition Duncan and Magnuson found that poor males were more than twice as likely to be arrested and that for females, poverty is associated with a more than five-fold increase in the likelihood of bearing a child out of wedlock prior to age 21.

- Research on delinquency shows that a few chronic offenders commit the vast majority of offenses. For example, an examination of 13,150 men born in 1958 in Philadelphia demonstrated that, while those with five or more contacts with the justice system comprised only 7.5 percent of the group, they were responsible for 61 percent of all recorded offenses (including 61 percent of homicides, 75 percent of rapes, and 65 percent of aggravated assaults). Findings that lead Yoshikawa (1995) to conclude that:
  - a) a small group of chronic offenders is responsible for committing the majority of serious juvenile offenses;
  - b) there are two groups of youthful offenders, distinguished by when their antisocial behaviour begins; and
  - c) youths whose delinquent careers begin early tend not to specialize in any particular type of antisocial act.
- Gluckman et al (2011) cite the findings of the Dunedin Longitudinal Study which investigated 1000 children who varied on levels of self-control, and showed that self-control predicted an impressive array of life outcomes including those of physical and financial health and criminal offending, up to three decades later. Self control is one of the executive functions developed during the rapid neurological growth infants and small children experience in the early years.



- The New Zealand Medical Association (2011) contends that a child's early life experiences, including whether they are brought up in a nurturing environment, have good exposure to language development, and develop social skills has a critical effect on later life health outcomes. Conversely, a child's exposure to overwhelming stress, emotional neglect, violence – whether witnessed or endured- or even environmental uncertainty has a profound influence on the incidence of a number of diseases in later life, and mental health problems.
- Lindenboom et al (2003) and Van den Berg et al (2008), using Dutch and Danish birth registry data respectively find that economic conditions at time of birth are related to mortality rates throughout life. Lindenboom et al found that those who are born in bad times on average have a high mortality rate throughout life, in particular during childhood itself and at ages above 50. Current macro-economic conditions mostly have an effect on youths and on the elderly. Van den Berg et al also found some evidence that economic conditions early in life exert their influence through nutritional quality and health infrastructure, as opposed to disease load exposure and housing conditions.
- Gould et al (2010) exploit variation in living conditions experienced by Yemenite children after being airlifted to Israel in 1949 as a natural experiment for investigating the lasting impacts of early life living conditions. They found that children who were placed in a more modern environment (better sanitary and infrastructure conditions) were more likely to obtain higher education, marry at an older age, have fewer children, and work at age 55. They also found an effect on the next generation – children who lived in a better environment grew up to have children with more education.
- The Public Health Advisory Committee (2010) concluded that young children's family environments are so influential that they predict children's cognitive, social and emotional abilities and their subsequent success at school. Factors such as parental income and maternal education are associated with almost every measure of child health and wellbeing.



### 3. WHO IS AT RISK?

In this chapter we examine the various childhood risk factors that contribute to poor outcomes in adulthood. Identification of the risk factors and the mechanisms of their negative operation is a critical precursor to any effective policy formulation. The international literature is unanimous in giving primacy to deprivation among the risks, although there is considerable discussion concerning the most effective measures of deprivation and the negative causative mechanisms of deprivation including the role of subjective perceptions of deprivation, the impact of poverty at different stages of childhood and its correlation with and influence upon poor parenting.

#### The role of deprivation

The OECD notes that in many countries policy has historically focused on child poverty as a means of improving child well-being. Partly the child poverty focus has been a default focus, as child poverty is one of the few outcomes that can be easily measured and compared across OECD countries for all children (OECD 2009).

Barrientos and De Jong (2006) note that children are disproportionately represented among the income poor, many suffer from severe deprivation, and their poverty and vulnerability have cumulative and long-term consequences.

Ballentyne et al (2003) conclude that the proximate causes of child poverty include:

- Demographic – simply being born into poverty.
- Labour market induced changes, eg parent losing their job.
- Changes in the physical or psychological welfare of parent(s) or family members.
- Changes in the size and composition of the family.

Changes in marital status are more likely to be associated with child poverty transitions, but change in marital status occur less frequently than labour market transitions. In their investigation of recurrent poverty experiences in Scotland, McQuaid et al (2010) found that it was often the combination of events that lead people into poverty, or into worse poverty. Events common with the movement of households into financial poverty were the arrival of children or a relationship breakdown, coupled with unemployment or with some other reduction in household income.

In nearly all OECD countries child poverty rates are significantly higher for jobless families, for single-earner (versus two-earner) families, and for sole-parent (versus two-parent) families (Whiteford and Adema 2007).

The Public Health Advisory Committee (2010) says New Zealand health outcomes are low in part because gaps have widened between the health status of different groups in our communities over the past three decades. Māori and Pacific children have two to three times poorer health than non-Māori, non-Pacific children. Children in very low-income families, children of beneficiaries and children of prisoners also have worse health than other children.



The UNICEF 2005 report card on child poverty identified three determinants of child poverty, namely:

- Social trends, including changes in family.
- Labour market conditions.
- Government policy.

It concluded that government policy settings have the single biggest impact on child poverty. That is, that policies are able to mitigate the impact of the circumstances that may result in a child or family being in poverty (UNICEF 2005).

Mayer (2002) in a major review of the international literature for the New Zealand Ministry of Social Development noted that parental income is positively associated with a wide range of important child outcomes, including:

- Cognitive test scores (intellectual ability).
- Social functioning issues such as emotional issues, mental health, and behavioural issues.
- Physical health.
- Teenage childbearing.
- Educational attainment.
- Future economic status, and
- Criminal behaviour.

At the most basic level family income has an impact upon the child's access to certain purchased goods and services important for their development including books, home computers, primary health care, sport and school field trips. But limited finances also restrict parents' emotional wellbeing and the day-to-day running of the household, as well as their, and their children's, social opportunities and experiences (McQuaid et al 2010).

However, the relationship between household income and child outcomes is considerably more complicated than a simple issue of access to resources. Although there is considerable evidence that poor child and later-life outcomes are correlated with household income in early childhood this does not necessarily mean that low incomes during childhood cause all of these problems. To begin with one needs to note that many children from poor beginnings go on to have productive and successful lives; likewise children from privileged backgrounds can develop considerable problems and cause considerable costs to society.

Mayer (2002) demonstrates that a lack of income may be more a marker of potential problems for children rather than the root cause of problems. The estimated size of the effect of parental income on child outcomes tends to reduce, with residual effects generally small to modest, when family background factors are controlled for. This suggests that it is the relationship between poverty and parenting that is the causative factor.

For example, in some situations it might be that the type of circumstance that undermines a parent or parents' ability to care for their children simultaneously



impacts on their access to income and resources. For others it might be that the personal characteristics that make someone unsuccessful in the labour market might also make them poor parents.

That income may not always be the root cause of child problems does not mean that access to resources is not an important component for improving child outcomes. Family resources influence the ability parents have to provide for their children's physical wellbeing. Adequate access to resources also removes a potential source of family stress, thus potentially reducing the risk of psychological harm for children. For example, longitudinal evidence from many studies suggests that hostile or rejecting parenting and lack of parental supervision is associated with children's later antisocial behaviour and delinquency (Yoshikawa 1995).

A further mechanism by which lack of family resources can influence child outcomes is through associated social exclusion. This might come about through an isolating effect where family circumstances lead to children developing values, norms and behaviour that are potentially regarded as dysfunctional by the dominant culture.

The complex nature of poverty and the solutions to it, is captured in the Sustainable Livelihoods framework. The framework identifies a multi-layered response to poverty, including community-led development and the implementation of appropriate public policy. The Sustainable Livelihoods framework is most commonly used in international development, but is also relevant to enabling people out of poverty in the domestic context (see for example Twigg 2007). Sustainable Livelihoods identifies five basic asset types needed to assist people out of poverty:

- Personal or Natural Assets: inner resources such as self-esteem and self-confidence.
- Physical Assets: basic material goods and services such as food, shelter, transportation and childcare.
- Social Assets: relationships and networks.
- Human Assets: skills, knowledge, education and health.
- Financial Assets: income, savings, and sources of financial security, including government income security programmes.

If a cycle of self-reinforcing social exclusion is indeed a driving force behind poor child outcomes it raises important questions with policy implications concerning effective ways of breaking the cycle and encouraging the reintegration of such families into the wider society. The framework above suggests a range of measures, delivered by a range of sectors is needed. But to what degree is it also an issue of access to resources through income support policies? To what degree is it an issue of improving parental employment opportunities through training and appropriate job creation policies? Is it a case of either or both? Is it more effective to target assistance at parents or children? We will return to these issues in *Policy design* issues below, here we will continue to examine the evidence of risk factors.



## Measuring resource deprivation

Measuring deprivation is not a simple task, and the measurement issues may be important for obtaining a true understanding of the relationship between family resource access and child outcomes. As Maxwell (1999) notes there is considerable ambiguity to the term poverty,

- Are we focussed on income or consumption?
- Is it the individual or the household that matters?
- Should poverty measures be adjusted for publicly provided goods and services?
- How does a snapshot of poverty relate to poverty dynamics?
- Are absolute or relative measures of poverty more relevant?
- Are objective or subjective perceptions of poverty more relevant?

In addition, with each of these debates there will also be competition between what is conceptually relevant and what can be measured more accurately. For example, many might consider that subjective perceptions of poverty probably offer a valuable insight into the incidence of poverty. However, the accuracy of self assessed subjective measures of poverty is likely to diminish if the measures are also linked to levels of public assistance as this will encourage many to overstate their sense of need.

That such measurement issues are critical for understanding the state of poverty is illustrated by the results of Meyer and Sullivan's 2010 examination of poverty in the United States from 1960 to 2008 in which they document sharp differences between different income poverty measures, and between income and consumption poverty rates and gaps. In particular they find that income and consumption measures of deep (extreme) poverty and poverty gaps have generally moved sharply in opposite directions in the last two decades with income deep poverty and poverty gaps rising, but consumption deep poverty and poverty gaps falling.

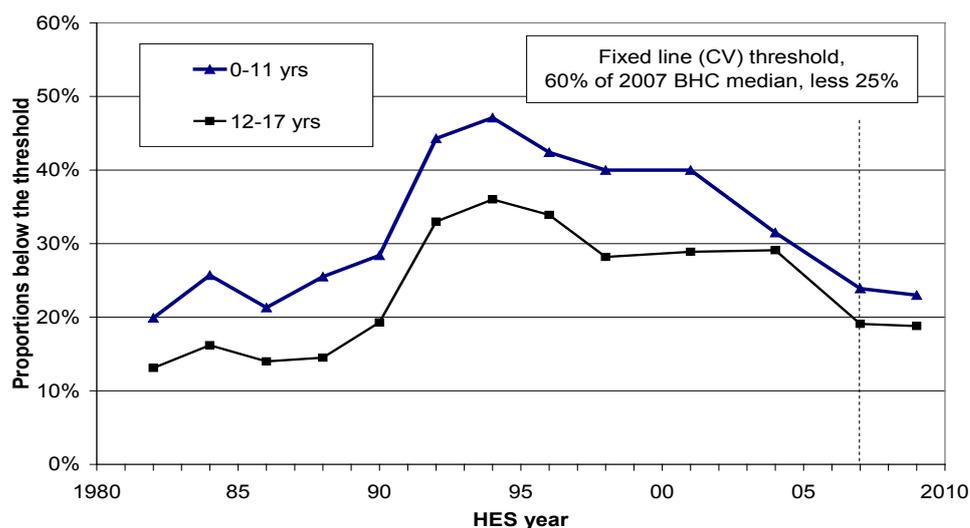
The growing consensus is that consumption-based measures of poverty are more relevant than income-based measures (for example see Whiteford and Adema:2007, Meyer and Sullivan:2010). This is because consumption is more likely to reflect permanent income and thus captures the long-term prospects of a family better than current income. Consumption is more likely to capture the effects of saving and dissaving, the ownership of durable goods such as houses and cars, and access to credit. Consumption is also more likely to reflect private and government transfers.

