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How important is the Capacity of Local Governments for Improvements in Welfare? Evidence from Decentralised Uganda

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Abstract

In recent years, a debate about the potential of decentralisation for poverty alleviation has set off among academics and policy-makers. It is often claimed that decentralisation can be effective for improvements in welfare and hence the reduction of poverty. For example, the World Bank explains on its website that “national development and poverty alleviation often hinges on improved sub-national growth and service delivery. Achieving these objectives often requires […] reforming the fiscal, political, and administrative framework in which subnational governments operate” , in other words decentralisation. Yet, empirical evidence is scarce. I therefore intend in this paper to gain further insights into the relationship between decentralisation and welfare by investigating the role of local governments’ capacity.

The hypothesis guiding this paper is that the capacity of local governments to im-plement decentralisation is decisive for its success in terms of welfare improvements. In other words, more capable local governments are assumed to obtain higher welfare levels and ultimately lower poverty.

Keywords: decentralisation, welfare, local government, capacity, poverty alleviation

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1. Introduction

In the past two decades, numerous developing countries around the world have embarked on decentralisation reforms with varying degrees of intention and success. The rationale to transfer power to local units of government has ranged from achieving higher popular participation in public decision-making (Crook and Manor, 1998; Blair, 2000; Crook and Sverrisson, 2001) and increasing efficiency in the provision of goods and services (World Bank, 2001; von Braun and Grote, 2002; Asante, 2003; Jütting et al., 2005) to merely shifting the fiscal deficit downwards attempting to maintain the legitimacy of the national government (Litvack and Seddon, 1999; Manor, 1999; Shah and Thompson, 2004). Mostly, decentralisation was embedded in democratisation efforts or public sector reforms. In recent years, a debate about the potential of decentralisation for poverty alleviation has set off among academics and policy-makers. It is often claimed that decentralisation can be effective for improvements in welfare and hence the reduction of poverty. For example, the World Bank explains on its website that "national development and poverty alleviation often hinges on improved sub-national growth and service delivery. Achieving these objectives often requires […] reforming the fiscal, political, and administrative framework in which subnational governments operate"[1], in other words decentralisation. Yet, empirical evidence is scarce. I therefore intend in this paper to gain further insights into the relationship between decentralisation and welfare by investigating the role of local governments' capacity.

The hypothesis guiding this paper is that the capacity of local governments to implement decentralisation is decisive for its success in terms of welfare improvements. In other words, more capable local governments are assumed to obtain higher welfare levels and ultimately lower poverty. Capacity is here understood as the ability of local governments to perform their assigned functions (Grindle and Hilderbrand, 1995; Grindle, 1996; Boesen et al., 2002).[2] I deliberately do not specify which functions these are since there cannot be a universal set of responsibilities for local governments but these must depend

[1] See http://www1.worldbank.org/publicsector/decentralization.

[2] Most of the literature on the capacity of governments is concerned with capacity building, and again most of it focuses on the central government. One of the few academic publications dealing with local government capacity is Gargan (1981) who understands capacity as the ability of a local government to do what it wants to do. He claims that local governments are no more than as good as they have to be because capacity results from the interplay of community expectations, community resources, and community problems. This definition might have worked for his purpose, which consisted in making the argument that capacity building in the form of imparting management practices is not always adequate; but it is not very helpful here. Particularly in the light of potentially high corruption, letting local governments do what they want to do would neither be a satisfying definition in theory nor an appropriate policy goal in practice. Other writers on local government capacity do not provide own definitions (Honadle, 2001; Wallis and Dollery, 2002; Matsui, 2005). I therefore base my definition of capacity on the writings concentrating on the central government. Wallis and Dollery (2002) do the same.

on the specific context of a country. Grindle (1996) distinguishes four types of capacity of national governments, namely technical, administrative, institutional and political capacity. Adapted to the local government context, technical capacity is the ability of local governments to set and manage effective policies, which presupposes a cadre of well-trained analysts and policy-makers. Administrative capacity is the ability to provide physical and social infrastructure and to carry out the regular administrative functions like revenue collection and information management. Institutional capacity refers to the ability to set and enforce rules that govern economic and political interactions, which must of course be within the scope of local authority. Political capacity is the ability to respond to societal demands, allow for channels to represent societal interests, and incorporate public participation in local decision-making and conflict resolution.

The hypothesis that more capable local governments will achieve higher welfare among their population is tested for the case of Uganda. This country initiated an ambitious decentralisation reform in 1992, which facilitated the transfer of far-reaching responsibilities for decision-making, planning and budgeting, finance, and service provision to five tiers of local governments (Villadsen and Lubanga, 1996; Nsibambi, 1998; Obwona et al., 2000; Saito, 2003; Steffenson et al., 2004). The district is the highest local government level and is endowed with more responsibilities and financial resources than the other levels. In the way it is designed, the reform has large potential for improving welfare and reducing poverty. However, several factors constrain the proper implementation of decentralisation, ultimately jeopardising an impact on welfare (Steiner, 2008). Among them feature restricted local autonomy, the prevalence of corruption and patronage, an unclear distribution of responsibilities between local elected councils and civil servants as well as low levels of capacity in terms of human capital, financial resources and infrastructure. Yet, there are large variations in capacity levels between district governments, and this variation is used here to evaluate the effect of capacity on welfare. I identify two indicators of capacity and two indicators of welfare, and pairwise assess the association between these controlling for other welfare determinants.

The data I use is from the second Uganda National Household Survey (UNHS II) of 2002/03, which was conducted and provided to me by the Uganda Bureau of Statistics (UBOS). Additional use of earlier household surveys is impeded by the fact that all Ugandan surveys are cross-sectional and do not include a panel of households, except for a small panel of about 1,200 households in the 1992 and 1999/2000 surveys. I thus cannot compare changes over time for households and individuals in the 2002 survey. Besides, it turns out to be extremely difficult to obtain information on local government affairs for the time before decentralisation was introduced in 1992 and just after its introduction. Standardised processes of data collection in local governments did not start before the second

half of the 1990s and are still lacking for levels below the districts. Hence, the capacity variable as derived below is not defined for the pre-decentralisation period, for which reason I cannot simply pool the data from several surveys and run a repeated cross-sectional estimation. Instead, I must rely on conducting the estimation of the effect of local governments' capacity on welfare exclusively on the basis of the UNHS II data. The estimation results by and large corroborate the hypothesis underlying this paper. The capacity level of districts correlates positively with welfare. However, relatively low levels of significance do not allow for drawing firm conclusions about the true relationship between capacity and welfare.

The remainder of this paper is organised as follows. In section 2, I identify two alternative indicators for the capacity of district governments. In section 3, I define two indicators for welfare and specify the respective estimation equations. In section 4, I provide an overview of the variables that will be included in the estimation. In order to rule out biased estimates, I then assess the endogeneity of the capacity indicators in section 5. I present the estimation results in section 6 and conclude in section 7.

2. Measuring the Capacity of District Governments

There are two sources of variation in the capacity of district governments in Uganda, which can be used to determine the impact of capacity on welfare.[3] The first capacity indicator relates to the level of financial resources available to districts, considering that adequate finance is one feature of districts' overall capacity and hence an essential precondition for effective local policy-making and service delivery. The second capacity indicator is a composite index capturing the level of technical and administrative capacity of district governments. In the following, I first generate what I will call the average transfer index and then the composite capacity index.

For the identification of the average transfer index, I exclusively rely on intergovernmental transfers and do not take revenue collected by local governments as taxes and fees into account for two reasons. First, data on locally collected revenue is scarce and often unreliable, and second, revenues that are collected at the local level are extremely low so that it would make no large difference if they were included. I obtained information on intergovernmental transfers from the central government to districts from the Local Government Finance Commission (for 1999/00-2003/04) and the Ministry of Finance, Planning and Economic Development (for 1993/94-1998/99) during my field research be-

[3] It is well possible that the capacity does not only differ between districts but also within districts, for example between sub-counties. If this were true, relying on the variation across districts would imply a loss of valuable information. However, due to lack of adequate data I am unfortunately unable to use the potential variation at other local levels than the district.

tween April and June 2004 and between April and May 2005. These transfers have steadily increased over time, which makes a mere comparison of the total amount of transfers little helpful. In addition, transfers to districts with a larger population are likely to be larger. I therefore conduct the following transformation of the data.

