University of BRISTOL

Measuring school quality: developing a model of school effectiveness in sub-Saharan Africa

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Outline

- Research evidence on school effectiveness: key factors that enhance or hinder educational quality and school effectiveness in sub-Sarah countries
- Summary findings of SACMEQ II analyses

Research evidence on school effectiveness

- School effectiveness research in developed countries: *several models*
- School effectiveness research in developing countries: *a review of reviews*

Fuller and Clarke

Hanushek

Heneveld

Kellaghan and Greaney

Lockheed and Levin

Pennycuick

Scheerens

Velez *et al*

World Bank Primary Education Policy Paper, Boissiere (2004)

School effectiveness research in SSA countries: empirical studies (1990s – present)

- In-depth review of empirical studies: Strategies for searching and identifying literature: inclusion and exclusion criteria
- Empirical studies identified:

Abrha et al. in Ethiopia (1991)
Carrim and Shalem in South Africa (1999)
Eisemon et al. in Burundi (1993)
Fuller et al. in Botswana (1994)
Harber in South Africa (1999) and Tanzania (1993)
Lee and Lockheed in Nigeria (1990)
Lee et al. in 14 SACMEQ II school systems (2005)
Lloyd et al. in Kenya (2000)
Michaelowa in PASEC countries (2001)
Nyagura and Riddell in Zimbabwe (1991, 1993)
Urwick and Junaidu in Nigeria (1991)

Context matters

- What are the key factors of effective schools?
- Is there a universal “recipe” that the empirical studies and literature synthesis tried to come up?
- Transferability and *trans-national planting* of school effectiveness characteristics from one context to another?
- Fertig (2000: 395): *School effective research in developing countries needs to move towards a more contextual model, one which takes account of the internal processes within the school, the socio-economic, political and cultural contexts in which the organisation operates, and the perspectives which different stakeholder groups bring to bear on the activities of the school.*
- **Download the literature review** at (remain available until: Tue Sep 25 23:59:59 2007 UTC)

<https://www.bris.ac.uk/fluff/u/gy0660/2ZjEC6v6ujEUraG0RFQ94ArD/>

Summary findings of SACMEQ II analyses

(1) Descriptive statistics of SACMEQ dataset (total and by country)
(2) Types of models used – model A, B, E, G
(3) Student/home factors identified as being statistically significantly associated with literacy and numeracy
(4) School context factors identified as being statistically significantly associated with literacy and numeracy
(5) School and teacher process factors identified as being statistically significantly associated with literacy and numeracy
(6) Range and extent of school effects and how this changes across model A, E, G within Tanzania/Zanzibar and across all countries (and goodness of fit)
(7) Differential effects: literacy vs numeracy (correlation and plots) within Tanzania/Zanzibar and across all countries
(8) Further analyses: differential effects for different student groups (eg gender, socio-economic class); country comparisons & country specific models

SACMEQ II analyses

- www.sacmeq.org
- 14 school systems: Botswana, Kenya, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania mainland, Uganda, Zambia, Tanzania/Zanzibar
- 2294 schools
- 41686 Grade 6 students
- Reading and Mathematics
- Data on student and school characteristics

Types of models used: across the 14 countries (a consistent set of expls for Reading and Mathematics

- FIRST STEP: test each variable to see if it is significantly related to reading/mathematics test scores (standardized)
- SECOND STEP: test iteratively the significant variables found in FIRST STEP within several thematic blocks (see Heneveld's framework on school effectiveness)
- Model A: null
- Model B: pupil/home factors
- Model E: ~/B + school context factors
- Model G: ~/E + teacher process factors
- Model G+: ~/G + teacher subject knowledge (Note: South Africa and Mauritius did not have teacher knowledge data)

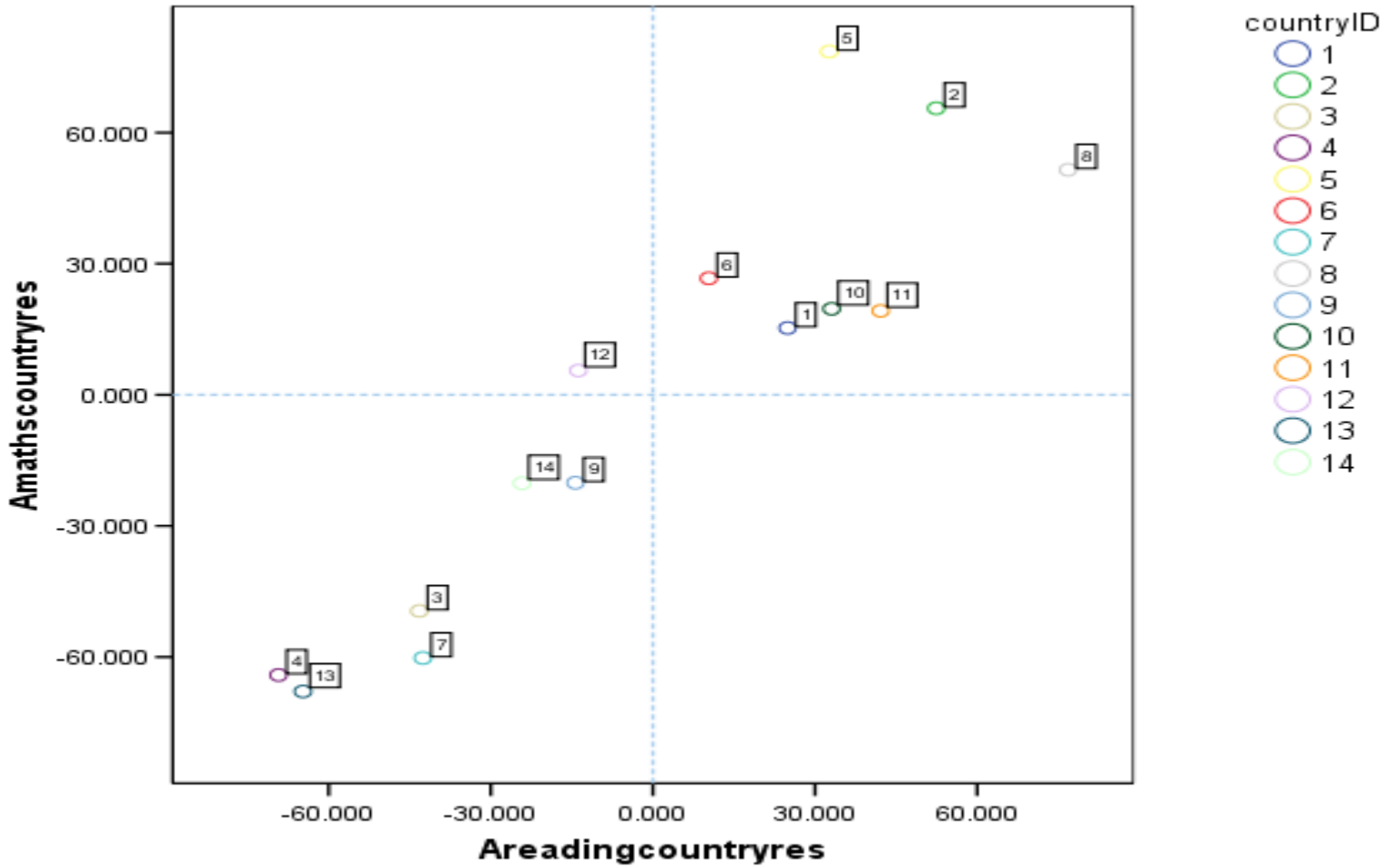
Model A in reading: cons and ICC schools (Table 9 in Working Paper No.1)

