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National evaluation of Sure Start local programmes: An economic perspective

National Evaluation of Sure Start Team led
by Pam Meadows

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The views expressed in this report are the authors' and do not necessarily reflect those of the Department for Education.

**The National Evaluation of Sure Start Team is based at the
Institute for the Study of Children, Families & Social Issues, Birkbeck,
University of London, 7 Bedford Square, London, WC1B 3RA.**

Core Team

Professor Edward Melhuish, Institute for the Study of Children, Families & Social Issues, Birkbeck (Executive Director)

Professor Jay Belsky, Institute for the Study of Children, Families & Social Issues, Birkbeck (Research Director)

Professor Alastair Leyland, MRC Social & Public Health Sciences Unit, Glasgow (Statistician)

Impact Module

Professor Edward Melhuish, Institute for the Study of Children, Families & Social Issues, Birkbeck (Director)

Professor Angela Anning, Institute for the Study of Children, Families & Social Issues, Birkbeck (Investigator)

Professor Sir David Hall, University of Sheffield (Investigator)

Implementation Module

Professor Jane Tunstill, Visiting Professor, Social Care Workforce Research Unit, Kings College, University of London (Director)

Mog Ball (Investigator)

Pamela Meadows, National Institute of Economic & Social Research (Investigator)

Cost Effectiveness Module

Pamela Meadows, National Institute of Economic & Social Research (Director)

Anitha George, National Institute of Economic & Social Research, Research Officer

Local Context Analysis Module

Professor Jacqueline Barnes, Institute for the Study of Children, Families & Social Issues, Birkbeck (Director)

Dr Martin Frost, Birkbeck (Investigator)

Support to Local Programmes on Local Evaluation Module

Professor Jacqueline Barnes, Institute for the Study of Children, Families & Social Issues, Birkbeck (Director)

Data Analysis Team

Mark Hibbett, Institute for the Study of Children, Families & Social Issues, Birkbeck

Dr Andrew Cullis, Institute for the Study of Children, Families & Social Issues, Birkbeck

National Evaluation of Sure Start local programmes: An Economic Perspective

Economic perspectives on the impact of Sure Start local programmes up to when the children were five years old

Executive Summary

Key messages

- On average, Sure Start local programmes (SSLPs) cost around £1,300 per eligible child per year at 2009-10 prices (or £4,860 per eligible child over the period from birth to the age of four). SSLPs were an area-based programme (unlike their successor children's centres) so that all children in the relevant age group living within a designated area were eligible for services, whether or not they received them.
- The economic benefits of early childhood interventions can be high (and much higher than for interventions with similar levels of expenditure on adults), but they typically do not emerge until at least fifteen years after the intervention begins. This report focuses on indicators available up to the age of five, which might indicate future benefits.
- The economic benefits of pre-school education are a critical part of the economic benefits of early childhood interventions. However, due to the introduction of free early education for three and four year olds all children living in SSLP areas received pre-school education which was similar to that received by comparison group children. Therefore, the national evaluation of SSLPs cannot include an element for these benefits. This means that the estimation of the benefits of SSLPs is based on the impact that they have over and above the impact of early years education, through the additional services provided or through the greater co-ordination of services.
- By the time children reached the age of five, SSLPs had already delivered economic benefits of between £279 and £557 per eligible child. These benefits relate to the fact that parents living in SSLP areas moved into paid work more quickly than parents in comparison areas. Two-thirds of the value of these benefits is received by families in the form of higher incomes and one-third by taxpayers in terms of higher tax receipts and lower benefit payments.
- There are several other outcomes of SSLPs as measured at the age of five years, which have the potential to generate economic benefits in

the future, although all the effect sizes¹ are small. If the differences remain small at later ages it is likely that future economic benefits may also be small, but this remains uncertain. The outcomes are:

- less harsh discipline in the home
- lower rates of family chaos
- a richer home learning environment

The first two are linked to negative behaviour in children and adolescents, which is in turn associated with higher rates of offending and poor educational attainment. Thus reductions in harsh discipline and family chaos are likely to yield economic benefits.

- A good Home Learning Environment is associated with better educational attainment, which in turn is associated with higher earnings in adult life. However, it is not possible to estimate the size of the long-term benefits with the information currently available. The size of the Home Learning Environment Effect at the age of five was small.
- There was also one potential source of negative economic impact: mothers living in SSLP areas reported higher rates of depression. Maternal depression is associated with children developing behavioural problems and with lower school attainment.

Sure Start local programmes - background

The first 524 Sure Start local programmes (SSLPs) were established between 1999 and 2003. They were aimed at families with children up to the age of four living in disadvantaged areas. The aim was to bring together early education, childcare, health services and family support to promote the physical, intellectual and social development of babies and children. They were geographically targeted to specific disadvantaged areas and all children living in the targeted area and their parents were eligible to receive services. Each SSLP chose its own mixture of services and delivery methods, based on an assessment of local needs and consultation with parents. They also aimed to reshape, enhance and add value to existing services and to increase co-ordination between services.

The impact of SSLPs – economic issues

This report discusses the economic issues arising out of the evaluation of the impact of Sure Start local programmes in England. It should be read in conjunction with the impact report², which describes the details of the methodology of the study and the full range of outcomes for children and their families when the children were five years old.

The impact evaluation was designed to examine the effects SSLPs had on children, families and communities. The purpose of this report is to provide an

¹ See footnote 13 for an explanation of the meaning of effect size.

² National Evaluation of Sure Start (2010) *The Impact of Sure Start Local Programmes on Five Year Olds and Their Families*. Department for Education Research Report DFE-RR067

economic analysis of those outcomes and, where possible, to estimate economic values for them. Where a direct estimation of economic value is not possible at this stage, because the economic benefits are likely to arise later in children's lives, the report discusses probable sources of future economic values.

In economic terms, Sure Start local programmes represent an investment in human capital. Human capital is the generic term for the personal, cognitive and vocational skills that people possess and that contribute to their productivity in the workplace. Human capital is developed by formal education and training, but also by experience and social interaction, including interactions that take place within the family.

International evidence suggests that early childhood interventions have the potential to generate much higher returns than investment in human capital at later ages³. However, these returns take a long time to be fully realised, mainly because they come in the form of higher earnings in adulthood and lower rates of problematic behaviour (particularly offending) in adolescence and adulthood. Although some interventions sometimes produce short-term economic benefits (for example in terms of improved parental or child health), it is more typical for positive economic returns to emerge only fifteen to twenty years after the initial investment, when children move into adulthood. This means that rigorous evaluation methods with very long-term follow up are critical to indicating causality between the intervention and the outcome.

Karoly et al (2005), Belfield et al (2006) and Aos et al (2006, 2004) all found that a significant proportion of the economic benefits of early childhood interventions was derived from crime reduction in adolescence and adulthood⁴. Poverty, living in a disadvantaged area and harsh parenting are all factors associated with higher rates of offending in later life.⁵ Crime is

³ Heckman, J. and Masterov, D. (2007) The Productivity Argument for Investing in Young Children. *Applied Economics Perspectives and Policy*. 29(3): 446-493; Currie, J. (2001). Early childhood education programs. *Journal of Economic Perspectives*, 15(2), 213-238; Karoly, L.A., Kilburn, M.R. and Cannon, J.S. (2005) *Early childhood intervention: Proven results, future promise*. Santa Monica, CA: RAND Corp.; Belfield, C., Nores, M., Barnett, W.S., and Schweinhart, L.J. (2006). The High/Scope Perry Preschool Program: Cost-benefit analysis using data from the age-40 followup. *Journal of Human Resources* 41(1): 162-190; Aos, S., Lieb, R., Mayfield, J., Miller, M. and Pennucci, A. (2004) *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy; Chetty, R., Friedman, J.N., Hilger, N., Saez, E., Whitmore Schanzenbach, D. and Yagan, D. (2010) *How Does Your Kindergarten Classroom Affect Your Earnings? Evidence From Project STAR*. NBER Working Paper No. 16381; Heckman, J. J., Moon, S.H., Pinto, R., Savelyev, P.A. and Yavitz, A.Q. (2010). The rate of return to the HighScope Perry Preschool Program. *Journal of Public Economics* 94 (1-2): 114-128.

⁴ Karoly, L.A., Kilburn, M.R. and Cannon, J.S. (2005) *Early childhood intervention: Proven results, future promise*. Santa Monica, CA: RAND Corp.; Belfield, C., Nores, M., Barnett, W.S., and Schweinhart, L.J. (2006). The High/Scope Perry Preschool Program: Cost-benefit analysis using data from the age-40 followup. *Journal of Human Resources* 41(1): 162-190; Aos, S., Lieb, R., Mayfield, J., Miller, M. and Pennucci, A. (2004) *Benefits and costs of prevention and early intervention programs for youth*. Olympia: Washington State Institute for Public Policy; Aos, S., Miller, M., Drake, E. (2006) *Evidence-Based Public Policy Options to Reduce Future Prison Construction, Criminal Justice Costs, and Crime Rates*. Washington State Institute for Public Policy

⁵ Farrington D (1996) *Understanding and Preventing Youth Crime*, York Publishing Services

expensive for victims, for the state which has to investigate, prosecute and deliver sentences, and for those who offend in terms of reduced earnings potential. There is therefore a strong economic case for interventions which aim to mitigate the relationship between disadvantage and offending.

Measurement issues

The report on the impact of SSLPs set out the cautions about the quality and reliability of the evidence related to the outcomes for children and families. These cautions apply equally to this report. The most important cautions relate to the fact that the comparison sample had to be drawn from the Millennium Cohort Study (MCS), a different survey with fieldwork undertaken on a different timetable. This means that although it is possible that the differences observed between the two groups can be attributed to the services provided by SSLPs, there may be other causes of the observed differences. For example immunisation rates were higher among SSLP children than MCS children at the age of three, but this may reflect general campaigns to increase take-up rather than any specific SSLP effect.

Another, potential more critical measurement issue relates to the availability of services to MCS children. Because SSLPs were an area-based intervention the evaluation was not measuring the impact of service use by individual children. Rather it was measuring the impact of living in an area where an SSLP was operating. Although children in the comparison group did not receive SSLP services, they were eligible for a range of early childhood health, education and family support services provided by local authorities, the National Health Service and voluntary organisations. These include access to parenting support programmes funded by the NHS, pre-school education and childcare funded by local authorities and family centres provided by local authorities and voluntary organisations. Some of these services will have been very similar to those provided by SSLPs. If the services themselves (as opposed to the way in which services are organised and delivered) are responsible for improving outcomes, then the use of a comparison group who may also have received some services will understate the impact of SSLPs. This is particularly pertinent in the case of early years education. The MCS comparison group children were as likely as children living in SSLP areas to have attended some form of pre-school education. Evidence from both SSLP children and from the EPPE study reveal the positive impact that good quality early years education can have, particularly for disadvantaged children.⁶

⁶ Sylva, K., Melhuish, E. C., Sammons, P., Siraj-Blatchford, I. and Taggart, B. (2004). *The Effective Provision of Pre-School Education (EPPE) Project: Technical Paper 12 - The Final Report: Effective Pre-School Education*. London: DfES / Institute of Education, University of London; Melhuish, E., Belsky, J., MacPherson, K., and Cullis, A. (2010). *The quality of group childcare settings used by 3-4 year old children in Sure Start local programme areas and the relationship with child outcomes*. Department for Education Research report DFE-RR068

The cost of SSLPs

Sure Start local programmes cost an average of £4,860 (including capital costs) per eligible child living in the area at 2009-10 prices over the four years that children and their families were eligible to receive services. There was substantial variation within this total. For the years for which detailed accounts information is available by programme (up to 2004-05) around a third (36 per cent) of SSLPs had expenditure per eligible child which was below 90 per cent of the average, while around a quarter (24 per cent) had expenditure per eligible child which was at least 10 per cent greater than the average. In a typical year at 2009-10 prices the range was from around £450 per eligible child to around £2,500. Taking the four years 2001-02 to 2004-05 (the last four years for which full information is available for individual SSLPs), the highest spending SSLP spent more than £12,000 per eligible child at 2009-10 prices, while the lowest spending spent less than £2,000.

Participation in Sure Start local programme services was voluntary, and not all eligible children received SSLP services. Although SSLPs measured the proportion of eligible children using services each month as part of their monitoring requirement, they were not required to record the proportion of children who received services during the course of a year (although some did so for their own purposes). This means it is not possible to estimate the overall take up rate for services on a consistent basis, and thus calculate expenditure per child who actually used SSLP services.

However, given that the evaluation was based on an intention to treat design so that all eligible children under the age of five living in the relevant areas were regarded as belonging to the treatment group, whether or not children actually used services was not relevant. What mattered was that services were available to them. Therefore, in order to maintain consistency with the impact evaluation design SSLP costs were also allocated across all eligible children.

Two sorts of cost are excluded from the calculation of SSLP costs. The first group consists of the cost of mainstream services including health services, nursery education and employment support services, which were equally available to people living outside SSLP areas (including to children and families in the comparison group). In some cases these mainstream services actually took place on SSLP premises (for example childcare). However, children and families' entitlement to these services was the same as the entitlement of all other children and families, and was not restricted in the way that access to SSLP-funded services was restricted.

The second group of excluded costs are strictly SSLP costs, but they are not readily quantifiable. These comprise services (e.g. premises, IT support) which SSLPs received from partner organisations and for which they were not charged. They also include the cost of the central team and regional support teams. It is probable, therefore, that the total cost was at least £5,000 per eligible child between birth and the age of four at 2009-10 prices.

SSLP expenditure on different activities

As SSLP accounts only exist up to 2004-05 the breakdown of expenditure is not available after this. Combining 2004-05 and 2003-04 to even out fluctuations, just under a third of SSLP expenditure was incurred on play, learning and childcare services. It is important to stress that play, learning and childcare expenditure by SSLPs excludes early years education for three- and four-year old children that was funded separately. A fifth of expenditure went on each of support for parents and community healthcare. This would normally be funding for provision which would not be available as part of mainstream health services, or to which access might be limited to more severe problems, for example speech and language therapy. For example, around half of all implementation case study SSLPs provided postnatal depression services over and above those which were available through local NHS provision. A sixth of spending went on outreach and home visiting. Other service areas such as support for children with special needs and premises costs each absorbed between four and seven per cent of expenditure (see Figure 1)

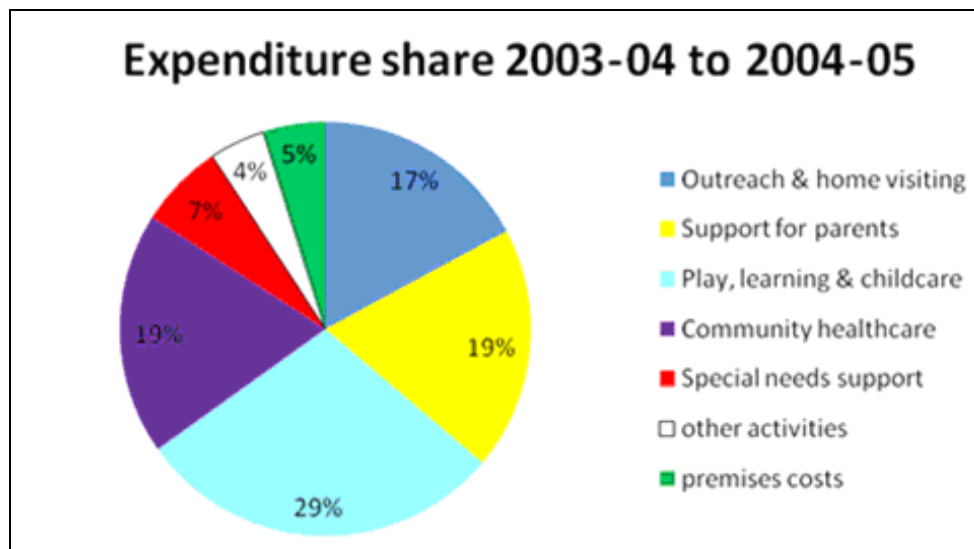


Figure 1: The shares of different activities in SSLP expenditure 2003-04 to 2004-05

It is clear that there was some deadweight⁷ in that children received services from SSLPs that they would have received from another source if the SSLP had not existed. This in part reflects the fact that one of the purposes of SSLPs was to improve the co-ordination of service delivery. As far as SSLP funding freed up resources in mainstream services more children across the

⁷ The Treasury "Green Book" (*Appraisal and Evaluation in Central Government*, The Stationery Office (2003)) defines deadweight as "expenditure to promote a desired activity that would in fact have occurred without the expenditure".

local area may have received services. However, as expenditure by mainstream services was not available this issue remains unresolved.