I first compute per capita transfers to districts for the years 1996/97-2002/03, correcting for population growth and inflation. I use average annual population growth rates at the district level as reported in the 2002 Housing and Population Census (UBOS, 2005) and changes in the composite consumer price index as indicated in various editions of Statistical Abstracts (MFPED, 1997; UBOS, 2002, 2004). I consider the time period 1996/97-2002/03 since the year 1996/97 marks the first year when all districts functioned under the so called block grant system, implying that they received lump-sum funds to be allocated according to the respective district's priorities. The year 2002/03 coincides with the year when the household survey data that are used in the below estimations were collected. The population of and the intergovernmental transfers to districts that were created in the course of this time period[4] were simply added to the size of the population and intergovernmental transfers of their respective mother districts. Since I am not so much interested in the nominal but rather in the relative size of the transfers, I then calculate the average per capita transfer for each year and determine whether the district per capita transfers are above or below this average. The resulting ratio of the district to national per capita transfer can be regarded as a transfer index. Table 1 reports per capita transfers (in 1,000 Ugandan Shillings) at the district level as well as the transfer index. Interestingly, some districts received above average per capita transfers and others below average per capita transfers in all or most years of the period of interest. Yet, I do not intend to proceed with the transfer index of all seven years but instead calculate an average percentage share for each district, the average transfer index (last column of Table 1).

[4] While 39 districts existed at the beginning of the decentralisation reform in 1992, six additional districts were created in 1997 and 11 more in 2000/01.

Table 1: Per capita transfers to districts (in Ush 1,000), transfer index, and average transfer index

	1996/97		*1997/98*		*1998/99*		*1999/00*	
	Per capita	*Transfer index*	*Per capita*	*Transfer index*	*Per capita*	*Transfer index*	*Per capita*	*Transfer index*
Apac	9.62	94	10.36	97	14.35	96	15.33	98
Arua	10.31	101	11.03	104	15.42	103	15.88	101
Bundibugyo	8.67	85	9.63	91	16.44	110	16.17	103
Bushenyi	9.11	89	10.23	96	15.09	101	16.38	104
Gulu	13.29	130	13.65	128	17.51	117	18.22	116
Hoima	11.50	113	11.29	106	15.49	103	16.62	106
Iganga	7.59	74	8.13	76	12.65	84	12.41	79
Jinja	17.98	176	17.85	168	20.51	137	20.79	132
Kabale	13.08	128	13.63	128	17.56	117	18.91	120
Kabarole	7.86	77	8.18	77	13.29	89	12.19	78
Kalangala	27.08	266	24.92	234	35.67	238	48.83	311
Kampala	6.71	66	7.79	73	8.09	54	7.93	50
Kamuli	7.43	73	7.72	73	10.76	72	12.01	76
Kapchorwa	12.38	121	12.66	119	19.10	127	19.55	124
Kasese	8.80	86	9.68	91	13.24	88	14.34	91
Kibaale	8.36	82	8.84	83	12.93	86	13.54	86
Kiboga	10.20	100	9.90	93	18.39	123	14.88	95
Kisoro	8.58	84	9.47	89	14.00	93	15.42	98
Kitgum	9.06	89	10.18	96	14.17	95	15.33	98
Kotido	6.66	65	6.68	63	8.73	58	7.85	50
Kumi	10.19	100	10.78	101	14.54	97	16.05	102
Lira	11.94	117	11.58	109	14.80	99	15.72	100
Luwero	9.51	93	10.85	102	15.37	103	16.48	105
Masaka	7.85	77	9.19	86	12.58	84	13.36	85
Masindi	10.04	99	10.15	95	13.70	91	14.44	92
Mbale	12.63	124	13.01	122	16.30	109	17.29	110
Mbarara	9.43	93	9.83	92	13.78	92	14.25	91
Moroto	8.53	84	7.70	72	9.47	63	10.97	70
Moyo	7.69	75	8.23	77	17.24	115	13.68	87
Mpigi	9.55	94	10.14	95	12.81	85	13.41	85
Mubende	8.70	85	8.87	83	12.89	86	13.45	86
Mukono	9.50	93	10.11	95	13.64	91	13.56	86
Nebbi	8.90	87	9.87	93	15.35	102	14.97	95
Ntungamo	7.71	76	8.39	79	12.54	84	13.44	86
Pallisa	9.57	94	9.34	88	14.74	98	13.23	84
Rakai	8.24	81	9.87	93	14.53	97	15.62	99
Rukungiri	10.77	106	10.89	102	15.41	103	16.02	102
Soroti	11.42	112	12.48	117	15.97	107	17.55	112
Tororo	11.03	108	11.72	110	15.52	104	16.29	104
National average	10.19		10.64		14.99		15.70	

Source: Author's calculation based on data from LGFC and MFPED.

Table 1 continued

	2000/01		2001/02		2002/03		Aver-age transfer index
	Per capita	Transfe r index	Per capita	Transfe r index	Per capita	Transfe r index	
Apac	20.90	91	23.51	87	23.94	90	93
Arua	19.93	87	26.07	96	27.99	105	100
Bundibugyo	27.20	118	34.97	129	29.04	109	106
Bushenyi	22.35	97	25.16	93	26.27	99	97
Gulu	28.51	124	33.18	123	28.56	107	121
Hoima	22.61	98	27.62	102	22.17	83	102
Iganga	16.50	72	21.44	79	22.96	86	79
Jinja	29.31	128	37.49	139	32.98	124	143
Kabale	25.08	109	33.93	125	32.91	124	122
Kabarole	17.99	78	23.56	87	22.11	83	81
Kalangala	80.66	351	78.45	290	68.85	259	278
Kampala	11.55	50	13.99	52	13.55	51	57
Kamuli	15.72	68	18.83	70	17.97	68	71
Kapchorwa	27.81	121	32.82	121	34.82	131	124
Kasese	20.63	90	21.99	81	23.03	87	88
Kibaale	19.59	85	19.73	73	20.19	76	82
Kiboga	26.84	117	31.32	116	28.15	106	107
Kisoro	25.50	111	27.38	101	30.52	115	99
Kitgum	20.23	88	24.76	92	27.77	104	94
Kotido	11.67	51	12.89	48	13.41	50	55
Kumi	20.59	90	25.86	96	26.58	100	98
Lira	23.17	101	28.16	104	28.79	108	105
Luwero	25.53	111	29.63	110	30.42	114	105
Masaka	20.10	88	25.12	93	24.74	93	87
Masindi	19.84	86	22.38	83	22.86	86	90
Mbale	20.93	91	28.47	105	24.99	94	108
Mbarara	21.72	95	22.43	83	23.02	87	90
Moroto	19.75	86	26.29	97	28.26	106	83
Moyo	25.56	111	26.90	99	27.02	102	95
Mpigi	17.69	77	21.44	79	21.45	81	85
Mubende	17.52	76	21.15	78	21.53	81	82
Mukono	16.94	74	21.83	81	23.92	90	87
Nebbi	23.46	102	28.02	104	26.10	98	97
Ntungamo	20.10	88	22.98	85	24.05	90	84
Pallisa	18.51	81	21.21	78	21.31	80	86
Rakai	21.22	92	24.34	90	23.97	90	92
Rukungiri	22.04	96	28.70	106	29.82	112	104
Soroti	27.43	120	34.83	129	31.58	119	116
Tororo	22.61	98	25.91	96	29.02	109	104
National avera	22.96		27.04		26.58		

Source: Author's calculation based on data from LGFC and MFPED.

With regard to the technical and administrative capacity of district governments, I define a composite capacity index based on the assessment results of the Local Government Development Programme (LGDP). This programme channels discretionary funds for development expenditure to the local government level. Districts[5] are evaluated annually with regard to their compliance with minimum conditions and performance measures. Performance measures evaluate ex post whether districts have performed well in terms of various requirements and responsibilities, while meeting minimum conditions is an ex ante criterion for districts' eligibility for the programme funds. Whereas some categories of minimum conditions are primarily features of the technical capacity of district governments (functional capacity in local development planning, internal audit and financial management, and engineering), others mainly describe their level of administrative capacity (capacity-building planning, revenue performance, and other programme specific conditions) (Table 2).