1. Bots	523.2	26.42	8.Seyc	580.5	9.2
2.Keny	550.9	43.75	9.SA	483.4	66.2
3.Leso	454.3	39.87	10Swz	531.5	35.1
4.Mala	427.8	29.15	11. Tz	540.6	31.6
5.Maur	531.2	26.08	12 Ug	484.0	58.5
6.Moz	508.5	30.42	13. Zm	432.7	31.1
7.Nam	541.7	30.84	14.Znb	473.5	27.0

Model A in maths: cons and ICC schools (Table 10 in Working Paper No. 1)

Bots	513.9	21.99	Seyc	553.2	8.88
Kenya	564.5	35.25	SA	478.1	63.02
Leso	448.6	29.87	Swazi	518.4	25.01
Malawi	433.8	14.77	Tz	517.9	24.9
Maurit	577.8	24.84	Ugan	504.1	62.88
Moza	525.3	20.5	Zam	430.3	20.28
Nam	437.9	55.0	Zanzib	487.0	33.79

Country residuals Model A: reading vs maths



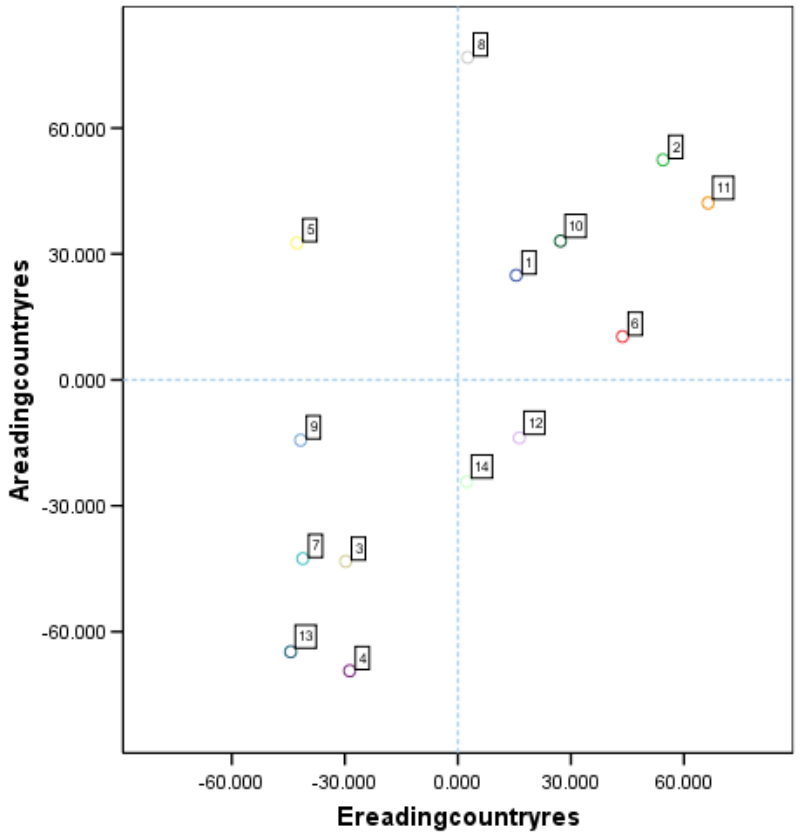
Model B: pupil/home factors (Refer to Tables 1 & 2 in Working Paper for statistics)

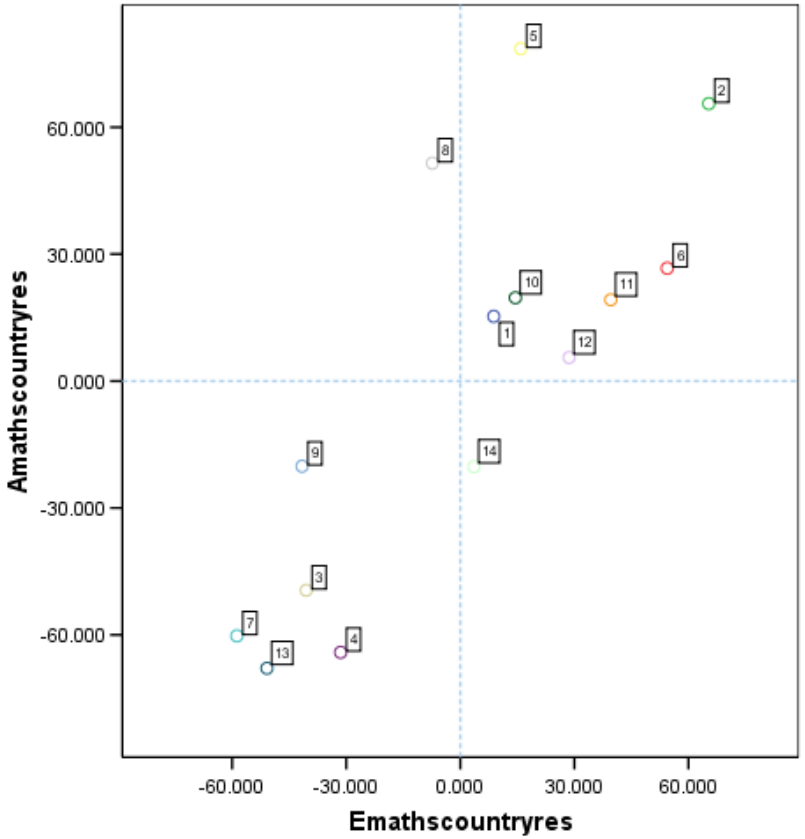
- **Age (-)**
- **Gender**
- **PEnglish**
- **Pstay (-)**
- **Pbookshm**
- **Pread, Plookwk, PquestR, Pquest, MPcalc,**
- **PextEng, PextMat, PextOTH,**
- **Pabsent, Pabwhy2, Pabwhy4, Pabwhy4, (-)**
- **Prepeat (-), Prepeat6**
- **ZPSES**

