

A Cost Benefit Analysis of Preschool Education in Turkey

• Mehmet Kaytaz •



September 2005



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• PREFACE •

Founded in 1993, the Mother Child Education Foundation (ACEV) is a non-governmental organization whose mission is to empower society through education and improve people's quality of life. ACEV realizes this mission through services rendered in the areas of early childhood and adult education. Children must receive education and support between 0 and 6 years of age, when the brain develops rapidly and human intellect, personality, and social behaviors are shaped. Through the training programs it has developed and implemented since it was founded, ACEV has reached 300,000 individuals and trained 3,500 trainers; ACEV believes that all children in Turkey must benefit from preschool education.

To make public the economic dimension of preschool education, and generate the knowledge to shed light on relevant policies to be developed, ACEV felt the need to commission the "**Cost-Benefit Analysis of Preschool Education in Turkey**" research study. The research report reflects rather striking findings about preschool education.

First of all, high-quality interventions in early childhood were found to be **small-scale investments that provided high returns** to children, families, society, and the economy. Every **1 unit** invested in early childhood education services was found to result in returns **as high as 6.37 units**. This translates to an increase in production, direct and indirect tax incomes, and public services; economic returns at these proportions are high for public investments. Within this context, even when only wage-earners are taken into consideration, the income to be generated from income tax is foreseen to increase by **3 percent**.

Analyses pertaining to the Mother Child Education Program (MOCEP) implemented via the collaborative efforts of ACEV and the Ministry of National Education, and which can be considered as an example of flexible and less costly early childhood education services, indicate that **benefit-cost ratios can go up to 8.14**.

The study conducted by Prof. Dr. Mehmet Kaytaz has revealed that **a unit of investment in a year of preschool education would create a benefit of 2.28 units for the individual, and for society, just through a decline in high school drop-out rates**.

The effects of inadequate preschool education, and hence children's not being ready for school, are also reflected in the performance of middle- and high-school students. Preliminary findings of the 2003 PISA (The Program for International Student Assessment) survey indicate that 15-year-old Turkish students (together with their Mexican peers) **rank the lowest in terms of mathematical proficiency** among OECD countries. The finding that more than 50 percent of the students lack the mathematical knowledge and skills necessary for the knowledge-oriented economies of the future shows that Turkey will soon be facing a very apparent threat in terms of the labor force potential of the country. However, the same study also found that children who receive preschool education are **advanced in their high school learning skills by two years** in comparison to children who did not receive preschool education. Consequently, in terms of the human capital Turkey will have to compete with in our present-day, knowledge-oriented community, preschool education is of utmost importance.



With the aim of drawing public attention to the ongoing problems in the area of preschool education in Turkey, and create awareness on all levels of society, ACEV initiated the “7 is Too Late” campaign. It is aimed to attain fundamental changes in education policies toward ensuring that each and every child in the country benefits from preschool education services as a result of campaign activities.

In the report entitled “**Cost-Benefit Analysis of Preschool Education in Turkey**”, it is emphasized that early childhood education services must be made more widespread based on a cost-benefit analysis of preschool education. Moreover, it is recommended that the state support targeted and flexible early childhood education services provided by the private sector and non governmental organizations, develop special programs, and try to recover costs where possible.

As seen in previous studies, the findings of the valuable work conducted by Prof. Dr. Mehmet Kaytaz once again reveal that preschool education is a must, and results in innumerable benefits.

We hope the present report will ensure that opinion leaders and decision makers understand the vital importance of the issue and contribute to the solution process.



• EXECUTIVE SUMMARY •

Early child development (ECD) and early child education (ECE) are interventions for the physical and intellectual growth of children in their early years. These services include day care, preschool, home visits by trained professionals, health and nutrition services, and parental education. The international research evidence shows that quality interventions in early childhood are small investments that yield very high returns to child, family, society and economy.

Effective ECE services provide important economic and social benefits to children, family and society:

- ECE services lead to well-fed and healthy children; child mortality rates drop.
- Those children who had a proper development in cognitive, physical, social and emotional terms are more ready for school, and adapt better. Thus the quality of primary education will increase, and teachers will be more productive.
- Those children ready for school show lower rates of repetition and drop-out. Thus the costs of education declines.
- Increased education means a more productive labor force which means a higher level of output.
- Increased education produces more good citizens; crime rates decline.
- Increased education reduces the degree of social and gender based inequalities in the society.
- ECE services provide opportunity for an increased labor force participation of women and increase their productivity.
- ECE services help to solve the problems of changing demographic and social conditions due to migration from rural to urban areas in the last decades.
- Investment in ECE brings particularly high returns if children at risk are targeted. If not enough investment is undertaken the existing inequalities will tend to grow.

Turkey has one of the lowest levels of preschool education coverage of any lower-middle income country. There has been an improvement during the last ten years. Still Turkey has a long way to go. For the 4-6 age group the Eighth Five Year Plan set a target of 25 % enrollment rate. Currently the enrollment rate is about 13 %. This figure is very low even for countries with similar social structure but with lower incomes.

The effects of lack of preschool education and hence the unpreparedness of children for school are reflected in the performance of secondary school students. The international surveys such as TIMSS (Trends in International Mathematics and Science Study) and PIRLS (Progress in International Reading Literacy Study) have shown that the Turkish students perform badly and usually come at the bottom scale of performance ranking. The first results of 2003 PISA (The Program for International Student Assessment) survey indicate that the Turkish 15-year olds have the lowest rank (together with Mexican students) in mathematical proficiency among OECD countries. More than half of the students do not have mathematical proficiency beyond Level 1. The results of international comparative studies give clear danger signal for the future labor force of Turkey. More than 50 % of students do not have mathematical knowledge and skills necessary for the future competitiveness of knowledge-oriented economies.



The low level of ECE services in Turkey is not the only problem. The main model promoted in Turkey is a center-based model of ECE. This makes reaching children at risk very difficult if not impossible. For example children in rural areas are those who need ECE services most and at the same time who would benefit most. The existing system of ECE does not reach them. Furthermore mainly the children of ages 4-6 are targeted. Younger children are neglected. ECE services for younger children are as important in consequence as for older groups. The government's priorities in investing between different levels of education are not very clear either.

The expansion of ECE services requires more resources devoted to education. The studies elsewhere show that some small investment in ECE has large returns in social and economic terms. The report underlines the importance of expanding ECE services using a benefit-cost analysis of preschool education.

The report makes use of the initial results of the MOCEP Follow-up Study. The study follows the progress of a group of children from early ages to early twenties. The study finds that the children who had some form of ECE intervention have higher level of education than those who did not have an early intervention. The percentage of children continuing to higher education is significantly higher for children who had ECE intervention. Their performance in school is better in terms of drop-out rates, particularly in secondary school there is a significant difference between the two groups. Furthermore they fail less than those who did not have an intervention. Their better performance continues in labor markets. More of them are employed and lose their jobs less frequently. Their better performance in school and in labor market is due the ECE services they and in some case their mothers received.

The benefit-cost analysis requires that all the benefits and costs are expressed in monetary terms. For most of the benefits this is not possible. In this report the benefits expected from ECE services are restricted only to an increase in level of schooling and hence an increase in productivity and earnings. Essentially increased education levels increase productivity and hence output. This is the standard approach in economics of education. The simulations are based on modest increases in enrollment rates and a decrease in drop-out rates. Even with this limited benefits the calculated benefit-cost ratios range 4.35-6.37. In other words one unit of investment in ECE services brings a return of up to 6.37 units.

This means an increase in output, an increase in tax revenue, both in direct and indirect taxes, and increased public services. A rough estimation of an increase in income tax revenue for the wage earners is 2.7 %. This figure should be considered a minimum. It covers only wage earners and the underreporting of incomes in the surveys tends to underestimate wage income and hence income tax revenue. The increase in tax revenue is not included in benefits.

The drop-out rates are higher for secondary school students who had not had any preschool education. A simple scenario where drop-out rates are equalized give a benefit-cost ratio of 2.28. That is, a unit of investment in a year of preschool education would create a benefit of 2.28 units for the individual and society just through a decline in drop-out rates.

