Tables and figures to:

Public Versus Private Production and Economies of Scale

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Table 1. Variable definitions

Name	Type
c	Annual cost in Danish Crowns (DKK) per school
$\mathbf{q} = (q^1, q^2, q^3)'$	Quality: q^1 (»high«), q^2 (»511«), q^3 (»assessed«)
$\mathbf{z} = (z^1, z^2, z^3)'$	Form of organization: z^1 (decentral municipal), z^2 (central municipal), z^3 (private)
s	School size in m^2
m	Vector of municipal characteristics

Note: The q's and z's are dummies, being 1 if the property is present and 0 otherwise.

Table 2. Cleaning qualities and forms of organization

	q^1, »high«	q^2, »511«	q^3, »assessed«	Sum
z^1: Decentral municipal	56	479	184	719
z^2: Central municipal	26	170	10	206
z^3: Private	22	107	27	156
Sum	104	756	221	1081

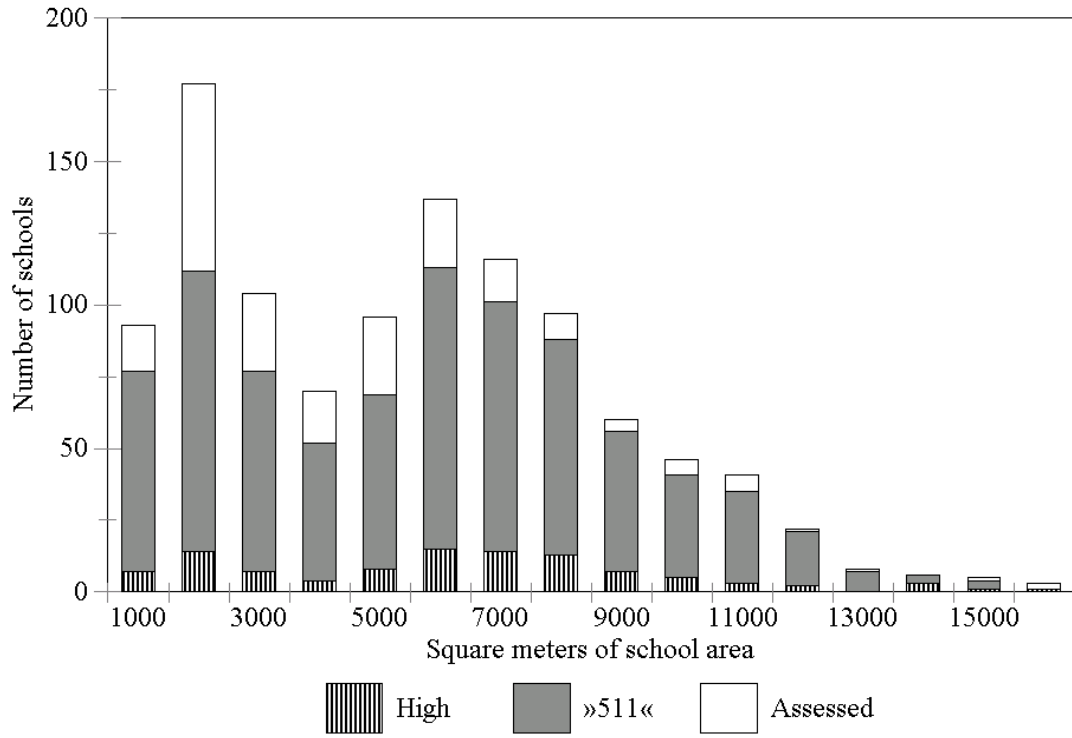Figure 1. The number of schools of different sizes and cleaning standards