Model E: school context (refer to Tables 1 and 2 for statistics)

- After controlling Model B factors,
- Stype
- Location (large city, town, rural area)
- total number of pupils in the school (-)
- class size
- school average of zpses

Country residuals for R & M (models A and E)

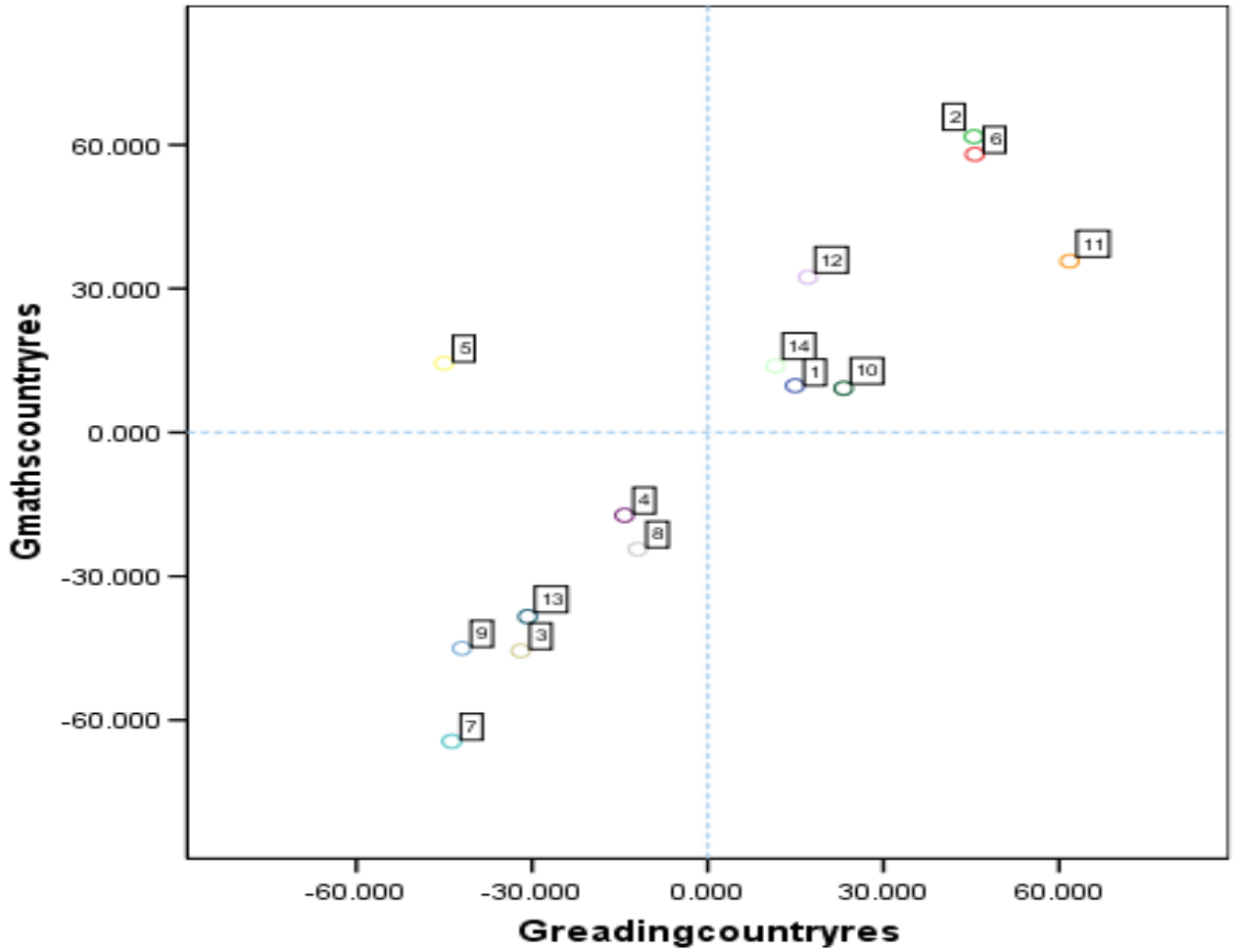




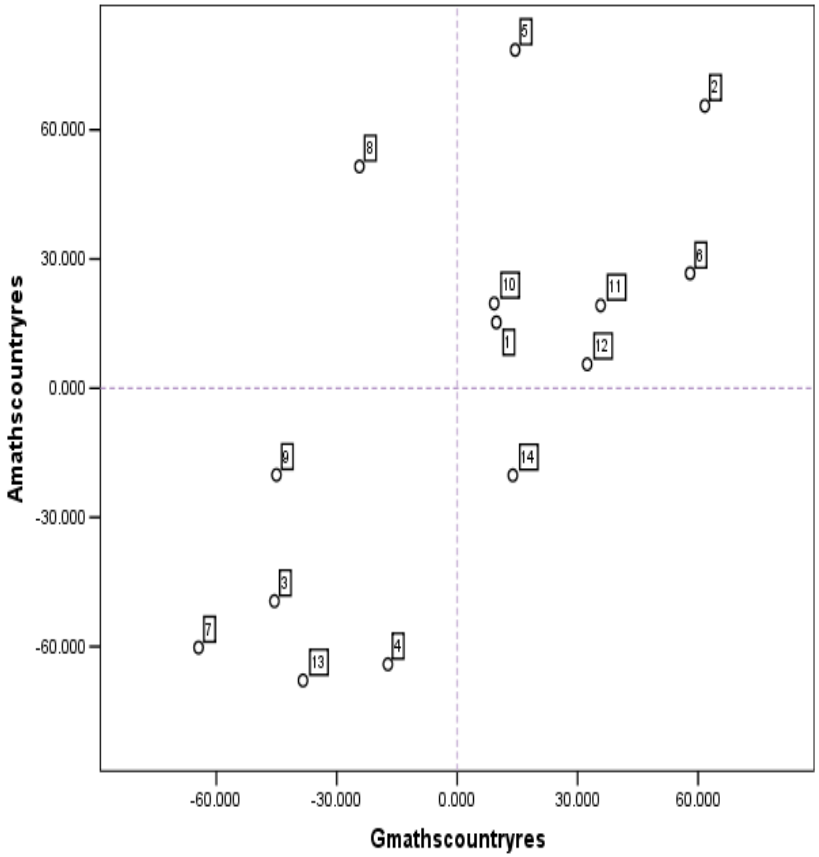
Model G (refer to Tables 1 & 2 for statistics)