Since only one quantifiable benefit is included in the analysis, these ratios should be considered as an initial approximation and at their minimum values. Certainly if other individual and social benefits could be quantified, then benefit-cost ratios would be higher.



All over the world due to the special nature of preschool education the main source of funding comes from central or local governments. The externalities in education and informational problems are the main arguments for government intervention. Increased level of education in a society increases not only the productivity of those who had education but of others. A small but highly educated segment of a society is not enough for economic growth and human development. The PISA survey shows that in Turkey the performance of students shows a large variation in comparison to other countries. This is mainly because of the existence of schools with differing qualities, possibly quality differences between public and private schools. The government should try to reduce these disparities. One way of doing this is through increased preschool education.

The low performance of Turkish students in international scale is not necessarily because of Turkey being a lower income country in OECD. For example Korea has a per capita income of 30 % less than the OECD average; but Korean students are ranked as one of the top performers.

The existing public ECE services are center based. The expansion of this model is necessary for many parts of Turkey. However the model is not effective in reaching children at risk and furthermore it is costly. Given the existing economic conditions it would not be possible for the government to extend these services greatly. For example to reach a target of 25 % enrollment rate for preschool education requires at least 16150 new classrooms and teachers. This is a large initial investment outlay. Currently preschool education has the smallest per student expenditure in relation to other education levels. This is true for the government as well as households. The importance of ECE is recognized by government, but not necessarily by households. The report suggests that government should continue with the expansion of preschool education, provide support to targeted and flexible ECE services provided by private sector and NGOs, develop special programs, and try to recover costs where possible.

MOCEP can be considered as an example of flexible and less costly ECE services provided by an NGO. The preliminary findings indicate that benefit-cost ratios can go up to 8.14.

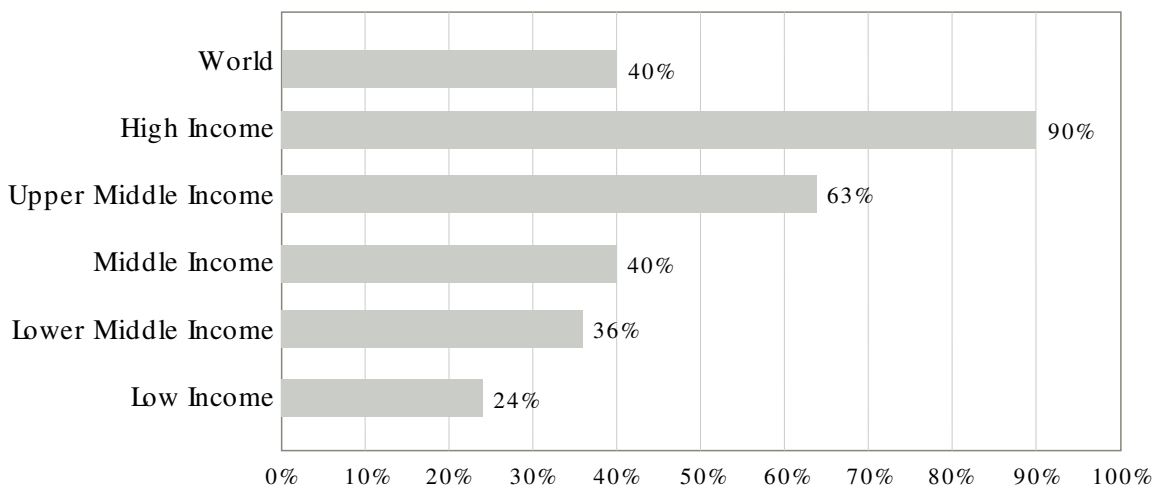


• INTRODUCTION •

The importance of early years in the development of a child is well documented by medical and educational research. The development of intelligence, personality, and social behavior, that is, mental growth occurs most rapidly in humans during their earliest years. The research has established that the brain responds most to very early experience and the environment has an important effect on the development of brain. It is estimated that half of all intellectual development potential is established by age four. Early child development programs include interventions to improve the nutrition, health, cognitive development, and social interaction of children in the early years. The children who had quality intervention tend to be more successful in later school, are more competent socially and emotionally, and show higher verbal and intellectual development during early childhood than children who did not have intervention. Investment in early child development is an investment in a country's future workforce. Human development is closely linked to early child development (ECD); it includes same dimensions-education, health, social development, and growth- but at a larger scale. So investing in ECD is the starting point for investing in human development.

Turkey has one of the lowest levels of preschool education coverage of any lower –middle income country. In 2003 only about 360 000 children were enrolled in ECE services. The government aware of the importance of ECD tried to increase enrollment during the last ten years. There has been a definite improvement. Currently the target for 2005 is 25 % enrollment rate. It is almost impossible to reach this target within the next few years. It means almost doubling the current rate. When Turkey reaches this target, the rate will still be lower than in lower-middle income countries where the average rate of enrollment is 36 %.

Gross Preschool Enrollment



Source: World Bank



Turkey is a developing country with a per capita income of about USD 3383. For almost two decades the economy was crippled with high levels of budget deficits. Until the Basic Education Reform of 1997, the budget for education was very limited. The allocation of education funds favored other levels of education. The scarcity of funds can be one of the reasons for not enough public investment in early child education (ECE) services. Inevitably investment in ECE services competes with any other investment, including investment in other educational levels. This report deals with the economic analysis of preschool education in Turkey. Specifically the benefits and costs of preschool education are estimated and a benefit-cost ratio is calculated. The benefits which are included in the analysis are only those which can be converted to money. Consequently the results obtained should be considered as a first approximation and a minimum. Chapter 1 reviews the ECE services in Turkey. Chapter 2 gives a short summary of the benefits of ECE and calculates benefit-cost for preschool education and Chapter 3 reviews and discusses some financing options.



• 1. EARLY CHILD EDUCATION SERVICES IN TURKEY •

1.1 INSTITUTIONAL STRUCTURE OF ECE SERVICES

The provision of ECE services in Turkey go back to the early 19th century. However the first set of regulations was decreed in 1915 which set the rules for starting an independent preschool. Only in 1961 with the new education act the importance of ECE was stressed and ECE was considered explicitly in policy discussions and programs of the Ministry of National Education (MONE). In 1992 the General Directorate of Pre-primary Education was established within MONE. This directorate has the main responsibility of regulating, supervising and/or running ECE services in Turkey. The other major institution delivering ECE services is the General Directorate of Social Welfare and Child Protection Agency (SWCPA) which is attached to the Prime Minister's office. ECE services are also provided by the private sector.

The existing ECE services are categorized according to the age of the child and the institution in which the services are delivered. Crèches provide care of and education for children aged between 0-36 months. According to MONE 'preschool education' covers children aged 36-72 months; this service is delivered in preschools (anaokulu). What is called 'application classes' which are run by the technical education departments of MONE also covers this age group. There are nursery classes attached to the primary schools, public or private; these cover children aged 6. The number of nursery classes attached to a school depends on the size of the school. SWCPA aims to serve children who are in need of protection. The childcare centers or children homes belonging to SWCPA cater for age groups of 0-6, 7-12 or 0-12. Furthermore SWCPA runs a very small number of crèches and daycare centers for the children of working fathers and mothers who can not afford private crèches.

MONE is responsible for regulating and supervising all the public and private preschools and nursery classes. For crèches and daycare centers MONE and SWCPA share responsibilities; MONE is responsible for educational aspects and SWCPA is for the rest.

MONE also provides TV programs targeting parents as well as children. SWCPA has a Social Development Program, and summer courses addressing children at risk.

ECE services directed toward nutrition and health of children is the responsibility of General Directorate of Mother-Child Health of the Ministry of Health.

NGO's and International Organizations play an important role in the provision and development of ECE services in Turkey. The leading NGO is the Mother-Child Education Foundation (MOCEF). Its services are directed at not only the child but his immediate environment. It is a home based program covering Mother/Father/Child Education, Strengthening Women, Home Visits, Summer Preschool Courses, TV programs. Now MONE runs part of this program with the support of MOCEF.