For the same reason the level of expenditure on comparison group children is unknown. The comparison group was drawn from children in the Millennium Cohort Study who were living in disadvantaged areas without SSLPs. The MCS was not designed to collect information about the services that were available locally to these children (expenditure on SSLP services was collected from financial returns made by SSLPs). However, it is likely that both SSLP and comparison group children received on average similar levels of expenditure from mainstream health and education services, not least because attendance by both groups at free pre-school education provision funded by local authorities was similar.

Outcomes for children and families with economic consequences

The Impact Study of the National Evaluation of Sure Start (NESS) followed up over 7000 five-year-olds and their families in 150 SSLP areas who were initially studied when the children were nine months and three years old. The outcomes for children and families in SSLP areas were compared with those for a comparison group of children and their families drawn from the Millennium Cohort Study (MCS). This comparison sample was selected based upon identifying and selecting children living in areas with similar economic and demographic characteristics to those in which the NESS sample resided, but which were not SSLP-designated areas and thus did not offer SSLP services. The study used an intention to treat design on the grounds that SSLPs were an area-based intervention and all children in the relevant age group living in the SSLP area were eligible for SSLP services whether or not their families chose to use them.⁸

Where the outcomes for children and families in SSLP areas are similar to the outcomes for comparison children and families, there is no net economic impact of SSLPs. There will be economic consequences of some outcomes (for example cognitive development leading to higher educational achievement and higher lifetime earnings) but those consequences will be similar for both SSLP area children and comparison children. Thus, in order to estimate the economic impact of SSLPs it is necessary to estimate the economic implications of differences in outcomes for SSLP children and families and comparison group children and families.

The NESS impact study found one outcome for children and families with short-term economic implications and four with longer-term implications:

- there were reductions in the proportion of children living in families where no parent was in paid work among both MCS and SSLP

⁸ Details of the impact study and the full range of outcomes and how they were measured, including those with no economic implications, can be found in National Evaluation of Sure Start (2010) *The Impact of Sure Start Local Programmes on Five Year Olds and Their Families*. Department for Education Research Report DFE-RR067

families between the ages of nine months and five years; however, the reduction was 3.6 percentage points larger among SSLP families than among MCS families.

- families living in SSLP areas showed less harsh discipline (effect size 0.24).
- families living in SSLP areas had lower rates of family chaos (effect size 0.29).
- families living in SSLP areas had a stronger home learning environment (effect size 0.27).
- mothers living in SSLP areas reported higher rates of depression (effect size 0.09).

The first four outcomes have a potential positive economic impact, while the fifth has a potential negative impact. In addition to these outcomes children growing up in SSLP areas experienced better physical health than children in non-SSLP areas.

Worklessness

Among both SSLP children and comparison children there was a fall in the proportion who were living in workless households at the age of five years compared with the proportion who were doing so at the age of nine months. However, families living in SSLP areas were more likely than comparison families to move from worklessness into work.

Although fathers' employment rates do not vary much according to the age of their children, the same is not true for mothers. In practice the employment rates of mothers (particularly lone mothers) generally increase as their children get older, and there is a marked increase as children enter primary school. This means that we cannot assume that this different rate of transition into work is likely to persist indefinitely, and therefore yield lifetime benefits both to the individuals and to taxpayers. Rather, it is likely that the rates of transition into employment of NESS families and comparison group families will converge over time. As we do not have information about the timing of movement into work (and hence the number of additional weeks or months worked by both NESS families and comparison families), it is necessary to make an assumption about this in order to calculate the benefit of these extra movements into work. We have assumed a lower limit of one year (i.e. all the differential movement took place as children went to primary school) and an upper limit that entry was spread evenly across the four year interval between studies (giving an average of two extra years worked).

We also do not have direct information about the financial gains, either to families themselves or to wider society. However, research evidence suggests that parents generally (and lone parents in particular) have smaller financial gains from moving into work than people without children, and where they have childcare costs in addition to the normal costs of working such as travel, their financial gains from working can be relatively small. The evidence suggests that most families moving into work have an income gain of around

20 per cent.⁹ This, combined with the minimum income guarantee of £240 a week, suggests that a typical income gain would be around £50 a week. Benefit savings and tax receipts would amount to £5,140 per year per family moving into paid work.

Spreading this benefit across all eligible children (as was done with costs) produces an average lifetime economic benefit to society of between £279 and £557 per eligible child. Two-thirds of the economic benefit is received by taxpayers and one-third goes to families.

Longer-term potential economic benefits

It was always intended that SSLPs should promote the social and emotional development of young children, and this implies that there should be social benefits in the long term. The cost-effectiveness module, however, considers only economic impacts (or social impacts to which economic values can be attached). Positive long-term economic impacts associated with the outcome measures where SSLP areas are outperforming their non-SSLP counterparts are likely to come through two routes:

- lower rates of conduct problems.
- higher educational attainment at age sixteen and beyond.

The impact study found lower rates of harsh discipline in the home among families living in SSLP areas compared with comparison families. Harsh discipline has an association with conduct problems in children, so that lower rates of harsh discipline are likely to be associated with lower rates of conduct problems.

The impact study also found lower rates of family chaos and a slightly better home learning environment in families living in SSLP areas compared with comparison families. Family chaos is associated with poorer educational outcomes for children, while a more positive home learning environment is associated with better attainment. Taken together, therefore, these outcomes suggest that in the longer term (at age sixteen and beyond) children living in SSLP areas are likely to have better educational outcomes than would otherwise have been expected given their characteristics and those of their families.

Conduct problems, crime and offending

Between 80 and 90 per cent of all crime is committed by people who had conduct problems as children¹⁰, and the cost of crime to businesses and

⁹ Adam, S., Brewer, M. and Shephard, A. (2006) *The poverty trade-off: Work incentives and income redistribution in Britain*. York: Joseph Rowntree Foundation

¹⁰ Sainsbury Centre for Mental Health (2009) *The chance of a lifetime: Preventing early conduct problems and reducing crime*. http://www.scmh.org.uk/pdfs/chance_of_a_lifetime.pdf; Farrington, D. (1995). The development of offending and antisocial behaviour from childhood: key findings from the Cambridge study in delinquent development. *Journal of Child Psychology and Psychiatry* 36: 929-964

households is estimated to be £60 billion a year¹¹. Reducing the prevalence of conduct problems has the potential to generate significant savings to society in the form of a reduction in offending. These savings are mainly received by potential victims of crime, who experience lower financial losses and less pain and suffering, and by taxpayers, who have reduced policing, court and sentence costs. However, some benefits are received by the young people and adults who commit fewer (or no) offences in the form of lower incarceration rates, higher employment rates and higher earnings.

Educational attainment

Higher educational attainment has the potential to generate significant returns both to the individual and to society more generally. Research based on cohort studies, following people from childhood into adult life have found that the lifetime earnings impact for an individual of gaining five GCSEs at grades A to C compared with not achieving them is between £80,000 and £100,000.¹²

Predictability of longer-term outcomes

There is at present insufficient information to reliably predict the longer-term economic impacts of SSLPs. However, some of the impact outcomes available at age five are consistent with longer-term positive economic impact. Worklessness, poor health, conduct problems generally and offending in particular all impose substantial costs on society in terms of lower productivity and higher taxes as well as experience of victimisation and lower incomes for the individuals themselves.

The impact indicators at age five (less home chaos, less harsh discipline and a better home learning environment) are all associated with lower rates of worklessness as adults and lower rates of offending. What is uncertain is what scale of reduction is likely, given that there is no firm basis for projecting adult offending rates and persistence from circumstances at age five, and given that the effect sizes found in the impact study were small. It is very likely that SSLP interventions will lead to further positive benefits in future years, but the size of the benefits will not be known for another decade.

¹¹ Dubourg, R., Hamed, J. and Thorns, J. (2005) *The economic and social costs of crime against individuals and households 2003/04*. Home Office Online Report 30/05.
<http://www.homeoffice.gov.uk/rds/pdfs05/rdsolr3005.pdf>

¹² Jenkins, A, Greenwood, C. & Vignoles, A. (2007). *The Returns to Qualifications in England: Updating the Evidence Base on Level 2 and Level 3 Vocational Qualifications*. Paper No CEEDP0089. Centre for the Economics of Education, London School of Economics and Political Science.
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<http://cee.lse.ac.uk/cee%20dps/ceedp47.pdf>

National Evaluation of Sure Start local programmes: An Economic Perspective

Economic perspectives on the impact of Sure Start local programmes up to when the children were five years old

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National Evaluation of Sure Start Local Programmes: An Economic Perspective

Economic perspectives on the impact of Sure Start local programmes up to when the children were five years old

1. Background

Sure Start local programmes (SSLPs) in England grew out of the recognition that deprivation was damaging the life chances of many children and families in disadvantaged areas. The first programmes were set up in 1999. The remit of SSLPs was to bring together early education, childcare, health and family support to promote the physical, intellectual and social development of babies and children under five living in disadvantaged areas and their parents. SSLPs were an area-based initiative targeted on disadvantaged areas and with services available to all the children and families living in the area.

The aims of Sure Start local programmes were to improve:

- the social and emotional development of children;
- children's health;
- children's ability to learn;

and to

- strengthen families and communities.

The original target was to establish 250 Sure Start local programmes by March 2002. In 2000, this was expanded so that more families could benefit. By the end of 2003, there were 524 Sure Start local programmes serving the most deprived communities. From 2004 onwards SSLPs were transformed into the first Sure Start Children's Centres along with centres based on other initiatives including Neighbourhood Nurseries and Early Excellence Centres. Children's centres were initially rolled out in the most disadvantaged areas that did not already have SSLPs, but by March 2010 there were around 3,500 centres serving all communities, not just those in areas of disadvantage.

SSLPs represented a type of early intervention that had not been tried before. Initially they did not necessarily provide specific services. Each SSLP chose its own services and delivery methods, based on an assessment of local needs and consultation with parents. But as well as delivering their own services, SSLPs represented an attempt to reshape, enhance and add value to existing services and to increase co-ordination between services. They were led by a range of bodies, mainly local authorities, local health services, national and local voluntary organisations and were expected to actively engage with the whole range of services which were being provided to young children and their families.

2. The National Evaluation of Sure Start

The National Evaluation of Sure Start (NESS) covered the first 260 programmes of the 524 Sure Start local programmes in England. The first 41 programmes started in 1999-2000 and the last two of the 260 started in 2002-03. Half started in 2000-01.

The evaluation had five components:

- implementation evaluation.
- impact evaluation.
- local community context analysis.
- cost benefit analysis.
- support for local evaluations.

Previous reports by the NESS team have covered a range of issues arising from the implementation of the programme and the local community context. An interim economic report (NESS, 2006) covered the cost-effectiveness of the implementation of SSLPs in the period before they became children's centres. This covered:

- issues related to variations in expenditure per child, including economies of scale.
- the speed at which SSLPs were able to establish their full range of services and deliver their capital programmes.
- variations in the distribution of expenditure between different types of service.
- the extent to which SSLPs received additional resources in cash and in kind from parent bodies and other sources.

These issues are discussed in more detail in Section 5 below.

This report discusses the economic implications of the evaluation of the impact of Sure Start local programmes in England. It draws on the findings described in the report which summarises the outcomes for children and families when the children were five years old (NESS 2010).

2.1 The NESS Impact Study

The Impact Study of the National Evaluation of Sure Start (NESS) followed up over 7000 5-year-olds and their families in 150 SSLP areas who were initially studied when the children were 9 months and 3 years old. The 5 year old study followed up a randomly selected subset (79%) of the children and families previously studied at 9 months and 3 years. The outcomes for children and families in SSLP areas were compared with those for a comparison group of children and their families drawn from the Millennium Cohort Study (MCS). This comparison sample was selected from the entire MCS cohort. Their selection was based upon identifying and selecting children living in areas with similar economic and demographic characteristics to those in which the NESS sample resided, but which were not SSLP-designated areas and thus did not offer SSLP services. This enabled the NESS research team to make comparisons with children and families from

areas as similar as possible to the NESS Impact Study areas to detect the potential effects of SSLPs on children and families. The study used an intention to treat design on the grounds that SSLPs were an area-based intervention and all children in the relevant age group living in the SSLP area were eligible for SSLP services whether or not their families chose to use them.

This report takes the outcomes for children and families at the age of five years reported in NESS (2010) and where possible estimates economic values for those outcomes. Where a direct estimation of economic value is not possible at this stage, probable sources of future economic values are discussed.

The main impacts identified for children were that:

- Children growing up in SSLP areas had lower body mass indexes than children in non-SSLP areas. This was due to their being less likely to be overweight with no difference for obesity (using WHO 2008 criteria).
- Children growing up in SSLP areas experienced better physical health than children in non-SSLP areas.

The positive effects associated with SSLPs for maternal well being and family functioning, in comparison with those in non-SSLP areas were that mothers residing in SSLP areas reported:

- providing a more cognitively stimulating home learning environment for their children.
- providing a less chaotic home environment for their children.
- greater life satisfaction.
- engaging in less harsh discipline.

On the negative side, however, in comparison with those in non-SSLP areas:

- Mothers in SSLP areas reported more depressive symptoms.
- Parents in SSLP areas were less likely to visit their child's school for parent/teacher meetings or other arranged visits. Although the overall incidence of such visits was low generally.

No differences emerged between the NESS and MCS groups on seven measures of cognitive and social development from the Foundation Stage Profile completed by teachers, four measures of socio-emotional development based on mothers' ratings, and mothers' ratings of area safety. In summary, across 21 outcomes, significant effects of SSLPs emerged for eight outcomes. In looking at change over time in family and child functioning, five of eleven repeatedly measured dependent variables showed evidence, again, of mostly positive and only one negative SSLP effect.