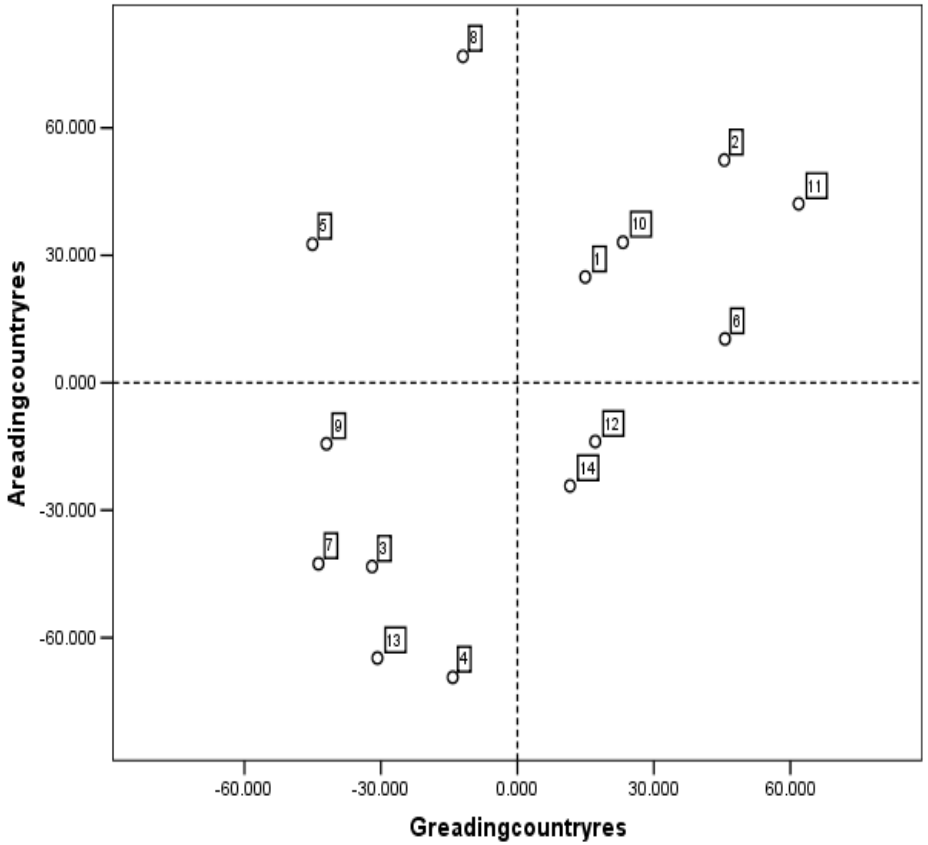
- After controlling factors in Model E
- Expl variables:
- **percentage of parents meeting teacher**
- **textbooks contributed by community**
- **exercise books, pencils, rulers, pens, sitting and writing places, zsrtot22, access to English dictionary,**
- **headteacher academic qualification, average teacher training years**
- **pupil and teacher absenteeism, pupil drop out (-),**
- **teacher academic qualification,**
- **teacher's views on the importance of travel distance to school, availability of school teaching house and salary level,**
- **homework**

Country residuals Model G: reading vs maths



Country residuals for R/M (models A and G)