Foundation for the Improvement of Women's Labor and Foundation for the Support of Contemporary Living also provide services towards mothers and children.



1.2 ENROLLMENT IN ECE PROGRAMS

Table 1.1 presents the current situation in ECE services. MONE delivers directly about 90 % of the existing services. Most of the ECE activities are conducted in nursery classes. For the private sector it is the other way around. The private sector has about 7 % share in preschool education. The capacity of private schools is generally smaller. However number of children per teacher is significantly smaller in private than MONE schools. A great majority of crèche and daycare centers are run by the private sector. This is also due the Labor Act requiring a certain types of businesses of a certain size to provide daycare facilities for employees.

Table 1.1 Number and Types of Early Childhood Services (2003-2004)

Source	Services	Number of Schools/ Classrooms	Children	Teachers
MONE	Nursery Classes	10.922	267.958	10.518
	Preschools	483	42.664	2.020
	Application Schools	308	7.767	597
	Public Institutions	397	13.758	1.544
Private/ MONE	Nursery Classes	199	5.004	741
	Preschools	300	9.059	620
SSCPA	Creche and Daycare Centers	48	850	
Private/ SSCPA	Creche and Daycare Centers	1.083	12.289	3.082
Total		13.740	359.349	19.122

Source: MONE and SWCPA

Considering the population of Turkey the figures in Table 1.1 is very small. However it has been steadily increasing particularly in the recent years. In the last ten years the number of children receiving a form of ECE services is doubled. Table 1.2 shows the progress of enrollment rates since 1991-92 school year. According to SIS the rates in Table 1.2 are overestimated. Five Year Plan targeted a 25 % enrollment rate for 2005. It seems that only half of the target rate will be met.

Table 1.2 Preschools and Nursery Classes Enrollment Rates (%)

Year	%
1991-1992	5.1
1992-1993	5.2
1993-1994	6.1
1994-1995	7.3
1995-1996	7.6
1996-1997	8.9
1997-1998	9.3
1998-1999	10.0
1999-2000	10.2
2000-2001	10.3
2001-2002	11.0
2002-2003	11.7
2003-2004	13.2

Source: MONE



On the other hand the countries with similar and lower income levels or countries with similar social background have significantly higher rates of enrollment. For example Egypt which has a 12 % rate as shown in Table 1.3 has taken important steps to increase it 65 % by 2015.

Table 1.3 Enrollment Rates in Some Selected Countries (3-5 age group, 2000-01)

Country	Rate (%)	Country	Rate
Belgium	95	Indonesia	19
Bulgaria	61	Italy	95
Check Republic	72	Japan	84
Denmark	89	Jordan	27
Egypt	12	Latvia	56
Estonia	81	Lithuania	49
France	100	Luxemburg	97
Georgia	22	Mexico	70
Germany	70	Morocco	34
Greece	73	Syria	9

Source: UNESCO

The increase in the number of children benefiting from ECE services is due mainly to an increase in the newly built preschools and nursery classes and an increase in the number of teachers. The large increase in public preschools starts in 1996. Overall the number of preschools increased by tenfold. The trend for the number of private preschools is steady; it has almost doubled during the last ten years. On the other hand the number of private nursery classes after reaching a peak in 2002 has dropped sharply. The growth in the number of public nursery classes follows the opening of new primary schools which increased with raising the primary education to eight years in 1997.

Table 1.4 Number of Preschools and Nursery Classes

Year	Preschools			Nursery Classes			Grand Total
	Public	Private	Total	Public	Private	Total	
1992-1993	35	160	195	4.104	106	4.210	4.405
1993-1994	49	160	209	5.377	134	5.511	5.720
1994-1995	65	152	217	5.658	161	5.819	6.036
1995-1996	79	140	219	5.998	208	6.206	6.425
1996-1997	100	155	255	6.294	237	6.531	6.786
1997-1998	129	182	311	6.356	332	6.688	6.999
1998-1999	189	219	408	7.200	368	7.568	7.976
1999-2000	269	237	506	7.665	400	8.065	8.571
2000-2001	301	262	563	7.996	437	8.433	8.996
2001-2002	348	262	610	8.524	509	9.033	9.643
2002-2003	418	279	697	8.807	153	8.960	9.657
2003-2004	483	300	783	11.230	199	11.429	12.212

Source: MONE



Table 1.5 Number of Teachers

Year	Teachers
1992-1993	8.855
1993-1994	8.870
1994-1995	9.464
1995-1996	9.622
1996-1997	10.059
1997-1998	10.186
1998-1999	11.825
1999-2000	15.696
2000-2001	16.563
2001-2002	18.149
2002-2003	18.921
2003-2004	19.122

Source: MONE

An important bottleneck in the growth of ECE services is the shortage of teachers. In line with the increase in facilities during the last ten years the number of teachers also doubled. An effective policy of MONE was the introduction of 'master instructors'. The graduates of child development department from 'Girls Vocational Secondary' schools would start Open University courses if their University Central entrance examination grades were above certain level and at the same time they could start teaching. Until they graduate they would be employed on a part-time basis.

Table 1.6 Introduction of New Instructors

Year	Instructors	Number of Children Benefiting
2000-2001	3.312	55.086
2001-2002	5.435	88.452
2002-2003	6.230	98.009
2003-2004	7.455	122.144

Source: MONE

1.3 TARGETING SERVICES

One of the four basic objectives of preschool education as defined by MONE is to create a common educational environment for disadvantaged children. MONE tries to reach this objective through giving priority to disadvantaged children in the enrollment. In many areas demand for a place in a preschool or nursery class is higher than the available capacity. In this case children from poor families and from disadvantaged environments have a priority.

Reaching the disadvantaged children depends also on the location of school. The distribution of ECE services across Turkey presents a relatively even picture. The regions and provinces with more population have more of the services. Table 1.7 indicates also a positive correlation between income per capita of a region and number of children receiving ECE services. At the aggregate level this is true. However at a province level this relationship does not hold. Particularly the correlation between income per capita of a province and the ratio of children receiving ECE services to province population is positive, but low and insignificant at 5 %.



This suggests that at least at the province level MONE is successful in following its principles of ECE. On the other within a province or a city the distribution may possibly present a different picture. Considering that a large part of the population lives in rural areas the task of MONE is difficult. The center based education makes this task more difficult.

Table 1.7 Regional Distribution of Enrolled Children (2001)

	Population (1000s)	Per Capita Income 1000000 TLs)	No. of Students
Istanbul	10.243	3.711	48.657
Western Marmara	2.917	2.907	19.135
Aegean	9.039	3.082	55.849
Eastern Marmara	5.782	3.959	39.030
Western Anatolia	6.557	2.802	36.760
Mediterranean	8.835	2.472	50.699
Central Anatolia	4.210	1.917	20.503
Western Black Sea	4.877	2.068	17.127
Eastern Black Sea	3.151	1.730	11.767
Northeastern Anatolia	2.520	1.114	7.449
Central Eastern Anatolia	3.770	1.297	15.348
Southeastern Anatolia	6.717	1.437	36.175

Source: MONE, SIS

MONE and SWPCA run special projects sometimes with the assistance of NGOs and international organization to cover children at risk. Currently MONE and MOCEF are implementing Preschool Parent-Child Education Program in selected provinces. Again MONE, SWCPA and UNICEF are running a project directed at the education of parents and children.



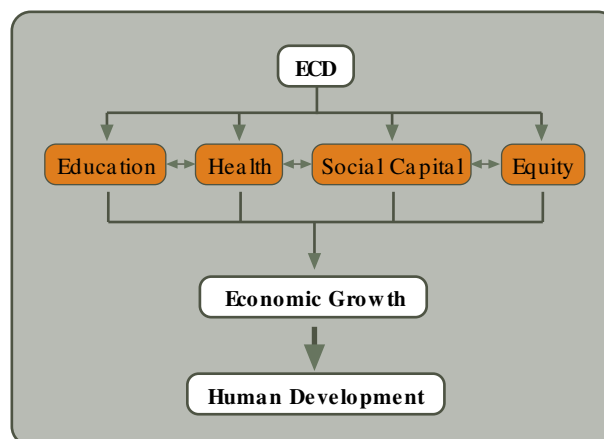
• 2. BENEFITS AND COSTS OF ECE SERVICES •

Benefits of early child intervention are well documented in the literature. These benefits can be classified as benefits to child, parents and to society in general. Or they can be analyzed as short term and long term benefits. It is also possible to classify them as direct and indirect benefits. The problem is to quantify the benefits. Some of them such as school performance can be measured; on the other hand to quantify social cohesion would be very difficult. A step further is expressing benefits in monetary terms. Very few of the benefits can be converted to monetary values. This chapter after presenting the benefits and costs of in a compact manner will estimate the benefit-cost ratio using only one quantifiable benefit, namely increased productivity and hence increased income during the work cycle of an adult.