Although there is scope for more research into the distribution of consumption patterns in New Zealand, the quality of analysis on deprivation and hardship is steadily improving. For example Bryan Perry has produced three thorough investigations of inequality and hardship in New Zealand since 2007, with each version offering advances in method as well as updating the measures. Perry has also been central to the development of measures of deprivation based on economic living standard surveys conducted in 2000, 2004 and 2008.



Figure 1 reproduces Figure H1 from Perry (2010) showing trends in the proportion of children in low income households. This illustrates that child poverty rates have been falling since the mid 1990s, but that poverty rates for younger children (aged under 12) are persistently above that of older children (aged 12-17). The outstanding concern is to what extent might the current economic recession be reversing the improvements of the previous decade?

Figure 1: Proportion of children in low-income households by age



Source: Perry (2010) Figure H1

Perry (2010) makes the following observations about the incidence of child poverty in New Zealand (p104):

Children living in sole-parent households experience significantly higher poverty rates than those in two-parent households and other family households (54 percent, 14 percent and 11 percent respectively in 2009).

- Around one in three sole-parent families live in wider households with other adults. Children living in these extended sole-parent families have lower poverty rates than those in sole-parent families living on their own because of the wider household financial resources available to them, both directly and indirectly.
- Although poverty rates for children in sole-parent families are much higher than for children in two-parent families, from the mid 1990s to 2004, 60 percent of poor children came from two-parent families and 40 percent from sole-parent families. In 2007 and 2009, half of poor children came from each family type. This is the highest proportion from sole-parent families since the start of the time series in 1988.
- Children in households with three or more children generally have higher poverty rates than those with only one or two children. In 2009, children in these larger households made up just under half of all poor children (48 percent).
- In 2001 and 2004, around one in two poor children came from households where at least one adult was in full-time paid employment.

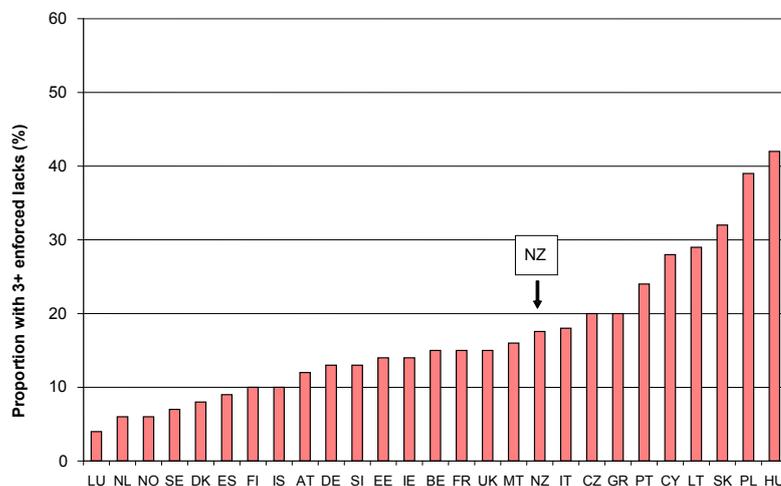


In 2007 and 2009 this proportion had dropped to around one in three.

- From 1992 to 2004, children in workless households generally had poverty rates around three to four times higher than those in households where at least one adult was in full-time work. In 2007 and 2009, the difference was even greater – around six to seven times higher for children in workless households.
- For children in ‘working’ two-parent households, poverty rates from 1988 to 2004 were much higher where there was only one parent employed full-time than where the second partner was also employed (either full-time or part-time). In 2007, the gap had closed, but it appeared to have opened again by 2009.
- The fall in child poverty rates from 2004 to 2007 for children in one full-time, one workless two-parent households was very large (39 percent to 12 percent).

The results of the 2008 living standards survey (Perry 2009) provide some additional insights about children’s experiences of deprivation in New Zealand. The surveys collect information from respondents about their material circumstances, including questions about ownership of household durables and their quality, their ability to keep the house warm, pay the bills, have broken down appliances repaired promptly, pursue hobbies and other interests, pay for a night out, and so on. From these responses Perry constructed measures of deprivation for different population groups.

Figure 2: International comparison of child (0-17) deprivation rates



Source: Perry (2009) Figure D3

In 2008, the survey calculated that 13 percent of the population were defined as experiencing material hardship. Children were more likely to be facing hardship, with 19 percent of children aged from 0 to 17 measured to be experiencing material hardship. Child hardship was found to be particularly concentrated in Pacific populations, with 40 percent of Pacific children experiencing hardship, 32 percent of Māori populations and 53 percent in families dependent on benefit



incomes. One piece of positive news is that child material hardship declined between 2004 and 2008 from 26 percent to 19 percent. This result is consistent with the poverty trends. The decline in material hardship and poverty rates is attributable to the labour market and the introduction of the Working for Families policy. There was no material improvement in deprivation rates for families relying on benefit income.

Perry also undertook an international comparison of material hardship for New Zealand children. Using a European Union definition, New Zealand children were found to have a material hardship rate of 18 percent. This ranked New Zealand at the 'low' (ie more deprived) end of the hardship rates for children measured in the "old" European Union member countries. It was the same as Italy (18 percent), but better than Greece (20 percent). The New Zealand hardship rate for children is higher than that for the UK (15 percent) and Ireland (14 percent), and well behind countries like Norway (6 percent), the Netherlands (6 percent) and Sweden (7 percent).

### **Timing issues**

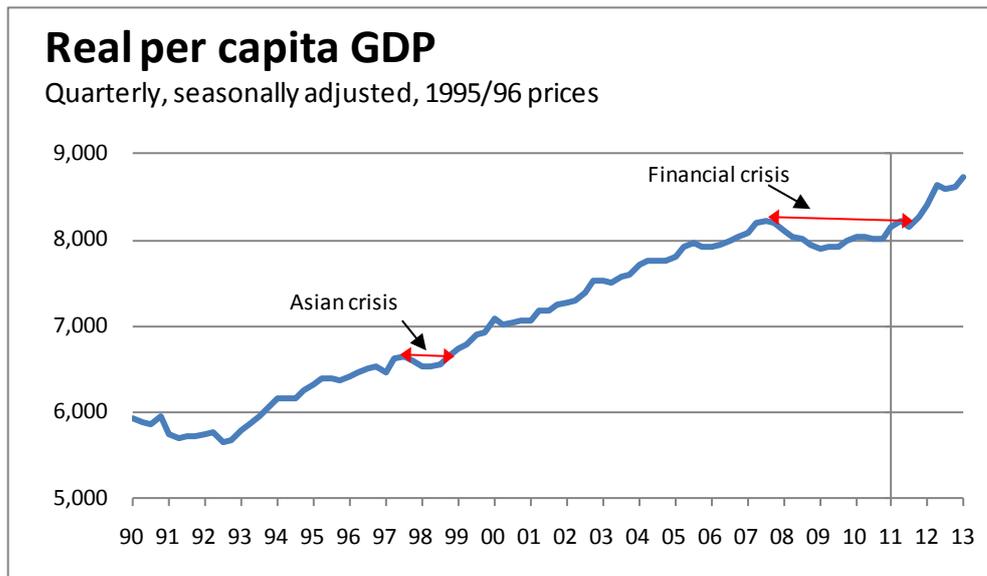
That child poverty appears to be declining, at least up until 2009, is a positive outcome. But there are few grounds for complacency. To begin with there is the evidence (presented in Figure 1) that poverty rates for younger children are greater than for older children. This of concern as it appears that low parental income could have more serious impacts at young ages. For example Mayer (2002) notes that income appears to have the largest effect on cognitive test scores and educational attainment, and that it is particularly income in early childhood that is important for schooling outcomes.

The evidence of Lindenboom et al (2003) and Van den Berg et al (2008), that economic conditions at time of birth are related to mortality rates throughout life is of increasing concern at the moment given the depth and length associated with the recent economic recession. After expanding for nine years the New Zealand economy went into recession at the end of 2007, initially due to the impact of a local drought, but later compounded by the international financial crisis. This economic downturn is the worst that New Zealand has faced in a generation. To put the current recession into context, real per capita GDP declined by 3.8 percent in the six quarters to March 2009. This compares to the 1.9 percent two quarter contraction in real per capita GDP resulting from the Asian crisis in mid 1997.

However, it is probably more meaningful to measure the intensity of a recession by counting the number of quarters it takes for an economy to recover to its pre-recession level of economic activity. On this basis it took the New Zealand economy six quarters to surpass its pre-Asian Crisis peak in real per capita GDP. At present, New Zealand real per capita GDP is still below its September 2007 peak. Current Infometrics forecasts do not see real per capita GDP above its September 2007 peak until the December quarter 2011 – implying a 17 quarter recession.



Figure 3



Source: Statistics New Zealand, Infometrics forecasts

Extended durations of low income appear to have stronger adverse effects on children than short periods. Mayer (2002, p68) notes that a short period of low income has very few long term consequences for children. But families that are poor for a long time are more likely to be headed by someone who suffers from depression, anxiety, psychological problems, physical health problems, low cognitive skills, drug and alcohol problems, and so on. All these factors, Mayer argues, make it more difficult to provide the involved, consistent and nurturing environment important for the upbringing of children.

In this regard, Motu conducted a very pertinent study of the dynamics of child poverty in New Zealand based on matching responses to adjacent income supplements to the Household Labour Force Survey's conducted in the June quarter of each year (Ballantyne et al 2003). Their results indicate that although New Zealand has a relatively high rate of child poverty compared to continental European countries, the income mobility of children is also at the high end in New Zealand. New Zealand children have a greater chance of experiencing poverty, but once in poverty they have a greater chance of exiting poverty.

The Motu analysis was based on income supplements collected in the late 1990s (when according to Perry (2010) child poverty rates were about 50 percent higher than in 2009). The Motu analysis indicated that children had about a 13 percent chance of being in poverty, with children having an 8.2 percent chance of entering poverty any year and a 58.5 percent chance of exiting from poverty within one year.

The data used in this study does not allow any analysis of multiple movements in and out of poverty as the analysis is of at most one transition for each individual household. However, the numbers produced by Motu can be used to estimate the probability that children might experience continuous periods in poverty. In this regard the Motu calculations would suggest that 7 percent of the children born into poverty are likely to live in poverty throughout their pre-school years.



## Risk factors

OECD (2009) notes that high-risk can be defined in terms of permutations of family circumstances such as parental education levels, low income, parental absence, young mother, large family, parental mental illness and drug and alcohol dependence, social isolation, older siblings with problems, or parental benefit dependence. High-risk can also be defined in terms of early outcomes of the child. It may be considered in terms of early onset problems, especially early onset externalising behavioural problems (childhood conduct problems) or cognitive and learning difficulties. However, inevitably the weighting will be much more strongly on the family risk factors, since the possibility of diagnosing cognitive or behavioural problems really only exists from age three onwards.

Harold (2011) reports that children are at increased risk for negative psychological outcomes (anxiety, depression, aggression and antisocial behaviour) from within a family context when they are exposed to acute or chronic economic strain, parental psychopathology (e.g. depression, antisocial behaviour), inter-parental conflict, negative parent-child relations, parental separation-divorce and remarriage, or child maltreatment. Harold however notes that in relation to each of the other family factors mentioned (economic stress, parent depression, negative parenting, for example), conflict occurring between parents has been recognised as a factor common to all in accounting for adverse outcomes for children. Although periodic conflict between parents is a natural and normal part of family life, it appears that parental conflict can potentially impinge on the psychological health of children if the conflict is also associated with the quality and consistency of parenting, and/or the stability of the parental relationship.