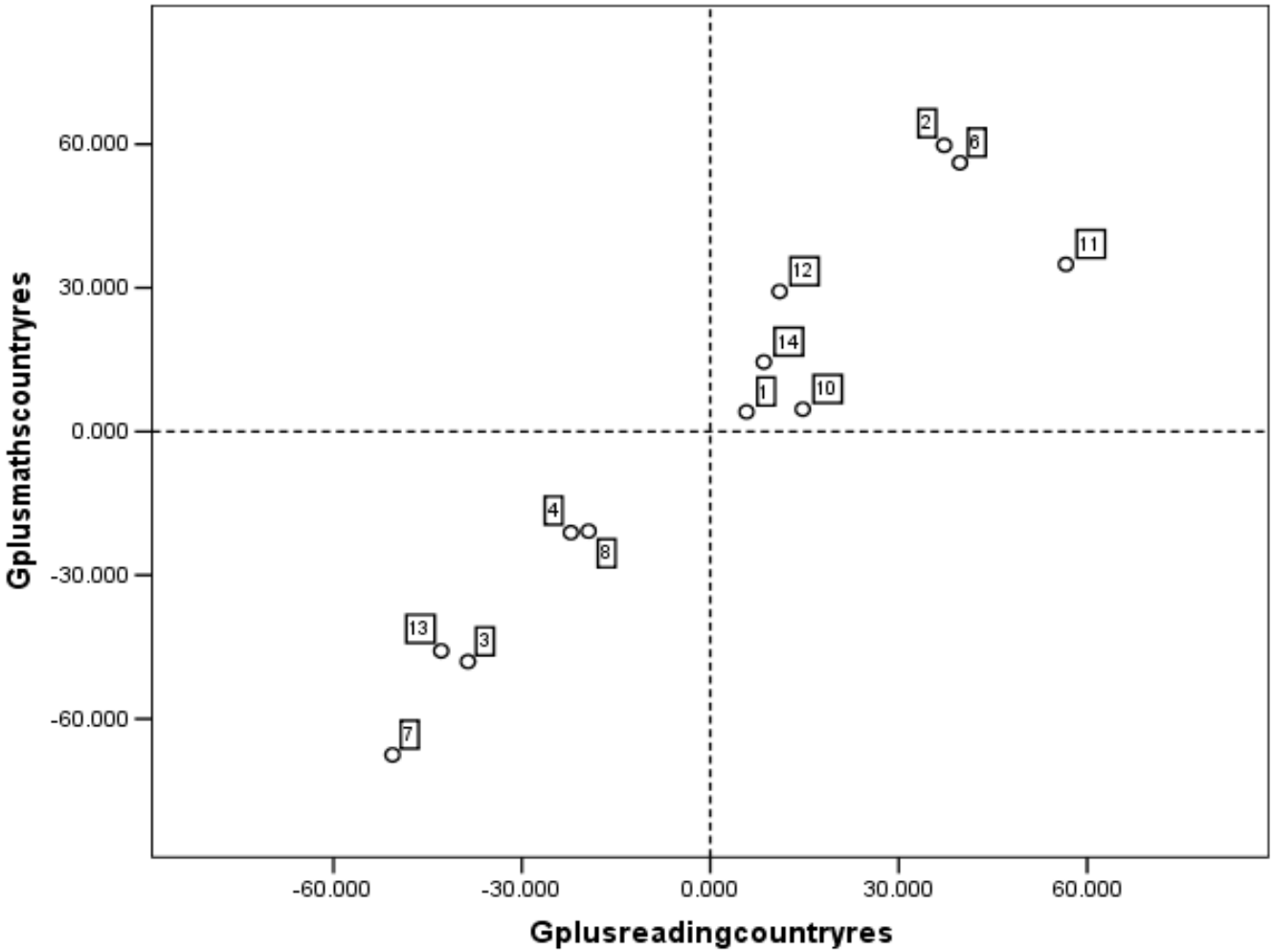




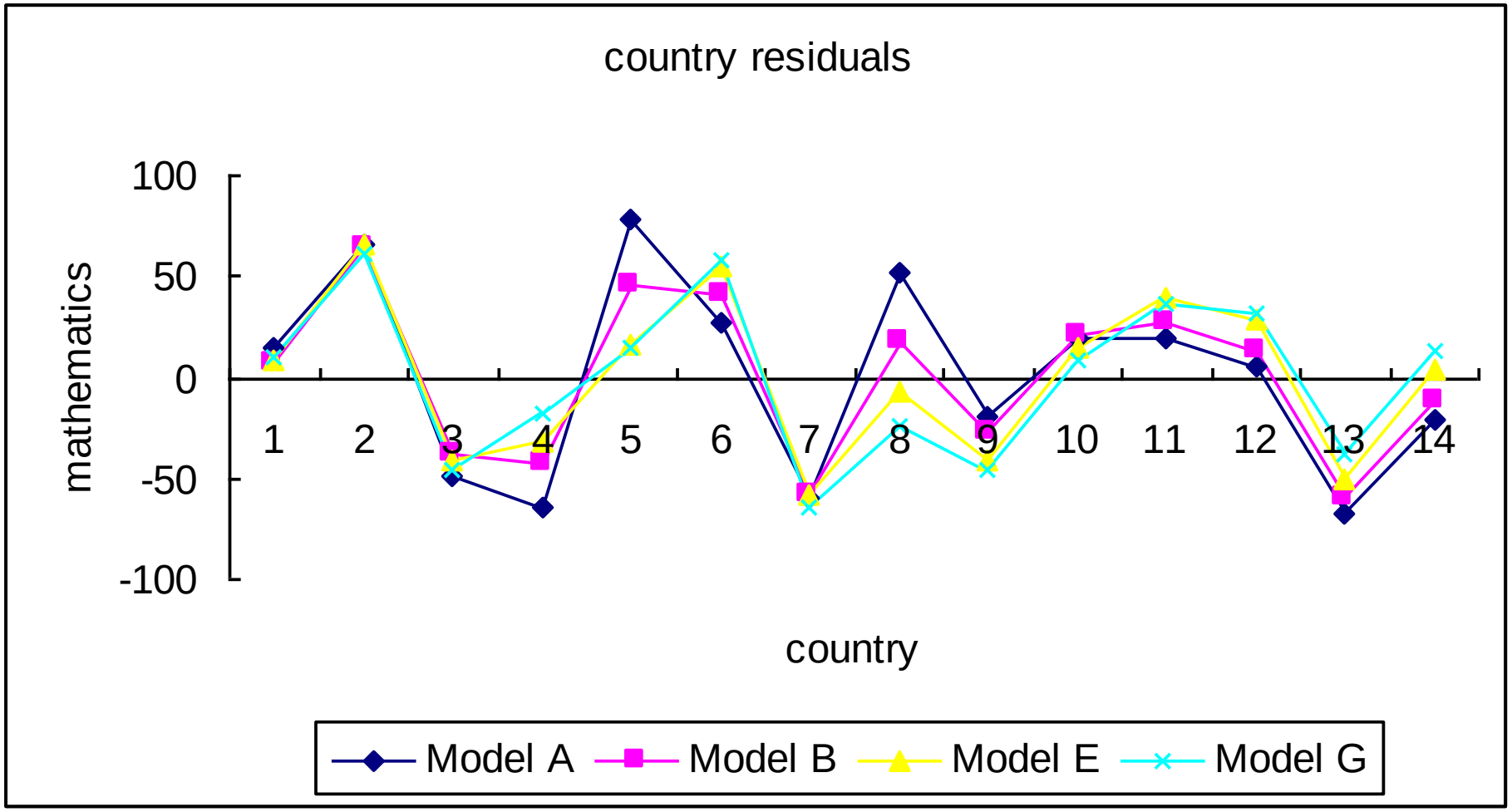
Model G+

- After controlling all the factors in Model G
- Adding: teacher subject knowledge/skill

