



**Western Cape
Government**

Provincial Treasury

Education in South Africa:
A Descriptive Overview and Allocative Efficiency in the Western Cape

by

Fiscal Policy

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Motivation

- Provincial Equitable Share – Education Component

$$PES_i = \left[\frac{1}{2} \frac{S_i}{\sum_j (S_j)} + \frac{1}{2} \frac{q_i}{\sum_j (P_j)} \right] * ES_{education}$$
$$= \frac{1}{2} \left[\frac{S_i}{\sum_j (S_j)} + \frac{q_i}{\sum_j (P_j)} \right] * ES_{education} ;$$

where i = a particular province i

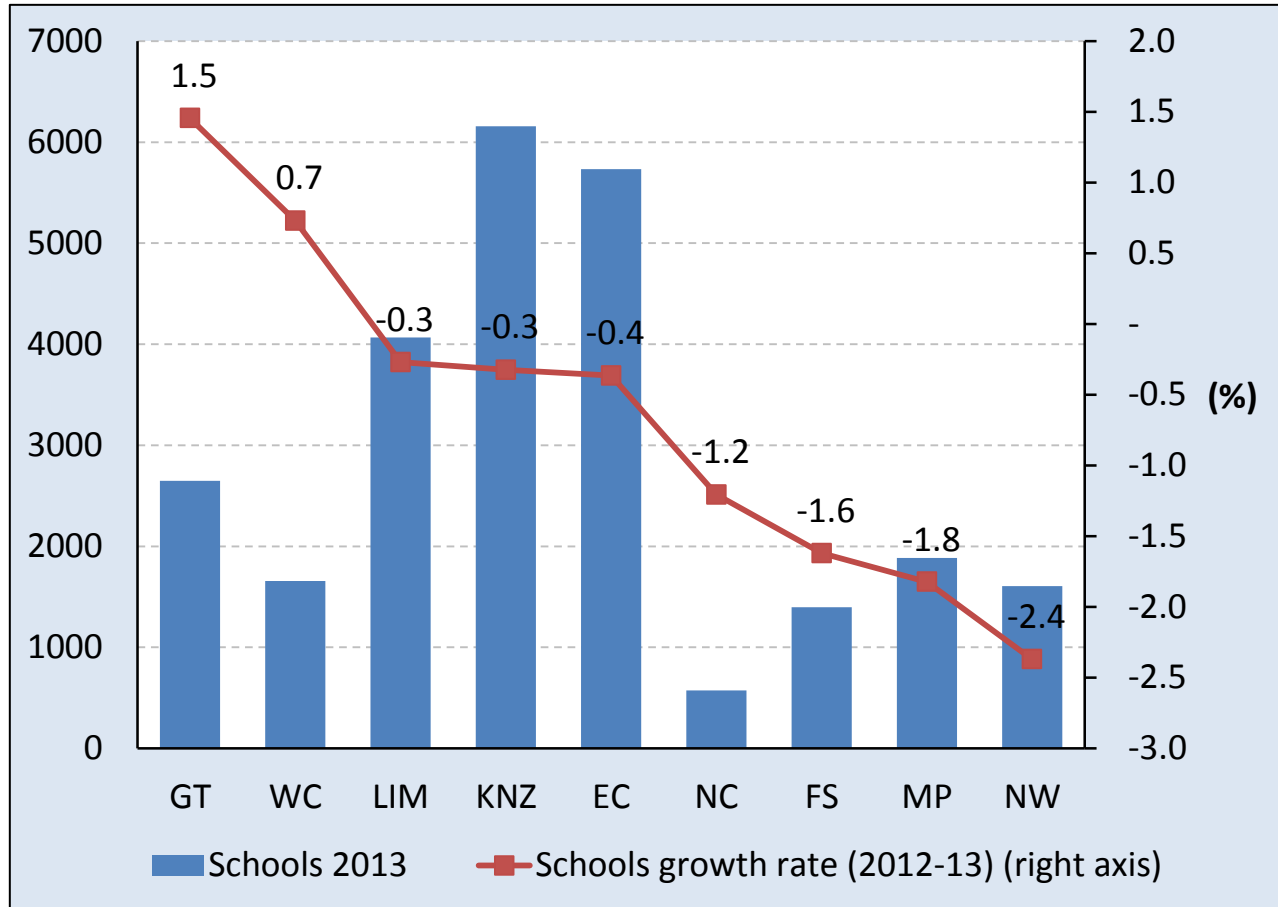
and $j = \forall$ provinces, including province i

- S_i is the primary and secondary school learners enrolled in the public ordinary schools, and q_i is the average school-age population between the ages 5 and 17.
- National Treasury uses EMIS-SNAP survey to decide 50% of the PES-Education component allocation.
- Roughly R14-R15 billion is at stake – Western Cape.

Overview - 3 objectives:

1. Descriptive overview of the EMIS-SNAP survey – schools and staff-mix etc.
2. To examine the data-consistency and reliability of the EMIS-SNAP survey – no weighting issues, just compatibility of the survey with administrative provincial school allocation (WCPT) and performance (WCED) datasets.
3. To investigate the quantity- as well as quality-efficiencies of schools in the Western Cape – searching for efficiency frontier and optimal efficiency (methodology tentative) Anscombe (1973).