Carlson and Berger (2010) illustrate the ways that marital separation can impact on children through an investigation of the engagement adults have with children in different types of family groups. The analysis examined six family structures, and with time use surveys obtained a count of engagements of adults with their biological or social children (ie the children of a partner). The number of weekly engagements that mothers have with their biological children are very consistent across different family types (ranging from 36 to 39). Cohabiting fathers were found to have 28 to 35 engagements with their children, whether biological or social. However, non-resident biological fathers were found to participate in very few activities with their biological children, typically fewer than 10 engagements, and as low as 2 if a new social father is living with the mother. Effectively this United States evidence suggests that, in addition to the impact of parental conflict associated with separation, a further psychological risk factor for the child is estrangement from their biological father.

Yoshikawa (1995) notes that a risk factor may exert an indirect rather than a direct influence on development of delinquent behaviour. For example, children who grow up in single-parent households tend to have higher rates of later delinquency, but this appears to be due to difficulty in providing adequate supervision, not single parenthood per se.

Ballantyne et al (2003) note that New Zealand is relatively successful in generating jobs for poor couple households with children. But New Zealand is



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less successful in translating positive events for lone parent families, such as re-partnering and/or gaining full-time work, into the income growth that will allow an exit from poverty.

This finding implies a conflict in developing public policy between recognition of the labour market impact upon poverty and changing social and demographic norms.

In summary, we have sought to demonstrate that –

- i) deprivation is a cause of poor adult outcomes for a child when it denies them access to critical needs for their full development;
- ii) deprivation is a critical indicator of other likely causes of poor adult outcomes for a child such as stressed or inept parenting and also an important parental stressor;
- iii) deprivation during the early years of childhood are more damaging than during the later years;
- iv) the factors contributing to poor childhood outcomes are complex but lone parenthood and the employment status of parents are important markers of child exposure to deprivation and this has a significant impact;
- v) further research is needed on the occurrence and frequency of multiple transitions into poverty, and the roles of different sectors in supporting these;
- vi) government policy can strongly influence both the level and distribution of deprivation;
- vii) multi-sectoral responses to poverty are useful and can help build the range of assets needed to lift people out of poverty, such as the Sustainable Livelihood Framework, and
- viii) consumption measures of deprivation are more useful than income measures.



## 4. RETURNS ON INVESTMENT IN EARLY CHILDHOOD

In this section we summarise the international literature on investment targeted at the early years of childhood; examine comparative studies of investment in early childhood in other countries of the OECD; subject the New Zealand data to regression analysis; and reach some conclusions relevant to policy formation.

### Evidence from international studies

There have been numerous studies on the long term impact of investing in improving outcomes in early childhood. The underlying concept that investment in early childhood should improve outcomes in adulthood is based on a human capital perspective of skill development. The possession of productive skills increases the returns from working for that person and reduces their likelihood of being reliant on the state or society to support them. The acquisition of skills is a cumulative exercise, with skills acquired early in life providing children with the grounding to acquire further skills in later childhood. This perspective is nicely encapsulated in a quote by Heckman and Masterov<sup>2</sup>:

*An accumulating body of knowledge shows that early childhood interventions for disadvantaged young children are more effective than interventions that come later in life. Because of the dynamic nature of the skill formation process, remediating the effects of early disadvantages at later ages is often prohibitively costly (...) Skill begets skill; learning begets learning. Early disadvantage, if left untreated, leads to academic and social difficulties in later years. Advantages accumulate; so do disadvantages. A large body of evidence shows that postschool remediation programs like public job training and general educational development (GED) certification cannot compensate for a childhood of neglect for most people.*

Below is a summary of a handful of studies into the types of returns obtained from specific early childhood interventions. We then use some high level internationally comparable data collected by the OECD to assess the level and effectiveness of New Zealand public investments in generating positive outcomes from children.

A survey of the results of international cost benefit analysis of early childhood education programmes conducted for the recent government Early Childhood Education Taskforce found that early childhood education programmes with well-educated, adequately paid teachers, small classrooms (no more than 20 children) and reasonable staff-child ratios (less than 1:10) have repeatedly produced strong short-and-long-term educational gains. American cost benefit analysis of a range of early childhood education programmes give ratios of \$2.36 to \$16.14 for every \$1 invested (ECE Taskforce Secretariat 2011).

Belfield (2005) examined whether the benefits of universal preschooling in the state of Ohio would outweigh the costs of provision. The types of benefits identified coming from universal pre-schooling were:

Short term: improved academic achievement, higher quality health, lower levels of neglect, more parents entering the workforce



Medium term: lower school costs associated with grade repetition, special education needs, lower child crime rates, fewer classroom disruptions (spillover peer effects)

Long term: adults earning higher wages, paying more tax, lower welfare dependence, better health outcomes and lower adult crime rates.

A cost benefit study undertaken by Belfield suggested that there would be a societal return of \$1.62 for every \$1 of pre-schooling expense. To put some sensitivity around this finding, costs would have to be 58 percent higher or the estimated benefits 63 percent lower for universal preschooling not to be regarded as having a net benefit to Ohio.

Harknett et al (2003) examine the relationship between public expenditures and child outcomes across the 50 states of the United States. They find that public expenditures on children are related to better child outcomes across a wide range of indicators including measures of child mortality, elementary-school test scores, and adolescent behavioral outcomes. The improvements in child outcomes associated with spending are sizeable in percentage terms. An extra \$100 spent on Medicaid is associated with a 7 percent reduction in the child death rate. Education expenditures are associated with improvements in a wide range of outcomes. An extra \$1,000 spent on education is associated with a 10 percent reduction in low math and reading scores, a 15 percent reduction in the high school dropout rate, and a 10 percent reduction in the teen birth rate.

Heckman and Raut (2002) estimated that the preschool social contract policy costs the economy \$195.64 per capita but increases the per capita earnings by \$309.60. That is, there is a significant net positive gain to the tax payers from the introduction of the preschool social contract program.

Havnes and Mogstad (2011) analysed a large-scale expansion of subsidised childcare in Norway, addressing the impact on children's long-run outcomes. Their analysis based on difference-in-differences estimation techniques indicated that subsidised childcare had strong positive effects on children's educational attainment and labour market participation, and also reduced welfare dependency. Subsample analyses indicate that girls and children with low educated mothers benefit the most from childcare.

They found that the reform reduced the chances of having little or no earnings: Per childcare place, the expansion in subsidised childcare was estimated to decrease the probability of being a low earner by about 3.6 percentage points. The mean probability of being a low earner was 15.5 percent, thus the 3.6 percentage point improvement represents a greater than 20 percent reduction in the probability of low earnings. In comparison, the probability of having at least average earnings increased by 5.1 percentage points [compared with a 69.3 percent mean this implies a 7 percent relative improvement]. The expansion in childcare caused a reduction in the probability of being on welfare by almost 5 percentage points, which when compared to the pre-reform mean of about 16 percent implies a 31 percent reduction in probability of being on welfare.

But just spending more money does not guarantee success. It is necessary also



to examine the effectiveness of such expenditure, as highlighted by Office of the Prime Minister’s Science Advisory Committee (2011). We explore this issue further in our analysis of the international comparative data produced by the OECD.

## International comparison

The 2009 OECD report, *Doing Better for Children* collects up to twenty measures of child outcomes from thirty OECD countries. They also collected measures of public spending on children in each country and comparable measures of average income in each country. A full summary table of these results plus a brief description of the data is presented in the Appendix of this report<sup>3</sup>.

*Table 1. Patterns of spending by age and type have varied associations with different measures of child well-being*

Correlations of child well-being dimensions and social expenditure by childhood stage and type as a proportion of median income, 2003

Spending by childhood stage	Child well-being dimensions					
	Material well-being	Housing environment	Educational well-being	Health and safety	Risk behaviours	Quality of school life
On all children (0-17) years	0.29	0.13	-0.13	0.32	-0.04	0.02
On early childhood (0-5 years)	0.28	0.13	-0.06	0.41	-0.16	0.02
On middle childhood (6-11 years)	0.09	0.02	-0.26	0.22	-0.07	0.16
On late childhood (12-17) years	0.38	0.17	-0.07	0.22	0.13	-0.10

■ Association significant at the  $p < 0.05$  level    ■ Association significant at the  $p < 0.10$  level

Source: Table 7.1 from OECD (2009)

Table 1 above presents the results of some correlation analysis presented in OECD (2009). The table correlates well-being outcomes by country against spending on children as a whole, and by spending on children during the three stages of early, middle and late childhood. Considering first all spending on all children in the first row, there is a significant positive correlation found with the Health and safety dimension, but not with other measures. When spending by child age is considered, the Health and safety correlation retains its significance for early childhood. Indeed, the correlation between total spending during early childhood and Health and safety becomes somewhat larger. No well-being dimension has a significant relationship with spending during middle childhood. Only the Material well-being dimension is significant for late childhood spending. Other correlations are small in size.

Below we present some more analysis based on the database of child outcomes from OECD (2009). Our first step is to generate a summary measure of child outcomes for each of the 30 OECD countries. To do this we need to convert the data from the various dimensions into a common basis so that we can obtain a meaningful country outcome measure. The approach we adopt is, for each of the outcome domains (ie rows 2 -21 in the Appendix tables) we take the outcome for each country as a ratio of the outcome for the best performing country. To



illustrate, for the outcome in row 2, percentage of children in poor households, the best result is 2.7 percent for Denmark. In comparison the New Zealand measure is relative performance score of 5.56 ( $=15.0/2.7$ ).

*Table 2: Ordinal Average Outcomes for Children in OECD Countries*

Country	Child Outcome Score
Denmark	1.78
Sweden	1.79
Israel	1.81
Netherlands	1.81
Norway	1.88
Korea	2.09
Switzerland	2.11
Spain	2.12
France	2.13
Luxembourg	2.17
Germany	2.19
Finland	2.20
Belgium	2.27
Austria	2.37
Czech Republic	2.45
United Kingdom	2.46
Portugal	2.51
Italy	2.52
Australia	2.55
Ireland	2.57
Canada	2.60
Hungary	2.71
Poland	2.96
Slovakia	3.02
Greece	3.08
Japan	3.10
United States	3.46
New Zealand	3.52
Mexico	6.63
Turkey	7.42

Source: OECD, Infometrics calculations

The score for Denmark in this category would be 1.0 ( $=2.7/2.7$ ). We then repeat this type of calculation for each of the 30 countries for each of the 20 child outcome domains. An overall score for each country is then obtained by averaging the results across all the domains collected for each country.

4. A perusal of the table in the Appendix will indicate that outcome data is not available for all domains in every country. For example data is available in just 14 domains for New Zealand. The scores in Table 2 are therefore averages for the data that is available. In the econometric analysis that follows we test and reject the importance of absent domains.