In comparison with those in non-SSLP areas, mothers in SSLP areas:

- Showed more positive change (i.e., greater increase) in life satisfaction.
- Reported more positive change in the home learning environment (i.e., greater improvement).

- Reported more positive change in harsh discipline (i.e., greater decrease).

In addition, in comparison with those in non-SSLP areas:

- There was a greater decrease in workless household status (from nine months to five years of age) for families in SSLP areas.
- Children in SSLP areas, however manifested less positive change in self regulation, that is, their capacity to control or manage their actions. This, however, appeared to be due to the fact that the children in the SSLP areas manifested greater self regulation at age three, but by the time of the age-five follow up, the MCS comparison group of children had caught up with them. This resulted in there being no difference in self regulation between the two groups by the time children were five.

There were no differences associated with SSLPs on change from age three to five years in child emotional dysregulation, positive social behaviour or internalising behaviour as rated by parents; no differences in child accidents, mother's depression, or chaotic home environments.

In the case of most of these outcomes it is not possible to estimate an actual or potential economic value, whether as a cost or as a benefit. However, there were five outcomes where the estimation of economic value is possible, either now or in the longer term. These are:

- there were reductions in the proportion of children living in families where no parent was in paid work among both MCS and SSLP families between the ages of nine months and five years; however, the reduction was 3.6 percentage points larger among SSLP families than among MCS families
- families living in SSLP areas showed less harsh discipline (effect size (0.24)¹³).
- families living in SSLP areas had lower rates of family chaos (effect size 0.29).
- families living in SSLP areas had a stronger home learning environment (effect size 0.27).
- mothers living in SSLP areas reported higher rates of depression (effect size 0.09).

The process of adding economic values to these outcomes is discussed in more detail in section 6 below.

¹³ Effect size is calculated by taking the mean difference for a particular outcome indicator between the treatment and comparison groups and dividing it by the standard deviation of that indicator. It is useful as a way of standardising outcomes which are measured in different types of scale or unit. It is widely used in statistical analysis in psychology and health, but less frequently encountered in economics. It can be thought of as an indicator of how important a particular outcome is likely to be in practice. With studies involving large samples it is possible for differences to be statistically significant, but the impact on the underlying issue may be too small to be of practical value. Following Cohen (1988) many analysts treat effect sizes of 0.2 as small, 0.5 as medium and 0.8 as large. When considering therapeutic interventions the minimum effect size for a treatment to be considered as effective is usually at least 0.5, and some would argue for a higher threshold.

The cautions about the quality and reliability of the evidence set out in the impact report (NESS 2010) apply equally to this report. The rapid rollout of Sure Start local programmes meant that it was not possible to use a research design which compared outcomes for children and families living in SSLP areas with the outcomes for children and families in otherwise similar areas but which were randomly selected not to have an SSLP. This meant that the comparison sample had to be drawn from the Millennium Cohort Study, a different survey with fieldwork undertaken on a different timetable. The data for the NESS and MCS samples of 5-year olds and their families were collected two years apart and by two different research teams. This makes attributing any discerned SSLP effects to SSLP exposure *per se* difficult, as they could potentially reflect changes taking place in communities or society more generally across the two-year period in question or be the result of differences in approaches to measurement by the two research teams, although there was close cooperation with staff training. An example of potential time of measurement effects was identified in the NESS Impact Study when children were three years old with respect to child immunisations. That is, apparently positive effects of SSLPs on the take up of immunisations were found to be possibly a function of the time difference between when NESS and MCS three-year old data were collected rather than an effect of SSLPs on immunisations.

2.2 How the economic evaluation relates to the other modules

The economic evaluation of SSLPs has two separate but interrelated components:

- Analysis of the cost-effectiveness of the implementation;
- Analysis of the cost-effectiveness of the impact on children and families;

The underlying conceptual framework for the economic evaluation of SSLPs is shown in Table 1. This represents the ideal in terms of measures of impact at different stages of children's lives and includes the range of measures that have been used in previous studies of early childhood interventions. The evaluation is currently only at the short-term stage, which approximates to the period before children enter compulsory education. Moreover, in practice, given both the constraints on interview length and the need to compare outcomes with those for children in the Millennium Cohort Survey it was not possible for all the potential sources of economic benefit to be measured. The medium-term outcomes suggested in the table are those which occur between the age of five and eighteen, and the long-term benefits are those which arise once the children are adults.

Some of the short-term outcomes are precursors for longer-term outcomes, some of which have important economic benefits. However, it will be at least ten years before these longer-term economic benefits can be identified and measured accurately. In fact, the only area of potential short-term economic impact which has been found in the impact study relates to parental employment, resulting in improved earnings and lower benefit costs and higher tax receipts. This is discussed in section 6.1.1 below.

Table .1: Sources of potential quantifiable economic benefits and additional costs

BENEFICIARY	SHORT TERM (up to age 5)	MEDIUM TERM (up to age 18)	LONG TERM (adulthood)
CHILD	Better health Better cognitive development Better social development Less involvement with social services	Lower use of health services Lower use of special education Lower use of social services Less involvement with criminal justice system Lower level of teenage pregnancy Greater commitment to education	Higher earnings Lower use of health services Increased time spent in full-time education (-) Reduced receipt of social security benefits (-) Less involvement with criminal justice system Less involvement with social services Lower level of early or unwanted pregnancy
PARENTS	Fewer unplanned pregnancies Lower use of health services Lower level of domestic violence Lower use of child protection services Increased earnings Improved skill levels Lower use of criminal justice system Lower receipt of social security benefits (-)	Fewer unplanned pregnancies Lower level of domestic violence Lower use of health services Lower use of child protection services Increased earnings Improved skill levels Lower use of criminal justice system Lower receipt of social security benefits (-)	
LOCAL COMMUNITY	Improved access to public services Lower rates of crime Greater quality of daily life Improvement in property values Greater commitment to education and training	Improved access to public services Lower rates of crime Greater quality of daily life Greater commitment to education and training Improvement in property values Higher levels of economic activity and employment	Improved access to public services Lower rates of crime Greater quality of daily life Greater commitment to education and training Improvement in property values Higher levels of economic activity and employment
WIDER SOCIETY	Lower expenditure on health and social services Lower expenditure on social security Lower expenditure on criminal justice system Increased tax revenue Increased use of specialist health services (-) Greater use of nursery education (-) Greater use of childcare (-) Greater use of play and library facilities (-)	Lower expenditure on special education, Lower expenditure on social services Lower expenditure on health services Lower expenditure on social security Lower expenditure on criminal justice system Lower costs to victims of crime Increased tax revenue	Lower expenditure on health Higher expenditure on education (-) Lower expenditure on social security Lower expenditure on criminal justice system Lower costs to victims of crime Increased tax revenue Lower expenditure on social services

Note: (-) indicates additional costs or negative benefits; text in bold indicates where economic outcomes have been found and measured.

It is also important to stress that SSLPs did not operate in isolation from the other services for children and families that operated in SSLP areas. The main providers of services for children and families were from the statutory sector, (notably health services, particularly general practitioners and health visitors, and local authorities providing children's social care services, early years education and childcare services). But voluntary organisations were also active in providing support activities such as family centres or Home Start. The exact configuration of SSLP services in each area reflected what was in place before the SSLP started. Thus, an SSLP in an area which already had a family centre run by a voluntary organisation would have been unlikely to develop a completely new family centre, and would be more likely to have collaborated with the centre to enable it to provide additional or extended services, but an area without such a facility might develop a completely new service. SSLPs were intended to complement and supplement what was already available locally, as well as to encourage better co-ordination between mainstream service providers.

However, this relationship with local services funded from other sources means that the issue of additionality is problematic and in practice the information available is not sufficient to estimate additionality reliably. In economic evaluation three elements are critical to the estimation of additionality: deadweight, displacement and substitution. Deadweight is defined as "expenditure to promote a desired activity that would in fact have occurred without the expenditure". Displacement is defined as "the degree to which an increase in productive capacity promoted by government policy is offset by reductions in productive capacity elsewhere". Substitution is defined as "the situation in which [an organisation] substitutes one activity for a similar activity . . . to take advantage of government assistance" (HM Treasury 2003).

It is clear that there was some deadweight in that children received services from SSLPs that they would have received from another source if the SSLP had not existed. There is therefore clearly deadweight in terms of services, but not necessarily in terms of expenditure, since (a) the total volume of services could have increased so that more children across the local area received services as some high priority children were served by Sure Start rather than by mainstream services or (b) savings were achieved by other service providers. However, as discussed in Section 5 below, it has proved impossible to establish mainstream service costs, so this issue cannot be resolved.

There is some limited evidence from the implementation case studies that there may have been some displacement of existing provision, most notably pre-school playgroups and some childcare, by the advent of SSLP provision. However, this evidence is limited and qualitative and was insufficient to provide an estimate of additional costs. There were also parallel developments, most notably the introduction of free pre-school education places for four-year olds (and later three-year olds) and the switch of inspection from local authorities to Ofsted. These were happening at the same time as SSLPs were operating under the model to which this evaluation relates. Their subsequent development into Sure Start Children's Centres

involved a move away from eligibility for services being defined by tightly drawn geographical boundaries.

The most difficult additionality issue relates to scarce skills. Initially there was some evidence from the implementation case studies that SSLPs were attracting scarce skills (most notably speech and language therapists, and in some areas health visitors) away from wider community provision. This would have meant that children in SSLP areas were now receiving services, but children in other areas were not. This issue remains unresolved, although many SSLPs demonstrated ways of using scarce skills more effectively, for example through speech and language therapists training other staff to deliver some services.

It is clear from the NESS implementation evaluation that many of the services provided by SSLPs would not have been available via mainstream services (NESS 2005b). The issue is not so much whether there was any additionality, but whether the whole of the SSLP intervention can be treated as additional. Then there is a subsidiary question as to whether better co-ordination is worthwhile in itself even where there is no additionality. However, because of the intention to treat design of the impact evaluation (which means that the detail of the nature of the intervention is not considered, only the outcome) this issue is not addressed in this report.

3. *The need for economic evaluation*

Resources are almost always scarce and there are generally a number of alternative ways in which scarce resources can be used. If money is spent on one particular activity it cannot be spent on another. This is called the opportunity cost by economists because the use of resources in one way represents a missed opportunity to use them another way. Moreover, an alternative use of resources might produce better returns on investment.

Economic evaluations of social interventions address three questions:

- How much did it cost?
- What did that use of resources actually achieve?
- Did the benefits from that use of resources exceed the costs?

Economic evaluations do not generally address the issue of opportunity costs directly, although this does underpin the approach. To include opportunity costs directly economic evaluation would have to adopt an experimental or quasi-experimental approach as is often used in health economics where the costs and outcomes of different treatments for the same condition are compared. In social interventions the opportunity cost may relate to a different client group (older people, say, or businesses) as well as different methods of trying to achieve particular outcomes for one target group (in this case, disadvantaged young children and their families). One way of thinking about the opportunity cost in the case of SSLPs would be to consider whether the issue underpinning families' disadvantage was lack of money rather than lack of services. The cost of SSLPs (roughly £20 per eligible child per week) might have had a greater impact as an income supplement rather than a service entitlement, but as this experiment was not done there is no measurement of the impact of such an alternative.

The systematic recording and comparing of the costs of an intervention with the outcomes achieved provides a valuable analytical framework to guide decision making by those who are responsible for allocating resources, at both a local and a national level (HM Treasury, 2003). The difference between economic evaluation and standard evaluations of process and impact is the stress on the importance of measuring costs as well as activities and benefits. Although there are inadequacies in the measurement of costs with respect to SSLPs, the identification of costs by SSLPs is in many ways better than for other interventions. For example, the evaluation of Early Excellence Centres found that centres without devolved budgets were unaware of their expenditure on any of their services and were unable to obtain this information from the budget holding local education authority. As a result only two-thirds of the centres in the original pilot study provided any expenditure data at all (Bertram et al 2002).

There are two broad approaches to economic evaluation. They both use the same information about costs, but focus on different outcomes. Generally speaking, cost-effectiveness evaluation examines intermediate outcomes over the short term (sometimes over less than a year, but rarely over more than three years), whereas cost-benefit analysis looks at final outcomes and spillover effects over a longer time period. Cost-effectiveness is easier to measure when an intervention is aiming to produce a single outcome that is measurable but difficult if not impossible to translate into monetary values (e.g., achieving a particular health status or a reduction in the level of an indicator such as child abuse). It is also particularly useful when there is more than one way of achieving the same outcome so that the costs per measured outcome of the different methods can be compared. This explains the growing importance of cost-effectiveness analysis in the field of health care when reviewing treatment or prevention options.

However, where an intervention has multiple potential outcomes, as is the case in Sure Start local programmes (SSLPs) cost-effectiveness analysis is impractical. SSLPs aimed to produce improved outcomes for children, families and communities across a range of areas including health, child development and parental employment. Cost-effectiveness analysis does not permit outcomes to be bundled together, while cost-benefit analysis, by attaching monetary values to a range of outcomes, does allow different types of outcome to be added together as a bundle (Boardman et al., 1996; Layard & Glaister, 1994).

Cost-benefit analysis should include all outcomes, both positive and negative, direct, indirect and spillover, anticipated and unanticipated. The experience of evaluating early childhood interventions in the United States has shown that unanticipated and spillover effects have produced the majority of the economic benefits (Aos et al 2004; Masse and Barnett 2002; Belfield et al 2006; Karoly et al 2005; Reynolds et al 2002; Olds et al 1998). In particular, programmes, such as the Perry Preschool, the Nurse Family Partnership and the Chicago Parent-Child Centers, that were originally aiming to influence children's cognitive, physical and emotional development turned out to derive their main economic benefits from the impact on other people of lower rates of offending once the children reached adolescence and adulthood. Some studies have also found a range of positive outcomes for parents, particularly in terms of participation in either education or employment, which were not part of the original intention.

In economic terms, when considering the outcomes for children, Sure Start local programmes represent an investment in human capital. Human capital is the generic term for the personal, cognitive and vocational skills that people possess and that contribute to their productivity in the workplace. Human capital is developed by formal education and training, but also by experience and social interaction, including interactions that take place within the family. Analytically this means it should be treated in the same way as education in school: investment takes place over a period of years during childhood and returns emerge once children enter adult life and start earning (Becker, 1993).

Within this framework, individuals who receive an investment in their human capital improve their productivity and receive a return in the form of increased probability of being employed and higher earnings in employment. Society as a whole earns a return from the investment in an individual's human capital from the increased overall productive potential of the economy, from the ability of more highly skilled workers to improve the productivity of their less skilled colleagues and from the reduced likelihood that the person with additional human capital will be dependent on out-of-work benefits.

When Sure Start local programmes were launched a decade ago there was very little literature related to the economics of early childhood interventions. Since then there has been growing interest, led by the work of Professor James Heckman of the University of Chicago. Heckman's work centred on the evaluation of labour market programmes for unemployed adults. One of the consistent findings of such studies is that the rate of return on the investment of resources in such programmes tends to be low. Although people are more likely to be employed after receiving support to equip them for and help them to find work, their incomes tend not to be much higher. More recently evidence has begun to emerge that rates of return to adult training programmes may be higher than previously thought, first because they emerge slowly (typically several years after the intervention) (Greenberg et al 2005, Hotz et al 2006). The second reason why returns tend to be underestimated is because they generally fail to take into account wider social benefits such as reductions in crime and improvements in individual health and self-esteem (Fujiwara 2010).