Figure 2. Log to cleaning cost per m^2 as a function of Log to size for quality »511«.
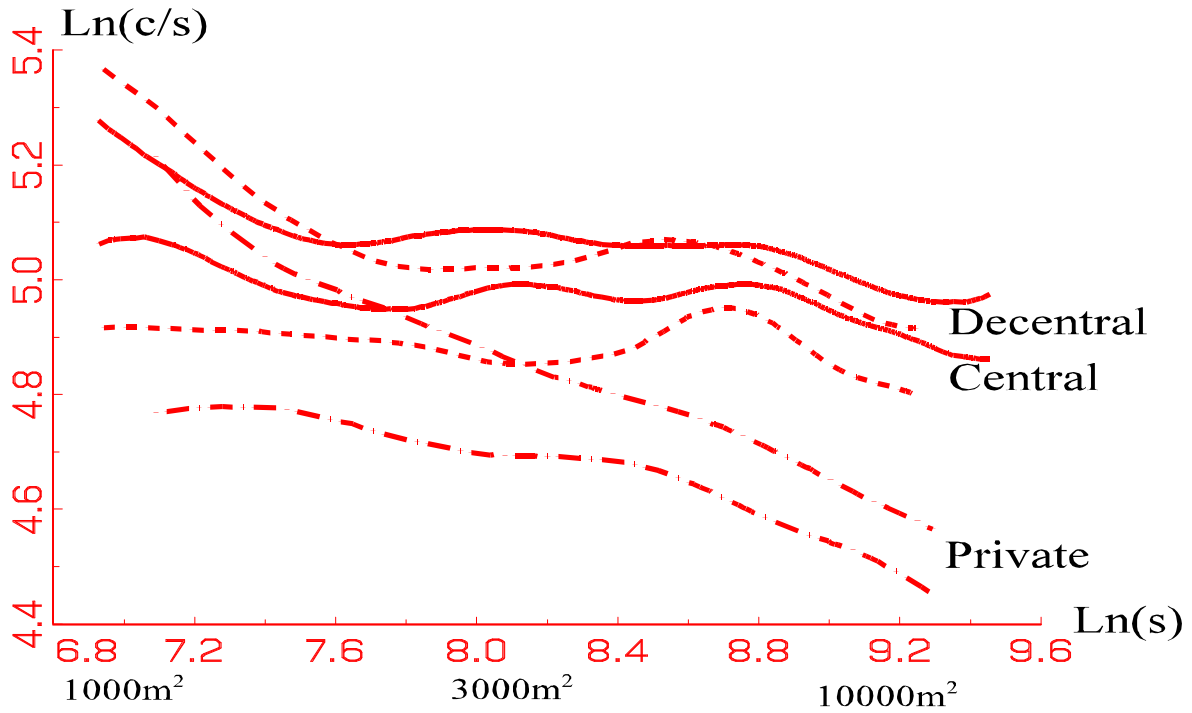
Table 3. Estimate of the model and a correction for the selection bias

Observations = 1064	Model (1)		Selection corrected	
Coefficient, variable	Estimate	Robust s.e.	Estimate	Robust s.e.
Selection correction	-	-	-0.0659	0.0975
Log average tax base	0.373	0.0629	0.329	0.0894
Log welfare coalition public[a)]	0.667	0.0656	0.651	0.0677
$"_1$ to z^1, decentral	1.20	0.394	1.51	0.598
$"_2$ to z^2, central	1.64	0.489	1.94	0.650
$"_3$ to z^3, private	5.45	0.359	5.68	0.468
$\$_1$ to $\ln(s_i)z^1$, slope decentral	-0.0803	0.0150	-0.0824	0.0158
$\$_2$ to $\ln(s_i)z^2$, slope central	-0.137	0.0288	-0.138	0.0290
$\$_3$ to $\ln(s_i)z^3$, slope private	-0.288	0.0260	-0.288	0.0259
$(_1$ to q^1, »high«	0.118	0.0266	0.117	0.0266
$(_2$ to q^2, »511«: set = 0	-	-	-	-
$(_3$ to q^3, »assessed«	-0.0477	0.0246	-0.0437	0.0264
Standard error, F	0.263			
	Test value	P-values		
Normality (Shapiro-Wilks)	0.97	0.000		
Heteroskedasticity 1, x^2	46.3	0.000		
Heteroskedasticity 2, x^2, xz	48.8	0.000		
RESET, pr^2, pr^3	1.49	0.475		

Note a. The variable became significant for public production only.