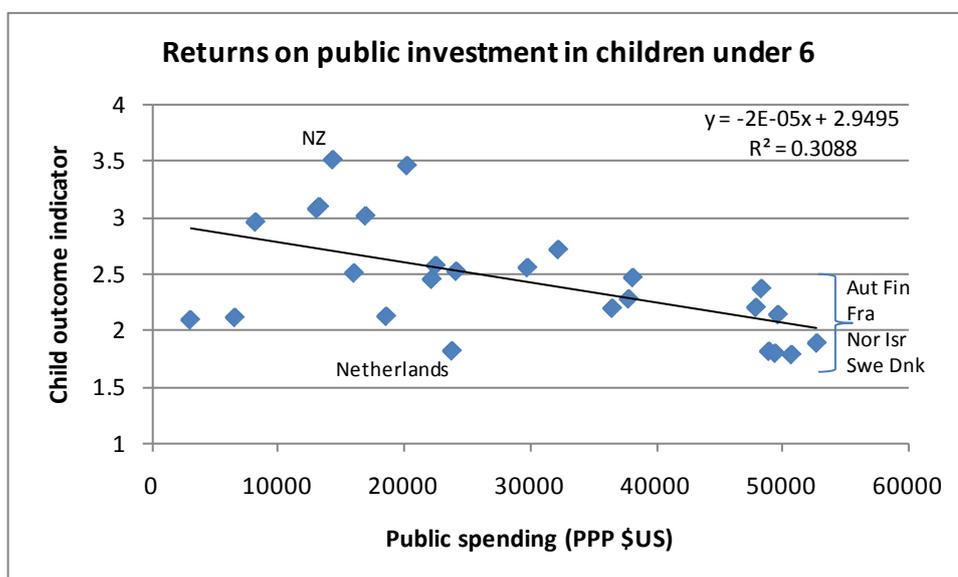
The results of these calculations are presented in Table 2. The measure is an ordinal score, with a lower score indicating better average child outcomes.

The optimal score would be 1.0, indicating that the country achieved the best outcomes in every domain. There is not necessarily an upper bound on the scores obtained<sup>4</sup>.

As stated, the child outcome scores in Table 2 are ordinal measures, measuring the relative performance of different countries rather than the absolute performance of each country. For example, a score of 1 in any domain might indicate that the country has the best performance in that domain, but this does not mean that further improvements are not possible or desirable. As the scores are relative measures, the results in Table 2 indicate that New Zealand child outcomes are typically almost twice as bad as the child outcomes obtained in the best performing country, Denmark ( $3.52/1.78 = 1.98$ ). However, in turn child outcomes in New Zealand are also roughly twice as good as apparent in Mexico and Turkey.

In Figure 4 the child outcome scores (from Table 2) are graphed against public spending on children aged under 6 (row 22 in the Appendix Tables). The graph excludes Canada and Turkey (because of a lack of public spending data) and Mexico (purely for illustrative purposes as its result places it far to the top right of the graph).

Figure 4



The regression line in Figure 4 indicates that more public spending directed at children aged under six typically improves outcomes for children. But Figure 4 also suggests that spending more public money is not the only way to achieving better outcomes. The countries that spend most on children (Austria, Finland, France, Norway, Israel, Sweden, and Denmark) achieve relatively better child outcomes. However, the tight cluster of these countries at the bottom right of the graph might indicate that these countries are beginning to face diminishing returns to their marginal investments in children. In contrast, the wider dispersal



in outcomes at lower levels of public spending (ie on the left end of Figure 4) suggests that there is a wide divergence in the effectiveness of public spending in obtaining better child outcomes. For example, the Netherlands achieves similar child outcomes to countries like Norway and Sweden but for half the investment. Such a conclusion has major policy ramifications.

The result for New Zealand is marked at the top right in Figure 4. Its position in the figure has the poorest child outcome indicator and also among the lowest levels of public spending per child. Two conclusions can be drawn from this. First, improvements in child outcomes in New Zealand probably require more public spending on the welfare of under six year olds. Second, and perhaps more importantly, New Zealand needs to improve the effectiveness of this spending. Figure 4 suggests that the Netherlands could perhaps be a better role model for New Zealand than the Nordic countries. At the very least it suggests that it would be useful to investigate more closely what are the factors behind the cost effective child outcome success of countries like the Netherlands, and see to what extent that methods successful there are applicable to the New Zealand situation.

### **Regression analysis**

Table 3 presents the results of some trans-log regression analysis of child outcome scores. The dependent variable in each of the three equations is the child outcome scores, as presented in Table 2. The explanatory variables used are average disposable incomes in each country (row 1 in the Appendix tables) and the level of public spending on children in each country, either for under six year olds or more comprehensively for children aged under eighteen. All of these variables were calculated by the OECD on a purchasing power parity basis and are per household in terms of income and per child in terms of public spending. All of the base data is expressed in natural logarithms. The regressions exclude Canada and Turkey as no public spending data was available for these countries.

The first equation, in column (1) of Table 3, relates child outcomes to average disposable income, public spending on under six year olds, the square of public spending on under six year olds (PS62) and the interaction between average income and public spending on under six year olds (Income\*PS6). A squared term for income was also tested but as it was never found to be significant is not included in any of the equations. Likewise a variable counting the number of child outcome domains included in each country's average outcome score was also tested and again excluded as it was not significant in any of the estimated results. Coefficient standard errors are presented in the rows marked standard error (or SE).

A significant negative squared term for public spending on under six year olds (PS62) is potentially consistent with our conjecture from examining Figure 4 that improvements in child outcomes diminish with increasing public spending on under six year olds. Diminishing returns would imply that spending more money on helping children will only get you so far and that perhaps what you do with the money may be as important as how much money is spent.



Table 3: Cross country regression results

<b>Dependent variable: Ln(Ordinal child outcome score)</b>			
Number of observations: 28			
<b>Variable</b>	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
Ln(average disposable income) [Income]	-3.8288	-3.5737	-2.7908
Standard Error	0.9497	1.2310	0.8210
Ln(Public spending on under 6 year olds) [PS6]	1.1607		1.1365
SE	0.8432		0.7289
PS6 <sup>2</sup>	-0.1239		-0.1037
SE	0.0496		0.0428
Income*PS6	0.3791		0.2698
SE	0.1012		0.0875
Ln(Public spending on under 18 year olds) [PS18]		-1.2145	
SE		0.3563	
Income*PS18		0.3164	
SE		0.1119	
Constant	1.8268	14.6589	0.0830
SE	4.0320	3.8110	3.4850
R <sup>2</sup>	0.668	0.604	0.64
DW	1.88	2.03	1.81
Implied improvement in New Zealand score from a 10% increase in:			
Average disposable income	1.9%		2.0%
Public spending on under six year olds	1.4%		0.9%
Public spending on all children under 18		3.2%	
Income offset required to negate public spending impact	8.0%		4.7%

The presence of the average income term, plus the lack of a significant squared term for average income, suggests that child outcomes typically improve with improvements in household incomes – indicating that economic growth is generally positive for child outcomes. This perspective is also captured in the presence of a significant interaction term between incomes and public spending on under six year olds (Income\*PS6).

Equation (2) in Table 3 presents similar analysis but considers public spending on all children under 18 rather than the focus on early childhood in equation (1). The key difference in functional form is the absence of a significant squared spending term.



Equation (3) in Table 3 examines the sensitivity of the results of equation 1 to outliers. For each country the worst result across the 20 domains of child outcomes is removed. For New Zealand this meant removing youth suicide, a domain for which New Zealand ranks worst of the OECD countries included. The parameter estimates of equation (3) are not statistically different from the unconstrained equation (1).

### **Implications for New Zealand**

The inclusion of the squared and interaction terms complicates the interpretation of the coefficient estimates and extracting the implied marginal impacts from the equation. The marginal impacts are illustrated by using the equations to estimate the impacts of increasing New Zealand average incomes and public spending levels by 10 percent. This is done in the bottom four rows of Table 3.

These calculations indicate that further concentrating spending on under six year olds would be an effective way of improving child outcomes in New Zealand. A ten percent increase in public spending on under six year olds yields the same type of improvement in child outcomes as one might expect from a 5 to 7.5 percent increase in average incomes.

The presence of the Income\*PS6 interaction term in equation (1) indicates that there is an offsetting impact from increasing public spending – more public spending transfers income from the household sector to the public sector, which is likely to have an offset on average household incomes, which in turn is likely to have a negative impact on child outcomes. It is an empirical issue as to which effect is likely to dominate. The final row in Table 3 uses the estimated equations to estimate the type of reduction in household incomes that would be required for the income effect to totally offset the positive impact on child outcomes from increased spending on early childhood. The numbers appear very large (5 to 8 percent) and much larger than the type of income offset one would expect from an increase in spending on under six year olds.<sup>5</sup>

Public investment targeted at under six year olds appears to be more cost effective than the current mix of public spending on children in New Zealand. If New Zealand was to increase its public spending on children by 10 percent, but allocating it in exactly the same way, this would be expected to improve our child outcome score by 3.2 percent from 3.52 to 3.40. The equations in Table 3 suggest that concentrating spending on under six year olds would yield the same result for about one third of the public expense (based on spending on under 6 year olds representing 16.5 percent of the public spending in New Zealand on children, ie  $3.2/1.4 \times 16.5 = 37.8$ ).

### **Rough estimates of return on investment**

Although the results of the cross country analysis indicate that more public spending on early childhood services are likely to result in improved child outcomes, this is not the same as saying that this spending will be cost effective. That will depend on the extent that improved child outcomes result in the type of economic gains suggested by the international research discussed earlier in this section. It also in turn depends on the effectiveness of specific policies in delivering the sought after outcomes.

5. Under six year olds comprise about 8 percent of the New Zealand population, thus it is difficult to conceive that a 10 percent increase in spending on this groups would yield a 1 percent offset let alone an 8 percent offset.



To illustrate, some very rough calculations of the potential returns on higher public investment in early childhood in New Zealand are presented. We do not have at present the full set of information that is required to make accurate calculations. In the absence of critical relevant information, the calculations are instead based on a number of assumptions, but are hopefully indicative of the potential range of relevant costs and benefits. The key message from these calculations is that there are potentially significant net national returns from increasing the public investment in early childhood, but this result depends critically on the design and effectiveness of specific interventions.

It is important to recognise that we are not beginning from a zero baseline. The New Zealand government already spends considerable amounts of tax funded money on children and their families. Some rough estimates based on the 2010/11 Estimates of Appropriations suggests that the New Zealand government is spending close to \$10,000 per child in households that include children aged under five. In total this represents close to \$3bn or 1.5 percent of GDP. This estimate is based on services directly related to the support of children and their families such as income support, welfare services, and early childhood education services. It does not include an estimate of health service expenses related to children aged under five.

The following calculations are based on an assumption that poor child outcomes are currently imposing an annual cost on society equivalent to 3 percent of GDP. This estimate is based on the estimates of Holtzer et al (2007) that child poverty in the US was imposing economic costs in the order of 4 percent of GDP each year, and from Hirsch (2008) that equivalent costs for the UK were around 2 percent of GDP. As New Zealand child poverty rates bi-sect those of the US and the UK (using the measure of 50 percent of median household income), we assume that the costs for New Zealand are 3 percent of GDP<sup>6</sup>.

From a purely economic standpoint, increases in public spending on children can only be justified if the resulting consequences of improvements in child outcomes outweigh the additional costs. The calculations below are based on two comparators, the OECD average and the Netherlands, and is based on data from OECD (2009) already discussed in this chapter.

According to the calculations of ordinal average outcomes for children in OECD countries (see Table 2), New Zealand has an average outcome measure of 3.52, the Netherlands 1.81 and the OECD median is 2.45 (remembering that lower scores are indicative of better child outcomes). Making a further assumption that improvements in the ordinal child outcome measure translates directly into proportional reductions in the economic consequences of poor child outcomes implies that if New Zealand obtained child outcomes equivalent to the OECD median, then this would translate into an economic benefit equivalent to 0.9 percent of GDP (ie  $(1 - 2.45/3.52) * 3.0 \text{ percent} = 0.9 \text{ percent}$ ). Obtaining child outcomes equivalent of the Netherlands would by a similar calculation equate to a 1.5 percent of GDP national benefit.

What about the costs? According to OECD (2009) the average public spend per child aged under 6 in the OECD was more than double that in New Zealand (110

6. There is also an implicit associated assumption here that rates of child poverty provide a proxy for poor child outcomes.



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percent more). The public spend per child in the Netherlands was 66 percent more than in New Zealand. Applying these proportional increases to current spending in New Zealand (\$3bn or 1.5 percent of GDP) would require public spending in New Zealand to increase to \$4.9bn (2.6 percent of GDP) to match the Netherlands or to \$6.2bn (3.3 percent of GDP) to match the OECD average.