2.1 POTENTIAL BENEFITS AND COSTS

Human development broadly defined can be considered as the overall objective of a society. It involves education and health of a society, social development and economic growth. ECE programs try to improve the nutrition, health, cognitive development and social interaction of children in the early years of development. Human development and ECD are closely linked. A quality intervention will increase education level of society, will lead to a healthier society, will increase social cohesion and hence social capital, and to more equality. Ultimately health, education, social capital and equality are linked to economic growth and human development. ECD is the starting point for human development (Young 1996; van der Gaag 2000).

Figure 2.1: ECD and Human Development



Source: Van der Gaag (2000)

The benefits of ECE can be listed depending on the purpose of a study or policy. The following table is adapted from Cleveland and Krashinsky (2003). Myers (1996) presents a table based on beneficiary groups, area of change and indicators of change. Haveman and Wolfe (1984) on the other hand examine the channels of impact on schooling in terms of economic nature of impacts, that is, whether private, public or marketed and give information whether the estimates are available (Van der Gaag and Tan, 1998).



Table 2.1 Potential Benefits and Costs of ECE and care Services

Type of Effect	Potential Benefits	Potential Costs
<i>Effects on Children</i>		
Stimulates the development of children in the important early years	Improved brain and social development of children in early years can improve school readiness and have long term payoffs in abilities, income, productivity and economic growth, reduced delinquency and criminal activity, improved health, higher tax revenues and better citizenship	The cost of resources necessary to provide good quality early Childhood education. Also, the excess burden costs of higher taxation
Ensures high-quality non parental childcare for children	Good quality licensed childcare provided by trained and dedicated childcare professionals is better for children than many current informal Arrangements. There is evidence that, either because of inadequate incomes or inability to judge accurately the quality of childcare, too many parents choose inadequate care	The extra resources needed to provide higher quality childcare
Provides a more equal start in life for children.	Promotes equality of opportunity, a fundamental value in most advanced societies. All children can benefit from some amount of early childhood education. Children from low-income families incur especially large benefits.	
<i>Effects on Mothers and Families</i>		
End tax discrimination against employed mothers	Failure to permit deductibility of childcare costs from taxable income creates tax inequality which reduces mothers' employment. Increased public funding will reduce this effect. Society shares in improved productivity through higher government tax revenue from those newly employed	Deductibility will reduce tax revenue from currently employed mothers. Employed mothers will reduce household production.
Providing assistance to young families when expenditures are high and incomes are low	Government funding of ECE when parents are young and higher taxation when older acts like a long-term loan program to allow parents to make better lifetime decisions about work and children	Assistance to young families, and more family-friendly leave and benefit policies at work, may encourage higher fertility, raising public costs
Encourage mothers to maintain labor force attachment, continuity of job experience, take job promotions, work full-time rather than part-time	Mothers are encouraged to make work decisions in long horizon framework to permit reasonable financial independence, avoid poverty if divorced, in old age, etc	Mothers may suffer tension from "super-mom" work and family activities unless gender roles continue to change and family policies are supportive
Change young women's assumptions about future job paths and prospects. Promote gender equity throughout society	Young women make education and other human capital decisions based on opportunities available to their mothers. Public financing of early childcare expands mothers' opportunities, allowing their daughters to make long-lasting early human capital investments based on ability rather than gender	Have to work on changing young men's assumptions about gender roles too
Reduce the job disincentive effects of social assistance and childcare costs	Reduced immediate and longer term social assistance costs, effective reduction of child poverty, end of poverty cycle. Increased future education, productivity, self-esteem of children and tax revenue for governments	Costs of good quality ECE and care, perhaps home-visit programs training programs, changes in social assistance policy
<i>Effects on Society</i>		
Common social and educational experiences when children are young	Encourages social cohesion, good citizenship, the integration of immigrant families, early screening of children with behavioral, social or cognitive difficulties. Provides early foundation for integration of children with disabilities	Increased taxes. Possible sense of decreased parental choice

Source: Cleveland and Krashinsky, 2003 adapted from Verry (1992).

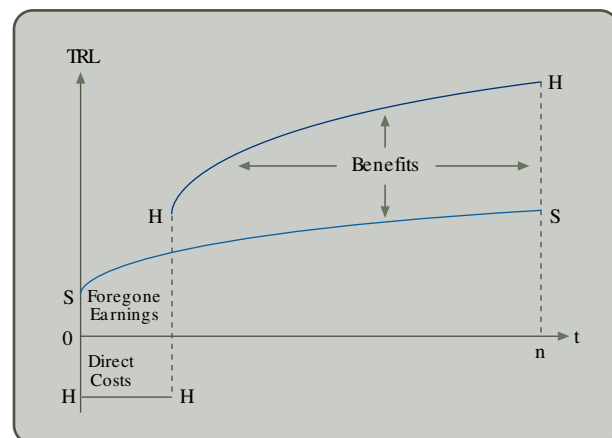


Table 2.1 lists the possible effects of early childhood interventions and potential benefits and costs of these interventions. It covers all types of interventions from custodial care to center based education as well as care at home. The common link between all of them is the public funding of these services. In the next chapter some of the points made here will be discussed in more detail with respect to financing. Among the benefits listed one of them is especially important for Turkey: namely provision of equal opportunities for all the children for an equitable society. 2002 Income Distribution Study of SIS shows that while the bottom 20 % gets 5.1 % of total disposable income the top 20 % gets 50.6 %. This is a relatively unequal distribution of income. Education can reduce this and other inequalities. ECE services give a good start particularly for the children of disadvantaged families.

2.2 BENEFIT-COST ANALYSIS

Benefit-cost analysis is one of the methods of comparing different investment projects in economic terms. The present value of costs to be incurred and benefits to be gained are estimated and benefit-cost ratio is calculated. Investment in ECE services like any other investment requires funds which will be diverted from other uses. Benefit-cost analysis facilitates the comparison of net returns from a specific ECE project with other types of ECE projects or any other type of project (Lewin and McEwan 2001). Benefit-cost analyses, although a powerful tool, present some difficulties. The main difficulty is to be able to express all the benefits and costs in monetary terms. Especially with regard to education projects this difficulty is more strongly felt. Out of all the benefits listed in Table 2.1 only one of them can be converted to monetary terms in this report, namely ‘...have long term payoffs in ... income, productivity...’. Many important benefits will be left out of the analysis due either to lack of data or not being able to express them in monetary units. Hence the benefit-cost ratio to be calculated in this study should be considered as an initial approximation and at its minimum. In real life we can rightly expect that the ratio is significantly higher. The economics of education links economic returns to education with the increased productivity and hence earnings. This relationship between education and schooling is shown in an “age-earnings profile”. In Figure 2.2 the area below t-axis represents costs and the area above benefits. We assume that a person with a given level of education finishes school and starts to work. Given his schooling his productivity and wages increase up to point then stays stable for some years, and then may tend to decline. The area below the SS line represents his lifetime income--that is his income up to the time he retires. Let’s assume another person who decides to continue to one higher level of education. She faces two types of costs: direct cost which is the cost of education and indirect cost which is the foregone income she would earn if she had joined labor market instead of continuing to education. Since her education level is higher, her productivity and earnings will be higher. The area between lines HH and SS represents her additional earnings because of her higher productivity. The benefit-cost ratio is the ratio of these additional earnings to total costs.

