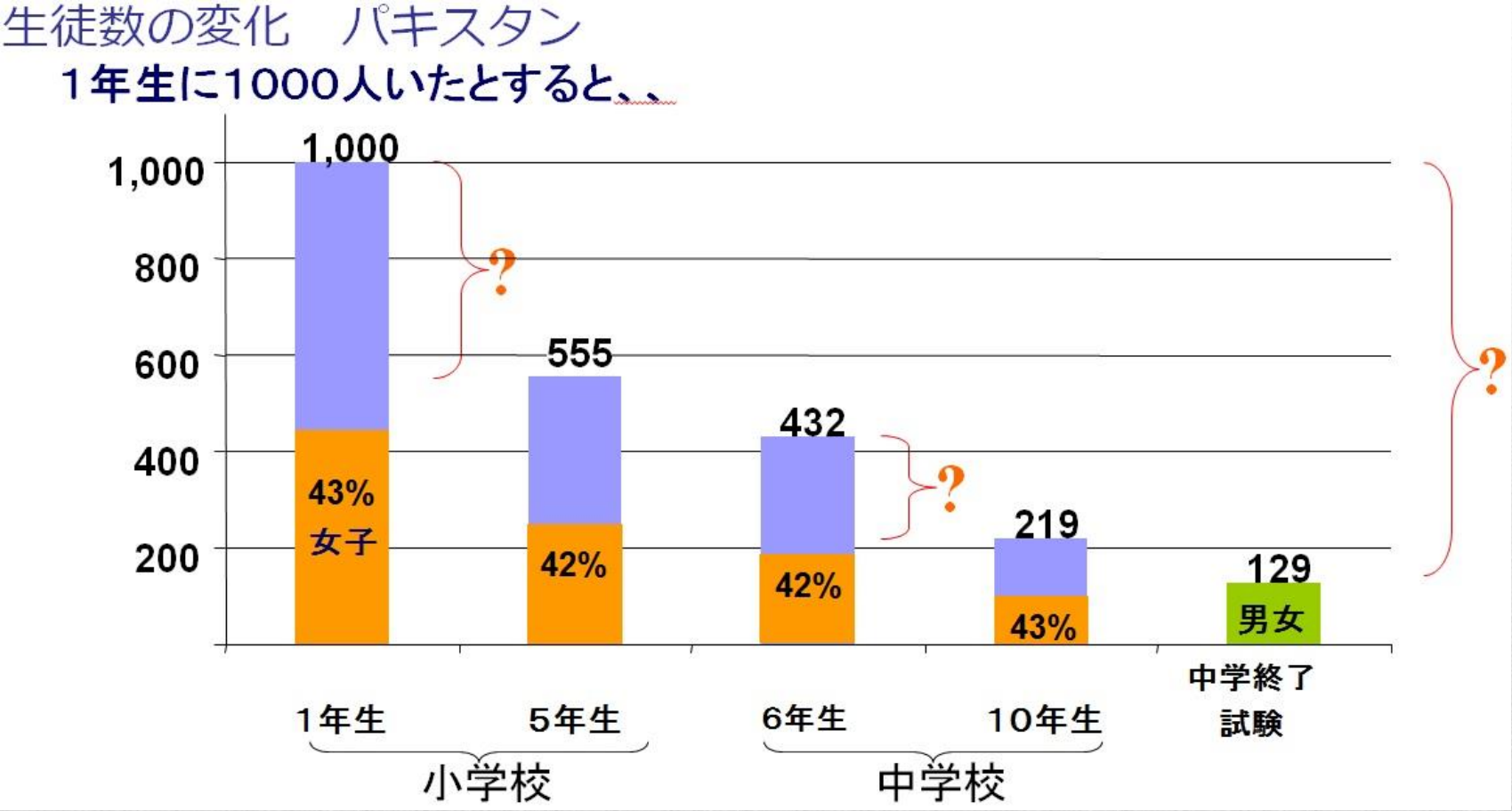
The Effect of Early Childhood Development in South-west Asia

From Macro- and Micro-level Analysis



Source: 宮沢一朗(2010) “途上国と教育開発”

Introduction 0

- Early childhood is defined as the period from birth to eight years old. A time of remarkable brain growth, these years lay the foundation for subsequent learning and development.
- UNESCO advocates for Early Childhood Care and Education (ECCE) programmes that attend to health, nutrition, security and learning and which provide for children's holistic development.
- ECCE and ECD (Early Childhood Care) are treated as almost same meaning in this paper.