Research on the rates of return to investment in programmes which are targeted towards the cognitive and social development of young children (particularly disadvantaged children) has shown that they can generate high returns. (Carneiro and Heckman 2002; Heckman 2006; Cunha et al 2006; Currie 2001; Lynch 2004; Heckman 2008; Heckman and Masterov 2007; Karoly et al 2005); Belfield et al 2006; Aos et al 2004; Heckman et al 2010). However, these returns take a long time to be realised, mainly because they come in the form of higher earnings in adulthood and lower rates of problematic behaviour (particularly offending) in adolescence and adulthood.

Although economic theory suggests that returns to human capital investment are greater the younger the age at which the investment takes place, it has traditionally been thought that this is because there is a longer period for the returns to be realised. More recently economists have begun to recognise that post-16 investments in human capital actually depend on the human capital foundations laid down earlier in childhood, and that without suitable foundations the later investment has very low returns (Heckman, 1998, Heckman & Lochner, 2000). In other words later skill development requires initial building blocks to be in place before it can be productive.

In the case of very young children the level and quality of early childhood investments are not solely determined by the inputs from educational institutions, even though the evidence makes clear that preschool education can make significant differences. But the family and the wider community are

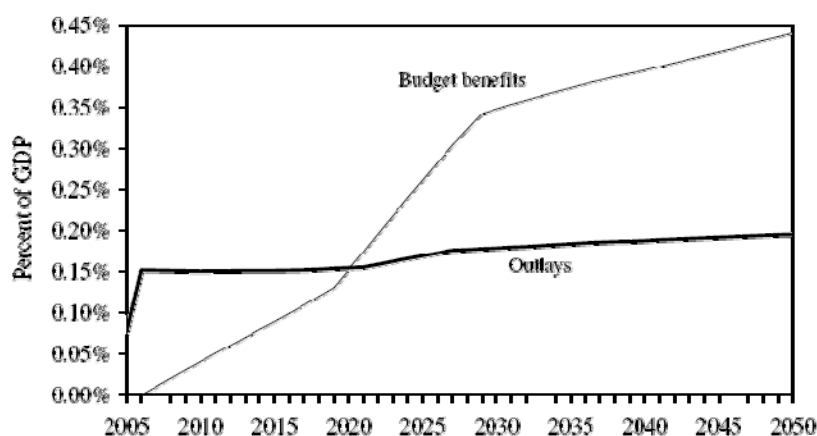
where young children spend most of their time and receive most of their influence. Thus, early childhood interventions need to target the child within the family setting (Currie 2001; Feinstein 2000; Feinstein and Duckworth 2006; Pike et al 2006; Melhuish et al 2008; Johnson et al 2008; Carneiro et al 2007; Blanden et al 2007)

Some early childhood interventions do sometimes produce short-term economic benefits. For example, one of the three trials of the Nurse-Family Partnership (the one that took place in Elmira, New York) found improved health among both mothers and children generating positive economic benefits within the first five years (Olds et al 1993). However, this was not replicated in the other two trials of the same intervention. It is more typical for positive returns to emerge only fifteen to twenty years after the initial investment, when children move into adulthood. For example Karoly et al (2005), Belfield et al (2006) Aos et al (2006, 2004) and Heckman et al (2010) all found that crime reduction in adolescence and adulthood was an important contributor to the wider social benefits of early childhood interventions. Poverty, living in a disadvantaged area and harsh parenting are all factors associated with higher rates of offending in later life (Farrington 1996). Crime is expensive for victims, for the state which has to investigate, prosecute and deliver sentences, and for those who offend in terms of reduced earnings potential. There is therefore a strong economic case for interventions which aim to mitigate the relationship between disadvantage and offending.

4. How are the returns from early childhood investments generated?

The literature on the economic benefits of early childhood interventions consistently shows that the economic returns do not start to appear until many years after the children have received the intervention, as they move through adolescence and into adulthood (Aos et al 2004; Karoly et al 2005; Burr and Grunewalds 2006; Heckman et al 2010). This conclusion applies to different forms of intervention including early childhood education, home visiting and parental support interventions. Some studies have also found some limited short-term economic returns from higher parental employment rates and improved child and parental health, but these are not generally sufficient to promote a positive ratio of benefits to costs in the early years; (see for example Olds et al 1993).

Figure 2: The timing of expenditure and receipts to the public purse



Source: Lynch (2004)

Robert Lynch of the Economic Policy Institute in the United States has calculated the timing of payments and receipts from funding early childhood interventions for the poorest 20 per cent of children as a percentage of GDP. This is shown in Figure 2, taken from Lynch (2004). In essence it illustrates that investment in early childhood typically takes around fifteen years before the benefits to taxpayers exceed expenditure in that year. However, once net benefits begin to accrue to public sector budgets, they increase rapidly. But what this does mean is that it is unlikely that Sure Start local programmes will start to show positive net benefits to the Exchequer until after 2018 at the earliest as children in the evaluation reach the age of fourteen.

It is also important to note that much of the cost-effectiveness literature related to early childhood interventions focuses on four small-scale experimental interventions all of which took place in the United States:

- The Perry Preschool Project (1960s)
123 African American children in Ypsilanti, Michigan with low IQs and from families with low socioeconomic status were randomly assigned to one of two groups: one enrolled in a preschool programme and one not. The preschool group attended half days for two years from the age of three. In addition there were weekly 1½ hour home visits.
- The Abecedarian Early Childhood Intervention (1970s)
111 children from low socio-economic status backgrounds, who were believed to be at high risk for impaired intellectual and social development were enrolled in the programme when they were between six and 12 weeks old. The children were randomly assigned to a preschool or a control group. The preschool ran full day, five days a week, and 50 weeks per year.
- The Chicago Child-Parent Center Program (1967 onwards)
The Chicago Child-Parent Centers serve children from low socio-economic status families. The centres provide half-day preschool for children aged three or four. The centres encourage the active engagement of parents in their activities, including adult education classes. Parents are expected to attend for at least two days a month. They also provide free breakfasts and lunches and health services. The children who have been followed up in the longest evaluation (Reynolds et al 2002) attended the centres for an average of just over a year and a half.
- Nurse Family Partnership (1980s)
The Nurse Family Partnership has been the subject of three separate evaluations in cities in the United States (Elmira, New York, Denver, Colorado and Memphis, Tennessee) and is currently being trialed in England. Only one of the trials involved long-term follow up of the participants. This was the first trial that took place in Elmira, New York. 400 first-time young (mainly teenage) disadvantaged mothers were enrolled in the programme during pregnancy. The women were randomly assigned to one of two intervention groups or one of two control groups. The women in the intensive intervention group received, on average, nine home visits during pregnancy and monthly home visits from birth to age two by specially trained nurses. The visits covered ante-natal care, positive health related behaviour, competent care of children, and maternal personal development (family planning, educational achievement, and participation in workforce). The programme stresses the identification and development of strengths.

The only large scale programme that has been extensively evaluated is Head Start, a US kindergarten education programme for disadvantaged three- to five-year olds that has been running since 1965. To summarise an extensive literature, covering extensive variation in programme delivery over several decades, children who have received Head Start make initial cognitive gains,

but these tend to have dissipated by the time children reach the age of eight, and there is no subsequent impact on school achievement. The most recent evidence is derived from a random assignment evaluation based on children who began Head Start in 2002 at the age of either three or four and were followed up for four years. The overall conclusion is that there is virtually no difference in outcomes related to cognitive development, health or parenting at the age of seven (Puma et al 2010) even though differences (for example in vocabulary and social skills) were apparent after the first year of Head Start.

However, this may present too pessimistic a picture. Recent evidence drawn from a population cohort study compared adult outcomes for those who had received Head Start as children, compared with siblings who did not (to control for family effects). This found significant benefits in terms of high school completion, college attendance and involvement in crime (Garces, Thomas and Currie 2002). Ludwig and Phillips (2007) argue that the long-term benefits in adult life exceed the typical costs of around \$7,000 per child and that many of these benefits flow to society generally, and to taxpayers in particular.

Nevertheless, the literature on the costs and benefits of early childhood interventions concentrates on the “model” intensive (and generally expensive) programmes listed above. The first three were centre-based early years education programmes targeted at disadvantaged African American populations with manualised processes and curricula and outreach activities to engage and support parents. All three were evaluated using randomised controlled trials or a comparison group of children who did not receive the intervention. All involved long-term follow-up. The small Perry Preschool sample has been followed up to the age of 40 (Schweinhart 2004; Belfield et al 2006). The Abecedarian sample has been followed up to the age of 21 (Campbell et al 2002; Masse and Barnett 2002). The Chicago Parent-Child Center participants, with a sample of 1,539, have been followed up to the age of 22 (Reynolds et al 2002). While the findings from all these evaluations have been powerful, what is not known is whether they can be expected to apply equally well to other locations and populations. One potential issue, for example, is that there are likely to be differences in the take up of health care by disadvantaged families in circumstances where they may not have insurance and thus have to pay for treatment compared with a UK population entitled to free health care from the National Health Service.

The Nurse Family Partnership has been evaluated at three sites (Olds et al 1997, 1998). However, so far, only one of the three US trials (the first one in Elmira, New York) followed families up beyond the age of twelve (in this case up to the age of nineteen). The other follow-ups have been for shorter periods although longer-term follow up is planned. The Nurse Family Partnership is currently being tested in England, where it is taking place in a context where disadvantaged teenage mothers and their children have access to universal health services (Barnes et al 2008, 2011).

Long-term evaluation evidence from all four “model” small scale high intensity programmes shows that those who have received early childhood interventions are more likely to obtain qualifications at school, less likely to

become pregnant as a teenager, more likely to go to college, more likely to be employed as adults, have higher earnings as adults, and less likely to be a persistent or prolific offender or to go to prison. (Olds et al 1998; Reynolds et al 2002; Aos et al 2004; Lynch 2004; Karoly et al 2005). The Nurse Family Partnership also found net savings over the first four years of the programme in terms of healthcare and out-of-work benefit costs at the Elmira site (Olds et al 1993). However, these savings were not found in the other two trials.

The economic returns are therefore derived from two main sources:

- higher lifetime incomes for adults who participated in the programmes as children. This leads to positive economic benefits for them, for taxpayers in terms of higher tax receipts and lower expenditure on benefits and the potential for wider economic benefits to society from a higher overall rate of economic activity and output.
- lower rates of problem behaviour (particularly teenage pregnancy and offending) in adolescence and adulthood. This leads to savings in state benefits in supporting teenage parents, savings to potential victims in terms of crime avoided, and savings to the criminal justice system.

In addition, some potential benefits have been found as a result of lower rates of maltreatment, improved parental health and improved parental employment. Not all studies measured these effects, so they may have been more widespread. However, such benefits typically account for less than 20 per cent of the total return. The single most important source of the positive returns that have been found in early childhood programmes comes from lower rates of offending, typically accounting for around two-thirds of the benefits (Aos et al 2004; Karoly et al 2005). The main exception is the Chicago Parent-Child Centers where there was no impact on offending. The reasons for this have not been identified.

In theory there may be better outcomes for the children of those who experienced interventions early in childhood. However, none of the major studies of early childhood interventions have considered this.

The critical period to assess the economic impact early intervention will have on the adult outcomes that generate positive economic returns is between the ages of 14 and 18. This is the point at which educational, behavioural and family factors lead young people onto paths which strongly influence their adult lives. These paths are influenced by personal, family and school factors. Early childhood interventions can influence all three.

Some of the routes by which pathways in adolescence may be influenced by early childhood interventions are:

- better health (particularly mental health) and confidence among parents.
- better parenting skills which are associated with lower rates of maltreatment, better educational attainment, lower rates of conduct disorder (a predictor of offending) and better health in adulthood.

- improved home learning environment, which is associated with improved attainment at school (discussed more fully in section 6).
- better social skills leading to better attainment at school (discussed in section 6).
- a community which is more supportive of positive behaviour and less tolerant of problem behaviour.

5. What did Sure Start Local Programmes cost?

The National Evaluation of Sure Start has used an intention to treat design, i.e. it treats all children living in the Sure Start Local Programme Area as participants. Thus, expenditure has been calculated on a per eligible child basis. Some of these children will have received extensive services, while some will have had no contact with the programme at all.

Information about the cost of SSLPs is available from four sources:

- Regular financial information provided by Sure Start local programmes to the Sure Start Unit from 1999-2000 to 2004-05.
- Information from the NESS implementation surveys of Sure Start local programmes.
- Information from the NESS implementation case studies.
- Information about children's centre expenditure from the National Audit Office report on Sure Start Children's Centres.

The most important source is the first. The information based on SSLP accounts covered current (revenue) expenditure in each of the financial years 1999-2000 to 2004-05. The expenditure was recorded under a number of headings covering core services (which all SSLPs were expected to provide) and additional services (which they could choose to provide).

Core services were:

- Outreach and home visiting
- Support for parents
- Play, learning and childcare
- Community healthcare
- Special needs support

Additional identified service areas were

- Teenage pregnancy
- Crime prevention
- Parental employability

In addition SSLPs itemised non-service expenditure under four headings:

- Management and administration
- Development
- Evaluation
- Other

To some extent it was a matter of judgment as to which heading to use to record the expenditure relating to a particular service. A drop-in play session could be a respite for parents or play, learning and childcare for the children. The development of a childminder network could be part of play, learning and childcare, or could address the issue of improving parents' employability. Different programmes made different choices on this issue. In reality many SSLP activities had multiple objectives, and different programmes will have made slightly different judgments about which heading to use in a particular case. This means that differences between programmes in the way that they allocate their resources was due only in part to differences in philosophy and the determination of priorities. Some of the differences depended purely on local judgments about how expenditure was classified.

Financial information up to March 2003 was held on paper records and was extracted from files manually. The evaluation had information for 250 out of 260 programmes for 2002-03, 255 out of 258 programmes for 2001-02 and 118 out of 128 programmes that were operating in 2000-01. There is also financial information for 41 programmes from 1999-2000, which in some cases was before they obtained formal approval. Financial data for 2003-04 and 2004-05 was held in the Sure Start finance computer system. The evaluation had information for 250 out of 260 programmes for 2003-04 and 256 out of 260 for 2004-05.