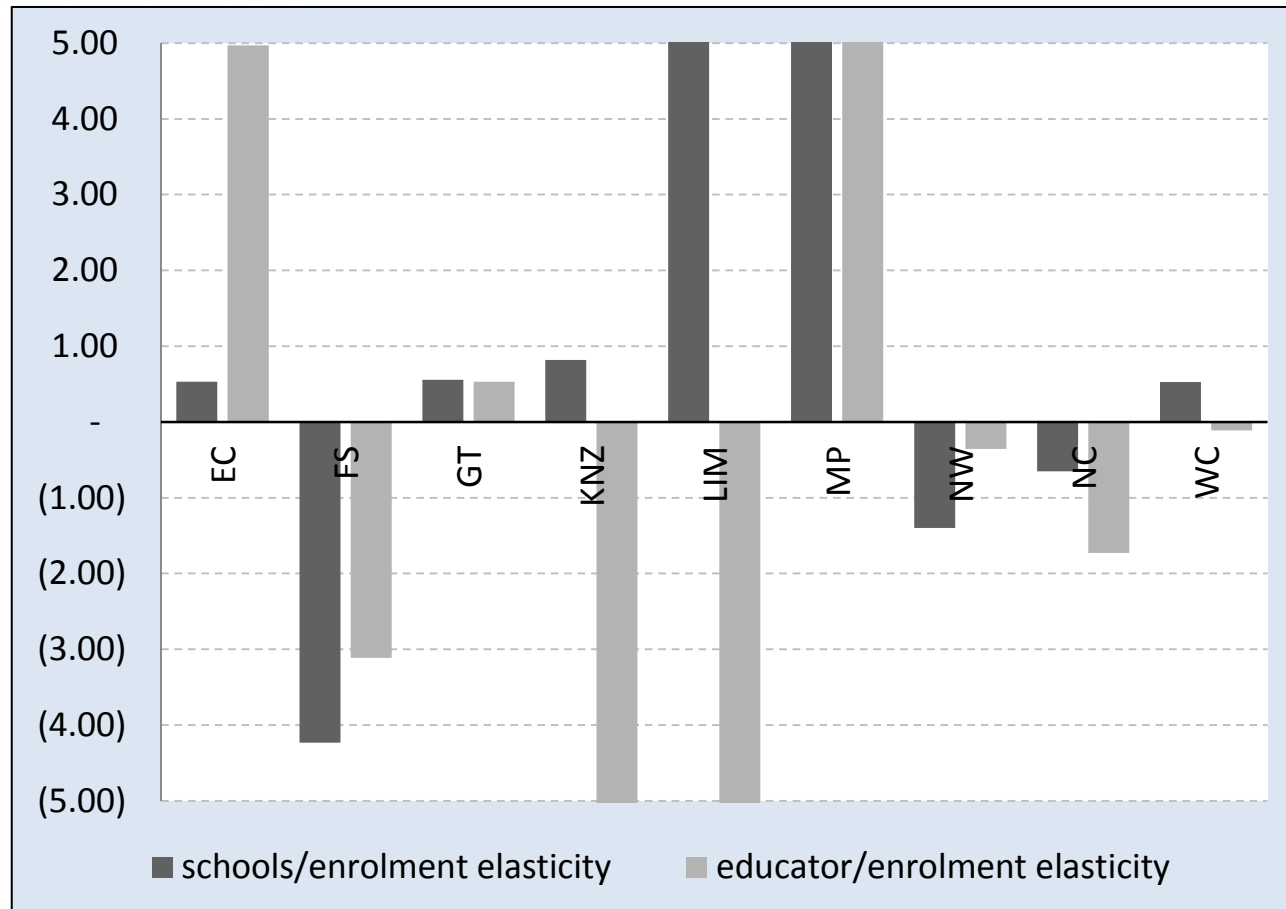
Obj. 1: Number and Growth rate of Schools by Province 2013 (2012-2013)



Source: EMIS SNAP (1997-2013); Own Calculation



Obj. 1: School- and Educator-Enrolment Elasticities, 2012-13



Source: EMIS-SNAP (2012-13), Own Calculations

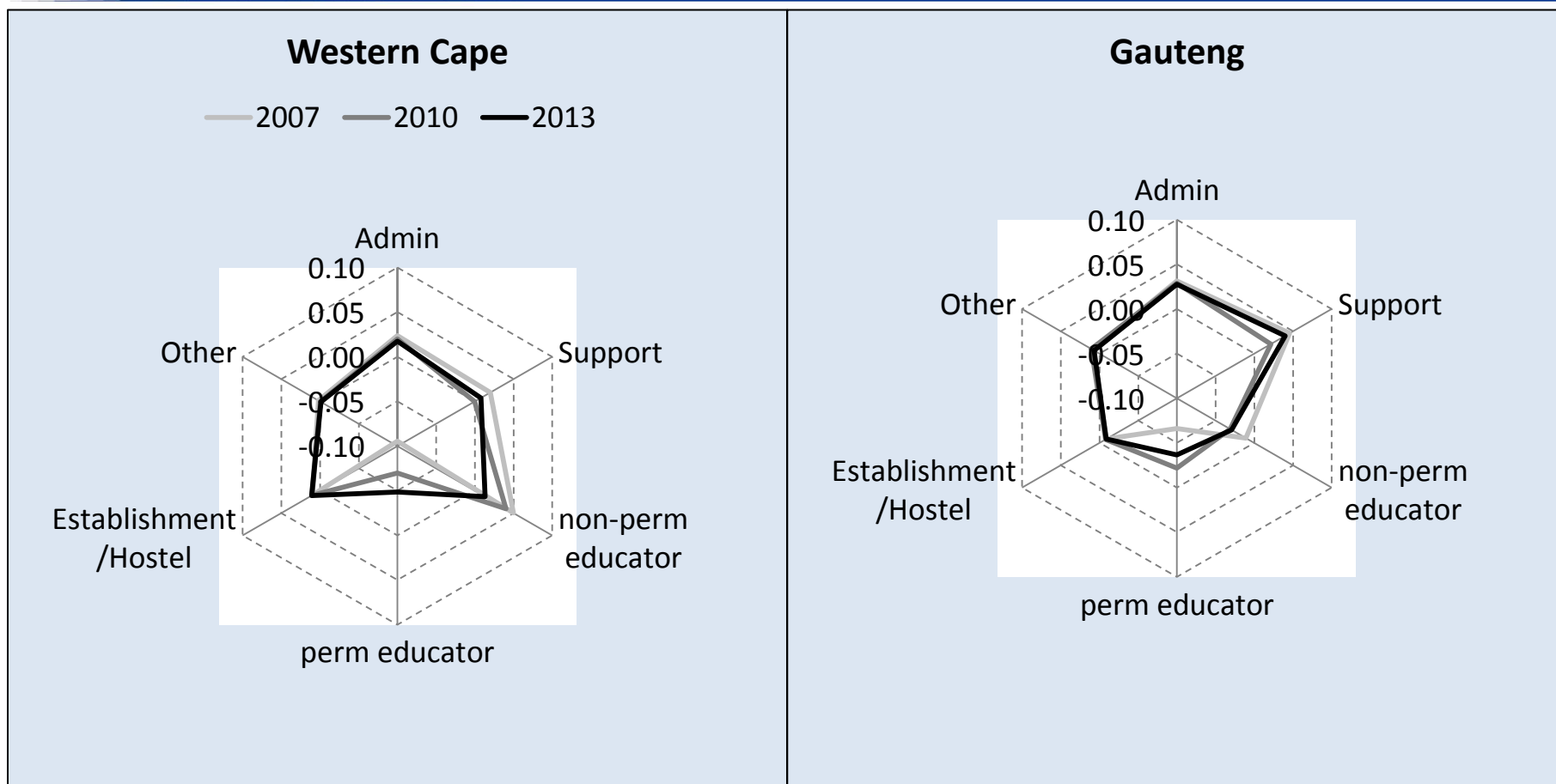
Note: See Appendix Table A 1 for the growth rates