These different spending requirements would imply quite different returns on investment. Matching the OECD average outcomes and spending levels implies a 1.8 percent of GDP increase in public spending on pre-school children for a 0.9 percent of GDP national benefit, a benefit to cost ratio of 0.53 – the return does not appear to justify the investment. However, matching the Netherlands implies a 0.9 percent of GDP increase in public spending with a 1.5 percent of GDP national benefit. The implied benefit to cost ratio of 1.43 would indicate that the extra public spending would be well justified.

This back of the envelope analysis is insufficient to provide a categorical answer on what the likely returns on public investment in children is likely to be. However, it does suggest that a contention that there are strong social and economic returns from public investment supporting pre-school children and their families is plausible, so long as the right programmes are promoted. More research is obviously required than offered here, but the results here are consistent with the “new consensus”: the quality of programme funded is of paramount importance for ensuring the achievement of national benefits. We turn to policy design issues in the final section.



## 5. POLICY DESIGN ISSUES

Three profound changes are challenging traditional views of childhood and child-rearing (Bennett 2008):

- the changing socio-economic role of women;
- the changing demography and population diversity of rich countries; and
- the new education ideology with its focus on social equity and preparation for school.

To be successful public policy aimed at improving child outcomes needs to be congruent or even reinforce these social trends. For example, the low early childhood education uptake among Māori and Pacific children suggests that our present nationwide policy of public investment is not as effective as it might be, perhaps because it fails to take account of the diversity of ethnic belief and practice. Other social trends that effective public investment in children needs to be consistent with include the diversity of contemporary family structures, such as one parent families, serial partners and parents, parents transitioning between childcare and paid employment.

### **Income support versus service provision**

The research of Duncan and Magnuson (2011) suggests that if one is hoping that giving parents extra income will bolster their children's chances for success, early childhood is the time to do it. Their study of a nationally representative sample of U.S. families and their children since 1968 found that an annual income increase of \$US3,000 sustained for several years boosted children's achievement by roughly one-fifth of a standard deviation, equivalent to a one-fifth of a year advantage in the early years of school. In addition, with respect to the earnings and work hours of people followed into adulthood, they find that income in early childhood appears to be better correlated with later life outcomes than family income in later stages of childhood.

A comparative analysis of child wellbeing in Canada and the United States illustrates the potential impact of income support on child outcomes. Corak et al (2010) note that while the average Canadian child is not as affluent as the average American, the poorest Canadian is not as poor in an absolute sense as Americans at the bottom of the income distribution. Public income transfers play a much more important role in reducing poverty among Canadian children with virtually all families receiving some measure of public support. This is likely the result of the Canadian Child Tax Benefit, a progressive system of income transfers delivered through the income tax system with the generosity of the benefit varying with family market income and number of children. While this program has played a limited role in reducing the incidence of low income, it has significantly reduced the severity of poverty. This design contrasts with the Employment Income Tax Benefit in the United States, which is tied to employment. Canada has also benefitted from multi-sectoral community development involving a wide range of stakeholders, including people who have experienced poverty.



Although publicly funded services can alleviate some of the consequences of poverty, public services cannot address the whole range of issues facing deprived children, as discussed in *Who is at risk?* above. For example, Case et al (2007) find no evidence that the British National Health Service, with its focus on free services and equal access, prevents the association between health and income from becoming more pronounced as children grow older. This seems a plausible result as health care is largely a remedial-type service – it is primarily about cure and often has little input into important preventative elements such as diet, heating and the quality of housing, which will be influenced by income.

### **Benefits versus work**

Corak et al (2005) find that poverty rates would be much higher in all countries if there were no child contingent transfers being made. But countries with the lowest poverty rates are those in which children benefit a good deal from other transfers not necessarily directed to them. In the Scandinavian countries this is because of public support for working mothers and fathers.

In another set of countries with low poverty rates child contingent payments make a large contribution to child poverty reduction. These include Luxembourg, Belgium and Austria which are the three countries with highest per child spending and, after the Scandinavian countries, the next lowest child poverty rates. These countries mainly make use of universal benefits and tax concessions. Their systems are not particularly targeted on low income children and indeed, in the first two of these countries more is spent per child on non-poor children than on the poor. Nevertheless the systems perform well in protecting children from poverty. In contrast, the two countries which target most by income, UK and Ireland, are the next highest spenders on a child-contingent basis (4th and 5th) but these countries rank lower in terms of child poverty rate (10th and 15th).

In recent decades in all countries, women increasingly engage in salaried work outside the home, not just before marriage, but also when they have responsibility for young children. In the expanding economies of the richer countries, the role of full-time mother is becoming less common (Bennett 2008).

The OECD (2009) notes that there is evidence that gainful parental employment is an important route out of poverty for families, and thus for children. There are a range of policies which governments can use to promote parental employment, many of which can positively influence family income. These include tax-benefit policies to encourage labour supply, active employment policies involving education and training, labour-market matching programmes or job subsidies, and the provision or subsidisation of child-care or out-of- school care for working parents.

But a major rationale for single-parent benefits – which discourage the parent from seeking employment – is to promote child well-being. So what is the appropriate balance between a “benefits strategy”, involving an increase in income via tax cuts or benefit increases for families, versus a “work strategy”, which involves policies to increase employment amongst poor families with children? The indirect evidence from United States welfare-to-work experiments suggests that eligibility for such benefits until late in the child life cycle does not have strong positive effects on child well-being.



Whiteford and Adema (2007) note that countries with low child poverty rates have managed to attain a combination of low levels of market joblessness and income support policies that are focused on high levels of public spending, rather than targeting. These factors are likely to be related as targeted income support systems tend to result in at-risk workers facing very high effective marginal tax rates. The implication is that systems that rely on targeted income support naturally impose strong disincentives for labour market participation, and so encourage ongoing benefit dependence.

This conjecture is supported by the evidence presented by Whiteford and Adema (2007) that in English speaking countries there exists a strong trade-off between the effectiveness of tax/benefit systems at reducing child poverty and the level of joblessness. In English speaking countries they find that for each 1 percent reduction in the level of poverty achieved by the welfare state there is an associated 0.92 percent increase in the number of jobless families. In other words, the targeted tax benefit systems common in English speaking countries appear to discourage labour market participation. In contrast Whiteford and Adema do not find these discouragement effects in the Nordic countries; reductions in poverty achieved by the welfare state are instead associated with decreases in the number of jobless families.

The implication seems to be that the key to effective family support measures in reducing child poverty is the approach not the level of assistance. Effective support requires an approach that does not effectively discourage people from working. A key point of difference between Nordic countries and the English speaking countries is the reliance of English speaking countries on income tested welfare benefits, while in Nordic countries the emphasis is on the provision of demographically determined universal public services. A criticism of the Nordic approach is that the universal nature of the public services imposes a high fiscal cost. However, the universality of the service provision is only part of the difference, and potentially the less important part.

The key issue seems to be that access to the public service is related to demographic factors (eg having children) not labour market related issues. Divorcing service provision decisions from labour market or income tests allows the Nordic nations to maintain high levels of labour market participation. Maintaining labour market attachment will of course have favourable resource implications for families with children, but potentially of at least equal importance is the positive impact this continued attachment has for social inclusion.

Even within policies aimed at encouraging parental labour market participation, policy design can have a bearing on child outcomes. For example a comparative analysis of child wellbeing in Canada and the United States highlights the importance of the flexibility that parents have in making childcare choices and deciding upon hours of work. According to Corak et al (2010) Canada and the United States have very different policies that offer different opportunities for parents in balancing the demands of family and workplace, particularly in the early years of a child's life. Canadian mothers and fathers would appear to have more flexibility as a result of significant policy changes in the mid 1990s that extended paid leave during the year after a child's birth as well as the legislative



right to return to their jobs. There seems also to be more use of part-time employment. In the United States the limited nature of parental leave leads to a polarization in family decisions, with relatively well-off families able to either afford private childcare or to have the mother withdraw from the labour market, while at the other extreme lone mothers have fewer options and are much more likely to continue working.

These analyses highlight two things: the value of universal service provision based on demographic factors (having children) not contingent on labour market or income tests, and the subsidization and flexibility of childcare provision.

### **Universal versus targeted assistance**

The rights of all children to receive support and protection from the State to achieve the best outcomes are clearly articulated in the United Nations Convention on the Rights of the Child. Indeed the provision of universal early childhood services appear to yield positive benefits for children in later life, as supported by the evidence of Havnes and Mogstad (2011) with respect to a large scale expansion of subsidised childcare in Norway. There is also evidence that universal childcare services can be cost effective social investments, see for example Belfield (2005).

As we have seen in our review of the *Returns on investment in early childhood* above, the countries that choose to have large public spending programmes targeted at supporting young children typically experience better outcomes for children and youths (see Figure 4). Many of the countries that are large public investors in early childhood do so because they provide universal assistance programmes.

However, the provision of universal services also have their shortcomings:

- Universality of access does not guarantee that all families will utilise the available services, indeed there is often concern that the groups who would benefit the most from public services are often under-represented in their utilisation of such services. For example, Walden (2011) notes that “New Zealand children who are members of low socio-economic households or who live in low socio-economic communities are accessing early childhood education less than other New Zealand children. This lack of opportunity is despite Government programmes which heavily subsidise [early childhood education] attendance.” Instead it seems that it has been higher decile groups who have benefitted most from the government’s early childhood education subsidy programmes. This raises issues about the ability of some groups to access services.
- By their nature universal services will not necessarily cater well for the needs of specific groups, particularly the high-risk, high-need groups. For example, studies into the benefits of early childhood development programmes often refer to the Perry Preschool Project, with cost benefit calculations suggesting that each dollar invested in quality early childhood education saves \$7 by reducing later grade repetition and special education placement, and increasing high school graduation rates. However, this project was very small in scale. The returns from other broad based schemes, such as Head Start, although positive are far less spectacular (Currie 2001).



- A universal approach will typically be a high cost approach to dealing with an issue, even if the programmes are highly effective. Universality wastes resources by providing something to children who don't need it. It may simply provide a service that the middle classes may otherwise have paid for privately, thus delivering them a windfall cash gain.

The main benefit of targeting is that it allows scarce resources to be used more intensively to remedy a problem. This can be more equitable than universalism that delivers a basic, core service purportedly available to all, but which may be inaccessible to large numbers of children.

Key problems with targeted services relate to boundary and moral hazard issues. Targeted services can be more customised and, per recipient, more generously funded. But targeting requires the imposition of eligibility rules, ie who receives the service (or a more generous service) and who does not. The presence of targeted services will mean that the group just on the wrong side of the eligibility boundary, although in an absolute sense no worse off than they would have been otherwise, now find themselves worse off than those who are eligible. Such rule-based outcomes can encourage perverse behaviour from families as their eligibility for assistance will influence the choices that they make. Such perverse behaviour can range from manipulative gaming of the system, through people changing their actions (potentially in a sub-conscious way) in light of the prevailing rules, right through to the situation where people do not access services that they are rightly eligible for due to perceptions of social stigma associated with participation with support programmes.

As the preceding discussion suggests there is no “universal” answer to whether universal services are preferable to targeted services. The availability of universal services do appear to confer advantages to child outcomes in the countries where they are offered. For example a comparative study of child outcomes in Canada and the United States noted that the universal provision of accessible health care in Canada plays a role in the preventative care of children, reducing the number and severity of health shocks that could potentially lead to more severe difficulties. But further, in both countries issues of access are also more subtle, associated with economic and social barriers limiting visits to health care providers, ability to pay for prescriptions, and knowledge as to how to navigate the health care system (Corak et al 2010). But the universal provision of services will not always be the most effective approach, either in terms of cost or desired child outcomes. However, as discussed in our section on Cascading below on page 39, there are potential hybrid options available to policymakers.