Table 2: Categories and indicators of LGDP minimum conditions

Category	*Indicators*
1.Functional capacity in local development planning	- Staffing - 3-year rolled plan - Functional Technical Planning Committee - Linkage between the development plan, budget and budget framework paper
2. Functionality for capacity building planning	- 3-year capacity building plan
3. Functional capacity in internal audit and financial management	- Staffing - Draft final accounts for previous year - Functional internal audit
4. Functional capacity in engineering	- Functional committee responsible for works (technical services) - Up to date list of resources (for information purposes) - Schedule of works
5. Programme specific conditions	- Co-financing in place - LDG and CBG account established
6. Revenue performance	- No nominal decrease

Source: Author's illustration based on MoLG (2001a, 2002a).

[5] Municipalities are assessed as well but their results are ignored here. Municipalties are treated as parts of districts.

I rely on past assessment results of minimum conditions in order to form the composite capacity index that is used in the below estimations. In Table 3, I present the assessment results of all districts for the years 1999-2003/04, with 1999 being the year when the first assessment took place. As can be seen, there is unequal coverage in the assessment, with some districts being evaluated in all six years since 1999 and some in only two, three, or four years. This has two major reasons. First, eleven new districts were created in 2000/01 and hence they could not be assessed in earlier years. Second, some districts did not participate in the LGDP in the first years of its existence because they received development funds through other programmes. So, there was no need to assess their capacity as well as performance on the basis of LGDP criteria. This unequal coverage constitutes a problem with regard to index building. If the aim was to use information from all six years, the index could be built for only 30 out of 56 districts. If in turn the aim was to include as many districts as possible, no more than two or three years of assessment results could be used. For the purpose at hand, it is considered to be more important to conduct the analysis for the maximum number of districts, and I therefore form the composite capacity index on the basis of the results for the years 2001/02, 2002/03, and 2003/04. This allows me to define the index for 50 districts, and it takes on values from zero to three as shown in the last column of the table

Table 3: Assessment results for minimum conditions and capacity index

	1999	*1999/ 2000*	*2000/ 2001*	*2001/ 2002*	*2002/ 2003*	*2003/ 2004*	*Capacity index*		*1999*	*1999/ 2000*	*2000/ 2001*	*2001/ 2002*	*2002/ 2003*	*2003/ 2004*	*Capacity index*
Adjumani	-	X	X	-	-	X	1	Kumi			X	X	X	-	2
Apac	X	X	-	-	-	-	0	*Kyenjojo*			X	X	X	X	3
Arua				X	X	X	3	Lira			-	-	X	X	2
Bugiri	X	X	X	-	-	X	1	Luwero	-	X	-	-	X	X	2
Bundibugyo	-	X	X	-	X	-	1	Masaka	X	X	X	X	-	X	2
Bushenyi	X	X	X	X	X	X	3	Masindi			X	-	X	-	1
Busia	-	X	X	-	X	X	2	*Mayuge*			X	-	X	-	1
Gulu	-	X	X	-	-	-	0	Mbale	X	X	-	-	X	X	2
Hoima					X	-	-	Mbarara	-	X	X	-	X	X	2
Iganga	-	X	X	X	-	X	2	Moroto	-	X	-	-	-	X	1
Jinja				X	X	X	3	Moyo	-	X	X	-	X	X	2
Kabale				X	X	X	3	Mpigi	X	X	X	X	X	X	3
Kabarole	X	X	X	X	-	X	2	Mubende	X	X	X	-	X	X	2
Kaberamaido				X	-	X	2	Mukono				X	-	X	2
Kalangala	-	X	X	X	X	X	3	*Nakapiripirit*				-	-	-	0
Kampala	-		X	X		X	-	Nakasongola	-	X	X	-	X	-	1
Kamuli	-	X	X	-	-	-	0	Nebbi	X	X	-	-	X	X	2
Kamwenge			X	-	X	-	1	Ntungamo	X	-	X	-	X	X	2
Kanungu					X	X	-	*Pader*			X	-	-	-	0
Kapchorwa	-	-	-	-	X	X	2	Pallisa	-	X	X	-	-	-	0
Kasese			X	X	X	X	3	Rakai			-		X	X	-
Katakwi	-	X	X	-	-	-	0	Rukungiri	-	X	X	-	-	-	0
Kayunga				-	-	X	1	Sembabule	-	-	X	-	-	-	0
Kibaale			X		X	X	-	*Sironko*			X	-	X	-	1
Kiboga	-	-	X	-	X	X	2	Soroti			X	-	X	-	1
Kisoro			X	-	X	X	2	Tororo	X	-	-	-	-	X	1
Kitgum	X	X	X	-	-	X	1	*Wakiso*			X	-	X	X	2
Kotido					-	-	-	*Yumbe*				-	-	X	1

Source: Author's illustration based on MoLG (1999, 2000, 2001b, 2002b, 2004a, 2005). Note: Empty cells indicate that the respective district was not assessed for minimum conditions in that particular year. X stands for meeting the minimum conditions and - for failing. Districts in italics are those that were created in 2000/01

The capacity of district governments between 2001/02-2003/04 may seem to be a highly problematic measure as a determinant of current levels of poverty since the effect of capacity on poverty is likely to occur with a time lag. Current poverty may not be determined by capacity in current years as much as it is determined by capacity in previous years. However, I make the following assumption. Current capacity is here regarded as the result of past developments in the sense that it is composed of initial capacity at the time of the decentralisation reform and capacity built up over time. It is therefore an ex post measure of the success of capacity building in previous years.[6] Districts that currently have high levels of capacity are assumed to either have had high capacity from the beginning or having built it up over time. Districts with currently low levels of capacity are supposed to not have been successful in accumulating capacity. This assumption is relatively strong, as it rules out the possibility that district governments may have lost their capacity over time. I discuss this issue when interpreting the estimation results.

3. Identification of the Estimation

The question addressed in this paper relates to the empirical literature on household welfare. As the name suggests, this literature analyses the determinants of welfare at the household level, with welfare being measured, for example, by consumption, income, educational attainment or health status. It here provides an orientation in the determination of the analytical framework in the sense that standard explanatory variables of welfare will be identified from the literature and included in the below estimation. The capacity of local governments, which clearly is not a standard regressor, will then be added as an additional potential determinant.

In order to investigate the importance of district governments' capacity for household welfare, I use two indicators of welfare as left-hand side variables, namely household per adult equivalent consumption and school enrolment of the 6-13 year-old population.[7] I choose these indicators because they are likely to be affected by decentralisation and hence by the capacity of district governments. Under the decentralisation reform, the responsibility for so-called poverty priority areas (primary education, primary health care, rural road rehabilitation and maintenance, agricultural extension, and rural water and sanitation) was assigned to the local level. The bulk of expenditures for these priority areas

[6] In their study on the effect of improved access to public information on capture of funds, Reinikka and Svensson (2004) also used an ex post measure for the programme under consideration. They measured exposure to information by access to newspapers and compared the level of capture between the treatment group that had access and the control group that did not have access to newspapers.

[7] I consider children of this particular age range, as it corresponds to the primary-school age in Uganda. Primary school comprises of seven school years and the regular age for school entry is six.

are disbursed to districts and spent there. If district governments were capable, access to and use of public primary schools, public primary health care facilities, feeder roads, agricultural extension services, and drinking water and sanitation should improve. To keep things short, I use school enrolment as one example for this link. Better access to and use of the mentioned services can in turn be expected to lead to an increase in households' consumption, if only in the medium term.

Reduced form estimations of household consumption are mostly referred to as consumption functions[8] in the literature, while models studying the determinants of school enrolment are generally called education demand functions. Although the literature on consumption poverty is large and still growing, most publications provide measurements and profiles of poverty and only relatively few are multivariate analyses of the determinants of consumption at the household level (Appleton, 2001b). Glewwe (1991) is one of the first authors who estimated a consumption function. In his study of household consumption in Côte d'Ivoire, he regresses per capita consumption on a set of household composition variables, physical assets owned by the household, human capital characteristics of the household members, community characteristics, and regional dummy variables. This specification has guided much of the following research. Many authors, who have later analysed consumption at the household level, used variants of the same set of explanatory variables, often with strikingly similar results (Appleton and Song, 1999; Datt et al., 2000; Datt et al., 2001; Appleton, 2001b; Grimm et al., 2002; Deininger and Okidi, 2003; Maitra and Vahid, 2006; Brück, 2004). I employ a similar estimation model, with the only exception that I do not take community characteristics into account because these are potentially endogenous. Especially such characteristics as the existence of a primary school or health centre are problematic, as they may themselves be the result of decentralisation. Hence, the estimation function is:

$$(1) \qquad C_{hj} = \eta_t + \gamma_1 H_{hj} + \gamma_2 E_{hj} + \gamma_3 A_{hj} + \gamma_4 R_j + \gamma_5 D_j + u_{hj},$$

where C_{hj} denotes per adult equivalent consumption of household h (h = 1, …, H) residing in district j (j = 1, …, J), H_{hj} a set of household composition variables, E_{hj} human capital characteristics of the households' members, and A_{hj} physical assets owned by the household. R_j is a set of regional dummy variables, D_j is the capacity variable for district j, and u_{hj} is the error term. In the below estimation of this consumption function, I apply the standard linear regression model fitted by ordinary least squares (OLS).