Figure 2.2: Returns to Education





Another issue in this analysis is the reduction of costs and benefits to present-day values. Both costs and benefits are distributed over a certain period of time. Costs are incurred during time in school and benefits are received during working life. Converting these values into current values is done by discounting them using a suitable discount rate.

Estimation of Costs

The costs included in the analysis are the costs borne by MONE, other ministries, local administrations, NGOs and international organizations. The idea is to find the returns to public expenditure. In the case of higher education fees paid by students are included in the costs of higher education. Indeed foregone earnings while studying constitute part of the costs. The estimation process is given in the Appendix in more detail.

Two critical assumptions are made in calculating fixed investment costs. Returns to a fixed investment continue for the lifetime of facility or equipment. It assumed that lifetime of a building is 30 years, of big scale repairs 10, and of equipment and furnishing is 5 years. Assuming different lifetimes can be used in the sensitivity analysis. If the lifetimes are longer the costs would decline.

The second assumption is related to the annualization of the costs of buildings, facilities, and equipment. Depreciation costs are determined by the lifetime of the facility. However depreciation is not the only cost involved. The un-depreciated portion of the facility represents an investment in resources that could have been used in some other way. It represents the resources which have been foregone by constructing the facility or buying the equipment. Again it is necessary to discount the foregone portion by a suitable discount rate. The issue is to find a suitable discount rate. The economic literature does not provide a specific rate to use. There are different conceptual approaches to determining the discount rate (Lewin and McEwan 2001). Furthermore the differences in financial markets between developing and developed economies introduce further difficulties in choosing a rate. For example the studies related to projects in USA suggest using rates of 3-5% and use rates going up to 10 % in the sensitivity analysis. Van der Gaag and Tan (1988) use a 7 % discount rate in the study of Bolivian PIDI program. In this report the discount rate is chosen as 6 % and for sensitivity analysis as 10 %.

Table 2.2 Costa per Student (Public, Discount Rate 6 %, 2002 Prices), TRL1000

	Preschool	Primary	Secondary	Higher
Facilities	247,270	185,974	333,273	715,684
Large Repairs	978	1,329	2,591	a
Equipment	3,083	3,379	4,549	a
Current	123,729	479,741	1,339,478	1,892,717
Total	375,061	670,423	1,679,891	2,608,401

Source: SPO, MONE, SIS, CB, HEC

a) Included in the cost of facilities



Estimation of Benefits

The estimation of benefits requires data which explicitly measure the impact of preschool on the life of a child, his health, readiness to school, performance at school, after school outcomes and the like. There are not many of this type of studies. For the developing countries there are two studies to author's knowledge: Brazil study by de Barros and Mendonça (1999) and the study by Kaşıkbaşı, Sunar and Bekman (2001 and 2004) and Bekman (1998). Kaşıkbaşı, Sunar and Bekman set out to assess the effects of early childhood intervention models in Turkey. The study follows the original preschool sample into adulthood and measure the impact of ECE on their performance at school, education levels, jobs, incomes and health. The original sample is composed of mother-trained and mother-non-trained children. Mothers were trained within the framework of Mother-Child Education Program (MOCEP). Some of the children were at home, some of them at a custodial daycare center and some were at educational centers. The composition of the sample is suitable for measuring the impact of a type of early childhood intervention as well as comparing different ECE programs with respect to their impact.

An initial analysis of the findings by Kaşıkbaşı, Sunar and Bekman in the follow-up study strongly indicates that children who had ECE services have completed a higher level of education than those who did not have ECE services. This becomes more pronounced in the case of higher education. Children who had ECE intervention definitely have a higher chance of continuing to higher education.

Kaşıkbaşı, Sunar and Bekman also find that the probability of unemployment is lower for those children who were enrolled in an ECE program. Currently more of them are employed and the number of times they were unemployed were lower than those children who did not have ECE intervention.

Table 2.3 Average Years of Education

Mother Trained	11.32
Mother Non-Trained	10.49
Mother Trained or Child at a Center	10.99
Mother Non-Trained and Child at Home	10.23
Mother Trained and Child at a Center	11.41
The Rest	10.57

Table 2.4 Final Education Level (%)

	Primary	Middle-School	High School	Higher Education
Mother Trained	17.1	19.5	29.3	34.1
Mother Non-Trained	18.7	17.3	41.3	22.7
Mother Trained or Child at a Center	17.6	21.2	29.4	31.8
Mother Non-Trained and Child at Home	19.4	9.7	58.1	12.9
Mother Trained and Child at a Center	14.3	17.9	35.7	32.1
The Rest	19.3	18.2	37.5	25



Table 2.5 Employment Status

Mother Trained	70
Mother Non-Trained	66
Mother Trained or Child at a Center	73
Mother Non-Trained and Child at Home	51
Mother Trained and Child at a Center	70
The Rest	66

Table 2.6 Number of Times Unemployed

	Percentage of Employed
Mother Trained	1.92
Mother Non-Trained	2.14
Mother Trained or Child at a Center	1.98
Mother Non-Trained and Child at Home	2.3
Mother Trained and Child at a Center	1.78
The Rest	2.15

The age-earning profile to be used in this report is estimated using 2002 Household Income and Expenditure Survey of SIS. Earning figures are those of wage earners in the private sector. As Figure 2.3 shows higher level of education in general means higher income. However there are some outliers and at certain age groups the number of observation are either small or non-existent; this creates an appearance of fluctuating or even conflicting figures. Figure 2.4 gives a smoothed age-earning profile.

Figure 2.3 Age-Earning Profile (Raw data)

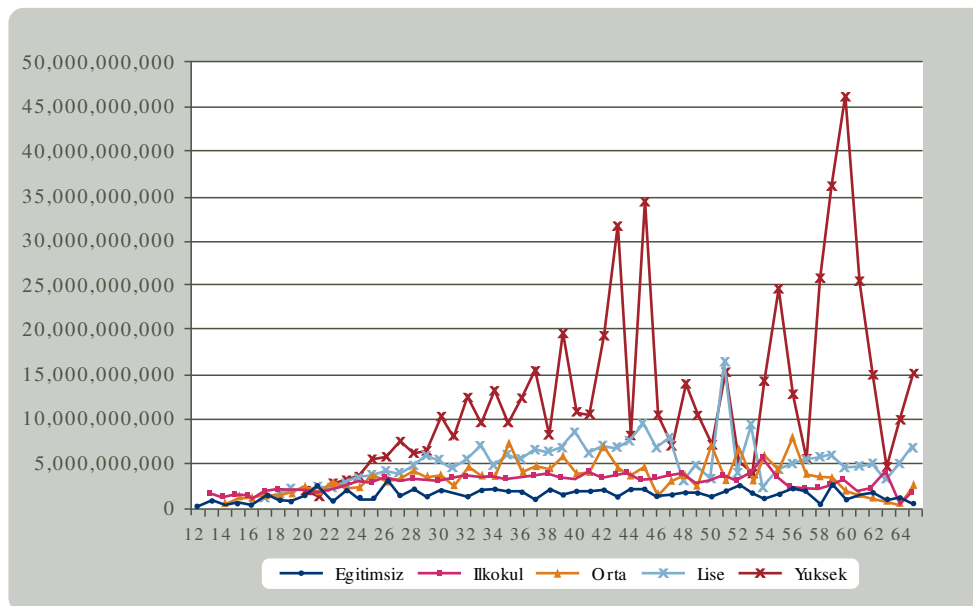
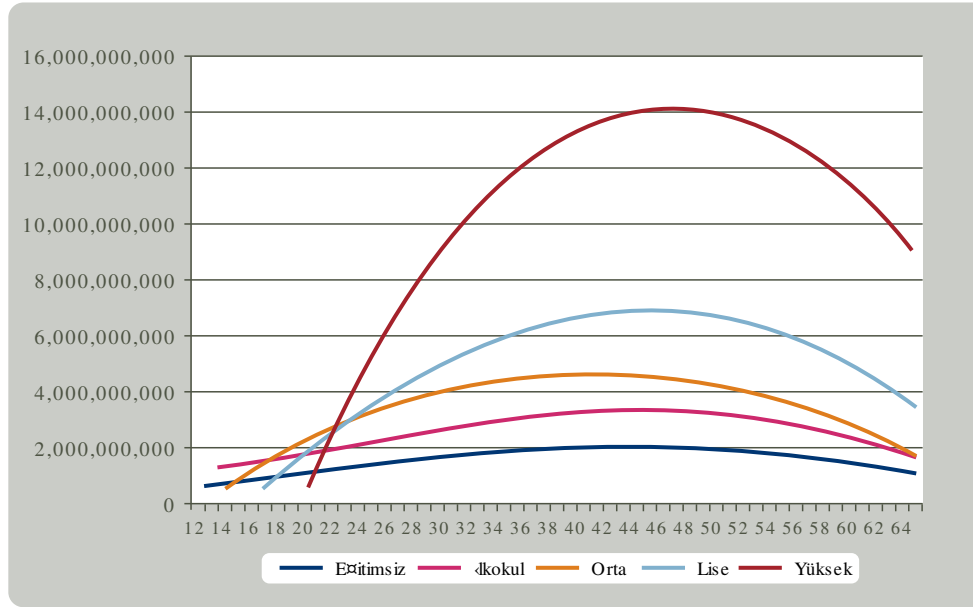