### **The influence of social philosophy on child policy**

Bennett (2008) notes that there is a certain ‘path dependency’ adopted by different groups of countries in the manner of their conceptualising and organising early childhood services, stemming from their traditional politico-economic structures. The policies in place in different countries evolved over time; they both shape and reflect social attitudes to the role and expectations of different institutions. Bennett suggest that wealthy countries can perhaps be placed into three categories or ‘worlds’ of welfare capitalism according to



the ways in which social welfare is customarily allocated between the State, the market and households:

- residual (liberal economy regimes, common in English-speaking countries),
- social insurance (conservative, common in continental European countries) and
- universalist (social democratic, common in Nordic countries).

Bennett notes that the social democratic countries of northern Europe have adopted a societal approach to the modern dilemma of rearing children in full-employment economies. The compatibility of motherhood and careers is contingent on the nature of institutional support, on public support for parental leave, the provision of early childhood education services and the availability of family-friendly jobs. Bennett argues that this three-pronged policy provides a solution that is efficient for economies, equitable for women and psychologically appropriate for babies.

In contrast Bennett contends that a social insurance approach stems from a maternal perspective; the belief that the young child should be cared for in the family. For example, both Austria and Germany have had traditionally low provision of services for children from birth to 3 years, but compensate for this with long parental leave entitlements; of two years in Austria and of three years in Germany (extendable, originally, to six years).

In contrast the liberal economies can be characterised as being based on encouraging the entry of women into the labour market, but in line with their residual social welfare traditions, have tended to leave families to fend for themselves. Apart from some childcare being provided to low-income families, mainstream families are expected to negotiate childcare in the open market.

Bennett (2008) contends that, on the grounds of both equity and efficiency, a move towards universal early childhood policy programming –as in education – is attractive, if flexibility and attention to vulnerable groups can be developed within universal services. This is the idea of ‘proportionate universalism’ identified in Marmot’s Fair Society, Healthy Lives 2010. It involves the delivery of universal support but with a scale and intensity that is proportionate to the level of disadvantage. This allows for a range of services to be available to all children to ensure their health and wellbeing, but in a way that is proportionate to a family’s needs. The precedent exists. The Nordic countries, for example, have enacted strong social and labour market policies to reduce child poverty and often provide an entitlement to a public childcare or preschool place from the age of one year or so.

In addition, universal services in these countries are well funded. They provide, in Denmark and Sweden for example, highly trained staff and favourable child:staff ratios. This means that all children from about the age of 15 months to 7 years – whatever their background –are nurtured and educated together by well-educated professionals in secure and healthy surroundings that favour the language and socio-emotional development of children from low-income backgrounds. Increasingly also, community kindergartens are organised as a front-line service for the respectful social integration of low-income and immigrant families.



## Effective programmes

So what type of programmes directed at supporting children are effective? The review of Hirokazu Yoshikawa (1995) on the causes of juvenile delinquency concluded that:

- Research on possible causal mechanisms for chronic delinquency suggests that providing support for early nurturing, parenting, and verbal ability, as well as ameliorating both family and community level poverty and their correlates, are promising prevention strategies.
- Family support programs are quite likely to reduce risks by improving maternal life course and parenting, but are less likely to improve early child cognitive ability.
- Early education programs, conversely, are quite likely to increase early child cognitive ability but seem less likely to affect the maternal life course and parenting.
- Combination programs of sufficient intensity and quality are more likely to reduce risks in both areas. Several of these programs, targeting urban, low-income families, have produced long-term decreases in antisocial behaviour or chronic delinquency.

Raut (2003) notes that a growing consensus reached among educators, among media writers, among researchers in economics, and among researchers in sociology, psychology and education is that the children of poor socio-economic status are not prepared for college because they were not prepared for school to begin with. The most effective intervention for the children of poor socio-economic status should be directed at the preschool stage so that these children are prepared for school and college.

Raut argues that publicly provided early childhood education programmes for children of poor socio-economic status will have many economic benefits, it will:

- increase social mobility,
- reduce income inequality,
- improve college enrolment rate,
- improve the community or criminal behavior, and
- also bring higher tax revenues because more workers will be earning higher wages.

Using very conservative assumptions (high costs and limited benefits) Raut calculated that each dollar spent to provide free preschool to children of poor socio-economic status, the tax payers get back \$1.16.

Danziger and Waldfogel (2000) note that education begets education, and education begets training. Those who complete more education initially are more likely to seek additional education and additional training. Second, education begins at home. The educational level of a child's parents is a primary determinant of how much education s/he gets and how well s/he does in school.



They reached three conclusions:

- Investments in parents' human capital raises not only their workplace productivity, but also makes them better teachers for their children.
- A government policy that focuses only on education and training for children will be ineffective if similar investments are not made in the parents.
- Individuals and employers on their own are likely to under-invest in children. Therefore, government policies to subsidise education and training are needed to offset private under-investment.

Investments in children will be most successful when efforts are co-ordinated, when providers work in partnership, when their efforts are comprehensive, and when the child is treated as a whole person who is developing in the context of his or her family and community.

Because early investments lay the groundwork for later success, early years and pre-school interventions are particularly cost-effective, as their benefits accumulate and are compounded over time.

We therefore propose that parents, foundations, non-profit organisations, and the government should work together to expand investments in the following kinds of programmes:

1. Programmes to improve the health of women of childbearing age and during pregnancy.
2. Early childhood support and parenting interventions, targeted to the most disadvantaged children who are at highest risk of school failure.
3. Measures to raise the quality and accessibility of childcare and early childhood education for pre-school age children, particularly Māori, Pasifika and low income communities.
4. After-school programmes and evidence-based mentoring programmes for school-age children and adolescents.
5. Programmes to raise levels of school and college attendance by high ability youth from low-income families.

Bergman (1994) notes that an efficacious and humane approach to the cure of child poverty would be to take the weakening of marriage as a given and to look for politically acceptable ways of capturing more economic resources for children in single-parent families. Such policies may further weaken the incentives to marriage, but that may be unavoidable. If the priority is children's development into self-actualised citizens, personal preferences about morality and marriage are a secondary consideration. Rather than focusing on family form, it becomes more important to focus on family function and ensuring that children live in homes that meet their physical, mental, emotional and spiritual needs.

Potential methods include getting single parents into substantial jobs, increasing wage subsidies, increasing transfer payments to at-home single parents, and better enforcing child-support payments from absent parents. Another way to direct major resources toward child-raising, one that has had relatively little



discussion, would be the provision by government of high-quality childcare, not merely as a temporary help for the mother in leaving welfare, but as a permanent benefit to all lower-income children. Dalziel (2011) cites (p17) the research of Maureen Baker which found that the share of income spent on childcare for a New Zealand lone parent on the average wage with two children was 42 percent of net income, compared to 17 percent in Australia and 27 percent in Canada. With childcare provided free, mothers in even the lowest-wage jobs would retain enough of their earnings to attain a minimally decent standard of living, and would be substantially better off than those currently on welfare.

Bennett (2008) concludes that quality achievement in early childhood development programmes requires:

- Strong public funding, policymaking and monitoring, regulation and goal-setting.
- Adequate structural standards, in particular, with regard to the physical environment for young children (buildings, space, outdoors, pedagogical materials); the quality and training levels of the staff; an appropriate curriculum properly trialled, covering all the broad areas of child development and respectful of the natural learning strategies of young children, reasonable child:staff ratios.
- Continuous support to staff working in teams, through regular in-service training; and participatory forms of quality development and assessment (e.g., pedagogical research and documentation); and other forms of collaborative working both within and between services.
- Particular attention to the most vulnerable groups of young children, and to those at risk of discrimination. These children should receive first call on services and to additional programmes and resources as necessary.

In addition to these important considerations, parental education levels and attitudes towards education impact on educational outcomes even in the pre-school years. Because of the cyclical nature of these issues, policies need to support social and community change that enables parents the time, will, and ability to play with and read to their children.

### **A new consensus**

There does not appear to be a simple “silver bullet” policy prescription for improving child outcomes. Instead, using the language of OECD (2009) the solution appears to be through the development of a wide ranging investment portfolio focussed on finding effective ways of improving child outcomes.

Bennett (2008) contends that rather than trying to improve unstable, low-quality childcare arrangements, a more effective policy may be to support parents to care for infants during the first critical year of life and in parallel, increase the enrolment of underrepresented children in pre-kindergarten. The reality on the ground is that ethnic communities in many cities suffer from an inadequate supply of affordable preschool slots, a lack of information for parents on the programmes that are available and, often, language barriers with programme operators. There may also be other barriers to participation.



The OECD (2009) offers the following policy recommendations for improving child wellbeing:

- invest early in children's lives;
- concentrate on improving the lot of vulnerable children;
- design interventions for children that reinforce positive development across their life cycle and across a range of well-being outcomes;
- create clear, achievable targets for child well-being outcomes;
- regularly collect high-quality information on children's well-being that is nationally and internationally comparable; and finally,
- governments should continuously experiment with policies and programmes for children, rigorously evaluate them to see whether they enhance child well-being, and reallocate money from programmes that don't work to those that do.

With regard to the final point made by the OECD, the ability to experiment, evaluate, research and adapt is fundamental to making progress in the interests of children. Developments such as high trust contracts are important steps in supporting innovation. In the process of experimenting and innovating it is important to ensure that programmes adopted from overseas are adapted well to fit the context of New Zealand communities and are implemented fully, with adequate resourcing and monitoring.

The importance of early life experiences is highlighted in much of the focus of the recent report from the Prime Minister's Chief Science Advisor:

*The evidence shows that the risk of impulsive and antisocial behaviour is greatly increased by experiences earlier in life. It is now clear that early childhood is the critical period in which executive functions such as the fundamentals of self-control are established. Children who do not adequately develop these executive functions in early life are more likely to make poor decisions during adolescence, given the inevitable exposures to risk in the teenage years. It is very clear from our review of the literature that more can be done to improve socialisation and executive function development by reorientation of early childhood programmes. Further, while all children will benefit from these programmes, the evidence is compelling that targeting intensive but costly interventions towards the higher-risk sections of the community has a high rate of social and economic return. Hence the critical importance of adopting a life-course approach to prevention.* (Office of the Prime Minister's Science Advisory Committee, 2011, p1)

The report also notes the importance of long-term action programmes that require "a prolonged effort over several electoral cycles and cannot be held hostage to adversarial politics" (p1).

## **Potential programmes**

### **Conditional Cash Transfers**

A conditional cash transfer programme pays recipients in exchange for an action that brings private behaviour closer to the social optimum. If the payment



is sufficiently high, conditional cash transfers accessed by poor families may also contribute significantly to poverty alleviation and other child well-being outcomes, as family income rises. An international example of a conditional cash transfer programme is Oportunidades, which currently about one in five Mexican families participate in. Oportunidades offers cash transfers to poor families conditional on their participation in pre-natal care, well-baby care, immunisation, nutrition monitoring and supplementation, preventive checkups, parent education, and school participation. It directly reduces income poverty while at the same time increasing services take-up, possibly generating positive long-term benefits for children. Programme eligibility is determined by a two-step process. First, geographical communities with high proportions of poor families are identified. Then low-income families are identified using a series of easily observed family proxies that correlate highly with poverty. Cash benefits are paid to mothers, reflecting evidence that this is more likely to be spent on children. Evaluations have been largely positive in terms of Oportunidades's impact on poverty alleviation, morbidity, infant height, anemia, child motor skills, and school attendance. (OECD 2009).