Obj. 1: Enrolment, school and educator growth rates and enrolment per educator

Province	Enrolment growth rate (%)	School growth rate (%)	Educators growth rate (%)	Enrolment/Educator
Eastern Cape	-0.7	-0.4	-3.4	32
Free State	0.4	-1.6	-1.2	30
Gauteng	2.6	1.5	1.4	31
Kwazulu Natal	-0.4	-0.3	2.0	35
Limpopo	-0.0	-0.3	1.2	32
Mpumalanga	-0.2	-1.8	-2.5	33
North West	1.7	-2.4	-0.6	34
Northern Cape	1.8	-1.2	-3.2	37
Western Cape	1.4	0.7	-0.2	33

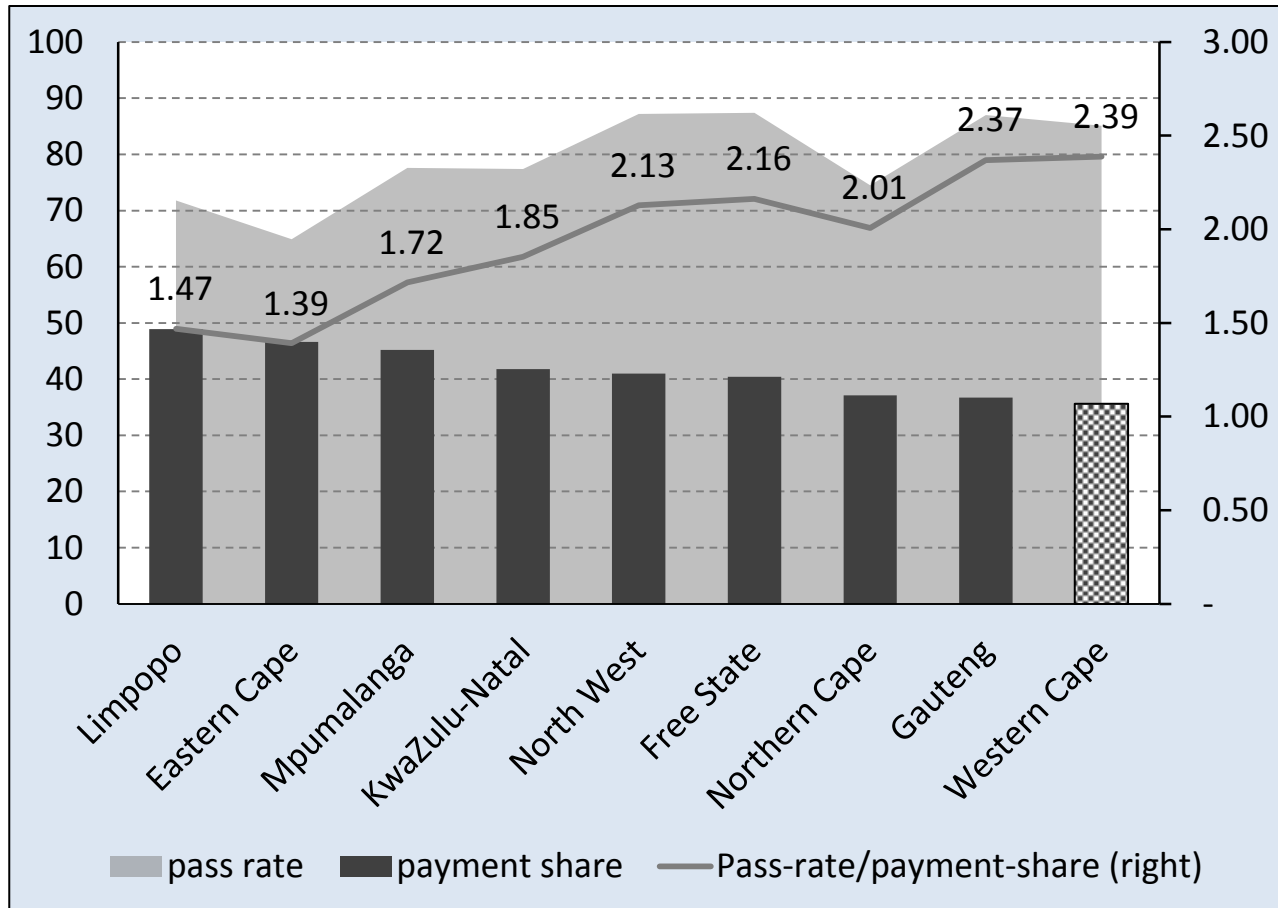
* The definition for an educator in the data is someone who is employed as a full-time, permanent educator.