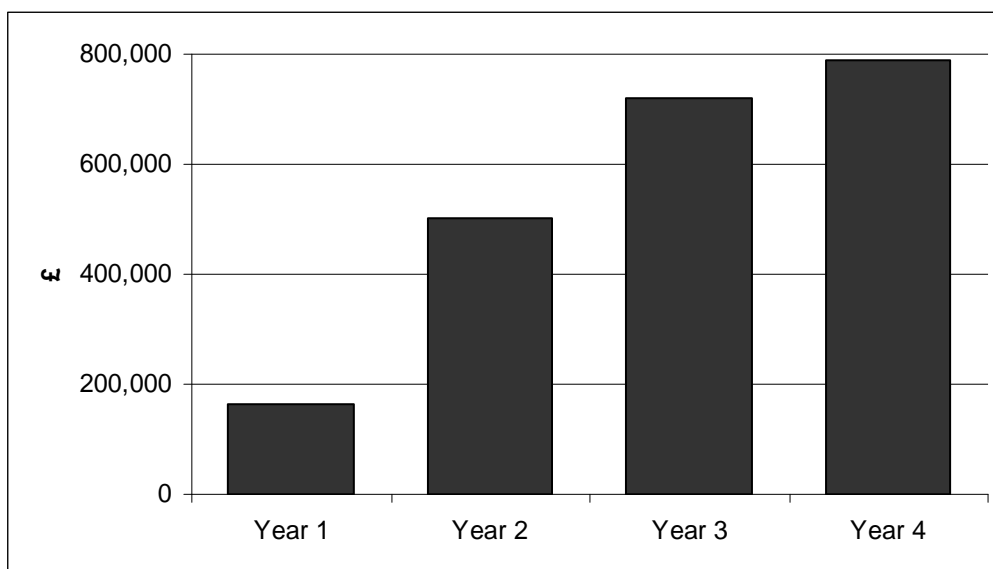
Detailed expenditure data based on financial returns is not available after the financial year 2004-05. After that SSLPs became children's centres and funding was given to local authorities rather than directly to the SSLP. SSLPs were no longer required to keep separate accounts, and in any case the concept underlying children's centres was that they would be a hub where mainstream services were provided, and were not restricted to providing services to people in a defined geographical area. Thus, the distinction between former SSLP services and other services for children became blurred. Moreover, whilst a significant amount of children's centre funding went to local authorities through the Sure Start, Early Years and Childcare Grant, health and employment services funding for children's centres was decided at a local level between the Local Authority, Primary Care Trust and Jobcentre Plus and came from mainstream budgets. Often this would take the form of services or staff time rather than cash funding to enable centres to provide their own services.

5.1 Overall expenditure by SSLPs

SSLPs were slow in becoming fully operational. In their first year of operation they typically spent less than a quarter of the amount they were spending by their fourth year of operation. Even bearing in mind that many programmes will have begun part way through a financial year in their first operational year, expenditure in their second year of operation was still only around 60 per cent of expenditure in the fourth year. By the third year of operation expenditure had reached 90 per cent of the fourth year level. In order to ensure that the evaluation only includes children living in areas whose SSLP was fully

operational, the NESS Impact Study only includes children who were nine months old when their local programme was in at least its third operational year. This was 2002-03 for SSLPs in rounds 1 and 2 and 2003-04 for SSLPs in rounds 3 and 4 (Figure 3).

Figure 3: Average Sure Start local programme expenditure by operating year (current prices)*



Note: * excluding Year 1 expenditure by programmes which had their first year of operation in 1999-2000

Source: SSLP financial returns to the Sure Start Unit

In comparing information across financial years it is important to take account of the fact that the same quantity of cash will not buy the same level of services in later years that it will in earlier years because of the effect of inflation. We have used the GDP deflator¹⁴ for financial years to adjust cash amounts to 2009-10 prices.

The national evaluation of Sure Start used an intention to treat design, so that all eligible children under the age of five living in the relevant areas were regarded as belonging to the treatment group. Whether or not children actually used services was not relevant. What mattered was that services were available to them. In order to maintain consistency with the impact evaluation design SSLP costs were also allocated across all eligible children.

However, although SSLPs measured the proportion of eligible children using services each month as part of their monitoring requirement, they were not

¹⁴ The GDP deflator reflects changes in the average price level for all goods and services across the economy as a whole. Unlike the better-known retail prices index it covers the cost of goods and services which are not traded (for example public sector services) and goods and services which are purchased by businesses such as office accommodation.

required to record the proportion of children who received services during the course of a year (although some did so for their own purposes). This means it is not possible to estimate the overall take up rate for services on a consistent basis, and thus calculate expenditure per child who actually used SSLP services.

Based on SSLP financial returns the cost of established Sure Start local programmes was around £1,200 per year per eligible child living in the area at 2009-10 prices. In addition, the annualised cost of capital expenditure by Sure Start local programmes, depreciated over twenty years, was around £96 per eligible child per year, again at 2009-10 prices, bringing the total cost to around £1,300 per eligible child per year. Expenditure per child at 2009-10 prices did not vary significantly either across years or between rounds up to 2004-05.

When the specific SSLP grant ended it was expected that in most cases the SSLP funding would be ring-fenced for their successor children's centres (although the actual ring fencing related to children's services more generally rather than to a particular centre). However, some SSLPs were situated in areas which were subject to Local Area Agreements, a new form of local authority funding that brought all support and specific grants together into a single funding package. Intrinsic to the approach is that the local authority determined the allocation between different services in accordance with local priorities. It is also likely that some resources will have been diverted from existing children's centres into new ones within the same local authority area, as the level of funding for newer children's centres was lower than that received by SSLPs. All these factors make it unlikely that funding in subsequent years was maintained at the level in 2002-03 to 2004-05.

Total expenditure on children's centres is still uncertain and even less is known about expenditure on each centre. The Select Committee on Children Schools and Families in its 2010 report on children's centres noted with some concern that the overall level of expenditure on the centres was uncertain (Children, Schools and Families Select Committee 2010). The National Audit Office in a memorandum prepared for the Select Committee stated:

Many [children's centres] were unable to supply data for capturing income and expenditure consistently, and much of the data we received were not comparable.

NAO (2010)

In part this reflects the fact that statutory services often use children's centres as a base for delivering services funded out of their mainstream budgets. The cost of establishing the cost of providing a Jobcentre Plus adviser one day a week, say, is disproportionate given the limited use of the information other than to evaluators. Moreover, there is a question mark over whether this is actually an additional cost as opposed to a change in the location of the delivery of a service that would have been delivered anyway to the same client group.

However, in order to estimate the cost of SSLP services for the cohort of children in the impact evaluation it was necessary to estimate expenditure for the remaining two or three years for which they were eligible for children's centre services. These children were aged five years in 2008 (for programmes in rounds 1 and 2) or 2009 (for programmes in rounds 3 and 4). The first group of children were eligible for SSLP provision from 2002-03 to 2005-06. The second group were eligible from 2003-04 to 2006-07. The best available source for this is the National Audit Office. Its 2006 report on children's centres covers 2005-06 and identifies separately expenditure by children's centres, which had previously been SSLPs and other children's centres (NAO 2006). An update for the Select Committee on Children, Schools and Families (NAO 2010) covered 2008-09. This means that 2006-07 still needs to be estimated. We have done this by assuming that the drop in expenditure between 2005-06 and 2008-09 occurred smoothly, so that a third of the drop (a 5.8 per cent fall) took place between 2005-06 and 2006-07. Table 2 sets out the figures in both current and 2009-10 prices.

Table 2: Annual average expenditure by SSLPs and by children's centres that had previously been SSLPs

	Average expenditure (current prices)	Average expenditure (2009-10 prices)
SSLPs (2004-05) (derived from SSLP returns)	£726,000	£816,400
CCs (ex-SSLPs) (2005-06) (from NAO)	£580,000	£640,400
CCs (ex-SSLPs) (2006-07) (our estimate)		£603,250
CCs (ex-SSLPs) (2008-09) (from NAO)	£520,000	£528,600

Source: SSLP financial returns and NAO (2006, 2010)

The National Audit Office estimated that the average annual expenditure of children's centres that had previously been SSLPs was £580,000 in 2005-06. This represents £640,400 at 2009-10 prices. In 2004-05, the final year of the previous financial system, the average expenditure of SSLPs in rounds 1-4 was £726,000 or £816,400 at 2009-10 prices. This implies there was a drop of 21.6 per cent in expenditure between the two years. In 2008-09 the NAO estimated that annual expenditure by children's centres that had previously been SSLPs was £520,000 (or £528,600 at 2009-10 prices). This represents a further fall of 17.4 per cent over three years, an average of 5.8 per cent a year. We have therefore assumed that average expenditure in 2006-07 was 5.8 per cent below that in 2005-06.

The NAO figures include all former SSLPs, including those in rounds which started later and are not included in the national evaluation. SSLPs in rounds 1-4 received slightly more funding in all years than those in subsequent rounds. Therefore, a more realistic conclusion might be that funding per eligible child in 2005-06 was on average 20 per cent below that in 2004-05, or £1,071 at 2009-10 prices, including capital costs. As the children's centre programme was rolled out, average funding per centre fell, and it is likely that there was some further redistribution by local authorities from former SSLPs to newer centres. Moreover, some children's centre services (such as employment support) were funded from mainstream budgets directly rather than via the children's centre. In SSLPs the money generally flowed through the SSLP. In line with the evidence from the NAO it has been assumed that there was a further reduction of 5.8 per cent in the following year to £1,008 per eligible child. This produces a total of just over £4,860 per child in Rounds 1-4 over the time up to their fourth birthday. This is summarised in Table 3.

Table 3: SSLP/children's centre funding per eligible child included in the national evaluation between the ages of 0-4 (2009-10 prices)

Year	Rounds 1-2	Rounds 3-4	Average
2002-03	£1,250		
2003-04	£1,390	£1,301	
2004-05	£1,333	£1,298	
2005-06	<i>£1,071</i>	<i>£1,071</i>	
2006-07		<i>£1,008</i>	
Total (four years)	£5,043	£4,678	£4,860

Sources: 2002-03 to 2004-05 SSLP financial returns adjusted by the GDP deflator to 2009-10 prices. Subsequent years estimated using National Audit Office data as indicated in text

This overall figure of £4,860 excludes the costs of the central team in the Department for Children, Schools and Families (now Department for Education), of regional support teams and of the national evaluation. It also excludes any costs incurred by local authorities and other agencies in support of SSLPs (for example the time spent by Jobcentre Plus advisers visiting SSLPs to advise parents on work options). It also excludes any additional funding that SSLPs might have received for some of their activities or funding from the National Lottery). (See Section 5.4 below for a more detailed discussion of additional funding.) It also does not take into account that in some areas a range of services such as childcare and early years education was already in place before the advent of SSLPs, while in other areas these services had to be developed from scratch by SSLPs themselves.

Moreover, there will have been variations in what local authorities and health services were spending within SSLP areas outside the SSLP framework. As part of the case studies which formed part of the implementation module of the National Evaluation of Sure Start (Allnock et al 2005) efforts were made to establish indicators of mainstream service spending within SSLP areas. However, senior respondents from both local authorities (LAs) and Primary Care Trusts (PCTs) were unable to provide estimates of per capita spending on children either within the SSLP or even within the wider LA or PCT area. This reflects the way in which service budgets are drawn up and managed, which is by service type rather than by service user type or geographical area. Expenditure is controlled by ensuring that budgets are spent on the service type to which they are allocated. Finance systems do not record client group or geographical area. It was not, therefore, possible to derive useable information about spending even by going back to mainstream agency records. This means the estimates above do not include spending by LAs or PCTs outside direct funding they provided to SSLPs and which SSLPs actually included in their accounts. Section 5.4 below discusses the fact that not all SSLPs accounted for additional resources provided by partner agencies.

There were also resources in kind made available to Sure Start local programmes by mainstream agencies, including use of premises and the provision of support services such as human resources and information technology without charge. When considering the full cost of Sure Start local programme services and the potential for replication, these additional resources need to be added to the total measured costs. Information from case studies and from themed studies forming part of the national evaluation of Sure Start (Allnock et al 2005) revealed that other organisations, including both mainstream services and other bodies, often provided services without charge to SSLPs or provided shared or matching funding for particular activities. These resources have also not generally been included in the cost of SSLPs, although a small number of programmes, mainly led by voluntary organisations, did include resources provided in kind in their accounts.

For all these reasons, the expenditure figures calculated should therefore be regarded as a minimum estimate.

5.2 Variability of expenditure

Although average expenditure per eligible child was fairly consistent across all programmes included in the evaluation once they were fully operational, there was substantial variation between SSLPs within this total. For the years for which detailed accounts information is available by programme (up to 2004-05) around a third (36 per cent) of SSLPs had expenditure per eligible child which was below 90 per cent of the average, while around a quarter (24 per cent) had expenditure per eligible child which was at least 10 per cent greater than the average.

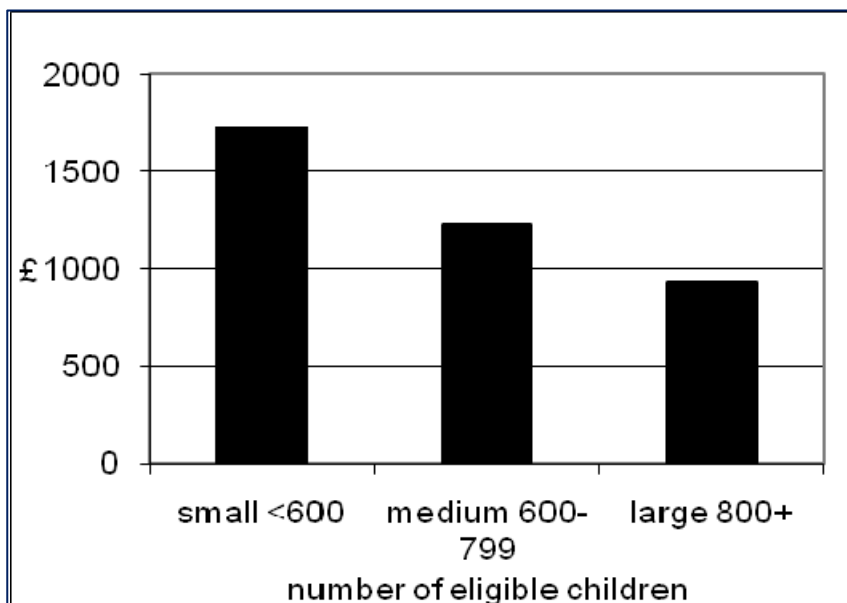
In a typical year at 2009-10 prices the range was from around £450 per eligible child to around £2,500. Taking the four years 2001-02 to 2004-05 (the last four years for which information is available for individual SSLPs and

therefore allowing comparisons to be made between them), the highest spending SSLP spent more than £12,000 per eligible child at 2009-10 prices, while the lowest spending spent less than £2,000.

5.3 Programme size

There was clear evidence of economies in scale in SSLPs. Small programmes with fewer than 600 children aged 0-4 in their area spent more per head overall, more on non-service costs, and more on each key service than did medium-sized and larger programmes. Large programmes with more than 800 children aged 0-4 living in the area consistently spent the least per child (see Figure 4).

Figure 4: Fourth year expenditure per eligible child at 2009-10 prices by SSLP size



Source: SSLP financial returns adjusted by GDP deflator

By the fourth year of operation, small programmes spent £1,726 per head at 2009-10 prices. Medium-sized programmes with 600-799 children spent £1,223 and large programmes spent £934. There was no evidence that larger programmes were providing fewer services. It seems likely that larger programmes provided services with larger groups or caseloads at lower average costs than smaller programmes.