### **Geographical targeting**

A potential way around some of the moral hazard problems associated with targeted early childhood programmes discussed above (see *Universal versus targeted assistance*) is to target programmes based on geographical location rather than on specific family circumstance. Highest risk children will be in families that are exposed to multiple risk factors. Geographical location in many cases can act as an effective proxy for multiple risk factors. Geographical targeting also fits in well with community-led development that supports service provision: the providers can be based close to where the recipients live, and services can be customised to local conditions and issues. The potential downside of this approach is that the service could hinder labour market mobility; and parental job opportunities might ultimately be more important for improving child outcome prospects.

### **Cascading**

One policy model, which is a sort of hybrid of a universal and a targeted system, is the "cascading service" model. The cascade model offers a universal entry point and a universal treatment. However, it also adjusts the intensity of the treatment in response to the social risks observed during the universal treatment. Overall, if resources are to be targeted towards those at high risk, on several counts it makes sense to develop systems across the child's life cycle that offer a universal service that encompasses the entire population, and which then collects relevant information to allow more intensive treatment where this is warranted. By encompassing the entire population, the service itself is less likely to stigmatise. The entire population is also screened for risks. Resources are not inefficiently targeted at those who have much less need of the cascading service. However, issues of misallocated resources will still arise regarding choices of intensification. A further issue with cascading systems is the degree of delegated provider discretion regarding who receives which treatments. According to OECD (2009) there is little hard empirical evidence about the efficacy of cascading



systems for child well-being outcomes.

The Office of the Prime Minister's Science Advisory Committee (2011) report that has a primary focus on outcomes for adolescents, nevertheless notes the co-dependence of adolescent outcomes on the effectiveness of early childhood interventions:

*We strongly argue that prevention and intervention strategies applied early in life are more effective in altering outcomes and reap more economic returns over the life course than do prevention and intervention strategies applied later. (p8)*

Further they note:

*Early childhood interventions should be available across a wide variety of policies and programmes. These include near-universal services, such as childcare and early childhood education, as well as targeted interventions for a range of vulnerabilities, including economic hardship, childhood disabilities, child maltreatment and parental substance abuse and mental illness among others. Programmes that combine child-focused educational activities with explicit attention to parent-child interaction patterns and relationship building appear to have the greatest impact. In contrast, services that are based on generic support, without a clear description of intervention strategies matched directly to measurable objectives, appear to be less effective, especially for families facing significant risk. (p9)*

The report identifies the need for policy to be based on evidence and suggests that the following types of early childhood programmes are likely to be part of a child outcome investment portfolio:

### **Home visiting programmes**

The general conclusions that emerge from the literature on home visitation are that well-designed home visitation can reduce rates of conduct problems in early childhood that contribute to adolescent difficulties, but to be effective these programmes need to be carefully implemented and require rigorous and continuous monitoring and evaluation.

### **Centre-based programmes**

Because multiple risk factors contribute to conduct problems in childhood, early childhood centre-based programmes that reduce multiple risks are more successful in preventing chronic delinquency and other adolescent problems and in maximising long-term success than are those that target only a single risk factor. The programmes that demonstrate long-term effects on crime and antisocial behaviour tend to be those that combine centre-based programmes for children with family support services.

### **Community-based programmes**

Community-based programmes that attempt to provide services, resources and support for at-risk families and children can also reduce negative outcomes for children and adolescents. Some of these community-based programmes have been shown to be effective.



### **Parent behaviour management training**

One of the most successful approaches to addressing behavioural problems in early and middle childhood has been parent behaviour management training programmes. Typically, this intervention involves therapists or facilitators teaching parents a range of skills for the management of challenging behaviour. These skills include: carefully observing and recording child behaviour; the use of positive reinforcement, the avoidance of physical punishment; the use of time out, loss of privileges and related parenting skills. Parent management training may be provided in both a group context and a one-on-one basis.

### **Programme evaluation**

Office of the Prime Minister's Science Advisory Committee (2011) report also endorses the importance of evaluation, noting that there has been increasing investment in a series of early intervention programmes in New Zealand, but with a few exceptions there has been no evaluation of these programmes using randomised trials to evaluate their efficacy in a New Zealand context. Of those programmes that have been evaluated, many have been shown to be ineffective. A matter of high priority is to set up a consistent programme of research and evaluation to develop high-quality early intervention programmes (and to cull ineffective and, in some cases, potentially harmful programmes) for New Zealand children at risk of longer term problems and difficulties. It is important that any such programme of research takes into account both Māori and Pasifika perspectives.

### **Policy trends**

Bennett's 2008 review of early childhood support policies, undertaken in OECD countries showed both positive and less reassuring responses. On the positive side, the following changes can be seen:

- A significant expansion of services for young children right across the age range, but in particular, in 'early childhood education' services for children 3-6 years.
- Steadily improving regulation and support for quality, especially in the childcare sector where traditionally, quality had been weak. Positive signs are emerging from all countries that the concept of services for the under-threes is broadening from a labour market perspective to the inclusion of quality objectives.
- Greater involvement of parents in early childhood services than was the case in the traditional preschool.
- Greater understanding by public authorities of the institutional supports that parents need if they are to reconcile work and family responsibilities, e.g. the stimulus of sufficient childcare services to meet demand; a significant subsidization of services so that the children of parents on modest incomes have access to good services; parental leave provision; and partnerships with employers to make available family-friendly jobs and work environments.

Less reassuring was:

- The continuation of split systems (childcare and education separated from each other in terms of governance, financing, goals, quality aims, staffing, etc.).



- The insufficiency of government investment in the early childhood sector as a whole, although the numbers of children using services has grown significantly. This insufficiency includes the use of funding processes, particularly in childcare, that do not favour effective governance of the sector.

This appears to reinforce the need for coordinated, evidence-based policy development, evaluation, a realistic views of modern social trends, and adequate, sustained funding.

### **Things to Avoid Doing**

The OECD advises against providing higher child benefits for older children. Benefits that rise with age are typically justified on the basis that costs are higher for older children. These costs are measured as the costs of marketed goods and services, not full opportunity costs including foregone leisure. If benefits for children are based on the costs of the children, these should reflect the opportunity costs. It may cost more to buy things for older children, but older children are more independent and spend a large proportion of their time in formal education. The parental investment in terms of time, particularly for the prime caregiver, is considerably higher when children are younger. Higher opportunity costs for parents for young children are a further argument for a tilt in government spending on children toward younger, and away from older children.

Some countries spend considerable amounts on long-duration single-parent benefits. There is little or no evidence that these benefits positively influence child well-being. Durations could be reduced and resources concentrated on improving family income during the early part of the life cycle for those children.

There is a need to consider the incentives to service providers when designing early childhood policies. Gordon et al (2009) provide an interesting example where provider incentives undermine the effectiveness of a policy aimed at assisting disadvantaged children. The Child and Adult Care Food Programme subsidises food for children at childcare centres in the United States. However, Gordon et al found that provider participation is influenced by the programme's reimbursement rules. Because the costs of participation are relatively fixed (e.g. a menu must be planned for three or three hundred children) but reimbursement increases linearly with the number of children (meals and snacks), participation tends to be skewed towards the childcare facilities that care for more low-income children. As a result, provider decisions, in combination with program eligibility rules, leave many poor children outside the programme.



## 6. CONCLUSIONS

Historically, the New Zealand system of investment in health, education and social welfare was constructed or modified in the immediate post-war context of full employment, low income inequality, two parent families, a single working family 'bread-winner', low rates of divorce and marital separation, and universality of state provided income transfers. None of those socio-economic practices are dominant today. To be effective, new policy needs to be premised on accepting and reinforcing these and other social trends affecting family life and child rearing.

While the pioneering rationales for public investment in children related to principles of social equity and rights, more recently the rationale has been found in arguments of realising the best return of the human capital of the nation. This analysis has been conducted from that perspective.

Our key conclusions are:

- The early years are critical for optimal child development and the realisation of the child's full potential as a loving, socially engaged, well-educated and trained adult, contributing to national social and economic life at their full potential.
- Children in their first years of life are the most vulnerable to the long term damaging consequences of deprivation.
- Deprivation impacts upon child development through the inability to access needed goods and services (including healthcare); through disruption and stress of family life; and through social alienation.
- Effective public investment in the early years of childhood produces measurable improvements in lifetime outcomes for children.
- Resulting reductions in the demand for remedial government services (education, health, criminal justice) and improvements in labour productivity mean that effective public investment in the early years of childhood represents a sound form of public investment.
- International evidence indicates that New Zealand child outcomes are poor compared with other OECD countries. We rank 28th out of 30 countries using OECD data on international performance across 20 dimensions of child outcomes.
- Our analysis indicates that New Zealand children would benefit from a higher level of early childhood public investment, but this will not be cost effective without improvements in the quality and effectiveness of New Zealand interventions. Policies and programmes must be evidence-based while also providing scope for innovation, especially where that is community-led.
- There are few grounds for complacency, given that poverty rates for younger children are greater than for older children, when the most important physical, psychological and social development is occurring. 2008 figures showed that 23 percent of children aged 0-17 experienced material hardship, which was particularly concentrated in Pacific populations with 51 percent of Pacific children experiencing hardship, 39 percent of Māori populations and



59 percent of families dependent on benefit incomes.

- Concentrating spending on under six year olds would be an effective way of improving child outcomes in New Zealand. A ten percent increase in public spending on under six year olds yields the same type of improvement in child outcomes as one might expect from a 5 to 7.5 percent increase in average incomes.
- Effective early childhood investment will not only improve prospects for at risk children, but will also have net national economic benefits as the lower social burden resulting from poor child outcomes will reduce the future tax burden imposed on the rest of society and/or improve the affordability of other desirable public services. Savings are likely to be substantial, perhaps as much as 3 percent of GDP.
- Countries that have lower levels of child deprivation and better measures of child outcomes appear to deliver support to at risk children without compromising parental attachment to the labour market.
- The three critical markers of the risk exposure of children appear to be sole parenthood, parental conflict and household joblessness.
- An effective public investment portfolio in New Zealand children will involve both increased spending and more effective spending. It is important to establish a sustainable funding system that encourages both innovation and rigorous evaluation of investment options.
- The effectiveness of child assistance programmes will be influenced by the interaction of a wide range of government policies such as between policies that provide support for at risk families with support and incentives for labour market participation; the appropriate balance between income support and the provision of family support services; the balance between universal and targeted programmes; the appropriateness of programmes that target children or parents; and the need to ensure the cost effectiveness of publicly funded programmes.
- Access to affordable early childhood education is a critical form of public investment leading to positive returns from good child outcomes. For vulnerable children this will be more effective when combined with support and education that enables parents to be involved and also upskill themselves.

## **Recommendations**

There is a growing consensus on the key policy foundations for improving child wellbeing, which were nicely summarised in OECD (2009):

- invest early in children's lives;
- concentrate on improving the lot of vulnerable children;
- design interventions for children that reinforce positive development across their life cycle and across a range of well-being outcomes;
- create clear, achievable targets for child well-being outcomes;



- regularly collect high-quality information on children's well-being that is nationally and internationally comparable; and finally,
- governments should continuously experiment with policies and programmes for children, rigorously evaluate them to see whether they enhance child well-being, and reallocate money from programmes that don't work to those that do.

This seems a sound policy template for improving child wellbeing. New Zealand-specific initiatives that would support the adoption of this template include:

1. Establishing a political consensus that is based on an investment approach to improving child wellbeing. This would entail not just a recognition of the importance and value of early life preventative investments but also a long term funding commitment.
2. Policy development and institutional arrangements that identify and separate the design, funding, governance, management, and service provision roles.
3. A commitment to undertaking research on the effectiveness of specific early childhood interventions within specific communities, and resourcing those communities to identify and deliver solutions.
4. Enabling multi-sectoral responses to child poverty and other family issues, coordinating central and local government efforts, and prioritising action for the youngest children and their families.
5. Research into the approach to early childhood support in the Netherlands and the applicability of Dutch policies to the New Zealand environment.
6. Setting targets, monitoring the impact of policies and resourcing programmes for long-term implementation where they are shown to deliver change.
7. Reviewing the interaction between the social welfare and tax systems in order to minimise the impact of income support for families with young children and parental attachment to the labour market.
8. In terms of child specific initiatives investigation is warranted of factors such as the applicability and potential effectiveness of public private partnership delivery systems, conditional cash transfers, geographical targeting, and the cascaded service model.