Figure 2.4 Age-Earning Profile



Benefit-Cost Ratios

In the calculation of benefit-cost ratios the benefits are those derived from ECD programs in terms of increased lifetime productivity for wage earners in the private sector and the costs are those of preschool education by MONE and the foregone earnings of students continuing to a higher level of education. Simulations are run for two different scenarios. The scenarios are based on the initial results of the Follow-up Study and on the international evidence on the impact of ECE.

In Scenario I we assume that a cohort of 1000 children enroll in preschool for a year. 950 of them finish primary school, 670 of them finish secondary school and 240 of them continue to higher education and graduate. This is a very modest scenario. Scenario II is more based on the results of the Follow-up Study and the number of university graduates increases to 250.

Table 2.7 Enrollment Rates and Scenarios

	Existing	Scenario I	Scenario II
Primary	94.2	95.0	95.0
Secondary	66.0	67.0	67.0
Higher	23.3	24.0	25.0



The ratios calculated are greater than unity which means that the total benefits are greater than total costs. The preschool program is profitable as an investment. Again it should be remembered that the benefit in the analysis is only one which could be converted to money. Hence the benefits and the ratio are at its minimum. For example an increase in wages means an increase in tax revenue both for direct and indirect taxes. A simple approximation shows that the income tax revenue from wage earners would increase by 1.3 % in Scenario I and 2.7 % in Scenario II.

Table 2.8 Benefit-Cost Ratios

Discount Rate	Scenario I	Scenario II
6 %	4.35	6.31
10%	2.09	2.84

Abecedarian (Masse and Barnett 2002) and Perry Preschool (Schweinhart, Barnes and Weikart 1993) are the leading studies in this field. Both projects traced personal and social development of a group of children and their interaction with family and society until they are 27 years old. The sample was composed of children who participated in the preschool project and those who did not. The quantifiable benefits and costs included health, employment status, and criminal activity as well as education. The benefit-cost ratio is estimated to be 7 in Perry Preschool study and 4 in Abecedarian project. The particularly high benefit-cost ratio is mainly due to the less involvement of those who attended the project in criminal activities.

The few available studies on developing countries are based on scenarios because of the lack of longitudinal data on the impact of ECE programs. Van der Gaag and Tan (1998) calculated benefit-cost ratio for PIDI program in Bolivia. PIDI is a program targeting children living in the slums of big cities. These children are considered at risk because they are living in an environment where baby and child mortality rates, malnutrition and illness load levels are high and physical and social development levels are low. The enrollment rate in primary education is low, repetition and drop-out rates are high; almost none continue to secondary education. The children participating in the program receive nutrition, health and cognitive development services. Van der Gaag and Tan analyze two scenarios. They are based on a decrease in under-5 mortality rates, increase in primary school enrollment and a drop in repetition and drop-out rates. The benefit-cost ratio they calculate for children at risk is 2.26 and for a wider target is 1.38.

A study on Egypt (World Bank, 2001) deals with regional differences. The scenarios are based on an increase in enrollment rates and a decrease in repetition and drop-out rates. The ratios range 1.20-5.81.

The Jordan study (by Young and Van der Gaag, 2002) deals with scenarios of decreasing child mortality rates and increasing enrollment in primary and secondary education. The ratios range 1.49-3.06. In all the three studies the discount rate is 7 %.

Table 2.9 gives the benefit-cost ratios for some non-ECD projects. The findings of this report and other studies mentioned clearly show that preschool education is profitable.

Table 2.9 Benefit-Cost Ratios for Selected non-ECD Projects

Project	Ratio
Hill Forest Development Project, Nepal	1.18
Philippine Ilocos Irrigation Systems Improvement Project	1.48
Large-Scale Alternative	1.32
Small-Scale Alternative	1.99
Livestock Development Project, Uruguay	1.59
Livestock and Agricultural Development Project, Paraguay	1.62
Cotton Processing and Marketing Project, Kenya	1.80
Kunda Cement Factory, Estonia	2.27

Source: Van der Gaag and Tan



• 3. FINANCING ECE •

The benefit-cost analysis clearly indicates that investing in ECE is profitable for the family, individual and society at large. As any other investment it requires resources. To reach the existing target of enrollment rate of 25 % requires considerable investment. This means an increase of 323 000 in the number of students. Assuming that a classroom holds 20 students 16150 new classrooms are needed. A rough estimate of initial cost of facilities and equipment is about 1 quadrillions of TRL at 2002 prices. This amount was almost equal to total investment budget of MONE in 2002. When the investment outlay is large, the cost of financing will be large, too. This was not taken into account in the analysis of the earlier chapter. Indeed the recurrent expenditures will draw also large resources. The question is who will bear the costs, capital and recurrent costs? What will be the relative share of stakeholders in financing ECE? Why should the government undertake financing? These are the main issues in financing ECE programs.

3.1 GOVERNMENT

All over the world the major source of funding comes from government, central or local. An important issue here is the justification for public spending. If ECE were a private good produced in a competitive market the intervention of government would introduce inefficiencies in a market. The only justification for intervention would be the existence of a kind of market failure.

ECE services can be considered as an economic service purchased by parents. These services as discussed earlier benefit parents; they have more free time which may be used more in the labor markets. They benefit children. Education is something valued by parents. Furthermore as shown in the benefit-cost analysis children's productivity increases at later life when they join the labor market and their incomes are higher. Parents decide whether to buy ECE services and if they decide to buy, how much of it to buy. However in the assessment of these benefits a market failure arises. Firstly there are externalities, that is benefits enjoyed not only by the parents and children but by the society. Secondly there are informational problems with respect to parents' decision making.

Children who receive ECE services are more successful in school and later in life they are more productive. They are also healthier. These benefits of ECE also spillover to the rest of the society. Workers with higher productivity make those working with them also more productive. Since their incomes are higher they pay more taxes which are necessary for an efficiently running social and economic infrastructure. More tax revenue means more expenditure on social infrastructure providing more equal opportunities to all children. The benefits of better health also spillover to all society since many cost components of poor health are met by public expenditure. Most parents in making their decision do not take these benefits into account and they may purchase less ECE services. There is a wide spectrum of parents with regard to how much they value the education of their children. Some parents may want to spend such a level that no public subsidy may be necessary. On the other hand some parents place a low value on their children's' education and welfare; in this case public spending will be more productive. The existence of all these externalities calls for public spending on ECE services.

Even if we do not take the externalities into account parents may not buy enough of ECE services or they may buy but the quality may not be high enough. Firstly they may face a budget constraint; they may not have enough money to pay for the services. In a perfectly competitive situation parents may borrow against children's' future incomes. However this is not easy or not possible at all for many parents. Secondly they cannot easily



measure the quality of ECE services they want to buy; that is they do not have enough information. Consequently the quality of ECE services they want to purchase does play enough important role in their decision process. These reasons are also widely accepted arguments for public spending.