Introduction 1

- Early childhood care and education (ECCE) provides an important foundation for later learning, and is an integral part of lifelong learning.
- The global pre-primary gross enrolment ratio grew from 33% to 40% between 1999 and 2005.

UNESCO (2008), Policy Brief on Early Childhood

Introduction 2

ECCE in Global Monitoring Report

–乳幼児のケアおよび教育では地域間で大きな格差が見られる

ECCEプログラムを有していない国は全体の47%

ECCEの普及は多くの女性が労働市場に参入したことの反映

–就学前教育の発展は均等ではない

–幼稚園教員は不足している

幼稚園教員1人あたりのこどもの数

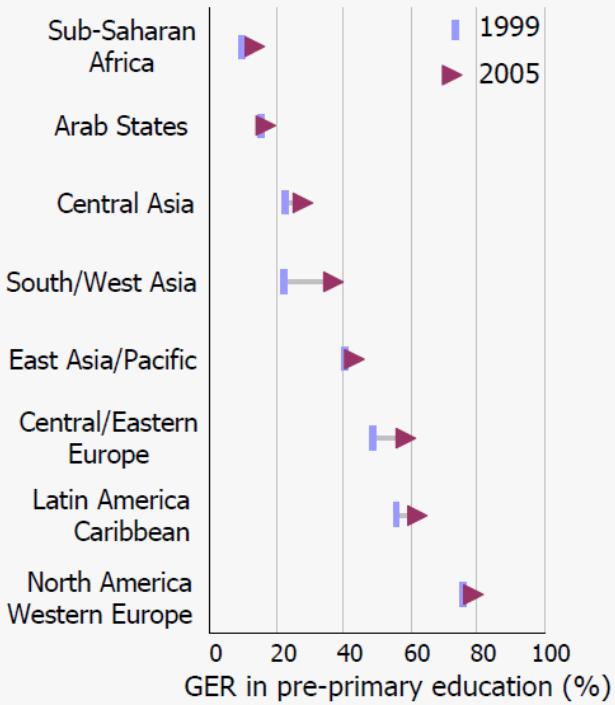
22人（世界平均 2005）

40人（南・西アジア 2005）

Introduction 3

Early childhood care and education: acting on the benefits

ECCE programmes improve child well-being and prepare children for school but:



- Provision of pre-primary education remains scarce across sub-Saharan Africa and Arab States
- Lack of policies for under 3s
- Programmes are not reaching the poorest and most disadvantaged children

Introduction 4

途上国の教育

低い入学率と進学率、および高い中途退学と男女不平等

Early Childhood Development (ECD) or ECCE

- **直接的効果**

  身体的発達の促進

  知的発達の促進

  子供の権利保障

  学習の素地の向上

  保護者支援・子供の保護

- **長期的効果**

  留年・退学の減少

  学習結果の向上

  学習年数の増加

  非行・犯罪関与の減少

Source: JICA 2004

Introduction 5

Micro-level analysis

$$P = \alpha + \beta 1hhsize + \beta 2MPCE + \gamma 1GC + \gamma 2ST + \delta 1fgedu + \delta 2mgedu + \delta 3focu + \varepsilon$$

(Sengupta, Guha 2002)

$$P = \alpha + \beta_1 HHSIZE + \beta_2 MPCE + \delta_1 FGEDU + \delta_2 MGEDU + ECY + CHRST + HND + MSLM$$

P:Dropout rate
HHSIZE: household size
MPCE: monthly expenditure
GC, SC: Caste and Scheduled Tribe
FGEDU: Father's education
MGEDU: Mother's education
FOCU: Father's occupation

ECY: Participation rate of ECD
CHRST: rate of Christian population
HND: rate of Hindu population
MSLM: rate of Muslim population