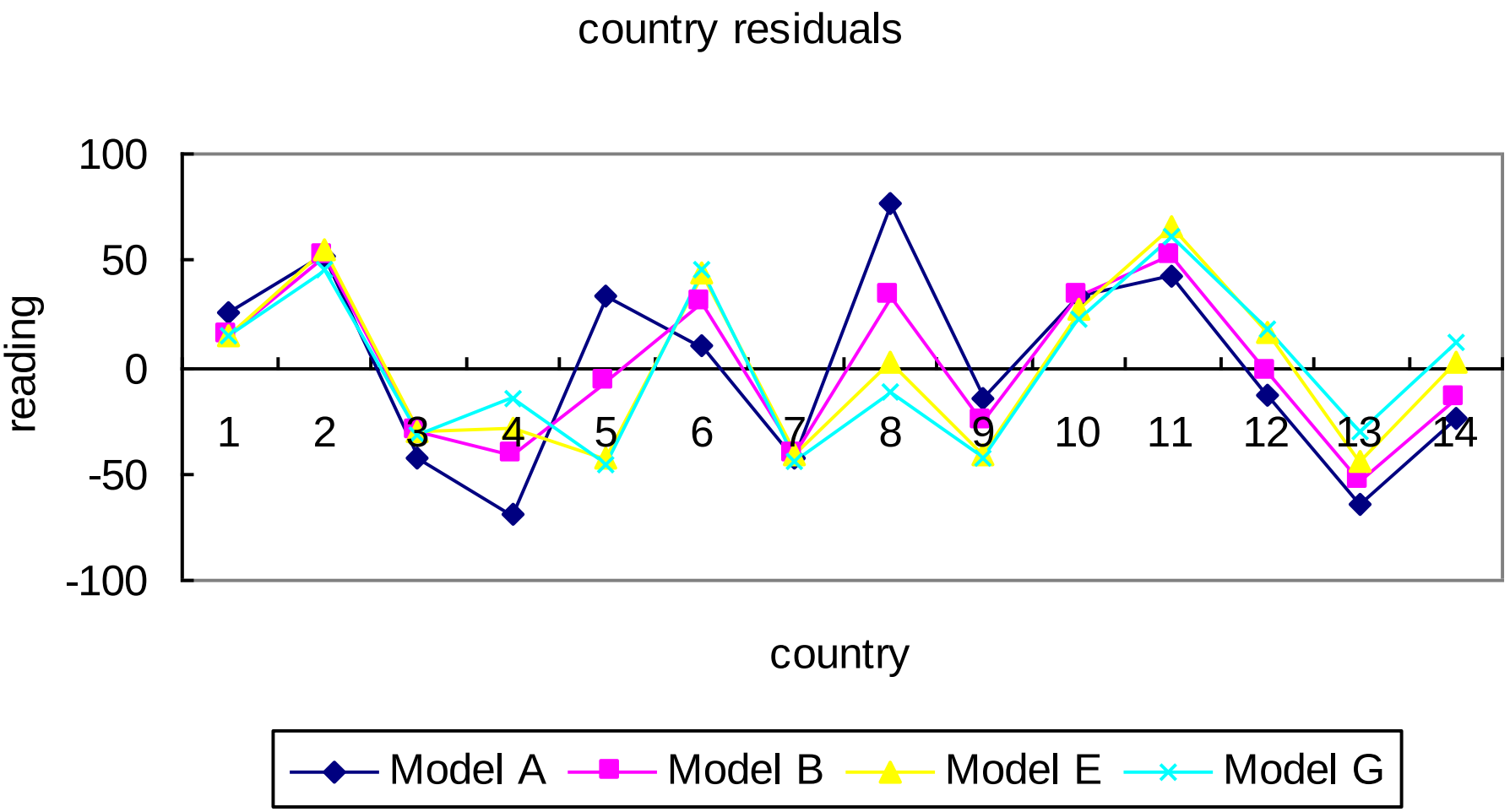
Country residuals Model G: reading vs maths



Country residuals (maths)



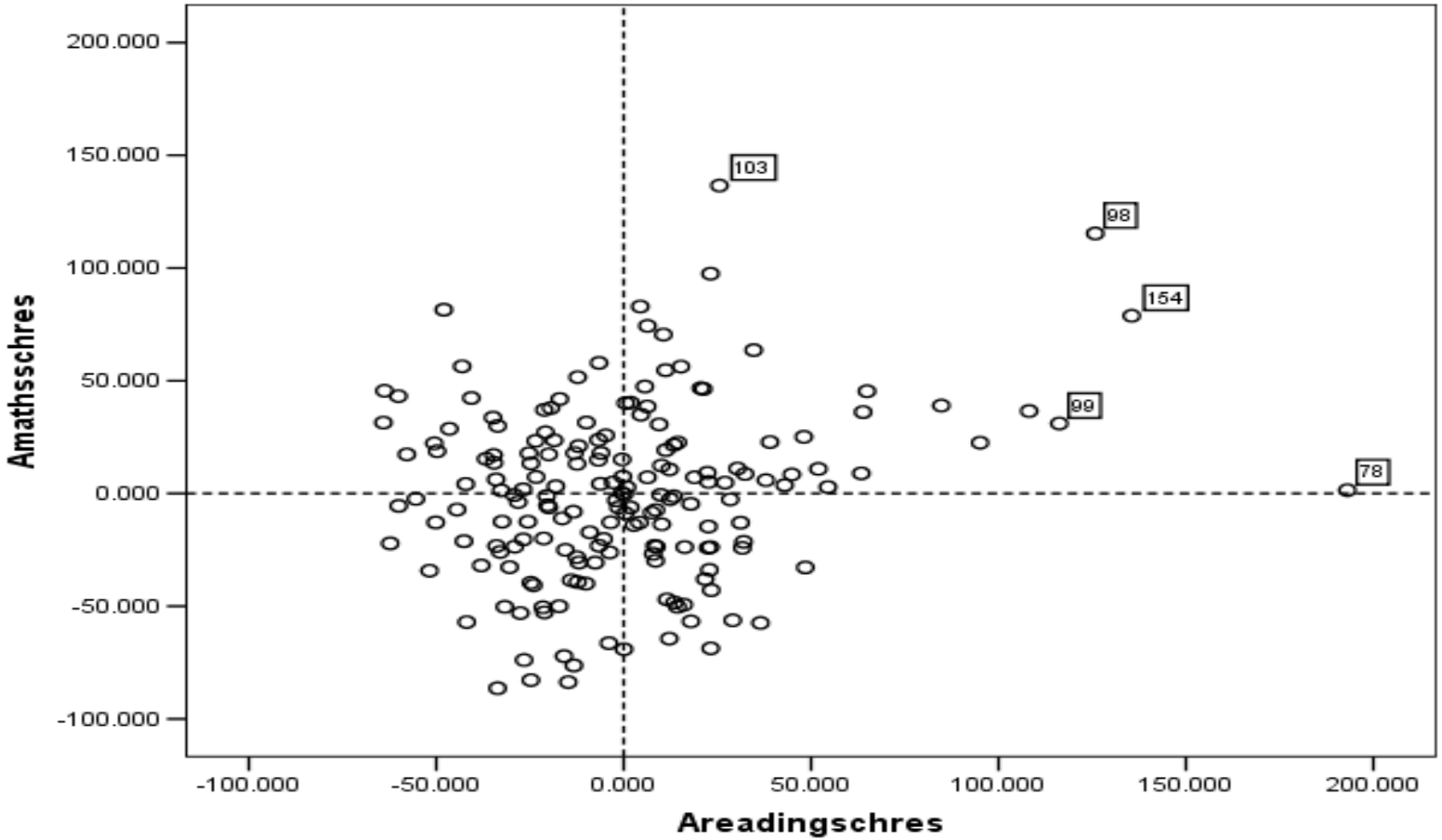
Country residuals (reading)