Obj. 1: Difference in Proportion of Staff-types relative to National average by Province (%), 2007, 2010 and 2013



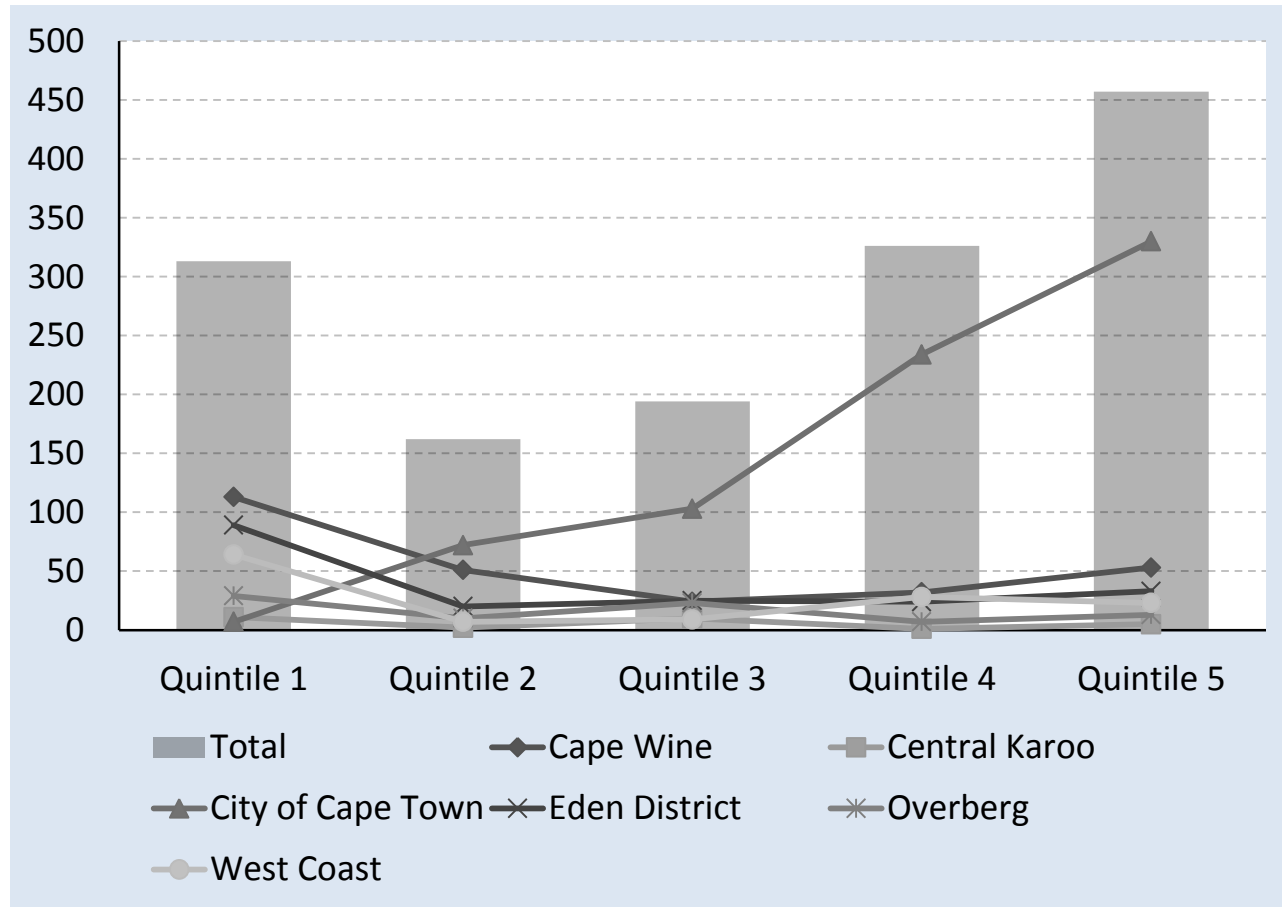
Source: EMIS-SNAPS (2013), Own calculations

Obj. 1: Education Spending vs. Matric Pass-rate Efficiency by Province



Source: Provincial Budget Overviews (2013), National Senior Certificate Examination Technical Report (2013).

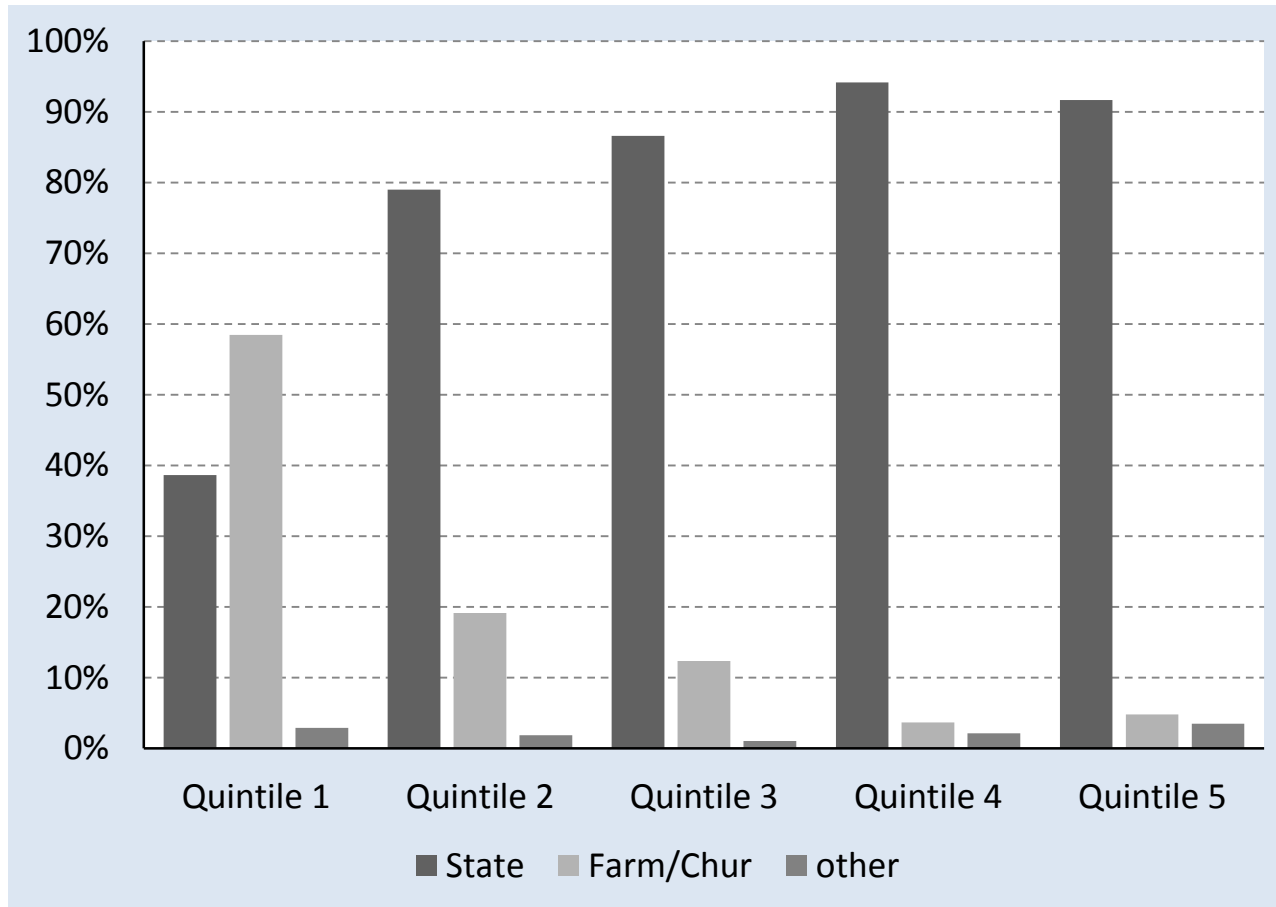
Obj. 1: Quintile-Schools by District Municipality 2013 - WC