Parents benefit directly from ECE services through their having more time and participating more in the labor market. This means an increase in their income. Although this a private benefit, it has externalities. An increase in tax levels because of the working mother brings significant benefits to other taxpayers. If a mother has to leave the labor force because she has to take care of her child then she will lose her wages and possibly her skills; the tax revenue will fall which will harm other taxpayers.

Again even if we do not take the externalities into account parents may not buy enough of ECE because they are not fully aware of the short and long term private and social losses they have to face when they leave the labor market for long periods of time in order to take care of their young children.

The externalities and incompleteness of information constitute the arguments for market failure and hence involvement of government in the provision of ECE services.

Even in the absence of market failures there may be a case for government intervention because education has a special role in the social and economic development of society. Firstly there is the consideration of equity. Not all parents can afford to invest in education of their children and meet all the direct and indirect costs. Under free market conditions only those children whose parents can afford to invest can get education. This situation creates an under-investment from the social point of view. Furthermore since education is one of the determinants of lifetime income, inequalities would continue from one generation to another. The government intervenes because it wants to promote equality.

Secondly education is considered to be a merit good. It is not easily quantifiable and left to the market forces it can be under-supplied. Education is necessary for economic and social development and hence government intervenes in the market so that it is not under supplied.

In Turkey about 93 percent of the children receiving ECE services are in the public domain and government meets most of the cost. The budget for MONE is allocated within the central budget like any other ministries and public institutions. For the government the problem is to allocate expenditures between different ministries. For MONE it is to allocate between different education levels and types of education. On the one hand there are the targets set by the government for enrollment in different education levels; on the other hand the resources are not enough. Although ECE is one of the priorities of MONE, since it is not compulsory inevitably it does not get the attention it deserves. In 2002 MONE allocated only 0.33 % to ECE services. To reach the target levels of enrollment MONE's budget should increase as well as the budget for ECE services. ECE is more expensive per student than primary education basically because the number of children in a classroom is restricted to 20 in preschools and 25 in nursery classes by regulations. In primary education class sizes can be very large out of necessity.

3.2 USER FEES

Most countries charge user fees to recover some of the expenses. User fees show considerable variation across countries. Some countries charge fees to recover a large part of the costs and only forego these charges in the extreme cases of very poor families or of children at risk. Some countries try to recover a small part of the costs. In Turkey user fees cover only cost of food and some operating expenses. The fees are determined every year for each province and district locally. Since ECE is not compulsory there is no reduction in fees except



for the children of martyrs, disabled and extremely poor people. Ten percent of the total capacity is reserved for these children and no fee is charged. Otherwise priority is given to those children whose parents are martyrs, disabled or single or those children who lost one of their parents or have special educational needs. Again children whose parents are working or one or both of them working abroad or are poor are taken into account during the acceptance process. However 90 percent of the students have to pay the full fee.

Schools also accept voluntary contributions from parents. This is a thorny issue because sometimes it is not clear whether it is voluntary or involuntary. Currently in Istanbul monthly fee for public preschools and nursery classes averages around 100 million TRL. This is a high figure for many parents. As a result the poorest families that need ECE services most will not be able pay these fees. It should be also noted there are also many parents who can pay this amount. MONE should try to recover costs, at least some of the current wherever possible.

In Turkey the top 20 % in the income scale spends 3.4 % of its disposable income on education services, while the bottom 20 % spends 0.3 % according to the SIS Income Distribution Study. Considering that the bottom 20 % is indeed poor it is financially difficult for them to invest in ECE. It would not be wrong to assume that the households in the bottom groups would have incomplete information about education.

Furthermore SIS 2002 Education Expenditure Survey shows that expenditure on ECE services constitute a small part of their education expenditures. Those households who have children in public schools spend only 0.3 % of their total education expenditure on ECE services. This is about 155.2 million TRL per child. For those who have children in private schools these figures are 0.5 % and 3592.8 million TRL, consecutively. These figures also may suggest that ECE does not have a priority for a large part of households.

3.3 PRIVATE SOURCES

In some countries subsidies are directed to public sector. In some countries where ECE services are largely provided by private sector these services are contracted to private non-profit or for-profit institutions. There have been arguments favoring both systems. The decision is whether to produce an input itself or contract for that input with an external supplier. Each mode has its own costs to ensure that the right product is delivered at the lowest cost. When state provides subsidies to private producers it has to regulate them so that the right kind of ECE services is delivered and the funds supplied by the state should be used effectively. This process has transaction costs. It involves lots of uncertainties about the nature and quality of the services; it requires monitoring which may be expensive. On the other hand it is well known that public bureaucracies have a rent-seeking nature. This way public provision of ECE services will be more expensive than private ones.

When governments start to give subsidies to private producers, the for-profit ECE service suppliers also want to become part of the system. These institutions argue that their innovative system will let them provide higher quality services at a lower cost. In a competitive market a for-profit institution strive to meet consumer demand and keep the costs down. Otherwise competition would drive a firm out of market. It can be argued that non-profit institutions do not have this drive for profits and may divert resources to uses other than the services required by government. On the other hand if the state cannot monitor the performance of for-profit supplier and when there are public goods then contract will fail. Non-profit institutions do not have the same incentive.

In many OECD countries public subsidies are given to private institutions only when they enroll children targeted by government.

In Turkey only about 7 % of children receiving ECE services are enrolled in private institutions. Private preschools, nursery classes and day care centers which are run on a profit basis are located mainly in big cities. Out of about 26 000 children attending these institutions about 14 000 of them live in Istanbul, Izmir and



Ankara. In 9 provinces there are no private institutions. The existence of parents in big cities who can afford to pay for the full cost of services and parents who have to have ECE services for their children either out of necessity or for educational purposes inevitably lead to a concentration of these services in large cities. Possibly the location of these centers will suggest something about the income distribution.

3.4 ALTERNATIVE MODELS OF ECE AND FINANCING OPTIONS

In the benefit-cost analysis of chapter 3 the costs which are included in the analysis are the costs of MONE ECE services. These services are center based. The center based model of ECE is one of the many models available (Bekman, 1998). Its both initial cost and operating costs are higher than other models of ECE. Furthermore it will be extremely costly to increase the capacity at a short-medium term. For example to reach the target of a 25 % enrollment rate would require at least 16 150 new classrooms and at least 16 150 new teachers. A single model is not sufficient to meet the varying needs of different groups of children. It would be less costly and more efficient to develop different models addressing different needs. These models would be developed along side the existing model. In a way they would complement the existing model. The overall objective should be to reach children from the point of view of poverty reduction and equity.

A good example of an alternative model is the MOCEP. It is a home based program. The program targets not only the child, but the child's immediate environment and the mother. It tries to foster cognitive and psychosocial development in the home environment (Bekman, 1998). As referred in Chapter 2 it has been a successful program. It is cost effective, it can be implemented at a large scale and extremely flexible in targeting various segments of society and reaching children at risk. Furthermore it has been a good example of cooperation between government and a NGO. The program was developed and managed by Mother-Child Education Foundation and later it was transferred to MONE. Currently MONE, SWCPA and the Foundation are working together.

The same simulations for MOCEP result in higher benefit-cost ratios. Furthermore the MOCEP Follow-up Study finds that in the secondary education level the drop-out rate is 7.35 % for mother-non-trained children, while 2.44 % for mother-trained children. Assuming that students drop-out at the end of their first year of high school, the benefit-cost ratio is calculated to be 2.28. If this is added to the benefit-cost ratio for scenario II then it is almost 10 which is a very high figure.

Table 3.1 Benefit-Cost Ratios (6 % discount rate)

	Scenario I	Scenario II
MONE	4.35	6.31
MOCEP	5.91	8.14

A relatively recent model particularly in some developing countries is the establishment of micro-enterprise projects. Usually subsidized loans are granted to women who want to start up a home-based day care center. In order to ensure the quality of services entrepreneurs are given training and support if they are qualified for a loan. This model also helps both children and women. It can be implemented with the assistance of NGOs.