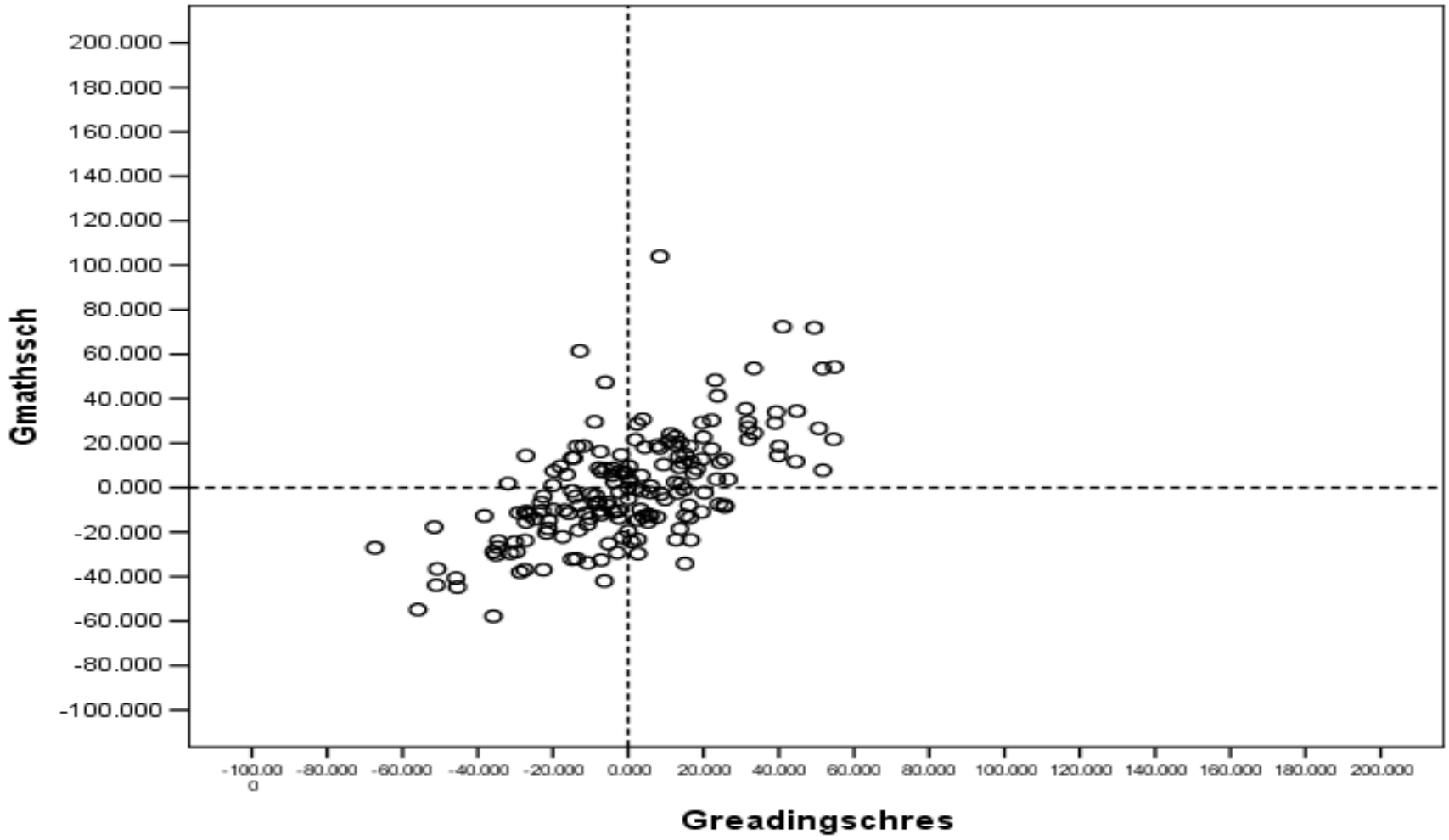
Tanzania data (2-level)

- The same models developed from data across the 14 countries were tested using Tanzania data only (school- and pupil-level analyses)