[8] Some studies investigate the determinants of poverty (Grootaert, 1997; Appleton, 2001b; Deininger and Okidi, 2003; Meng et al., 2005), measured as poverty headcount, poverty gap, or squared poverty gap, or of income (Kronlid, 2001; Brück, 2004) instead of consumption. The set of explanatory variables as well as their effects on the respective dependent variable is generally very similar across the three types of functions.

In order to keep the estimation of the demand for education as similar as possible to the estimation of household consumption[9], I modify equation (1) only slightly to account for the fact that the outcome variable in the education demand function is a characteristic of individuals and not of households and hence the estimation must be conducted at the individual level and not at the household level.[10] The resulting estimation equation takes the form:

$$(2) \qquad S_{ihj} = \pi + \delta_1 H_{hj} + \delta_2 E_{hj} + \delta_3 F_{ihj} + \delta_4 A_{hj} + \delta_4 R_j + \delta_5 D_j + v_{ihj},$$

where S_{ihj} denotes the school enrolment status of child i (i = 1, …, I) belonging to household h (h = 1, …, H) residing in district j (j = 1, …, J) and H_{hj} is a set of household composition variables of this child's household. E_{hj} are human capital characteristics of this households' members, F_{ihj} are demographic characteristics of child i, and A_{hj} are physical assets owned by the household. As above, R_j is a set of regional dummy variables, and D_j is the capacity variable for district j. v_{ihj} is the error term.

In the below estimation of equation (2), I use the multinomial logit model, taking into consideration that the dependent variable can take the values of non-enrolment, enrolment in a public school and enrolment in a private school. The distinction between different school types is essential for determining the impact of districts' capacity on enrolment. Districts have become responsible for primary education through decentralisation but they are in charge of the public school system only. Hence, decentralisation should have a direct effect on enrolment in public schools but, if one at all, only an indirect effect on enrolment in private schools. If access to and/or quality of public schools improved substantially after the introduction of decentralisation, households may decide to take their children out of private schools and send them instead to presumably less expensive public schools. In contrast, if access to and/or quality of public schools worsened, households may tend to send their children to private schools, given these can be better accessed, are of higher quality, and households can afford their fees. By applying the multinomial logitmodel, I consider enrolment in public schools and enrolment in private schools to be truly distinct options in Uganda. This is because public and private schools usually differ

[9] This might seem to be an arbitrary action but a review of the literature on the determinants of household education investments in developing countries, such as provided by Behrman (1990), Strauss and Thomas (1995), and Schultz (1999), shows that it is not. Six broad categories of explanatory variables can be identified from existing studies, namely human capital characteristics of household members, especially a child's parents, household resources and employment status of household members, household composition variables, characteristics of the child himself or herself, community characteristics, and regional dummy variables. Obviously, these correspond largely with the right-hand side variables in the resulting equation.

[10] In the below calculation of the standard errors and hence the t-values for the education demand function, I take into account that observations can belong to the same household. I do so by defining the household instead of the enumeration area to be the primary sampling unit. I thereby regard the household as a cluster and assume that observations are independent across households but can be dependent within households.

strongly in quality and of course in price. I thus argue that households weigh the alternatives of non-enrolment, public school enrolment, and private school enrolment independently from each other. This implies that they do not first decide whether to send their children to school at all and then whether to send them to public or to private school. Since this may appear to be a strong argument, I conducted the Hausman test to determine whether the assumption of Independence of Irrelevant Alternatives underlying the multinomial logit specification can be maintained. This assumption implies that the inclusion or exclusion of categories does not affect the coefficients of the explanatory variables in the remaining categories. The fact that I am unable to reject the null hypothesis, which said that the assumption is violated, lends credibility to the use of the multinomial logit specification.[11]

4. Definition of Variables

In this section, I label and define the variables and report means on the basis of the UNHS II data (Table 4). The first outcome variable, household per adult equivalent consumption, is generated through household consumption aggregates. These consumption aggregates were calculated on the basis of consumption expenditure data and provided to me by UBOS.[12] In the calculation of per adult equivalent consumption, I do not allow for economies of scale since these are usually not very important in poor countries like Uganda where the budget share of food is high (Deaton and Zaidi, 2002). I express consumption in natural log form, as this yields a distribution that is nearly normal (*LogCons*). The second outcome variable, school enrolment of 6-13 year-old children, is a categorical variable indicating whether children are enrolled in a public school, in a private school, or not at all (*Enrol*).

[11] In fact, I get a negative value for the χ^2 statistic. This appears to be a common finding in such tests, and Hausman and McFadden (1984) conclude that a negative result is evidence that the assumption of independent irrelevant alternatives is not violated.
[12] For details on their calculation, see the technical appendix in Appleton (2001a) and the documentation in Appleton (2003).

Table 4: Labels, definitions, and means of variables

Label	Definition	Mean
Enrol*	Categorical variable for no enrolment (1), enrolment in public school (2), enrolment in private school (3) of children age 6-13	1.001 (0.001)
LogCons	Natural log of household per adult equivalent consumption	10.013 (0.022)
Child<5	Number of children age 0-5 in the household	1.166 (0.018)
Child6-12	Number of children age 6-12 in the household	1.226 (0.022)
Child13-17	Number of children age 13-17 in the household	0.595 (0.014)
Adult18-59	Number of adults age 18-59 in the household	1.965 (0.015)
Adult>60	Number of adults age 60 and above in the household	0.165 (0.006)
Femhead	Dummy variable for female-headed household	0.261 (0.007)
Femratio	Number of females in the household divided by total number of household members	0.511 (0.003)
Other*	Dummy variable indicating that 6-13 year-old children are other relatives (1) and not own children (0) of the household head	0.107 (0.004)
AgeChild*	Age of children age 6-13 in years	9.307 (0.023)
SexChild*	Dummy variable for male (0) and female (1) children age 6-13	0.515 (0.006)
AgeAdult	Mean age of adult persons (age 18 and older) in the household	34.610 (0.162)
AgeAdultSq	Mean age squared	1333.183 (13.878)
AdultEdu	Mean years of schooling of adult persons in the household	5.151 (0.079)
Housindex	Housing index constructed by factor analysis based on information about floor, roof, wall, toilet, bathroom, source of drinking water, source of lighting, fuel for cooking (the lower the index, the lower the standard of housing)	-0.604 (0.018)
Urban	Dummy variable for rural (0) and urban (1) area	0.171 (0.114)
Central	Dummy variable for the Central region	0.316 (0.019)
West	Dummy variable for the Western region	0.244 (0.018)
East	Dummy variable for the Eastern region	0.257 (0.017)
North	Dummy variable for the Northern region	0.183 (0.017)
TransInd	Average transfer index	92.241 (0.775)
CapInd	Capacity index	1.634 (0.0429)

Source: Author's illustration.

Note: Numbers in brackets are standard errors. * indicates variables for which the means are for the subpopulation of all children aged 6-13. All other means are for the total number of households.

With regard to right-hand side variables, I include several household composition characteristics, namely the number of children of the age ranges 0-5 (*Child<5*), 6-12 (*Child6-12*), and 13-17 (*Child13-17*) as well as the number of adults aged 18-59 (*Adult18-59*), and 60 and above (*Adult>60*) in the household. I also control for female headship (*Femhead*) and for the ratio of females in the household (*Femratio*) in order to take gender issues into account. In the education demand function, I include a dummy variable for children who are reported to be other relatives, i.e. not own children of the household head (*Other*), assuming that these children are treated differently from own children. Human capital characteristics of household members are given by the mean number of schooling years (*EduAdult*), mean age (*AgeAdult*), and mean age squared (*AgeAdultSq*) of all persons of age 18 and above in the household.[13] In the education demand function, I also control for age (*AgeChild*) and sex (*SexChild*) of the child as well as for (the log of) per adult equivalent consumption (*LogCons*) in order to take differences along these lines into account.