Model & Method 1

	Household size(2001)	Literacy male(2011)	Literacy female(2011)	Pre-Primary entry(2011)	Drop-out total (2011)	Drop-out grade V (2011)	Expenditure on Edication
Andaman & Nicobar	4.5	90.11	81.84	14.3	3.5	0.4	
Andhra Pradesh	4.4	75.56	59.74	8.2	5.4	7.2	12.5
Arunachal Pradesh	5	73.69	59.57	18.4	18.7	6.9	10.8
Assam	5.4	78.81	67.27	21.8	8.6	5.3	22
Bihar	6	73.39	53.33	4.5	6.4	20.1	16.3
Chandigarh	4.3	90.54	81.38	18.9			
Chhattisgarth	5.1	81.45	60.59	6.8	5.4	5.6	18.6
Dadra & Nagar Haveli	4.8	86.46	65.93	2.4	2	4.5	
Daman & Diu	4.4	91.48	79.59	21.6	6.3	2.3	
Delhi	5	91.03	80.93	7.9			
Goa	4.5	92.81	81.84	23.9	4	2.7	15.4
Gujarat	5.2	87.23	70.73	8.5	4.3	5.6	15.9
Haryana	5.7	85.38	66.77	12.7	6.2	7.5	17.3
Himachal Pradesh	4.9	90.83	76.6	11.2	1	1.8	17.9
Jammu & Kashmir	6.4	78.26	58.01	25.7	5.3	8.1	12.6
Jharkhand	5.6	78.45	56.21	3.7	10.5	21.6	15.8
Karnataka	5	82.85	68.13	15	3.6	5.3	15.6
Kerala	4.7	96.02	91.98	48.3			17
Lakshadweep	6	96.11	88.25	1	2.4	5	
Madhya Pradesh	5.5	80.53	60.02	10.8	8.6	13	14.2
Maharashtra	5	89.82	75.48	11.3	2.1	0.9	20.8
Manipur	5.7	86.49	73.17	13.4	9.1	13.3	10.7
Meghalaya	5.5	77.17	73.78	56.2	12.7	14.5	16.1
Mizoram	5	93.72	89.4	23.7	12	15.2	14.9
Nagaland	6	83.29	76.69	40.8	5.2	15	13.4
Orissa	4.7	82.4	64.36	3.2	6.1	13.9	18.3
Pundicherry	4.5	92.12	81.22	34	0.4	3	
Punjab	5.6	81.48	71.34	19.9	1.8	3	11.7
Rajasthan	6	80.51	52.66	11.3	10.8	11.2	19.1
Sikkim	4.7	87.29	76.43	16.4	7.1	10.9	17.3
Tamil Nadu	4.2	86.81	73.86	18.7	1.2	4	15.2
Tripura	4.8	92.18	83.15	2.6	11.9	12.2	17.2
Uttar Pradesh	6.4	79.24	59.26	4.1	11.1	35.9	16.1
Uttarakhand	5.3	88.33	70.7	10.4	5.8	6.4	23.5
West Bengal	5	82.67	71.16	5	6.5	7.4	19.7

Data set

Data source: Census of India 2001
Series-1, Provisional Population Totals, Paper-I 2011, District Information System on Education 2011

Constant term	**0.406340977**	
Partial regression coefficient		**T-value**
a) Household size	0.61439312 [0.354677097]	1.732260488
b) Monthly expenditure to education of household	-0.013550709 [0.051948518]	-0.260848801
c) Father's education	-0.09620306 [0.063849515]	-1.506715607
d) Mother's education	0.023929817 [0.048272944]	0.495719032
f) Participation rate of ECD program	-0.051613203** [0.019636944]	-2.62837247
g) Rate of Christians	0.034376132*** [0.011869009]	2.896293397
h) Rate of Hindus	0.011207496 [0.012905544]	0.868424918
i) Rate of Muslims	0.006442882 [0.013647054]	0.472107894
R square	0.591472748	
Adjusted R square	0.409905081	

*, ** and *** represent P value 0.05 < P < 0.1, P < 0.05 and P < 0.01 respectively. Standard errors in [brackets].

Analysis 1 Micro-level analysis

Macro-level analysis

$$LnY = \alpha + \beta Ln(EDUEXP) + \beta 2Ln(LFPR) + \beta 3Ln(GFCF)$$

Source: Khiliji, Khan (2011)

$$LnY = \alpha + \beta Ln(EDUEXP) + \beta 2Ln(LFPR) + \beta 3Ln(GFCF) + COMP + PROG$$

Ln: Natural Logarithm
Y: GDP growth
EDUEXP: government expenditure on education
LFPR: labor force participation rate
GFCF: gross capital formation
COMP: completion rate of primary school
PROG: promotion rate to second education