Types of Financial Instruments

Depending on the policies of there is a wide variety of possible funding mechanisms to encourage and provide ECE services. The following list gives the instruments used in some OECD countries and taken from Cleveland and Krashinsky (2003).

- Maternity leave, parental leave, paternity leave, child-rearing leave, family leave, all with or without paid wage replacement benefits. This is used in Turkey as regulated by the Labor Act.
- Public provision of universal services, or services with restricted clientele. Services provided by MONE and SWCPA are in this category.
- Childcare expense deduction or tax credit based on childcare expenses. Only wage and salary earners claim a small percentage of education expenses as part of tax rebate.
- Voucher conditional on purchase of childcare of certain types (for instance, conditional on non-profit provision, accreditation, or some indicators of quality)
- Income-conditioned childcare subsidies to low-income families, conditional on employment and use of certain types of childcare
- Wage grants, operating grants, maintenance grants to child care facilities with or without conditions about the use of the grants
- Childcare allowance as part of social assistance, with requirements for job training or employment
- Tax benefits or cash grants to subsidize stay-at-home care
- Capital grants to ECE facilities
- Tax treatment of fringe benefits, employer provision of services, employer capital investment in services. When employers provide crèche services, they considered as fringe benefits.
- Reduced taxation of net income of childcare centers, reduced sales taxes charged to childcare operators, reduced sales taxes charged to parents purchasing childcare.

There is no single best method of financing ECE services. It al depends on the social and economic objectives of a country, its approach to the relationship between state and family and the evaluation of the benefits-costs of different ECE policies. Also ECE needs show variation across a country. The nature of ECE activities may be different in a large city than in a small village. The most important element is the flexibility and efficiency in reaching the target groups. Flexible programs such as MOCEP are cost effective and can target children at risk who has priority for receiving ECE services but not able to. These programs can complement the public preschool program.



• 4. CONCLUSION •

The benefit-cost analysis indicates that expansion of ECE services in Turkey is highly desirable from an economic point of view. Although the assumptions about the impact of preschool education on schooling were very conservative the benefit-cost ratios are relatively high. If other benefits of ECE were included they would be still higher.

The high benefit-cost ratios are not the only reason for the expansion of ECE services. The existing state of children in Turkey, poverty and various inequities make education and particularly ECD important issues which government and society have to face and deal with.

The desired expansion of reaching 25 % enrollment rate requires considerable extra resources. These resources can be generated. Government should support targeted and flexible programs. The benefit-cost ratios for these programs will be much higher. It should try to recover costs wherever possible. However it is necessary for government to heavily subsidize or provide free of charge ECE services targeting the poor.



• 5. APPENDIX: BENEFITS AND COSTS DATA •

Age-Earning Profile

The report considers the benefits gained due to increased labor productivity and hence increased income as the main benefit.

SIS conducted an income and budget expenditures survey in 2002. The wage incomes of wage earners in the private sector are estimated using data from this survey. Age-earning profiles include some empty cells or cells with little observation towards the older ages particularly for those wage-earners with secondary and higher education. These cells are estimated by simple extrapolation.

Rate of Discount

Both benefits and costs should be discounted to present day values. In this report a 6 % discount rate is used.

Costs

Facilities

The replacement cost of facilities is estimated through the projects followed by the State Planning Organization. The Annual Investment Programs provide information on specific public investment projects, and follow the progress of these over the years. The costs can be expressed in any year's prices using Investment Deflators developed by SPO.

Table A-1 Age-Earning Profile by Level of Education
(millions of TRL)

Age	No Education	Primary (5 years)	Primary (8 years)	Secondary	Higher
12	295				
13	932	1,300			
14	588	1,020			
15	789	1,220	1,220		
16	603	1,050	1,170		
17	1,630	1,660	1,470	1,110	
18	1,210	1,840	1,370	1,510	
19	829	1,860	1,600	2,010	
20	1,410	2,070	2,440	1,910	1,950
21	2,360	1,500	1,830	2,280	1,420
22	833	1,880	2,930	2,320	2,800
23	2,050	2,280	2,150	2,630	3,130
24	1,220	2,690	2,340	3,340	3,620
25	1,290	2,650	3,610	3,560	5,520
26	3,000	3,210	2,950	3,990	5,750
27	1,470	2,800	3,290	3,720	7,460
28	2,080	3,020	4,090	4,550	6,210
29	1,270	2,920	3,440	5,680	6,470
30	1,920	2,870	3,740	5,270	10,200
31	2,000	3,180	2,430	4,390	7,910
32	1,450	3,350	4,760	5,370	12,500
33	2,080	3,180	3,470	6,850	9,530
34	2,280	3,400	3,460	4,580	13,300
35	2,000	3,030	7,150	5,770	9,320
36	1,960	3,340	4,060	5,190	12,400
37	1,040	3,350	4,640	6,280	15,500
38	2,150	3,590	4,370	6,140	8,040
39	1,600	3,170	5,770	6,500	19,700
40	1,910	2,890	3,830	8,400	10,700
41	1,990	3,960	4,080	5,950	10,500
42	2,140	3,150	6,890	6,740	19,400
43	1,470	3,540	4,500	6,560	31,800
44	2,300	3,860	3,600	7,460	8,130
45	2,280	2,870	4,650	9,110	34,400
46	1,390	3,100	1,380	6,490	10,200
47	1,660	3,500	3,170	7,700	6,980
48	1,870	3,580	3,720	2,810	14,000
49	1,820	2,530	2,550	4,660	10,400
50	1,400	2,800	6,980	3,110	7,120
51	1,930	3,330	3,080	16,200	15,400
52	2,670	2,690	6,600	3,780	5,220
53	1,740	3,610	3,170	9,100	3,980
54	1,230	5,430	5,900	2,160	14,340
55	1,660	3,190	4,200	4,090	24,700
56	2,340	2,030	7,860	4,915	12,700
57	2,100	1,800	3,659	5,328	5,450
58	400	1,990	3,515	5,534	25,825
59	2,980	2,360	3,362	5,740	36,013
60	1,050	2,940	1,940	4,370	46,200
61	1,660	1,640	1,535	4,575	25,400
62	1,720	1,850	1,130	4,780	15,000
63	983	3,920	805	3,000	4,600
64	1,100	20	480	4,800	9,850
65	593	1,580	2,600	6,600	15,100

Source: SIS



Preschool students attend 'Anaokulu' as well as nursery classes. The former is exclusively for 3-5 age groups; the latter is one or two classrooms reserved for this group in a primary school. In estimating the cost of preschools it is assumed that existing percentage of preschool students in a primary school facility will not change.

Unfortunately for the higher education it was not possible estimate cost of facilities based on specific projects. Fixed investment expenditures are calculated for the period 1999-2003 and divided by the increase in the number of students. The Open University is not included in the calculations.

It is assumed that the lifetime of facilities is 30 years old. In annualizing the cost of facilities a 6 % discount rate is used.

Equipment and Large Repairs

Expenditures on equipment and large repairs are calculated using The Annual Investment Programs. Again for the higher education it was not possible to calculate these expenditures separately, so they are included in the cost of facilities for higher education.

The lifetime of large repairs are assumed to be 10 years, and that of equipment 5 years.

Table A-2 Costs per Student (Public, 2002 Prices, TRL1000)

	Preschool	Primary	Secondary	Higher
Construction of Facilities	3,403,631	2,559,907	4,587,452	9,851,275
Large Repairs	7200.853	9,783	19,069	a
Equipment	12,985	14,232	19,160	a
Total	3,423,817	2,583,922	4,625,681	9,851,275

Current Expenditures

Current expenditures include all other expenditures not included in investment expenditures. SIS conducted a survey of education expenditures in 2002. The survey covered expenditures incurred by the government, local administrations, educational institutions, NGOs, households and foreign organizations. The current expenditure estimated for this report used data from this survey with some modifications.

The survey does not provide information on the distribution of expenditures incurred by institutions other than MONE. It is highly probable that some of these are investment expenditures. However not including them in current expenditures would not distort the estimates greatly. At all levels of education more than 70 % of the total expenditures are borne by MONE and households. If there is some bias it should be small.



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