With regard to physical assets owned by the household, I constructed an index for the standard of housing based on information on the type of floor, roof, wall, toilet, and bathroom as well as source of lighting, drinking water, and fuel for cooking (*Housindex*). Each of these elements was assigned a weight generated through factor analysis, by which I follow the practice of creating asset indices (Sahn and Stifel, 2000; Stifel and Sahn, 2003). The index ranges from -1.423 to 0.648, with lower values indicating a lower standard of housing. An urban dummy variable (*Urban*) as well as dummy variables for the four administrative regions (*Central*, *West*, *East*, *North*) are included to control for regional differences. The variables that capture information about the capacity of district governments are the average transfer index (*TransInd*) and the composite capacity index (*CapInd*).

5. A Note on the Endogeneity of Capacity

I have so far ignored the question of whether the identified capacity variables are truly exogenous or rather endogenous variables. If they were not exogenous but influenced by certain attributes of the districts, which also have an effect on household welfare, simple estimates of the effect of capacity would be biased. Before conducting the estimations, I

[13] I attempted to define education and age variables for males and females separately but this left me with missing data for a considerable number of households, in which there is either no adult male or no adult female. The problem even persisted when I extended the definition of adults to include all persons of age 10 and above. For the education demand function, I would have preferred to use parental education instead of adult education but there is no question on the educational attainment of parents in the UNHS II. I am also not able to create such a variable myself since it is not always clear whether the parents of a particular child live in the same household.

therefore dedicate this section to identifying potential influential factors of the average ratio of district to national per capita transfers as well as the technical and administrative capacity of district governments.

As far as the level of intergovernmental transfers to district governments is concerned, it would be implausible to assume that these transfers were determined randomly. Transfers are presumably calculated according to allocation formulae, or if this is not the case, they are more likely to be allocated in accordance with the power structures in relevant central government institutions than randomly. In Uganda, formal allocation formulae for the distribution of intergovernmental transfers are in place, which potentially reduce (but do not eliminate) the chances for patronage in this context. I here assume that the formulae provide the only determinants of the level of intergovernmental transfers and that patronage does not play a role. Population size, district area, different welfare indicators, and the size of the payroll are determinants that can be directly derived from the allocation formulae. Larger districts in terms of population and area, districts with worse welfare indicators, and districts with a higher number of civil servants can be expected to receive higher (per capita) transfers from the centre than their counterparts.

Hence, I regress the average transfer index on (log of) population size in 1991, (log of) district area, the number of primary schools and health units per 100,000 inhabitants at the beginning of the 1990s, the existence of an overland road, average school enrolment per district in 1992, average consumption per district in 1992, and regional background (i.e. Central, Western, Eastern, Northern).[14] I include a dummy for Kampala in order to take the special standing of the capital vis-à-vis the rest of the country into account. I restrict myself to data for the pre-decentralisation period in order to avoid the risk that the district attributes have been influenced by decentralisation. It turns out that the number of schools and health units as well as average consumption and enrolment are positively and significantly associated with the average transfer index, while the Central, Western, Eastern, and Kampala dummies are negatively and significantly associated with it.[15] The other variables (population, area, road) are insignificant. Testing for joint significance of population, area and road turns out that the null hypothesis of joint insignificance can be rejected at the 10 percent level. Hence, at least one of these variables exerts significant influence on the average transfer index. Testing for joint significance of population and road alone reveals that the null hypothesis cannot be rejected. This implies that these variables together are not significantly related with the index. Hence, the level of welfare in terms of schools, health units, initial school enrolment, and initial consumption, the re-

[14] I am unfortunately not able to include the size of the payroll due to lack of such data.
[15] The result of this estimation is not reported here but can be obtained from the author. The adjusted R^2 is 77.7.

gional background (including Kampala), and the area of districts appear to be important determinants of the average transfer index and are thus controlled for in the below estimation of the effect of this index on consumption and school enrolment.

The positive sign of the welfare indicators is surprising, as it suggests that the richer or more developed a district (i.e. the more schools and health units per 100,000 inhabitants, the higher initial consumption, and the higher initial school enrolment), the higher are per capita transfers to this district compared with national per capita transfers. In other words, those districts that are most advantaged receive above average per capita transfers. This is an entirely unexpected finding, as it is in contrast to what the allocation formulae for intergovernmental transfers suggest. It implies that everything else equal districts with better welfare indicators get more financial resources per capita than districts with worse welfare indicators, which carries an important counterproductive implication for poverty reduction. However, the Central, Western, and Eastern dummies are all negative and significant, implying that, ceteris paribus, districts in these regions are characterised by lower ratios of per capita transfers to national per capita transfers than Northern districts. Since the North is the most disadvantaged region, this effect has the potential to offset the previous effect, at least partly. Kampala, which is generally more advanced than the rest of the country, also received lower per capita transfers than the North on average.

Turning to the second capacity index, the level of technical and administrative capacity of district governments is likely to be influenced by certain attributes of the districts as well, although identifying potential determinants is not as straightforward as above. However, the initial education level in a district appears to be a plausible potential determinant, assuming that better educated local councillors and civil servants are more capable to fulfil their functions properly. In addition, during my field research in Uganda in April and May 2004 I was repeatedly told by my interview partners that there was a strong perceived relationship between the age of a district and its level of capacity. Districts that had already existed at the time of independence in 1962 or were formed in the following three decades were assumed to be more capable than younger districts since they had much longer experience in local government affairs, even if responsibilities were not devolved to the local level to the same extent as under decentralisation. Newly established districts in turn supposedly needed time to build their own organisational structures and working routines and hence would achieve high capacity levels only over time.

There is unfortunately no data on education levels at the district level for the pre-decentralisation period. School enrolment as used above is not a satisfying variable, as it indicates future but not current education levels of the local government workforce. In the absence of a better education variable, I nevertheless include school enrolment but add the district poverty headcount in 1992 as a proxy for education levels. Hence, I regress

the composite capacity index on the poverty headcount in 1992, school enrolment rate in 1992, and district age in 1992 (which is defined as the difference between 1992 and the year in which a district was established[16]).[17] It turns out that the poverty headcount is negatively and significantly associated with the capacity index, while district age is positively and significantly related with it. Initial enrolment is insignificant. This implies that everything else equal older as well as richer districts tend to be more capable than their counterparts. The positive sign of the age coefficient provides support for the statements of my interview partners. In the below regression of consumption and school enrolment, age and headcount are therefore used as control variables when the technical and administrative capacity of district governments serves as an independent variable.

The problem with this model is that it produces a relatively low adjusted R^2 of 22.0 indicating that about three quarters of the variation in capacity remain unexplained. This either points to weaknesses in the data, particularly the dependent variable, or to the omission of crucial explanatory variables, or to both. Adding additional variables, such as population size, area and others used in the regression of the average transfer index, does not increase the explanatory power of this model. As explained above, I make a strong assumption in the proposition that current capacity is an appropriate measure for the intensity of exposure to decentralisation, as it captures the level of initial capacity and increases in capacity. This may not be a realistic assumption and it may instead be the case that district governments experience gains and losses in capacity over time. If the capacity and the performance of district governments depended on the level of experience, commitment, and cooperation of individuals in key positions, the assumption could not be maintained. Local politicians and bureaucrats come and go, and hence, it is rather unlikely that there is a steady process of building up capacity. Yet, the level of experience, commitment, and cooperation of individuals are almost impossible to observe, implying that important explanatory variables remain omitted from the estimation. I therefore want to make it very clear that the below findings of estimating the effect of technical and administrative capacity on consumption and school enrolment must be interpreted with great caution.

[16] In order to calculate the age in 1992, I conducted an investigation into changes in the composition of districts over time. In particular, I retraced the year of establishment of districts and from which mother districts they were split. Those districts that had already existed during colonial times (i.e. the four kingdoms of Toro, Ankole, Bunyoro, and Buganda as well as the territory of Busoga) are considered to have been created in 1962, the year when Uganda became independent. Since the age variable must indicate the age of districts in 1992, those districts that were formed after 1992 are not taken into consideration. An exception is the district of Ntungamo, which was created in 1993, i.e. just before the introduction of the reform. Ntungamo underwent the entire decentralisation reform from the beginning, and I therefore include it here. The age variable indicating age in 1992 takes the value of zero for this district.