Moreover, by the fourth year of operation, when most programmes had the full range of services up and running, small programmes had overhead expenditure per child which is one and a half times that of medium-sized programmes. When fully operational, typically small programmes were spending more than £500 per eligible child per year on non-service

expenditure, while medium-sized programmes were spending around £350 and large ones around £270. This strongly suggests that economies of scale were important in the operation of Sure Start local programmes, and that small programmes were disproportionately expensive.

The SSLP model of delivering services through small, freestanding local organisations working in partnership had the inevitable consequence that non-service costs (i.e., management and administration, development and evaluation) were a relatively high proportion of total costs. Partnership working also imposed costs on other partner organisations which are largely hidden, but are still a consequence of the existence of SSLPs.

5.4 Additional funding

5.4.1 Additional cash funding

Sure Start local programmes sometimes received additional resources other than their funding from the Sure Start Unit for their work with children and families. It is important to identify these additional resources, both because they contribute to the observed outcomes and because they need to be taken into account when considering the total resource cost of maintaining, extending or replicating the kind of services offered by SSLPs.

Information about the availability of additional cash resources comes mainly from NESS implementation module surveys of SSLPs. These asked all 260 SSLPs included in the national evaluation about the type of services they were providing, what was in place already, what their relationships were with mainstream agencies and staffing issues. The surveys took place over four years (2000-01 to 2003-04). More detail can be found in the final research reports from the NESS implementation evaluation (2005a and 2005b). In order to inform the economic evaluation the first three surveys included questions related to additional resources received other than the Sure Start Grant, and questions related to services received in kind, and whether or not these were charged for. The 2004 survey did not cover these issues in order to reduce the burden imposed on SSLPs.

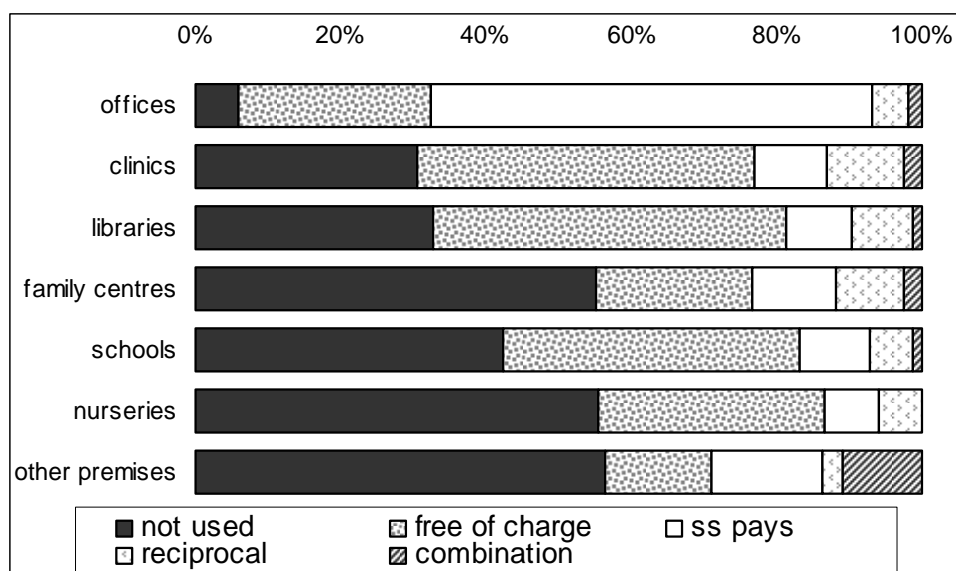
Combining three sets of survey data (for 2000-01 to 2002-03), almost half (47 per cent) of all SSLPs received additional resources to support current expenditure in at least one of the three years. For those which did receive additional resources the average amount was around £69,000 a year at 2009-10 prices. This represents an additional eight per cent on top of recorded expenditure.

5.4.2 Additional resources in kind

The NESS implementation surveys asked SSLPs about their receipt of in-kind resources from partner agencies, including both the use of premises and the provision of a range of backup services. In addition to the 184 programmes that responded to the 2003 survey, 24 round 1 and 2 programmes provided some information about receipt of services in kind in their responses to the

2002 survey and these responses have been included in our analysis, on the basis that it is unlikely that such services will have been withdrawn by partner agencies between the two years.

Figure 5: Charging arrangements for the use of premises belonging to other organisations



Source: NESS implementation surveys of SSLPs

The most common arrangement for the use of premises belonging to other organisations was that the Sure Start local programme had the use of the premises free of charge. Around half of all programmes had free use of all or most of the premises they used. Generally, the charging arrangements varied for different kinds of premises. These are shown in Figure 5. Clinics, libraries and schools were available free of charge to 40-50 per cent of SSLPs. Around half the remainder did not use clinics, libraries or schools for delivering their services.

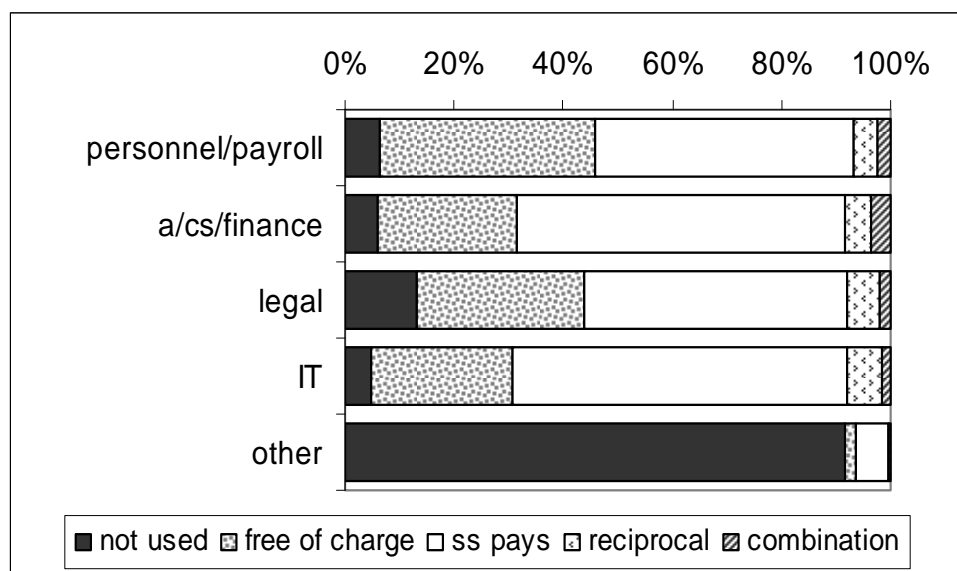
The main kind of premises for which Sure Start local programmes paid was office accommodation, where six out of ten programmes paid. Only around one in ten paid for the use of premises apart from offices. This means that in addition to recorded costs there were hidden costs in almost all SSLPs that were using other organisations' premises to deliver their services.

5.4.3 Use of support services

As well as the use of premises belonging to other organisations, almost all programmes received some support services from another organisation (generally, but not always the lead body). SSLPs that were companies limited by guarantee or other independent charities were more likely to provide their own services and less likely to use those provided by other organisations. Nevertheless, only one programme did not use any services provided by other organisations.

The main difference between the use of premises to deliver services and the use of professional and support services by SSLPs is that most programmes were charged for support services. The details of the charging arrangements for these services are shown in Figure 6.

Figure 6: Charging arrangements for different types of support services



Source: NESS implementation surveys of SSLPs

Six out of ten programmes paid for IT and finance services, and around half paid for legal, human resources and payroll services. However, around a quarter of programmes received finance, legal and IT services free of charge and four out of ten received HR and payroll services. SSLPs that received one service free tended to receive others as well. Thus, of the 53 programmes that received free accounts and finance services, 51 also received free HR and payroll services, and 41 received free legal services. Overall, for most SSLPs these costs will be included in their accounts, but for around a quarter of programmes there were further hidden subsidies in the shape of free services.

5.5 Expenditure on different service areas

The information from SSLP accounts covers current (revenue) expenditure in each of the financial years 1999-2000 to 2004-05. As discussed above, from 2005-06 SSLPs became children's centres and received their funding from a wider budget. Thus, the allocation of expenditure to different services was only available up to 2004-05. The expenditure was recorded under a number of headings covering core services (which all SSLPs were expected to provide) and additional services (which they could choose to provide). The service headings are listed at the beginning of this chapter.

In 2003-04 and 2004-05 taken together, 29 per cent of SSLP expenditure was on play, learning and childcare; 19 per cent each on support for parents and

community healthcare, and 17 per cent on outreach and home visiting. Other categories of expenditure were all relatively small. This is shown in Figure 7.

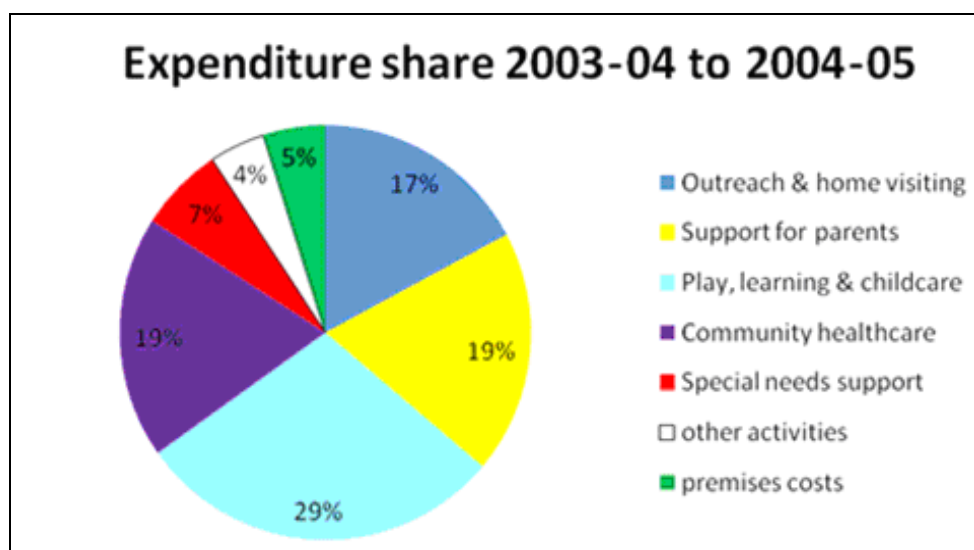


Figure 7: The shares of different activities in SSLP expenditure 2003-04 to 2004-05

This distribution is not markedly different from that found by the National Audit Office in 2005/06 in children’s centres that had previously been SSLPs: play, learning and childcare 25 per cent, outreach and home visiting 15 per cent, support for parents and families 14 per cent, primary and community healthcare 13 per cent and special needs support eight per cent (NAO 2006).

It is important to stress that play, learning and childcare expenditure by SSLPs excludes early years education for three- and four-year old children that was funded separately. Some SSLPs did operate their own nurseries, but this was unusual. More typically they hosted nurseries delivered by local authority or voluntary or independent providers, or they collaborated with such providers to deliver childcare to children living within the area. Other examples of the type of activity funded by SSLPs included subsidies for childcare for working parents, childcare for children whose parents were attending SSLP activities, and the development of childminder networks. Overall, therefore, the level of expenditure on play, learning and childcare available to children living in SSLP areas will have been much higher than just the expenditure recorded by the SSLP.

Similarly, community healthcare expenditure was almost all on provision that would not have been available as part of mainstream health services, or where access might have been restricted to cases of severe need, such as speech and language therapy. For example, around half of all implementation case study SSLPs provided postnatal depression services over and above those which were available through local NHS provision (NESS 2005b).

5.6 Expenditure on comparison group children

There is no means of establishing what resources were spent on comparison group children living in other areas. The uncertainty in mainstream services about expenditure per child in SSLP areas is equally true in non-SSLP areas. What is known is that the comparison group children were as likely as the SSLP children to have received early years education (NESS 2010), because funding for part-time universal early years education for three and four-year old children became available during the lifetime of SSLPs.

One of the consequences of this is that it will not be possible, either now or in the future, to establish any rate of return from the early years education element of SSLPs. Both international evidence and the Effective Provision of Pre-School Education (EPPE) Project suggest that good quality early years education has a significant impact on children's social and cognitive development (Sylva et al 2004). However, the shift to universality means that the impact cannot be evaluated by reference to the experience of the comparison group.

This means that the estimation of the impact of SSLPs is the impact that they have over and above the impact of early years education, whether through the additional services provided or through the greater co-ordination of services.

5.7 Costs: key issues

In terms of costs as measured, eligible children living in SSLP areas received an input of £4,860 at 2009-10 prices before they reached the age of five. In addition around half of all SSLPs received additional resources amounting to around eight per cent of expenditure in at least some years. Most SSLPs had access to free or subsidised accommodation, and most received some benefits in kind in the form of services. It is likely therefore that the overall average cost per eligible child was more than £5,000 at 2009-10 prices. In addition three and four year old children were also eligible for additional universal funding for early years education.

It is known that SSLP services were not received by all eligible children. In the early years of operation SSLPs recorded the proportion of eligible children in contact with the programme each month. This was typically around a quarter, but was as high as three-quarters in some programmes. However, the proportion in contact with the programme over the course of a year was not collected, so the average figure of around a quarter represents a lower bound for the true level of service usage. As the evaluation has used an intention to treat design, it is appropriate for costs to be apportioned across all eligible children, not just those who actually used services.

6. What are the indications of the potential economic benefits of Sure Start local programmes?

The evidence collected so far in the National Evaluation of Sure Start Impact Study (NESS 2010) was collected when the children who had lived in areas where Sure Start local programmes were operating were aged five. This is at least ten years before most previous early years interventions have shown positive economic rates of return. At this point there can only be a limited set of outcomes which can provide immediate economic benefits (for example better child or parent health, or higher rates of parental employment), but they are inevitably likely to be relatively small compared with the costs of the programme.

Moreover, both children living in SSLP areas and comparison group children were equally likely to have taken part in early years education, and that education appears to have been of a similar quality (Melhuish et al 2010). This means that the benefits of early years education in terms of the long-term impact on children's employment and earnings in adulthood cannot be estimated through the National Evaluation of Sure Start as these benefits are likely to appear in both groups of children.

In terms of economic evaluation, therefore, Sure Start local programmes are being subject to a difficult test. They provided an additional range of health, parenting and other support services over and above what was available through mainstream provision. They provided additional support for childcare and early years services (for example the development of childminder networks, or subsidising childcare for working parents, or the provision of childcare for parents attending courses). They also had a role in improving multi-agency working. So it is the economic impact of the service co-ordination and the additional services which is being tested.

The element that has been found to be a central component of three of the four cost-benefit studies of early intervention in the US, which influenced and informed the establishment of Sure Start local programmes (Glass 1999) (i.e. preschool education) is excluded from the range of benefits that can be attributed to SSLPs because the evaluation was unable to have a comparison group that did not have access to such provision.

It is also important to remember the general caveat about "black box" evaluation approaches. These approaches attribute observed differences between treatment and comparison groups to the intervention. In the case of the National Evaluation of Sure Start this means that differences between SSLP families and MCS families are attributed to SSLPs even though they might actually have other causes.