Model & Method 2

	GDP growth (annual %)	Gross capital formation (annual % growth)	Labor force participation rate for ages 15-24, total (%)	Public spending on education, total (% of government expenditure)	Primary completion rate, total (% of relevant age group)	Secondary school enrolment(gross %)
1998	6.184416	5.167108	47.4	12.55355	65.84578	42
1999	8.463071	21.96875	47	12.72165	68.84578	43.1
2000	3.975053	-6.76878	46.5	12.71442	71.47893	45.3
2001	4.944226	10.98745	46.6	11.71442	71.97123	45.5
2002	3.907534	2.860074	46.8	11.11442	75.1583	47.3
2003	7.943995	11.72569	46.9	10.73765	79.43431	49.8
2004	7.848801	31.74044	47	10.53765	84.13325	51.4
2005	9.284872	16.29737	47.1	10.73765	85.51253	53.9
2006	9.263965	15.28433	45.1	10.43765	86.67422	54.7
2007	9.80136	17.20243	43.2	10.33765	94.35308	57
2008	3.890958	-1.64615	41.3	10.13765	95.68729	60.2
2009	8.479785	12.65702	39.5	9.97964	95.68729	59.5
2010	10.54638	16.16947	37.7	10.49991	95.68729	63.2
2011	6.330517	1.462869	37.5	11.11442	96.68729	65.1

データを得られなかったため、推計した値

Data source: the World Bank, World Development Indicator

Data set

ADF検定の結果(第二階差において)

		Variable					
		LNY	LNGFCF	LNLFPR	LNEDEXP	LNCOMP	LNPROG
Countries	India	-5.115***	-5.499***	-2.277	-3.477***	-4.219***	-7.292***
	Sri lanka	-3.217**	-5.749***	-5.062***	-3.773***	-4.810***	-4.920***
	Bangladesh	-3.027**	-5.767***	-6.138***	-6.362***	-4.341***	-4.464***
	Bhutan	-4.154***	-2.769*	-2.991**	-6.855***	-3.376**	-4.401***
	Nepal	-5.035***	-5.543***	-2.480	-5.005***	-57.127***	-2.467
	Iran	-8.332***	-4.600***	-5.675***	-6.992***	-5.266***	-10.235***
	Pakistan	-2.601*	-4.070**	-2.711**	-5.237***	-4.236***	-4.236***

*, ** and *** denote 0.05 < P < 0.1, 0.01 < P < 0.05 and P < 0.001 each.

ADF Unit Root Test

	India	Sri lanka	Bhutan	Bangladesh	Nepal	Iran	Pakistan	All countries
Constant term	18.26432486	31.90605906	8.475457233	74.54351923	4.345236474	15.43625493	-22.70680728	-2.610626882
Partial regression coefficient								
a) EDUEXP	0.024836168	0.170571987	-0.068459519	-1.799506402	1.558386754	1.901780261	-0.538636901	1.383837***
b) LFPR	-1.82143152***	-1.353828985**	0.87684427	-11.48146094***	1.789447148	-0.035597894	3.032676928	0.484868
c) GFCF	0.510534423***	0.009117545	-0.015200421	0.032589718	-0.002601472	0.058391305	0.851302832	0.161408088
d) COMP	-0.376863651	-1.653663647***	1.762416934***	-0.695802372	2.492001534	0.344331757	4.238938044	2.378118*
e) PROG	1.210819389**	1.248414784***	0.359975241	1.334627524	-1.160105765	0.726349781	-0.157933691	2.571845**
R square	0.998237337	0.984341093	0.997080992	0.621772	0.955772405	0.216877678	0.951772378	0.646447767

*, ** and *** represent P value 0.05 < P < 0.1, 0.01 < P < 0.05 and P < 0.01 respectively.

Analysis 2 Macro-level analysis

- 就学前教育の普及によって、初等教育での退学者を減少させることができる。
- 初等教育の修了、進学がGDP成長と正の相関を持つ。若年層の労働参加率は逆に負の相関を持つ。
- 政府の教育分野への支出は重要であるが、従来通りの投資では経済成長に寄与できない。早期幼児教育へのインプットを高め、退学・留年を減少させることが重要である。

Concluding remarks

- 国境を跨いだ分析では、それぞれの法制度と社会の成熟度(教育収益率など)によって、左右され一様な結果を得られない
- 今回の2つ分析では、教育の“質”を考慮していない。幼児教育に関する“質”のデータは少ない。

Concluding remarks

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