[17] I again do not report these regression results here but they can be obtained on request from the author.

6. Estimation results

In this section, I present the results for estimating equations (1) and (2), using the average transfer index first and the composite capacity index second as an indicator for the capacity of district governments. On the one hand, the level of financial resources is considered to be decisive to enable district governments to fulfil their functions in general and to provide an adequate level of services to the population in particular. I found in Table 1 that some districts received above average per capita transfers and others below average per capita transfers in all or most years of the period of interest. It is this variation that is used here in order to test the hypothesis that districts disposing of more financial resources are better able to implement decentralisation properly and ultimately to achieve higher household consumption levels and school enrolment. On the other hand, I test the hypothesis that the variation in the technical and administrative capacity of district governments matters for how districts are able to reap the benefits of the decentralisation reform. Technically and administratively more capable districts are assumed to achieve better outcomes in terms of household consumption and school enrolment.

Table 5 shows the OLS estimation results for the regression of per adult equivalent consumption. Column (1) reports the baseline estimation, i.e. the estimation of equation (1) without entering the capacity variable. I enter the average transfer index in column (2) and additionally include the above defined set of control variables in column (3). The baseline estimation reveals that the signs of the standard explanatory variables are in line with the literature and most are significant. Extra household members, except those above the age of 60, are significantly associated with a fall in per adult equivalent consumption although the magnitude of the effect may be somewhat exaggerated since the consumption aggregate used here does not allow for economies of scale. The finding that an extra child reduces per adult equivalent consumption by between 7 and 9 percent, while an extra adult reduces consumption by around 3 percent is puzzling, as children usually consume less than adults. An explanation could be that children in contrast to adults do not engage in income-earning activities. Hence, higher consumption requirements by an extra adult are partly offset by the additional income this adult brings into the household. An extra child, however, must be maintained by the income that is earned by the adults of the household.

Table 5: Effect of average transfers on household consumption

	(1) Basic estimation	*(2)With transfer index, without controls*	*(3) With transfer index, with controls*
Child<5	-0.0911	-0.0909	-0.0898
	(-11.49)***	(-11.50)***	(-11.47)***
Child6-12	-0.0803	-0.0806	-0.0805
	(-12.50)***	(-12.53)***	(-12.56)***
Child13-17	-0.0747	-0.0747	-0.0719
	(-7.78)***	(-7.79)***	(-7.65)***
Adult18-59	-0.0343	-0.0335	-0.0329
	(-3.20)***	(-3.13)***	(-3.17)***
Adult>60	-0.0279	-0.0282	-0.0288
	(-1.35)	(-1.36)	(-1.40)
Femhead	-0.0262	-0.0258	-0.0251
	(-1.26)	(-1.25)	(-1.24)
Femratio	0.1566	0.1560	0.1526
	(4.24)***	(4.22)***	(4.19)***
AgeAdult	0.0025	0.0024	0.0030
	(0.66)	(0.65)	(0.80)
AgeAdultSq	0.0000	0.0000	-0.0000
	(0.00)	(0.00)	(-0.12)
EduAdult	0.0565	0.0562	0.0550
	(20.23)***	(20.09)***	(20.30)***
Housindex	0.5158	0.5189	0.4924
	(21.33)***	(21.71)***	(20.65)***
Urban	0.0525	0.0610	0.0246
	(1.79)*	(2.14)**	(1.05)
Central	0.2432	0.2542	0.1110
	(7.18)***	(7.38)***	(2.65)***
West	0.1950	0.1986	0.1122
	(6.01)***	(6.09)***	(2.97)***
East	0.0910	0.0900	0.0264
	(2.93)***	(2.95)***	(0.74)
TransInd	-	0.0010	0.0009
		(1.69)*	(1.16)
Constant	10.0406	9.9464	6.4086
	(111.88)***	(93.12)***	(9.75)***
R^2	50.6	50.7	51.4
No. obs.	9,643	9,643	9,643

Source: Author's calculation.

Note: The dependent variable is log of household per adult equivalent consumption. Values are coefficient estimates (t-values in brackets). Calculation of standard errors takes the enumeration area cluster structure into account. The asterisks indicate level of significance: *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Whereas female headship is negatively but not significantly related with consumption, the coefficient on the ratio of females in the household is positive and significant. A 10 percentage points higher ratio of females in the household is related with 1.6 percent higher per adult equivalent consumption. This effect is low in magnitude but nevertheless visible and can imply different things. Females may simply have lower needs than males, or they may spend the household's resources more efficiently than men, for example by not wasting money on alcohol. Consumption increases significantly with the mean number of schooling years of adult household members as well as with the status of housing. One more year of schooling and an increase in the housing index of 0.1 is associated with slightly more than 5 percent higher consumption. To the extent that the number of schooling years captures information about the ability or efforts of adult household members, this effect may, however, be upwards biased. The urban dummy indicates that, everything else equal, households in urban areas have 5.2 percent higher consumption. Compared with the Northern region, consumption in the Central, Western, and Eastern regions is 24 percent, 19 percent, and 9 percent higher, respectively. This reflects the stark regional differences in Uganda, with the poverty headcount amounting to 22 percent in the Central region, 33 percent in the West, 46 percent in the East, and 63 percent in the North (UBOS, 2003). The coefficients on mean age and mean age squared are close to zero and not significant, implying that age of adult household members is not important for household consumption.

Introducing the average transfer index in column (2) does not change the coefficients of the other explanatory variables much. In column (3), however, the coefficients on the urban and the regional dummies become smaller, and residence in urban areas and the Eastern region are now insignificant. The coefficient on the average transfer index is positive as expected but only marginally significant in column (2) and insignificant in column (3). Without the inclusion of control variables, a higher index by 1 unit increases per adult equivalent consumption by 0.1 percent. This implies that for example households in districts that received average per capita transfers between 1996/97 and 2002/03 have 1 percent higher consumption than households in districts that received only 90 percent of average per capita transfers. The coefficient on the transfer index is slightly smaller in column (3) indictaing that the omission of control variables may overestimate the effect of the average ratio of district to national per capita transfers on household consumption, but as already mentioned this coefficient is not statistically significant.

Table 6 shows the multinomial logit estimation results for the regression of school enrolment. The non-enrolment category is defined as the base category. The other two categories (enrolment in public school and enrolment in private school) must therefore be interpreted in comparison with non-enrolment. As above, column (1) presents the baseline

estimation, which in this case refers to the estimation of equation (2) without the capacity term. Columns (2) and (3) show the regression results including the average transfer index, without and with the defined control variables, respectively. As column (1) reveals, the age of a child increases her likelihood of being enrolled in either public or private school vs. not being enrolled. With each additional year of age, a child is more likely to be enrolled in school, which suggests that children tend to enter school later than at the age of six. This is reflected in the high gross enrolment rate in primary schools in Uganda, which in 2002/03 amounted to 111 percent. As regards household composition, the number of pre-school-age children is positively related with the decision of sending children to public school vs. not sending them to school as well as sending children to private school vs. not sending them to school. This appears to be a plausible finding, as a mother is more likely to stay at home in households with many small children. There is therefore no need for children in the primary-school age to drop out of school in order to take care of their younger siblings. The number of children aged 13-17 and of adults aged 18-59 is negatively related with the decision of sending children to public school vs. not sending them to school.