The approach that has been adopted for this report has been:

- to estimate the values of any immediate outcomes.
- to consider whether there is sufficient evidence to estimate likely future rates of return by simulating the link between the kind of outcome that

can be observed at age five and the outcomes at later ages which are associated with positive returns.

6.1 Outcomes at age 5 which might deliver future savings

Where the outcomes for children and families in SSLP areas are similar to the outcomes for comparison children and families, there is no net economic impact of SSLPs. There will be economic consequences of some outcomes (for example cognitive development leading to higher educational achievement and higher lifetime earnings as a result of access to early years education) but those consequences will be similar for both SSLP area children and comparison children. Thus, in order to estimate the economic impact of SSLPs it is necessary to estimate the difference in the economic outcomes for SSLP children and families and comparison group children and families.

The impact study (NESS 2010) of Sure Start local programmes (SSLPs) on child development and family functioning has revealed several positive outcomes, where there is literature that suggests potential future economic benefits. It is, however, important to note that all the effect sizes are relatively small ranging from 0.09 to 0.29¹⁵. The positive outcomes are:

- a larger proportion of children living in SSLP areas lived in families where at least one parent moved into paid employment over the course of the evaluation.
- families living in SSLP areas reported less harsh discipline.
- families living in SSLP areas reported lower rates of family chaos.
- families living in SSLP areas reported a stronger home learning environment.

In addition the impact study found one negative outcome which has a potential economic impact:

- mothers living in SSLP areas reported higher rates of depression.

These were not the only outcomes reported in the impact study. However, the additional outcomes are ones which cannot readily have economic values attributed to them. For example, children living in SSLP areas had lower measured body mass than comparison group children (effect size 0.12). However, this did not represent a difference in the proportion of children with obesity (for which there is some literature on potential future costs both to the individuals themselves and to health services). There is no equivalent literature on the costs or benefits of higher or lower weight levels. Moreover, an effect size of less than 0.2 is usually considered not to have any practical significance (Cohen 1988).

Similarly, children living in SSLP areas had better physical health than comparison group children (again with a very small effect size of 0.10). This has the potential to lead to lower health expenditure and better earnings potential in future, but given the nature of the measurement (parent's rating of

¹⁵ See footnote 13 above for a discussion of how effect sizes are calculated and their interpretation.

child's general health) there is no literature on which to base estimates of cost savings. (By contrast it is possible to estimate the savings in healthcare costs from lower accident rates, but there was no statistically significant difference between SSLP children and comparison group children in their accident rates).

Mothers in SSLP areas also reported higher rates of satisfaction with life. There is growing interest among economists in the issue of happiness and its economic value, but this has not reached the stage where it is possible to attach economic values to mothers' life satisfaction, positive though this is as an outcome.

There is research evidence on the economic impact of clinically diagnosed depression (see for example Bell et al 2006). The main impact is on productivity and earnings as people take time off work as a result of depression. The NESS impact study collected self-report information on symptoms of depression. While there is likely to be some overlap between clinically diagnosed depression and self-reported symptoms of depression, there is no established relationship in the literature between self-reported symptoms of depression and absence from work as there is with clinically diagnosed depression, where clinicians' diagnoses can be matched with days of sickness absence from work taken by individuals. The impact evaluation specifically tested the relationship between maternal depression and changes in working status and found there was no relationship in either direction (NESS 2010). However, neither the NESS impact study nor the MCS asked employed parents about absence from work.

6.1.1 Worklessness

Among both SSLP children and comparison children there was a fall in the proportion who were living in workless households at the age of five years compared with the proportion who were doing so at the age of nine months. However, there was a 3.6 percentage point difference in the fall in worklessness between the families living in SSLP areas and the comparison group families. The areas the comparison group families lived in were selected on the basis of the level of deprivation being similar to that experienced in SSLP areas and the absence of an SSLP. All the children living in the selected area were then included in the comparison (NESS 2010 has further details). There were, however, some differences in the characteristics of the families themselves, and in particular the SSLP families had higher initial levels of disadvantage. At the age of nine months, 31.8 per cent of children living in SSLP areas lived in workless households, while 27.9 per cent did so at the age of five years. Among comparison group children drawn from the Millennium Cohort Study 27.4 per cent were living in workless households at the age of 9 months, while 27.1 per cent were doing so at the age of five. Thus, although families living in SSLP areas were more likely than comparison group families to be workless when children were nine months old, by the age of five the families living in SSLP areas had caught up, even

though the areas themselves were slightly more disadvantaged on average than the areas in which the comparison group families lived.

Worklessness results in lower incomes for families. Improvements in in-work financial support to families mean that most families in paid work (including both lone parents and couples) have incomes at least 20 per cent greater than they would have had if they were out of work (Adam et al 2006). The minimum income guarantee for a family with one child where a parent works part-time was £240 a week when the children living in SSLP areas were aged five years (DWP 2009). Other evidence has found lone parents with higher financial gains from moving into paid work were more likely to move out of worklessness than those with smaller gains (Knight and Kasparova 2006).

Although fathers' employment rates do not vary much according to the age of their children, the same is not true for mothers. In practice the employment rates of mothers generally increase as their children get older (Jenkins and Johnson 2010). Two-thirds of children who live in workless households live with a lone parent, even though most children live with two parents (Jenkins and Johnson 2010). This means that in practice any significant reduction in the proportion of children living in workless households must involve the movement of lone parents into paid work. Among children living with two parents the vast majority have at least one parent in paid work.

But the fact that employment rises as children get older means that we cannot assume that this higher rate of transition into work for NESS families is likely to persist indefinitely, and therefore yield lifetime benefits both to the individuals and to taxpayers. Rather, it is likely that the rates of transition into employment of NESS families and comparison group families will converge over time. As we do not have information about the timing of movement into work (and hence the number of additional weeks or months worked) by both NESS families and comparison families, it is necessary to make an assumption about this in order to calculate the benefit of these extra movements into work.

Whether or not parents receive a financial gain from working can be complex. It depends on rent levels and childcare costs as well as the interaction between out of work benefits, earnings, tax credits and housing and council tax benefit. However, in reality it is unlikely that parents would move into paid work if they did not achieve a financial gain. Parents who find themselves financially worse off in paid work (particularly those with high rents) tend to give up their jobs and return to benefits (Ray et al 2010).

We do not have direct information about the financial gains from paid work, both to families themselves and to wider society. However, research evidence suggests that parents generally (and lone parents in particular) have smaller financial gains from moving into work than people without children, and where they have childcare costs in addition to the normal costs of working such as travel their gains from working can be relatively small (Adam et al 2006).

The estimate of the economic benefit from moving into work in this report is based on the relatively conservative assumption that those who moved into work gained on average £50 a week. This is based on the minimum income guarantee of £240 a week yielding a gain of 20 per cent (i.e. £240 equals 120 per cent of out of work income, implying an out of work income of £190 a week). In reality, some families may gain more than £50, but it is not possible to estimate what proportion of families would have gained more than this minimum. Some families may have gained less. Families with high housing costs can have very small gains from working. The London Child Poverty Commission found that in 2010 many workless London families would gain only £10 a week from working (London Child Poverty Commission 2010). The evidence suggests that those with small potential gains are much less likely than those with higher gains to move into paid work (Knight and Kasparova 2006). One London initiative found an average gain of £80 a week and another average gain of £116.¹⁶ While these are good practice examples, and are therefore likely to represent particularly positive outcomes, an assumption of a £50 a week gain is more consistent with the evidence from Adam et al (2006), Knight and Kasparova (2006) and Ray et al (2010) than any alternative higher or lower assumptions. The calculations are illustrated in Table 4.

Table 4: Distribution of estimated benefits of reduction in worklessness (£ per week)

	Received by family	Received by wider society	Total
Benefits/out of work support	- £190	+ £190 ¹	nil ⁴
Tax credits/in-work support	+ £ 91	- £ 91 ¹	nil ⁴
Earnings	+ £149 ³		+ £149
Net gain	+ £ 50 ²	+ £ 99 ¹	+ £149

Notes:

¹ Based on net gain to taxpayers of £99 a week based on Freud (2007). The division between benefit savings and tax credit payments is an approximation which does not affect the outcome. It is the net figure which is critical.

² Based on net gain from working of 20% from Adam et al (2006), combined with minimum income guarantee

³ Estimate based on £240 minimum income guarantee and £50 net gain and £99 net loss of income from the state. This would approximate to 20 hours a week at £7.45 an hour, or slightly fewer hours at a slightly higher wage.

⁴ The presentation of costs and benefits in this table uses the gross flows method rather than the more usual opportunity cost method to make clear where the taxpayer makes savings in transfer payments. However, transfer payments cannot be net benefits to society because although the taxpayer saves them the individual loses them. The net benefits to society are only those derived from the individual's work output. Both methods of presentation end up with the same net benefits to society. For an illustration of this see Haveman and Farrow (2011).

¹⁶ <http://www.childpovertytoolkit.org.uk/Into-Work-Schemes>

There is, of course, an attribution problem: was the move into paid employment by these parents a consequence of the help they received from the SSLP or due to other interventions in the area? The evidence suggests that although only a minority of parents in SSLP areas took part in activities related to employability, those who did so received personalised and intensive help in a way which fitted well with their responsibilities for their children. There was also evidence that taking part in a range of SSLP activities boosted parents' confidence, which can be a critical part of engaging with paid work (Meadows and Garbers 2004; Meadows 2006).

A second conservative assumption is therefore that those who moved into work did so a year before they would otherwise have done so. The move into paid employment by workless mothers is gradual as children get older. Most non-employed mothers have moved into paid employment by the time their children reach the age of sixteen. It is unlikely that the difference in movement into work between families in SSLP areas and comparison families would persist indefinitely. Rather, their transitions are likely to have taken place sooner.

The assumption that the timing of the movement into work was brought forward only by a year implies that most of the movement into paid work among SSLP parents (and as discussed above, given the predominance of lone parents among workless households with children, this means movement into work by lone mothers) took place during the year in which their children turned five. This is not unrealistic, given that many parents start paid work when their children enter primary school between the ages of four and five (Jenkins and Johnson 2010), and there remain strong social traditions that this is an appropriate point in the life course for mothers to return to paid work (see for example Park et al. 2010; Duncan 2004).

However, if the flow into work took place gradually across the four-year period between the age of nine months and five years, the average additional time spent in paid work by the group would be two years rather than one. This means that the lower limit of the economic value of these additional entries into work is likely to be based on an additional one year of paid work, while the upper limit is based on two years.

At £50 a week the gain in income would have been £2,600 per year per household moving into paid work. In addition to the individuals' gain in earnings, the net potential savings to the taxpayer of out of work benefits are £4,400 a year for lone parents, £8,100 for Jobseekers' Allowance claimants and £9,000 a year for those dependent on incapacity benefits (Freud 2007). This is based on the aggregate of savings in benefit payments and the value of additional payments of tax and national insurance. If four out of every five families moving from worklessness into work were lone parents (which is consistent with their over-representation among workless families with children), the annual net savings to the taxpayer would be £5,140 per year per

family moving into paid work. Thus the combined benefit would be £7,740 of which families would gain a third and taxpayers two-thirds.

When the benefit per family moving into work (£7,740) is averaged across all families living in SSLP areas (analogous to the estimation of the cost of the programme) this produces an average economic benefit of £279 per SSLP family per year. Of this, the benefit to taxpayers is £181 and the benefit to families is £98. The lower limit of the lifetime benefit is £279 (based on one additional year in work), while the upper limit is £557 (based on two additional years in work).

6.1.2 Harsh Discipline

Harsh discipline is defined in the NESS Impact Study as ignoring, smacking, shouting or punishing children. There was less harsh discipline reported among families living in SSLP areas compared with comparison group children. The effect size was small (0.24).

There is a long-established association between harsh discipline and the emotional and behavioural development of children. Gershoff's (2002) meta-analysis of corporal punishment found an association between parental corporal punishment and eleven negative behaviours, including:

- increased child aggression
- increased delinquent and anti-social behaviour in childhood
- decreased child mental health
- increased adult aggression
- increased adult criminal and anti-social behaviour

Other studies have also found associations between harsh discipline and lower cognitive development (Smith and Brooks-Gunn 1997), higher levels of anxiety (Lansford et al 2002), conduct disorder (Sainsbury Centre for Mental Health 2009), and persistent offending as an adult (Farrington et al 2006).

The economic costs of conduct disorder are discussed in more detail in Section 6.2.1 below. The evidence that families in SSLPs are less likely to engage in harsh discipline suggests that SSLPs do have the potential to generate some future returns in terms of lower offending rates, although the impact may not be substantial given that the effect size (0.24) is not large. However, offending patterns and the cost of crime differs between the US and the UK, so it is not feasible at this point to predict the size of the long-term impact on offending using previous American evaluations as a guide.

6.1.3 Family (household) Chaos

Family (household) chaos has been associated with parents who are less likely than parents in families with less chaos to monitor children's activities, less likely to be involved with and responsive to their children and more likely to use inconsistent discipline. Families living in SSLP areas had lower rates of

family chaos, although, as with harsh discipline, the effect size was small (0.29), so the potential for long-term economic impact is also likely to be small.

Some of the negative outcomes that have been associated with more disorganised households are lower levels of expressive vocabulary (Johnson et al 2008), poorer cognitive outcomes (Pike et al 2006), and problem behaviour (Coldwell et al 2006). These outcomes are likely to be associated with poorer educational attainment and behaviour problems in adolescence and adulthood.

6.1.4 Home Learning Environment

The Home Learning Environment (HLE) was measured by an index that was comprised of seven items that relate to learning opportunities: frequency read to, going to the library, playing with numbers, painting and drawing, being taught letters, numbers and songs/poems/rhymes (NESS 2010). The HLE of children living in SSLP areas was richer than that of comparison group children after taking account of demographic differences. The effect size was small (0.27).

Evidence from the Effective Provision of Pre-school Education (EPPE) research project has demonstrated that the HLE has strong effects on numeracy and literacy ability at age 5, with those with higher HLEs more likely to overachieve and children with lower HLEs more likely to underachieve (Melhuish et al 2008). A richer HLE can offset at least in part some other sources of disadvantage such as low family income.

Educational attainment is strongly related to future employment and earnings (Jenkins et al 2007; Blanden et al 2007; Blundell et al 2004; Blundell et al 2009) (see Section 6.2.3 for more details). It also has an impact on other areas such as health outcomes. Thus, although the HLE itself does not have an immediate economic impact, it does have an important potential economic impact in the long term via its effect on educational attainment.

6.1.5 Maternal depression

The mothers in SSLP areas were slightly more likely than the comparison mothers to report that they were depressed. The effect size (0.09) is below that conventionally regarded as the starting point for “small” (0.2) (see footnote 13 for discussion of this). However, small though the effect is, it is potentially a negative outcome for the economic evaluation.

The main economic cost of depression relates to the loss of income and output from not being in paid employment (Bell et al 2006). However, this evidence relates to clinically diagnosed depression and its associated absence from work, both short-term and long-term. The available evidence on

the costs of this absence cannot be applied to self-reported symptoms, as there is no equivalent data on absence rates for self-reported measures.