Source: EMIS-SNAPS (2013), Own calculations

Note: Available quintile data only

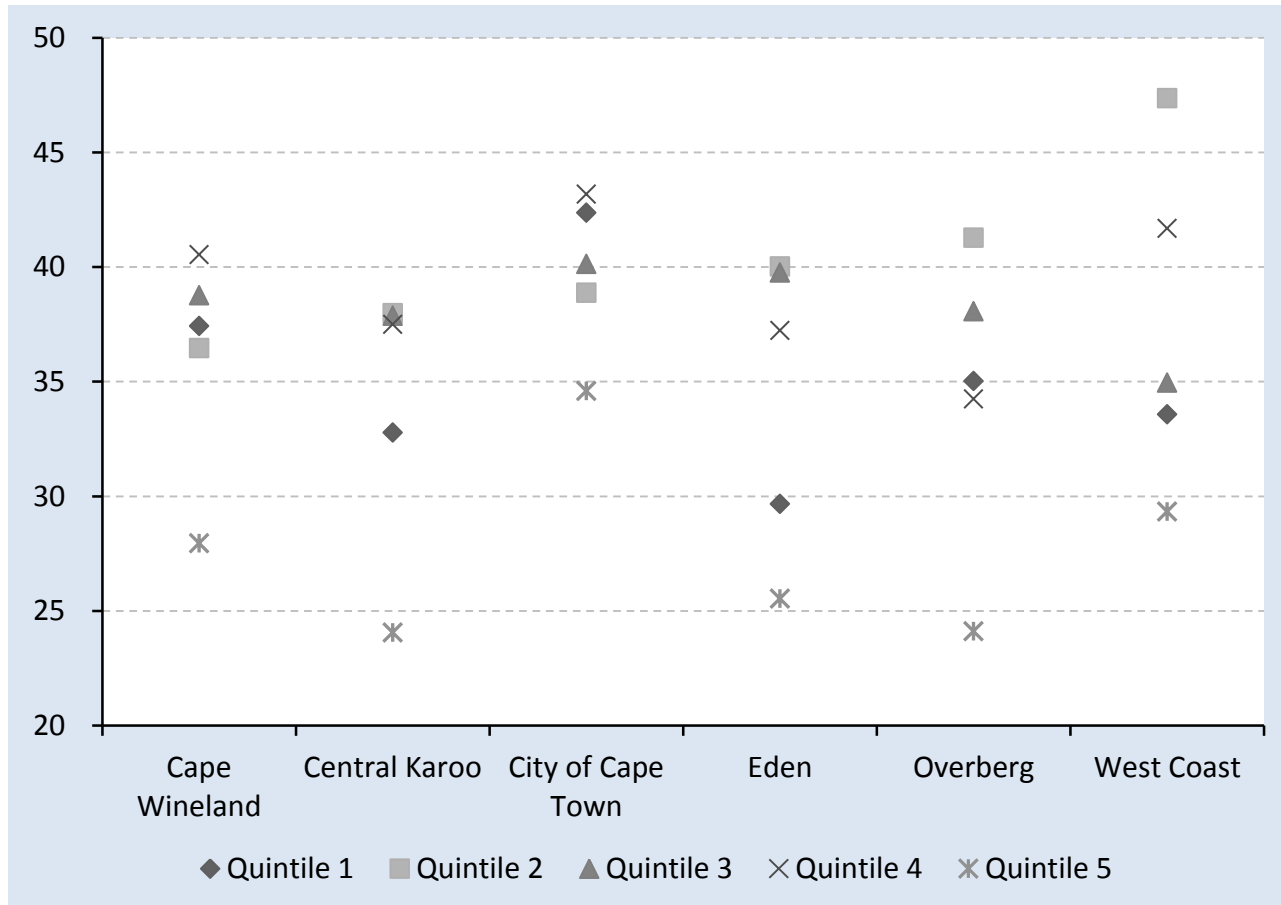
Obj. 1: Quintile-Schools Proportion by Ownership - WC



Source: EMIS-SNAPS (2013), Own calculations



Obj. 1: Average Enrolment per Educator in Districts by quintile, WC 2013



Source: EMIS SNAPS (2013); WCG Provincial Treasury: Public Finance (2014); Vulindlela (2013-14) & Own Calculation