Table 6: Effect of average transfers on school enrolment

	(1) Basic estimation		*(2)With transfer index, without controls*		*(3) With transfer index, withcontrols*	
	Public	*Private*	*Public*	*Private*	*Public*	*Private*
AgeChild	0.4090	0.2881	0.4135	0.2896	0.4239	0.2973
	(18.39)***	(11.02)***	(18.51)***	(11.02)***	(18.52)***	(11.12)***
SexChild	0.1196	0.1129	0.1138	0.1132	0.1109	0.1094
	(1.55)	(1.14)	(1.47)	(1.15)	(1.41)	(1.10)
Child<5	0.1124	0.1156	0.1102	0.1203	0.1112	0.1277
	(3.17)***	(2.13)**	(3.09)***	(2.22)**	(3.12)***	(2.40)**
Child6-12	0.0057	0.0190	0.0026	0.0180	0.0053	0.0193
	(0.16)	(0.38)	(0.08)	(0.36)	(0.16)	(0.40)
Child13-17	-0.0736	-0.0343	-0.0771	-0.0349	-0.0945	-0.0381
	(-1.98)**	(-0.65)	(-2.09)**	(-0.66)	(-2.52)**	(-0.73)
Adult18-59	-0.0762	0.0654	-0.0563	0.0728	-0.0432	0.0809
	(-1.81)*	(1.20)	(-1.34)	(1.34)	(-1.02)	(1.49)
Adult>60	0.0611	-0.1946	0.0546	-0.1821	0.0740	-0.1659
	(0.62)	(-1.37)	(0.56)	(-1.30)	(0.77)	(-1.19)
Femhead	0.1218	0.1110	0.1477	0.1137	0.1754	0.1173
	(1.23)	(0.76)	(1.49)	(0.78)	(1.75)*	(0.80)
Femratio	-0.3900	-0.5155	-0.4045	-0.5397	-0.3341	-0.4688
	(-1.52)	(-1.34)	(-1.60)	(-1.40)	(-1.33)	(-1.23)
Other	-0.0463	-0.1828	-0.0427	-0.1778	-0.0577	-0.1891
	(-0.36)	(-1.07)	(-0.32)	(-1.04)	(-0.44)	(-1.11)
EduAdult	0.0867	0.0939	0.0758	0.0865	0.0625	0.0737
	(5.35)***	(3.90)***	(4.78)***	(3.65)***	(3.90)***	(3.08)***
Housindex	0.1254	0.7756	0.1648	0.7800	0.1808	0.7909
	(1.14)	(4.88)***	(1.48)	(4.90)***	(1.61)	(5.03)***
LogCons	0.2489	0.8277	0.2074	0.7927	0.1805	0.7610
	(2.86)***	(7.12)***	(2.41)**	(6.91)***	(2.08)**	(6.63)***
Urban	-0.5563	0.1356	-0.4798	0.1019	-0.4032	0.0494
	(-4.95)***	(0.83)	(-4.27)***	(0.64)	(-3.72)***	(0.34)
Central	-0.3052	1.3281	-0.0902	1.2767	-0.6603	0.5890
	(-2.74)***	(6.57)***	(-0.77)	(6.21)***	(-3.50)***	(1.92)*
West	0.4833	0.8554	0.5702	0.7983	0.1866	0.4489
	(4.08)***	(3.87)***	(4.75)***	(3.62)***	(1.01)	(1.52)
East	0.8413	0.5783	0.8889	0.5538	0.2810	-0.0511
	(7.53)***	(2.47)**	(7.80)***	(2.39)**	(1.70)*	(-0.17)
TransInd	-	-	0.0213	0.0014	0.0080	-0.0088
			(6.95)***	(0.32)	(1.88)*	(-1.59)
Constant	-4.6882	-11.7540	-6.3448	-11.4669	7.8859	-6.1114
	(-5.24)***	(-9.75)***	(-6.87)***	(-9.21)***	(2.58)***	(-1.42)
No. obs.	12,640		12,640		12,640	

Source: Author's calculation.

Note: The dependent variable is children's enrolment in public school, private school, no school. Not enrolled is the base category. Values are coefficient estimates (t-values in brackets). Calculation of standard errors takes the household cluster structure into account. The asterisks indicate level of significance: *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

In line with the literature on education demand, mean education of adult household members and the level of per adult equivalent consumption are positively and significantly associated with children's enrolment in both public and private school vs. non-enrolment. The status of housing is only positively and significantly associated with enrolment in private schools vs. non-enrolment. The urban dummy is negative and highly significant for public school enrolment vs. non-enrolment but positive and insignificant for private school enrolment. Everything else equal, children in urban areas have thus a lower probability of going to public school relative to not going to school than their rural counterparts. The included regional dummies are invariably positive and significant, except for the Central dummy in the case of public school enrolment vs. non-enrolment. Hence, children in the Western and Eastern regions are each more likely to be enrolled in either public or private school relative to not be enrolled compared with children in the Northern region (which is the omitted regional dummy variable). Yet, children in the Central region display a lower probability of being enrolled in public school vs. not being enrolled but a higher probability of being enrolled in private school vs. not being enrolled compared with children in the North. Considering that the Central region is the most affluent of the four regions in Uganda, this finding suggests that there is a relationship between the level of development of a region and enrolment in different types of school. More advantaged regions, or rather households in more advantaged regions, seem to prefer private schools over public schools. The child's sex and relationship to the household head, the number of children aged 6-12 as well as the number of elderly people in the household, female headship, the ratio of females to males are not statistically significant determinants of school enrolment.

Adding the average transfer index in column (2) does not change the signs and levels of significance of the other explanatory variables dramatically. The only major difference in comparison with column (1) consists in the insignificance of the Central dummy in the case of public school enrolment vs. non-enrolment. The coefficient on the average transfer index is positive for both the public school enrolment category and the private school enrolment category, but it is significant only for the first. Hence, children in districts that receive a higher ratio of district to national per capita transfers are significantly more likely to go to public school than not to go to school compared with children in districts that receive a lower ratio. Private school enrolment relative to the alternative of non-enrolment is here not significantly related with the average transfer index. On the one hand, this underlines the hypothesis that districts with higher financial resources at their disposal achieve better outcomes in terms of children's enrolment in public schools. And on the other hand, it confirms that the capacity of district governments to fulfil their responsibilities does not significantly affect children's enrolment in private schools. Including the control variables in column (3) changes the results insofar as the coefficient on the index be-

comes marginally significant for the public school enrolment category and negative (but still insignificant) for the private school enrolment category.

I now turn to the estimation of the effect of technical and administrative capacity on household consumption and school enrolment. The estimation of equation (1) is again conducted first with the results being reported in Table 7 and the results of estimating equation (2) are shown in Table (8). Due to the fact that the capacity index is only identified for 50 out of 56 districts, the underlying dataset is of a different size than that in the previous estimation of the effect of districts' financial resources. I therefore report the results of the respective baseline estimations again in column (1) of Tables 7 and 8, even though the coefficients are likely to be similar to those in Tables 5 and 6. In column (2), I add the composite capacity index, and in column (3), I control for district age and poverty headcount in 1992, which were identified to be significantly associated with capacity. Column (1) of Table 7 reveals that although the underlying dataset is smaller than the one used in Table 5, the findings for the standard explanatory variables are largely comparable. The capacity index turns out to be positively associated with household consumption. This indicates that the higher the capacity of the district government, the higher is the level of consumption of households in the respective district. However, capacity is only marginally significant in column (2). When the control variables are included in column (3), the coefficient becomes insignificant.

Table 7: Effect of technical and administrative capacity on household consumption

	(1) Basic estimation	*(2) With capacity index, without controls*	*(3) With capacity index, with controls*
Child<5	-0.0861	-0.0859	-0.0863
	(-10.51)***	(-10.50)***	(-10.70)***
Child6-12	-0.0786	-0.0784	-0.0785
	(-12.46)***	(-12.48)***	(-12.56)***
Child13-17	-0.0676	-0.0675	-0.0661
	(-6.84)***	(-6.84)***	(-6.78)***
Adult18-59	-0.0378	-0.0379	-0.0364
	(-3.11)***	(-3.13)***	(-3.08)***
Adult>60	-0.0364	-0.0373	-0.0387
	(-1.62)	(-1.66)*	(-1.73)*
Femhead	-0.0296	-0.0303	-0.0305
	(-1.29)	(-1.32)	(-1.35)
Femratio	0.1376	0.1389	0.1389
	(3.47)***	(3.50)***	(3.52)***
AgeAdult	0.0005	0.0004	0.0005
	(0.14)	(0.12)	(0.14)
AgeAdultSq	0.0000	0.0000	0.0000
	(0.51)	(0.54)	(0.55)
EduAdult	0.0540	0.0540	0.0538
	(21.09)***	(21.15)***	(21.15)***
Housindex	0.5068	0.5040	0.4861
	(20.48)***	(20.43)***	(19.99)***
Urban	0.0226	0.0229	0.0261
	(0.93)	(0.94)	(1.11)
Central	0.2234	0.2136	0.1396
	(6.54)***	(6.32)***	(3.64)***
West	0.1881	0.1766	0.1367
	(5.78)***	(5.45)***	(4.10)***
East	0.0703	0.0711	0.0388
	(2.42)**	(2.44)**	(1.34)
CapInd	-	0.0181	0.0043
		(1.74)*	(0.38)
Constant	10.1113	10.0856	6.9507
	(119.95)***	(116.87)***	(10.09)***
R^2	43.6	43.6	44.1
No. obs.	8,706	8,706	8,706

Source: Author's calculation.