The impact evaluation investigated the relationship between changes in paid employment status and changes in self-reported depression among SSLP parents, but found no link (NESS 2010). In other words, mothers who reported symptoms of depression were no more or less likely to be in paid work than mothers who did not report symptoms of depression. Given the small size of the effect, and the fact that many parents of young children are not in paid employment as a result of their family commitments, the impact of depression on the employment rate of SSLP parents is likely to have been very small. However, if maternal depression persists then it is likely that there will be an impact on future employment rates as children reach the ages at which parents usually move more quickly into paid employment.

However, maternal depression is a risk factor for adverse outcomes in children. These include cognitive, emotional and conduct problems (summarised in a review by the Canadian Paediatric Society, 2004). These are likely to provide a potential offset to the generally positive impact on these child outcomes of some of the other outcomes observed at age five. It is important to stress that all the outcomes are measured across all eligible children. The positive outcomes and negative outcomes may well affect different children, and the size of the effects may differ. Nevertheless, the average outcomes for all children will be affected by both elements.

Table 5 summarises the outcomes found in the impact study and their short-term and likely long-term economic consequences.

6.2 Sources of potential long-term economic benefits

6.2.1 *Conduct problems in children*

Perhaps the issue with the highest potential for generating economic benefits to society is conduct disorder. Conduct problems refer to oppositional or anti-social behaviour in childhood such as disobedience, lying, fighting, and stealing. If the problems are severe and sufficiently long-standing they warrant a diagnosis of conduct disorder. Behavioural problems in the early years are associated with poorer educational attainment, with consequences for employment and earnings. Conduct disorder in childhood has an impact on educational achievement, adult mental health problems, is associated with a high probability of being an offender, of starting offending at an early age, of offending persisting into adulthood and of substance use (Feinstein and Duckworth 2006; Sainsbury Centre for Mental Health 2009; Kim-Cohen et al 2003; Scott et al 2001; Hill 2003).

Table 5: Sure Start local programmes outcomes at age 5 and current and future economic consequences

Outcome	Short-term economic impact	Route to potential long-term economic impact	Potential long-term economic impact
Reduction in workless households	Higher family incomes (shared between families and tax receipts); lower expenditure on benefits tax contributions to the State	Improved human capital through work experience	If higher employment rates persist, the short-term benefits will be repeated in future years
Less harsh discipline		Lower incidence of behavioural problems, particularly conduct disorder, leading to less anti-social behaviour and offending	Lower criminal justice system costs; lower costs to crime victims; higher employment rates and earnings; lower benefit costs; lower health costs for both children and adults
		Lower incidence of anxiety	Lower child health costs; less adult depression; higher adult employment rates, higher earnings, lower benefit expenditure
Less family chaos		Better vocabulary and cognitive outcomes likely to lead to higher attainment at school	Higher potential employment rates and earnings and lower benefit expenditure
Home learning environment		Improved school attainment	Higher potential employment rates and earnings and lower benefit expenditure

The prevalence of conduct disorders among children aged 5-15 in Britain is eight per cent for boys and four per cent for girls. In families where no parent is in paid work the proportion is doubled. Other factors which are associated with a much higher prevalence of conduct disorder are family income under £400 a week and parent having no qualifications (Green et al 2005). There is also a well-established relationship between conduct disorder and the use of harsh discipline in the home (Gershoff's 2002; Sainsbury Centre for Mental Health 2009). This means that the lower rate of harsh discipline among SSLP families, albeit small, may have an impact on subsequent rates of conduct disorder.

The potential long-term costs of conduct disorder first came to public attention in Britain with the publication in 2001 of a paper by Scott et al, which estimated the costs to the public sector up to the age of 28 of dealing with the adolescent and early adult behaviour of people who had conduct disorder as children. Scott et al estimated that the average cost up to age 28 was around £70,000. Those who had conduct problems but not a diagnosis of conduct disorder incurred public expenditure costs of £24,000 while those who had no problems incurred costs of around £7,000. The emphasis of this work was on costs to education and children's social services, and on the public sector costs of crime such as criminal justice system costs.

More recent work by the Sainsbury Centre for Mental Health has focused on the lifetime costs to society generally, not just to the public sector, of someone having had conduct problems or conduct disorder as a child. Between 80 per cent and 90 per cent of all crime is committed by people who had conduct problems as children (Sainsbury Centre for Mental Health 2009; Farrington 1995). Perhaps more importantly, people who had serious conduct disorder as children commit 30 per cent of all crime.

The Home Office has estimated that the total cost of all types of recorded crime to businesses and households is £60 billion a year (Dubourg et al 2005). This includes not only the public sector costs of police, courts and sentences, but also the much larger private costs to the victims of crime in terms of loss of property, pain and suffering caused by injuries and death, and the cost of crime prevention such as security.

Friedli and Parsonage (2007) take the Home Office figure and conclude that if a third of all offences are committed by people who had serious conduct disorder as children; this implies that the cost of offending by this relatively small group is around £20 billion a year. This does not take into account the possibility that people who had serious conduct disorder as children might commit offences that are more expensive than the average (perhaps because they result in lengthy prison sentences, or where establishing the identity of the offender is more difficult and therefore more costly). It should probably therefore be treated as potentially an underestimate. But, within its own terms Friedli and Parsonage conclude that a single child with serious conduct disorder is likely to commit offences which cost society (taxpayers, victims and potential victims) £160,000 per child (Friedli and Parsonage 2007)

As well as their involvement in offending, people who had serious conduct disorder as children are less likely to be in paid work as adults than those who did not have any conduct disorder. This leads to lower output, lower earnings, higher benefits and lower tax receipts. They also have higher needs for healthcare, particularly, but not only, mental health care. Lower employment rates and higher health costs add a further £65,000 to the lifetime costs of serious conduct disorder, bringing the total cost to £225,000 on average for each child with serious conduct disorder (Friedli and Parsonage 2007).

In addition, to the social costs imposed by people who had serious conduct disorder as children, the larger group of people who had milder conduct problems as children commit half of all crime. The lifetime cost of offending for the second group is £45,000 each, with worklessness and health costs amounting to a further £30,000, or £75,000 in total (Friedli and Parsonage 2007).

The aspect of SSLPs which is most likely to have an impact on the prevalence of conduct problems is improving parenting skills and parental confidence, which have been shown to have an impact on conduct disorders. The evidence related to the impact of parent education and training has been reviewed by the National Institute for Clinical Excellence, which recommends the use of parent education and training as a means of reducing the incidence of conduct disorders. (NICE 2006) Interventions that aim to prevent or intervene with conduct problems at pre-school age have been found to be the most effective in diminishing negative outcomes (Hill 2003; Scott 2008).

6.2.2 Anxiety in children

Children who are anxious in childhood are between one and a half times and twice as likely to experience anxiety or depression as adults than children who are not anxious (Clark et al 2007).

A recent major study of the economic costs of depression found that the average annual cost of each case of adult depression is around £2,300 a year (Bell et al 2006). This includes lost productivity, healthcare costs and benefit costs. Thus, any reduction in the incidence of anxiety in children has the potential to deliver long-term benefits in terms of the cost of depression in adulthood. Lansford et al (2002) found that harsh discipline was associated with higher levels of anxiety. This means that the lower rate of harsh discipline found among SSLP families has the potential to reduce anxiety levels in later childhood and depression and anxiety in adults.

6.2.3 School attainment

There is a growing body of empirical economics literature on the relationship between different levels and types of academic and vocational qualifications and lifetime earnings. The returns to particular qualifications are estimated by comparing the earnings of those who achieved a particular qualification with the earnings of those who achieved a lower level qualification (or none at all) taking account of other differences in characteristics (such as gender, age), which are associated with earnings differences.

The most recent estimates suggest that the lifetime earnings impact of obtaining five or more GCSEs at grades A* to C is around 16 per cent a year (Jenkins et al 2007). The return to gaining any O level qualifications (the precursors of GCSEs) compared with no school qualifications at all has been estimated to be slightly higher at around 18 per cent. (Blundell et al 2004). The higher rate of return is likely to reflect the lower proportion of the age cohort in the Blundell study who had any qualifications at all. The attainment of five good GCSEs (or its predecessor qualifications) is critical not only because it raises earnings in its own right, but also because it is an essential part of the gateway to higher education, where rates of return are even higher.

If future earnings are discounted at 3.5 per cent a year (the current Treasury test discount rate)(HM Treasury 2003), and earnings are conservatively assumed to be static in real terms across the working lifetime, when all the years of earnings are added together, the Jenkins et al (2007) estimate represents a lifetime net present value to the individual of around £70,000 from achieving five GCSEs at grades A to C, while the Blundell et al (2004) estimate represents a net present value of achieving O levels (the previous equivalent to GCSE grade A to C) would be around £79,000. These estimates assume no growth in real earnings. If real earnings grow at an average of two per cent per year (typical of the past few decades) the lifetime value would be between £90,000 and £100,000. These figures are approximate in that they do not take account of the fact that for many groups earnings initially rise more quickly with age, then either flatten or fall slightly. This means that the returns to five GCSEs at grades A to C may be underestimated by this method because a proportion of lifetime earnings will have been subject to discounts that are too high.

In addition, to the returns to the individual, there is also an impact on economic output and tax revenues.

6.3 Predicting potential long-term economic benefits

As a final step in the economic evaluation, we attempted to predict long-term economic benefits using a simulation model.

There are established relationships based on the EPPE study between the Home Learning Environment at age three (Melhuish et al 2008) and attainment at school Key Stage 2 tests taken at the age of eleven. The Home Learning Environment (HLE) is one of a number of influences on Key Stage 2

attainment. The others include gender, parents' education, low-birth weight, ethnic origin and family socio-economic status.

There are also established relationships between Key Stage 2 test results and attainment at GCSE (Key Stage 4). These have been used by the Department for Education and its predecessors to generate estimates of school value added, depending on whether pupils achieve better or worse GCSE results than they are predicted to do (DCSF 2009).

In considering modeling potential future benefits, there is a potential predictive chain available by drawing on these established relationships. The chain would run:

- from the Home Learning Environment at age three together with demographic indicators to predict maths and English scores at Key Stage 2 (based on the relationships established by the EPPE study)
- from these predicted Key Stage 2 scores to predicted achievement at GCSE (Key Stage 4) (based on DfE value-added models)
- from the predicted achievement at GCSE to predicted earnings (based on cohort study models such as Jenkins et al 2007 or Blundell et al 2004)
- from predicted earnings to calculation of a long-term rate of return.

Such a model would inevitably have to be regarded as tentative and indicative rather than precise. Although it would be based on well-established relationships, it would only be able to take into account in a limited way factors that have an impact on attainment but which are inevitably unknown at this stage in children's lives. These would include issues such as parents' interest in schooling, children's health and whether or not their education is disrupted. The aim was therefore not to produce a reliable predictive model, but an indication of whether the outcomes for SSLP children and their families identified up to the age of five might have a noticeable impact on their lifetime outcomes.

The development of a simulation model was not as straightforward as this. One immediate potential problem was that the EPPE model linking HLE to outcomes at Key Stage 2 was based on HLE at age three rather than at age five. For SSLP children and MCS children HLE data was collected at the ages of both three and five. However, the HLE for children living in SSLP areas improved more between the ages of three and five than the HLE for MCS children. This meant that a simulation based on the HLE at age three might lead to an underestimate of school performance at Key Stage 2.

The second challenge related to the quality of the predictions at each stage. The DCSF (2010) prediction model for Key Stage 4 takes as its starting point each pupil's actual achievement at Key Stage 2, then adjusts for gender, and a range of socio-demographic variables to increase or reduce the prediction. This part of the simulation is likely to be relatively reliable, as the model has been built up over a number of years, and is based on the actual outcomes of very large numbers of pupils.

The Key Stage 2 results used in our model would be predictions based on the HLE. They cover a much narrower range than true KS2 results as each child is attributed with the average points score for a child with his or her characteristics starting from the average points score in either English or Maths for all children.

The final challenge was that there is a difference between the ability of an equation to show an association (even a strong association), and the ability of the same equation to simulate or predict. This is because even strong associations only explain part of the observed differences. Some sources of difference will be unmeasured, while others will relate to schools and to early learning experience. A simulation based on NESS data would not be able to take these into account.

In practice only the first two stages of the simulation were undertaken. The effect size for the difference in the Home Learning Environment was small, so not surprisingly, the impact on the KS2 “prediction” was very small. By the time the KS2 prediction was used to predict KS4 results there was no detectable difference between SSLP children and comparison children.

6.4 Conclusions on economic impact

Over the years between birth and age three SSLPs cost an average of around £4,860 per child living in the relevant area. By the age of five SSLPs had generated average benefits of between £279 and £557 per eligible child. In other words somewhere between six per cent and 12 per cent of the costs had already flowed back into benefits. These benefits derived from improved parental employment, which resulted in benefits to families and to taxpayers more generally.

The international evidence outlined in Section 4 suggests that early childhood interventions rarely show a positive economic impact for the first fifteen years or so, but thereafter the impact increases and continues to grow. It is not therefore surprising that most of the overall economic impact of Sure Start local programmes is difficult to detect at the age of five.

An important caveat that cannot be stressed too strongly is that there is a wide range of evidence, internationally, from the EPPE study and from the NESS children themselves, that there are potentially very high returns from expenditure on early childhood education. Because the SSLP children and comparison group children were equally likely to have received early childhood education, the NESS research design did not permit the identification of the impact of this on their cognitive, social or emotional development. To the extent that SSLPs contributed to the quality of early years education, and also provided encouragement for parents to use the provision that was available, the benefits of SSLPs will have been understated. There is some qualitative evidence from the implementation evaluation that suggests that SSLPs may have encouraged parents to be willing to trust the childcare that was available (Meadows and Garbers 2004).

Of the outcomes at age five that can be regarded as precursors to economic impact in the longer term, almost all were either positive or neutral, although they were all relatively small. There is only one SSLP outcome that is likely to have had a negative economic impact: the higher rate of reported maternal depression. The outcomes reported in the impact report (NESS 2010) have all been treated as attributable to SSLPs. However, it is essential to reiterate that the differences detected may reflect the research design and the use of a comparison group from a different survey taken at a different time.

6.4.1 Short-term economic impact

The main identified short-term economic impact was the relatively larger fall in the proportion of children living in workless households.

This was worth on average £279-£557 per family, or between six per cent and 12 per cent of the total cost of the SSLP over the time between birth and the age of four. Although relatively small, this is a large impact for such an early stage in the lives of the children who have gone through SSLPs.

6.4.2 Longer-term economic impact

There is at present insufficient information to reliably predict longer-term economic impacts. However, the indications are positive in that the outcomes observed in children aged five living in SSLP areas are consistent with the possibility of higher levels of educational attainment and lower prevalence of conduct disorder in later childhood and adolescence. Previous research outlined in section 6.2 above has found clear relationships between attainment and conduct disorder and adult outcomes including offending and health-related behaviour as well as employment and earnings. Previous evaluations of early childhood interventions have indicated that early intervention does have the ability to improve these outcomes.

Worklessness, poor health and offending all impose substantial costs on society in terms of lower productivity and higher taxes as well as experience of victimisation. The evidence so far from SSLPs is that the interventions available to children and families had the potential to lead to positive benefits in future years, but these will probably not become apparent until after 2020.

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