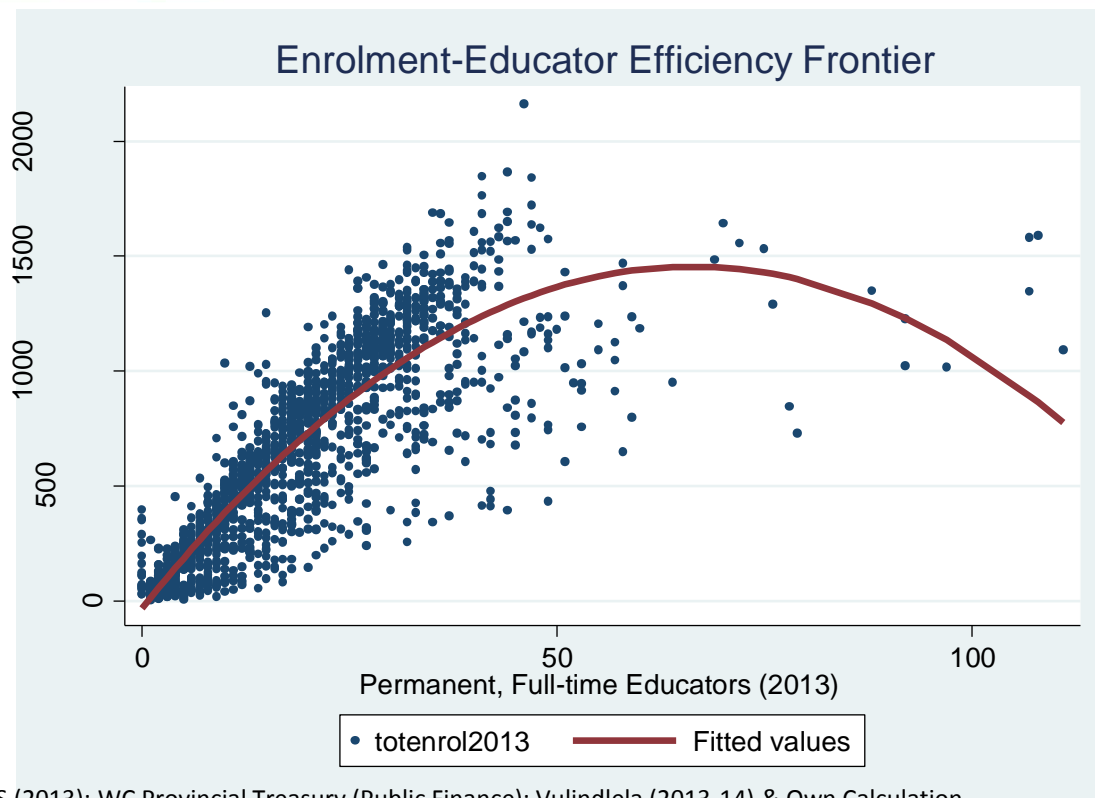


Obj. 2: Western Cape Education Expenditure and Enrolment (2013)

		Allocations		Enrolment	
	Number of Schools	Absolute (R'000)	Per cent (%)	Absolute	Per cent (%)
WC Schools (EMIS-SNAP)	1655	-	-	1 052 435	100.0
Schools not matched with school- allocations	111	-	-	29 785	2.8
Schools matched	1544	11 748 017	75.8	1 022 650	97.2
School-allocations not matched with EMIS	124	1 424 153	9.2	-	-
Non-School allocations	-	2 330 026	15.0	-	-
Total Allocation 2013-14	1668	15 502 196	100.0	-	-

Source: EMIS SNAPS (2013); WC Provincial Treasury (Public Finance); Vulindlela (2013-14) & Own Calculation

Obj. 3: Enrolment -Permanent, Full-time Educators Efficiency Frontier, WC (2013)



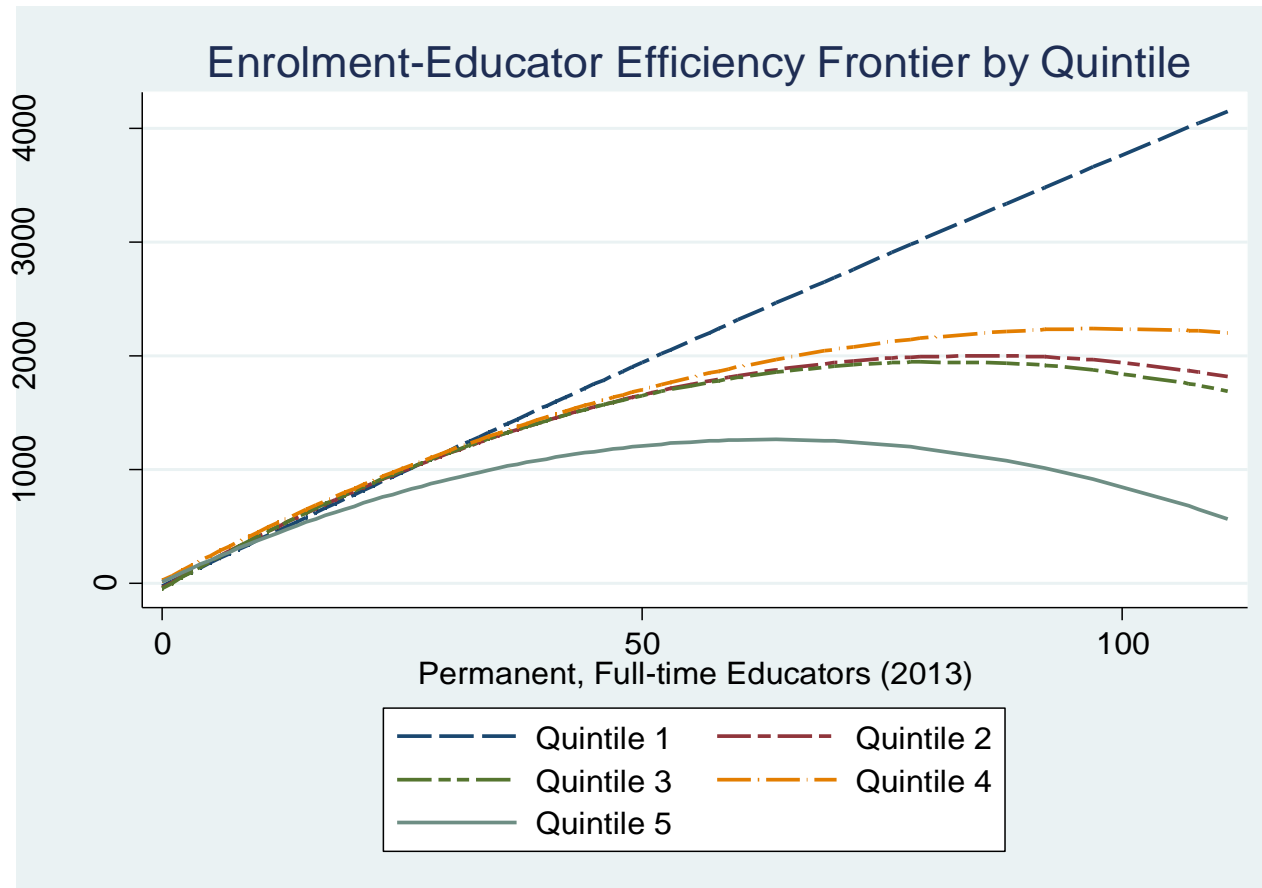
Source: EMIS SNAPS (2013); WC Provincial Treasury (Public Finance); Vulindlela (2013-14) & Own Calculation