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## Appendix: OECD Table of International Child Outcome Comparisons

Child outcome indicator	AUS	AUT	BEL	CAN	CZE	DNK	FIN	FRA	DEU	GRC	HUN	ISL	IRL	ITA	JPN	OECD
1 Average disposable income	20.8	22.2	21.4	25.6	10.8	23.2	22	19	19.9	17.2	9.5	22.3	22.4	17.2	22.5	19.2
2 Children in poor homes	11.8	6.2	10	15.1	10.3	2.7	4.2	7.6	16.3	13.2	8.7	8.3	16.3	15.5	13.7	12.4
3 Educational deprivation	2.2	0.6	1	2.1	1.2	0.7	1	1.2	0.5	6.1	2.1	0.4	2.9	1.2	5.6	2.7
4 Overcrowding	19.7	34	12.6	NA	58.9	17.6	15.2	20.3	20	54.9	73.3	21.7	16.4	47.9	22.5	32
5 Poor environmental conditions	10.5	20.2	29.8	NA	29.7	20.2	22.8	25.8	37.4	25.1	22.2	15.5	19.3	32.6	32.4	25.2
6 Average mean literacy score	520	502	510.3	529.3	502	501	552.7	493	505	464	492.3	493.7	508.7	468.7	517.3	496.3
7 Literacy inequality	1.6	1.7	1.7	1.6	1.7	1.6	1.5	1.7	1.7	1.7	1.6	1.7	1.6	1.8	1.7	1.7
8 Youth NEET rates	7.4	6.9	6.2	6.1	5.3	4.3	5.2	6.2	4.4	9.8	6.4	NA	4.4	11.2	8.4	7.4
9 Low birth weight	6.4	6.8	7.8	5.9	6.7	4.9	4.1	6.8	6.8	8.8	8.2	3.9	4.9	6.7	9.5	6.6
10 Infant mortality	5	4.2	3.7	5.3	3.4	4.4	3	3.6	3.9	3.8	6.2	2.3	4	4.7	2.8	5.4
11 Breastfeeding rates	92	96	71.5	84.5	95.6	98	93	63	96	79	95.8	98	41	81.1	96.6	86
12 Vaccination rates (pertussis)	92	83	97	78	98.7	95	97	98	97.8	88	99.8	97	90	94.7	93	93.8
13 Vaccination rates (measles)	94	74	88	94	96.6	96	97	87.1	94	88	99.8	94	84	87.3	94	91.5
14 Physical activity	NA	19.6	19.1	23.6	22	22.7	24.8	13.5	17	15.5	19.5	20.6	31.1	15.1	NA	20.1
15 Mortality rates	23.7	24.6	29	23.4	24.9	22.9	23.6	21	21.2	23.2	25.8	16.9	22	21.8	18.2	23.7
16 Suicide rates	8.5	9.5	9	10	6.2	5.9	12.2	4.9	5.5	1.3	6.8	7.8	9.5	2.4	7.7	6.9
17 Smoking	NA	27.1	16.7	8.6	21.5	15	22	19	19.5	16.5	21.5	13.5	19.5	20	NA	16.5
18 Drunkenness	NA	18.6	13.9	18.8	16.8	24.8	22.4	11.2	15.1	10.3	17.7	10.5	16.3	10	NA	15.2
19 Teenage births	14.3	12.3	7.8	13.2	11.4	6.6	9.7	6.7	9.8	8.7	20.7	16.9	13.5	6.8	3.7	15.5
20 Bullying	NA	15.6	12.2	14	5.5	8	8	13.6	13.9	22	6.6	5.4	8.6	7.9	NA	11
21 Liking school	NA	38.1	21.6	29.5	11.7	25.6	16.1	21.4	34.9	25.6	27.6	36.6	24	12.8	NA	27.2
22 Early childhood (under 6) - Public spending	29753.7	48292.5	37769.4	NA	22172.9	50672.3	47861.7	49604.9	36471.5	13078.3	32198.7	48884.9	22491.3	24114.4	13261.2	30187.9
23 Middle childhood (6-11) - Public spending	43305.5	64288.1	50876.7	NA	21493.9	67778.1	40802.4	49453.5	50329.1	28218.7	28903.8	54474.1	42145.8	47783.4	43504	44822.8
24 Late childhood (12-17) - Public spending	48111.6	70012.8	66372.5	NA	31200.2	68979.5	51716.4	64968.5	57653.1	30263.4	29783	45150.4	50282.9	49585.5	43002	51391.8
25 Total public spending on whole childhood	121170.8	182593.4	155018.5	NA	74866.9	187429.9	140380.5	164026.8	144453.7	71560.4	90885.5	148509.5	114920	121483.2	99767.3	126402.5

Source: OECD (2009) *Doing Better for Children*



Child outcome indicator	KOR	LUX	MEX	NLD	NZL	NOR	POL	PRT	SVK	ESP	SWE	CHE	TUR	GBR	USA	OECD
1 Average disposable income	21.7	34.2	5.3	25	17.2	28.6	7.9	13.8	7.8	16.4	19.9	24.7	5.1	22.7	29.2	19.2
2 Children in poor homes	10.7	12.4	22.2	11.5	15	4.6	21.5	16.6	10.9	17.3	4	9.4	24.6	10.1	20.6	12.4
3 Educational deprivation	1.8	1.1	13.7	0.6	2.2	1.3	2.1	1.4	3.8	0.9	1.6	0.7	13.6	1.8	4.8	2.7
4 Overcrowding	NA	16.9	69.6	10.3	31	15.1	74	32	68.4	10.8	20	NA	NA	21.5	26.2	32
5 Poor environmental conditions	NA	25.6	NA	38.7	NA	12	22.8	33.5	27.3	31.7	15.7	NA	NA	29.1	25.4	25.2
6 Average mean literacy score	541.7	485	408.7	521	524.3	487	500.3	470.7	482	476.3	504	513.7	431.7	501.7	481.5	496.3
7 Literacy inequity	1.6	1.7	1.8	1.6	1.7	1.7	1.6	1.7	1.7	1.6	1.6	1.7	1.7	1.7	1.7	1.7
8 Youth NEET rates	NA	2.2	NA	3.9	8.5	2.5	1.7	8.4	6.3	8.5	4.7	7.2	37.7	9.3	6.1	7.4
9 Low birth weight	4.3	4.9	8.8	6.2	6.1	4.8	6.1	7.5	7.2	7.1	4.2	7	11.3	7.5	8.1	6.6
10 Infant mortality	5.3	2.6	18.8	4.9	5.1	3.1	6.4	3.5	7.2	4.1	2.4	4.2	23.6	5.1	6.8	5.4
11 Breastfeeding rates	81.3	88	92	79	87.8	99	NA	91	87	71	97.6	92	96.8	77	74.2	86
12 Vaccination rates (pertussis)	97	NA	98.1	95.8	88.6	91	99	93.3	99.2	96.2	99	96	90	91.4	85.7	93.8
13 Vaccination rates (measles)	90.2	NA	96.4	96.3	82	88	97	92.7	99.5	96.8	95	86	91	83.8	91.5	91.5
14 Physical activity	NA	15.2	18.1	21.2	NA	15.6	17.3	14.6	42.1	20.3	16.4	13.1	20	18.7	26.8	20.1
15 Mortality rates	22.4	14.8	50.2	20.5	32.1	21.5	28.1	34.6	30.1	23.5	19.3	20.3	NA	21.2	32.7	23.7
16 Suicide rates	6.8	6.4	5.1	3.5	15.9	10.1	8.9	2.4	5	2.6	6.8	7.3	NA	3	7.7	6.9
17 Smoking	NA	19	NA	18.5	NA	10.4	16.4	10.6	16.4	17.1	8.5	15	NA	15.9	8.1	16.5
18 Drunkenness	NA	11.7	NA	12.1	NA	14	19.9	10.9	16.8	16.1	13.8	11.4	NA	22.1	10.2	15.2
19 Teenage births	3.7	8.6	65.8	4.7	23.4	9.4	14.5	18.1	20	9.1	6.8	4.5	39.7	24.8	49.8	15.5
20 Bullying	NA	13.8	NA	8.5	NA	8.3	9.6	14.1	NA	4.7	4.2	12.1	25.3	9.7	11.9	11
21 Liking school	NA	20.7	NA	39.7	NA	41.7	21.1	22.8	13	23.9	24.1	27.3	57.4	35.7	26.4	27.2
22 Early childhood (under 6) - Public spending	3050.5	96020.9	4741	23776.6	14339	52679.4	8218.2	16017.6	16935.4	18572.8	49381.8	6574.7	NA	38104.7	20220.8	30187.9
23 Middle childhood (6-11) - Public spending	22865.3	114720.2	10858	47921.9	33372.2	68977.7	18208.5	34184.9	15568	37147	60745.5	49064.2	NA	51432.6	56616.6	44822.8
24 Late childhood (12-17) - Public spending	27266.2	169634	8448.8	56154.9	39049.5	82493.7	17232.7	37568.1	17810.7	34107.4	65960.9	56651	NA	56307.6	63202	51391.8
25 Total public spending on whole childhood	53182	380375.1	24047.8	127853.4	86760.6	204150.9	43659.4	87770.6	50314.1	89827.3	176088.3	112289.8	NA	145844.8	140039.3	126402.5

Source: OECD (2009) *Doing Better for Children*



## Notes.

1. Average equivalised household disposable income in households with children (0-17-year-olds), USD PPP thousands, circa 2005
2. Children in poor households (50% of median income), 2005
3. Percentage of children reporting less than four educational possessions aged 15 yrs: 2006
4. Percentage of children living in overcrowding homes as a proportion of all children (2006)
5. Percentage of children living in homes with poor environmental conditions as a proportion of all children (2006)
6. Average mean PISA literacy score, 2006
7. Ratio of 90th to 10th percentile score in mean PISA literacy achievement
8. Percentage of the 15-19 population not in education and unemployed: 2005
9. Low birth weight (% births less than 2500g): most recent data (2003 - 2005)
10. Infant mortality rates, 2005
11. Breastfeeding rates: having ever breastfed, various years
12. Vaccination rates for pertussis, children aged 2 and incidence of pertussis among total population, 2005 (or latest year available)
13. Vaccination rates for measles, children aged 2 and incidence of measles among total population, 2005 (or latest year available)
14. Moderate to vigorous physical activity (11, 13 and 15)
15. Deaths per 100000 under 20s: All causes, Three year averages of most recent data,
16. Suicides of children aged 15-19 per 100000 15-19 year olds, Three year averages of most recent data,
17. 15 yr olds who smoke at least once a week (no variation for 13 and 11 year olds), 2005/06,
18. Percentage of 13- and 15-years-old children who have been drunk at least twice, 2005/06
19. Adolescent fertility rate (births per 1,000 women ages 15-19), 2005
20. Children who have been bullied at school at least twice in the last couple of months (11, 13 and 15)
21. Students who report liking school (11, 13 and 15)
22. Public spending on Early childhood (under 6), USD PPP, in 2003
23. Public spending on Middle childhood (6-11), USD PPP, in 2003
24. Public spending on Late childhood (12-17), USD PPP, in 2003
25. Total public spending on whole childhood (under 18), USD PPP, in 2003