Note: The dependent variable is log of household per adult equivalent consumption. Values are coefficient estimates (t-values in brackets). Calculation of standard errors takes the enumeration area cluster structure into account. Control variables are district age, poverty headcount. The asterisks indicate level of significance: *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

Table 8 presents the results for estimating the education demand function. As above, the findings with regard to the standard set of explanatory variables are close to those in Table 6. Slight changes in the magnitude of the coefficients and the significance levels are natural given the different sample size. The capacity index has a positive and significant effect on children's likelihood of being enrolled in public school as well as private school relative to not being enrolled. This implies that children living in districts with more capable district governments are more likely to be enrolled in either public or private school compared with the alternative of not being enrolled, which supports the key hypothesis. The higher coefficient on the capacity index in column (3) indicates that omitting the control variables potentially underestimates the effect of capacity of district governments on children's school enrolment.

Table 8: Effect of technical and administrative capacity on school enrolment

	(1) Basic estimation		*(2) With capacity index, without controls*		*(3) With capacity index, with controls*	
	Public	*Private*	*Public*	*Private*	*Public*	*Private*
AgeChild	0.4329	0.3188	0.4331	0.3190	0.4356	0.3211
	(17.76)***	(11.42)***	(17.78)***	(11.44)***	(17.86)***	(11.52)***
SexChild	0.0860	0.1583	0.0855	0.1570	0.0923	0.1626
	(1.05)	(1.50)	(1.05)	(1.48)	(1.13)	(1.54)
Child<5	0.1195	0.1158	0.1189	0.1152	0.1217	0.1175
	(3.26)***	(2.06)**	(3.24)***	(2.04)**	(3.31)***	(2.09)**
Child6-12	-0.0069	-0.0292	-0.0039	-0.0263	-0.0038	-0.0266
	(-0.20)	(-0.56)	(-0.11)	(-0.50)	(-0.11)	(-0.51)
Child13-17	-0.1005	-0.0312	-0.1016	-0.0320	-0.1072	-0.0363
	(-2.65)***	(-0.53)	(-2.70)***	(-0.54)	(-2.84)***	(-0.62)
Adult18-59	-0.0613	0.0689	-0.0639	0.0665	-0.0710	0.0602
	(-1.35)	(1.12)	(-1.41)	(1.09)	(-1.56)	(0.99)
Adult>60	0.0529	-0.2300	0.0504	-0.2336	0.0555	-0.2286
	(0.54)	(-1.57)	(0.51)	(-1.59)	(0.57)	(-1.56)
Femhead	0.1429	0.0478	0.1344	0.0384	0.1395	0.0426
	(1.36)	(0.30)	(1.28)	(0.24)	(1.32)	(0.27)
Femratio	-0.2007	-0.4103	-0.1720	-0.3816	-0.1789	-0.3889
	(-0.76)	(-1.02)	(-0.65)	(-0.95)	(-0.68)	(-0.97)
Other	-0.0992	-0.2338	-0.0916	-0.2260	-0.1001	-0.2340
	(-0.74)	(-1.33)	(-0.69)	(-1.29)	(-0.76)	(-1.33)
EduAdult	0.0661	0.0750	0.0665	0.0753	0.0661	0.0751
	(3.94)***	(3.00)***	(3.99)***	(3.02)***	(3.94)***	(3.01)***
Housindex	0.1144	0.7490	0.0973	0.7321	0.1587	0.7853
	(0.99)	(4.52)***	(0.85)	(4.42)***	(1.35)	(4.72)***
LogConshh	0.2063	0.8293	0.1948	0.8188	0.2132	0.8325
	(2.30)**	(6.97)***	(2.18)**	(6.90)***	(2.38)**	(6.99)***
Urban	-0.3267	0.0361	-0.3074	0.0542	-0.3288	0.0379
	(-2.91)***	(0.24)	(-2.73)***	(0.36)	(-2.89)***	(0.25)
Central	-0.4098	1.1353	-0.4827	1.0467	-0.2613	1.2126
	(-3.41)***	(5.52)***	(-4.09)***	(4.71)***	(-1.79)*	(4.83)***
West	0.3366	0.6209	0.2557	0.5231	0.3912	0.6194
	(2.77)***	(2.75)***	(2.12)**	(2.12)**	(2.88)***	(2.41)**
East	0.6791	0.3959	0.6808	0.3918	0.77354	0.4568
	(5.87)***	(1.69)*	(5.86)***	(1.66)*	(6.13)***	(1.90)*
CapInd	-	-	0.1134	0.1333	0.1409	0.1548
			(2.54)**	(1.71)*	(3.02)***	(1.91)*
Constant	-4.3059	-11.6908	-4.3663	-11.7827	5.5287	-3.8935
	(-4.36)***	(-9.37)***	(-4.70)***	(-9.46)***	(1.89)*	(-0.91)
No. obs.	11,545		11,545		11,545	

Source: Author's calculation.

Note: The dependent variable is children's enrolment in public school, private school, no school. Not enrolled is the base category. Values are coefficient estimates (t-values in brackets). Calculation of standard errors takes the household cluster structure into account. Control variables are district age, poverty headcount. The asterisks indicate level of significance: *** significant at 1 percent, ** significant at 5 percent, * significant at 10 percent.

7. Conclusion

In this paper, I intended to add value to the discussion on the welfare effect of decentralisation. I did so by evaluating the impact of district governments' capacity on household consumption and children's school enrolment. The hypothesis underlying this analysis was that more capable local governments were better able to implement decentralisation and fulfil their devolved functions properly, which in turn led to higher consumption and school enrolment in their jurisdictions. Capacity was here measured by two different indicators. The first indicator is a ratio of district to average per capita intergovernmental transfers over a period of seven years, and the second indicator is a composite index capturing the elevel of technical and administrative capacity of district governments.

The estimation results provided for ambiguous conclusions. The association between the relative level of financial resources available to district governments and consumption turned out to be positive. Households living in districts, which received above average per capita transfers, thus appear to have higher consumption on average than households living in districts, which received below average per capita transfers. However, this result was only (marginally) significant when I did include a set of control variables that may have influenced the level of districts' financial resources. With regard to school enrolment, the decision of households to send their children to public school compared with the alternative of not sending them to school is positively influenced by the relative level of financial resources of district governments. On the other hand, the decision to send children to private school compared with the alternative of not sending them to school is not significantly related with the average transfer index. As far as the level of technical and administrative capacity is concerned, consumption at the household level is positively associated with capacity, but again, this effect is only significant when the controls are not included. However, there was a positive and statistically significant relationship between technical and administrative capacity and the decision of households to send their children to either public or private school vs. non-enrolment.

By and large, the signs of the estimation coefficients provide support for the working hypothesis. Districts with more capable local governments, which are here regarded to be those with relatively higher financial resources at their disposal or a higher level of technical and administrative capabilities, achieve higher household consumption as well as higher enrolment in public schools than districts with less capable local governments. Yet, many of the findings are either not or only marginally statistically significant. The failure to obtain high levels of significance in several of the estimations might first be due to the fact that I here used data covering a 10-year time period, which could have simply been too short a period to get significant estimates. Second, it might also be due to the

specific measurement of capacity in this paper. Specifically, the average ratio of district to national per capita transfers is only one of several possible measures for the level of financial resources of local governments. If data on locally collected revenue, ideally for local levels below the district, were available, different indicators could have been used, which might have led to significant findings.

Third, the composite capacity measure I used was based on a very strict assumption that might not be in line with reality. I measured the current level of capacity, which supposedly captured the initial level of capacity in a district and any increases in capacity over time. I thereby assumed that capacity building was a unidirectional process and that local governments could only gain but not lose in their capacity levels. The findings from the estimation of the effect of capacity on welfare could have been very different, if it had been possible to identify a different measure of capacity. And lastly, it is well possible that the control variables used here are insufficient to eliminate a potential bias in the estimations and that other district variables should have been added. Yet, an important shortcoming of this project consisted in the fact that data, and especially administrative data, at the district level for the period before 1992 is almost non-existent in Uganda. During my field research, I intended to obtain such information as staff levels in district governments and local revenue for the pre-decentralisation period but my attempts remained largely fruitless. In sum, I suggest that there is scope for much further research on the relationship between decentralisation and/or the capacity of local governments and welfare by applying different indicators, focusing on other countries and regions, and capturing longer time periods.

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