Note: *** p<0.01, ** p<0.05, * p<0.1

$$Y = c + B_1X + B_2X^2 + e$$

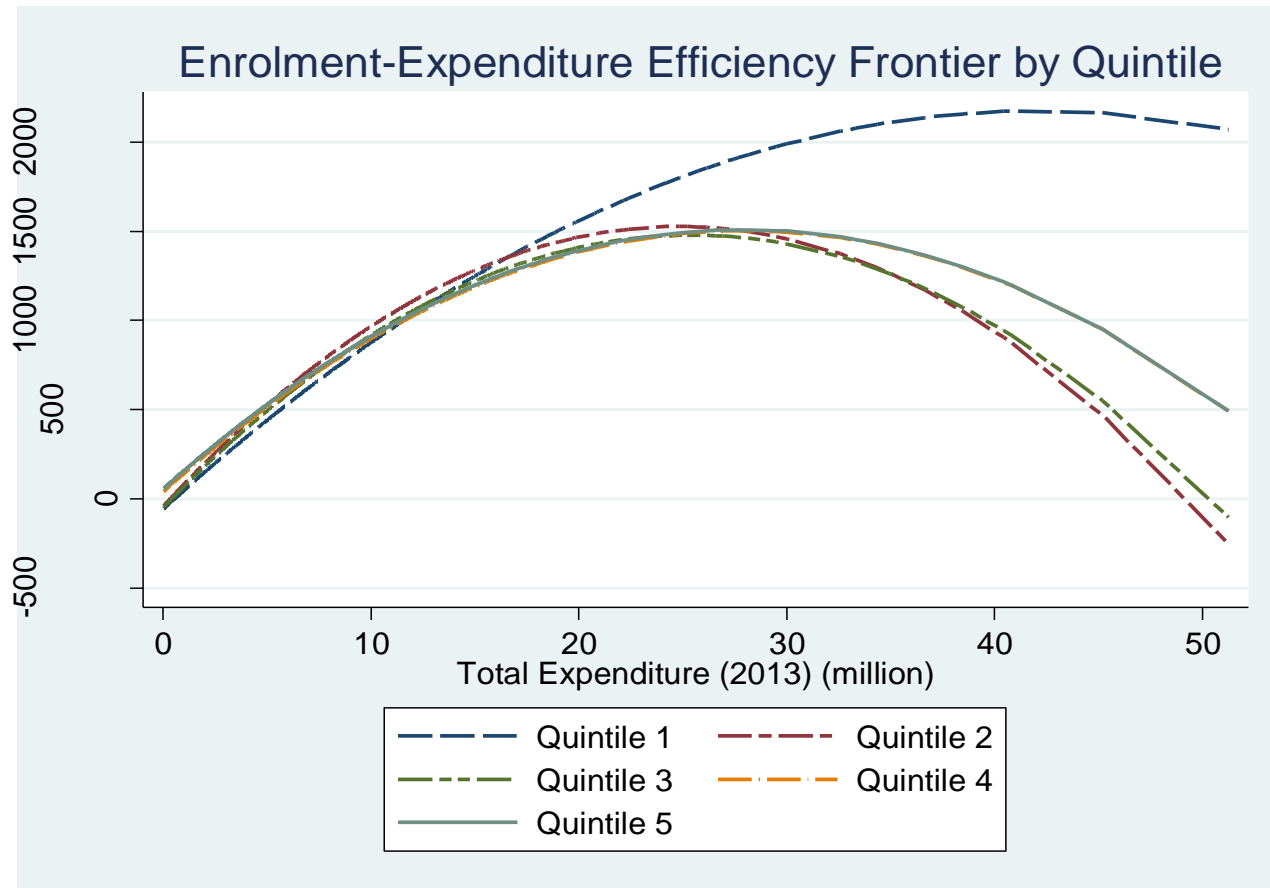
VARIABLES	enrol_educator
Perm. Educators	44.879***
Perm. Educators Squared	-0.339***
Constant	-30.759***
Observations	1,655
R-squared	0.762

Obj. 3: *Enrolment - Educators Efficiency Frontier by Quintile, WC (2013)*



Source: EMIS SNAPS (2013); WC Provincial Treasury (Public Finance); Vulindlela (2013-14) & Own Calculation