Figure 3. Cost functions for the three types of organization, and quality »511«
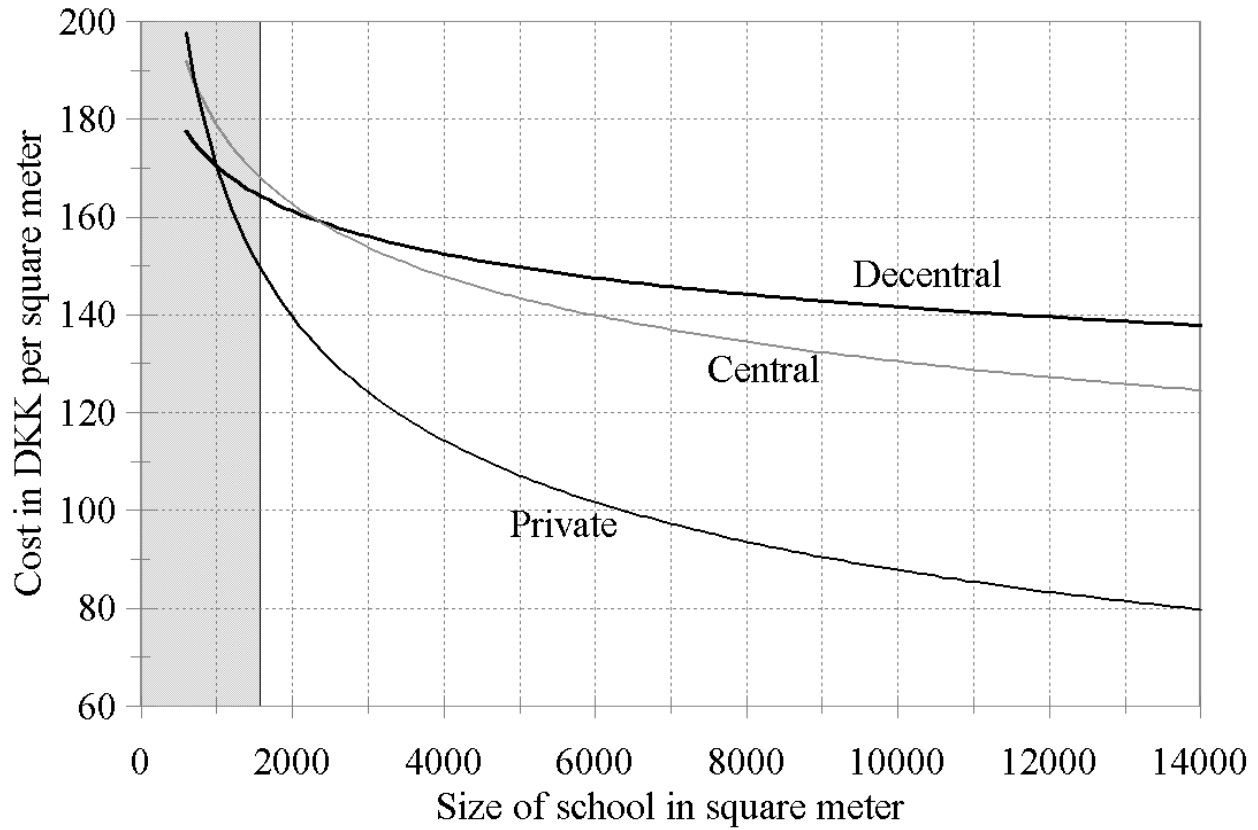
Note: The shaded area is the one of the mini-schools where the variance is very large. The vertical axis is the estimated costs in 1998 Danish kroner (DKK). The exchange rate is fixed to the Euro at ap. 7.46 DKK/Euro. To the US $ the exchange rate fluctuates around 8 DKK/$.

Table 4. The costs in DKK per year

School size, m^2	q^1: »high« quality			q^2: Quality »511«			q^3: »assessed« quality		
	2000	6000	12000	2000	6000	12000	2000	6000	12000
z^1: Mnp decen	181	166	157	161	148	140	154	141	133
z^2: Mnp centr	183	157	143	163	140	127	155	133	121
z^3: Private	157	115	94	140	102	83	133	97	79

Note: The exchange rate is fixed to the Euro at ap. 7.46 DKK/Euro.

Table 5. The effect of quality changes

	To »high«	To »511«	To »assessed«
From »high«		-11.1%	-15.3%
From »511«	12.5%		-4.7%
From »assessed«	18.0%	4.9%	

Note: Organizational form and municipal characteristics are kept constant.

Table 6. The effect of changing organizational form for the individual school

		To decentral	To central	To Private
From central municipal	2000 m^2	0.9%	-	13.4%
	6000 m^2	-5.5%	-	31.0%
	12000 m^2	-9.7%	-	40.3%
From decentral municipal	2000 m^2	-	-0.9%	16.5%
	6000 m^2	-	5.2%	37.5%
	12000 m^2	-	8.8%	52.7%

Note: Cleaning quality and municipal characteristics are kept constant.

Table 7. The effect of changing organizational form for the average municipality

Change for all schools	To decentral	To central	To private
From decentral		-5.3%	-29.6%
From central	5.6%		-25.7%
From private	42.0%	34.5%	

Note: Calculated or the average municipality as regards the sizes of its schools.

Figure 4. A model of the decision process of public savings

Costs
per m^2

Political pressures

Pressure line

Problems
& Protests

Result in
public sector

True minimum costs
unknown by decision-makers
found by market

School size (log)