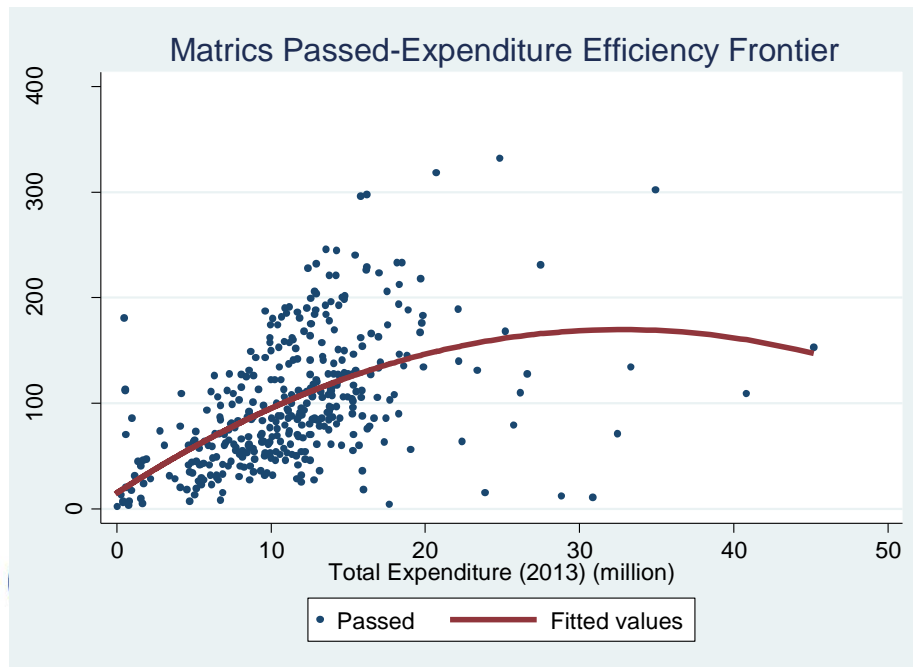
Obj. 3: Enrolment-Expenditure Efficiency Frontiers by School Quintile, WC (2013)



Source: EMIS SNAPS (2013); WC Provincial Treasury (Public Finance); Vulindlela (2013-14) & Own Calculation
Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

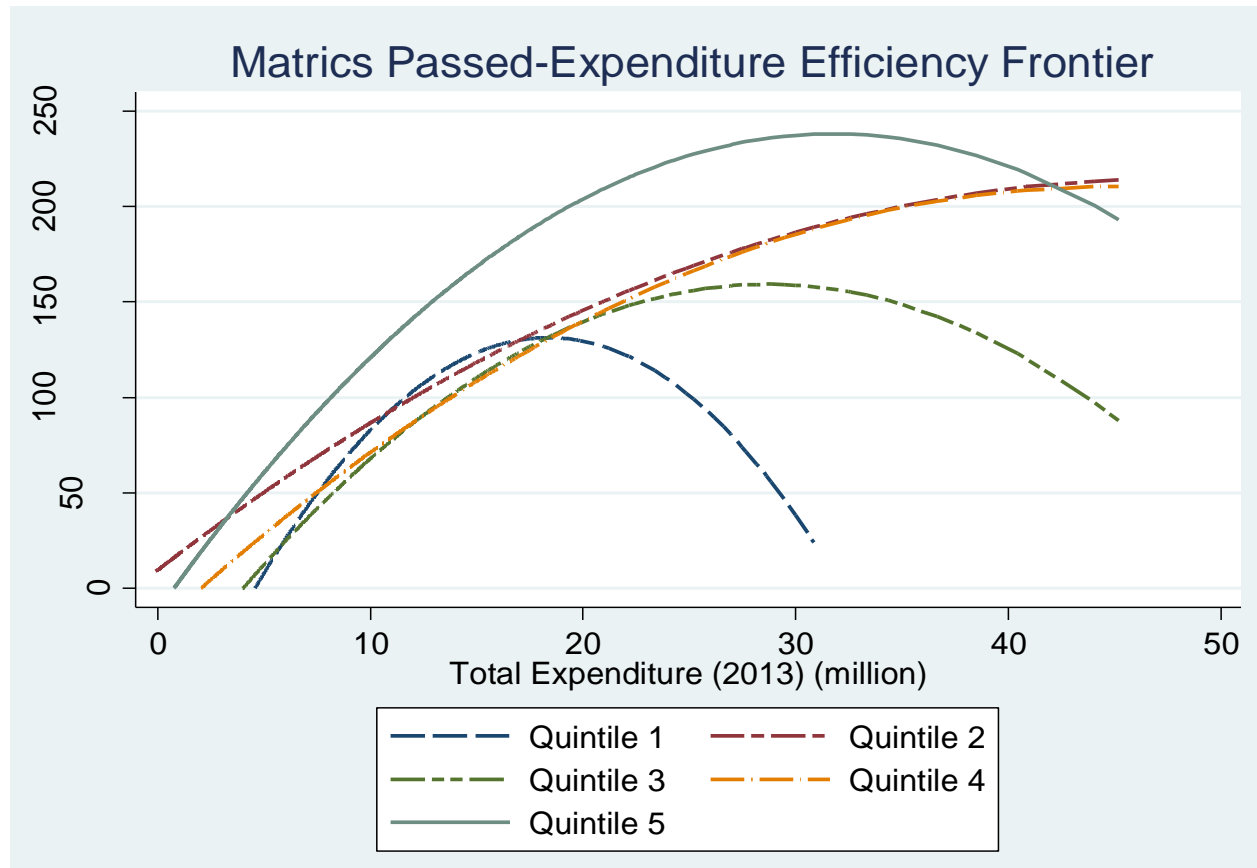
Obj. 2: Compatibility and Consistency of the WCED Passed Matric Data

		EMIS-SNAP		Total
		not matched	matched	
Provincial Treasury	not matched	2	38	40
	matched	11	380	391
Total		13	418	431



VARIABLES	Matric passed vs. Expenditure
Total Expenditure	9.470***
Total Expenditure Squared	-0.145***
Constant	14.931*
Observations	391
R-squared	0.277

Obj. 3: Matric Passed-Allocation Efficiency Frontiers by School Quintile, Western Cape (2013)



Source: WC Provincial Treasury (Public Finance); Vulindlela (2013-14); Western Cape Education Department & Own Calculation

(Lunch)

- Policy/Budget Allocation Implications
 - Clear quantity and quality-efficiency trade-off dilemma.
 - More scientific look at South Africa's quality education issues and allocative efficiencies.
 - Regression Tool - Simple and easy to use!
- Data: EMIS-SNAP survey dataset is fair, but we need to find those 'missing' schools and 'missing' schools that receive funding.