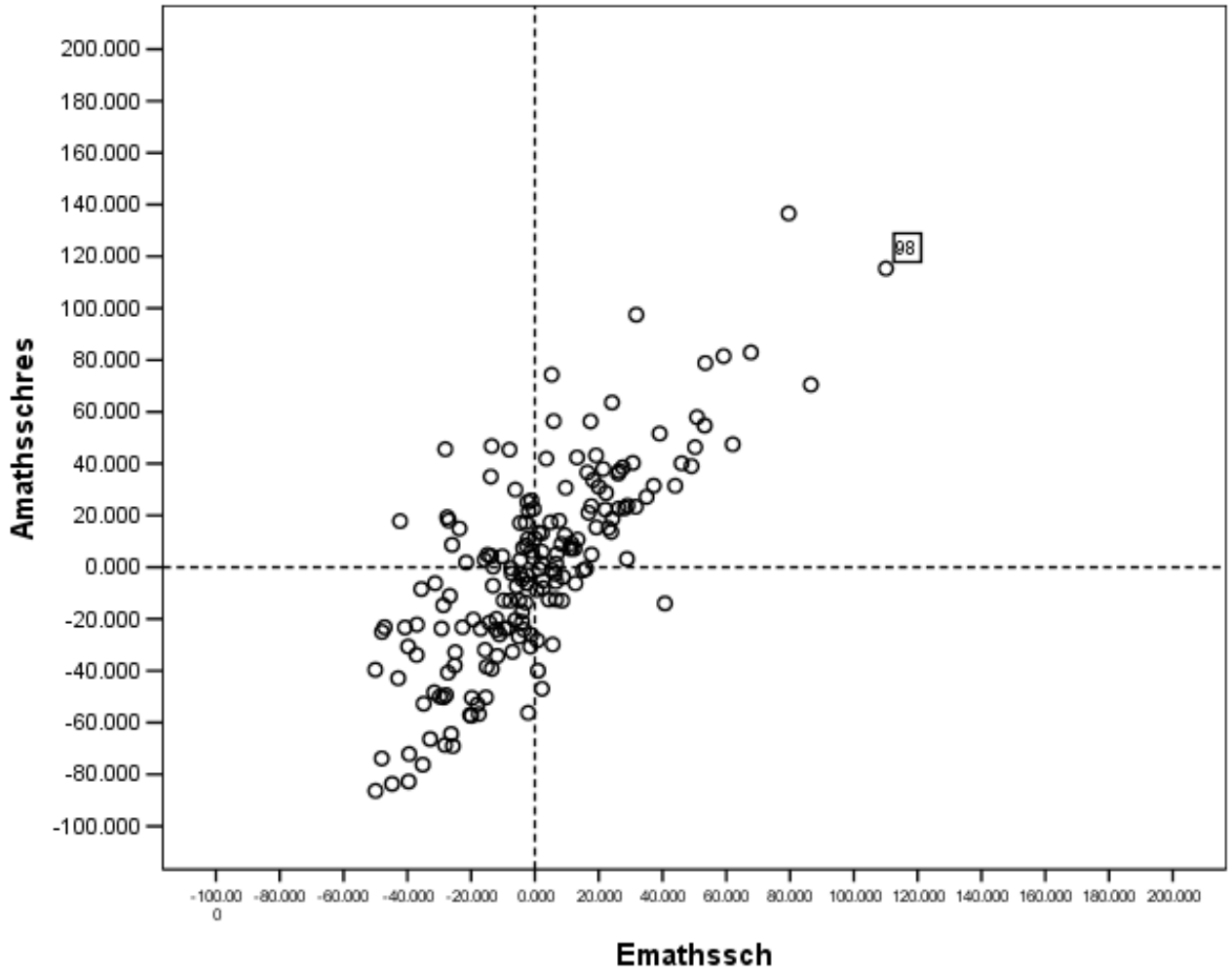
Tz: school residuals Model A: reading vs maths



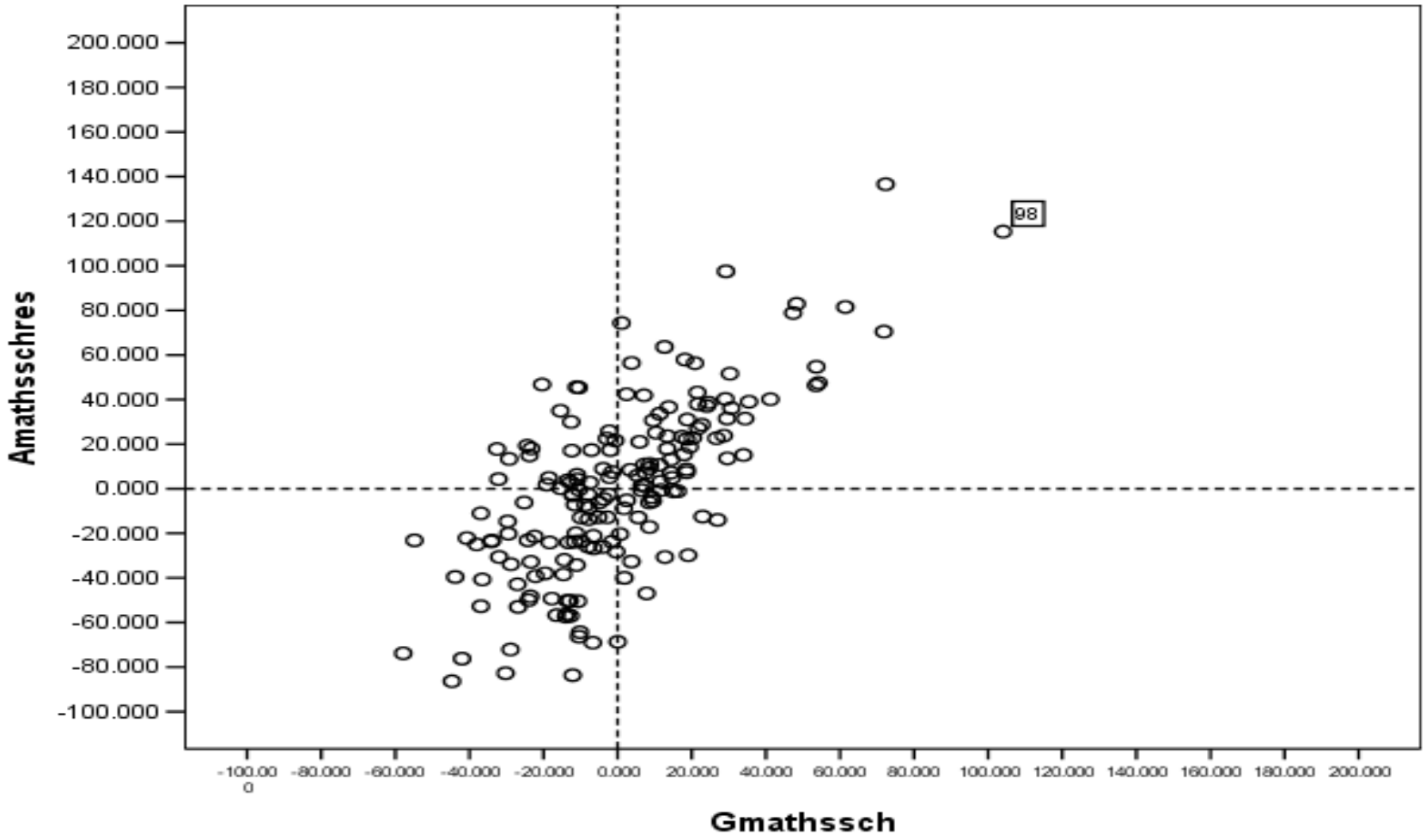
Tz: school residuals Model G: reading vs maths



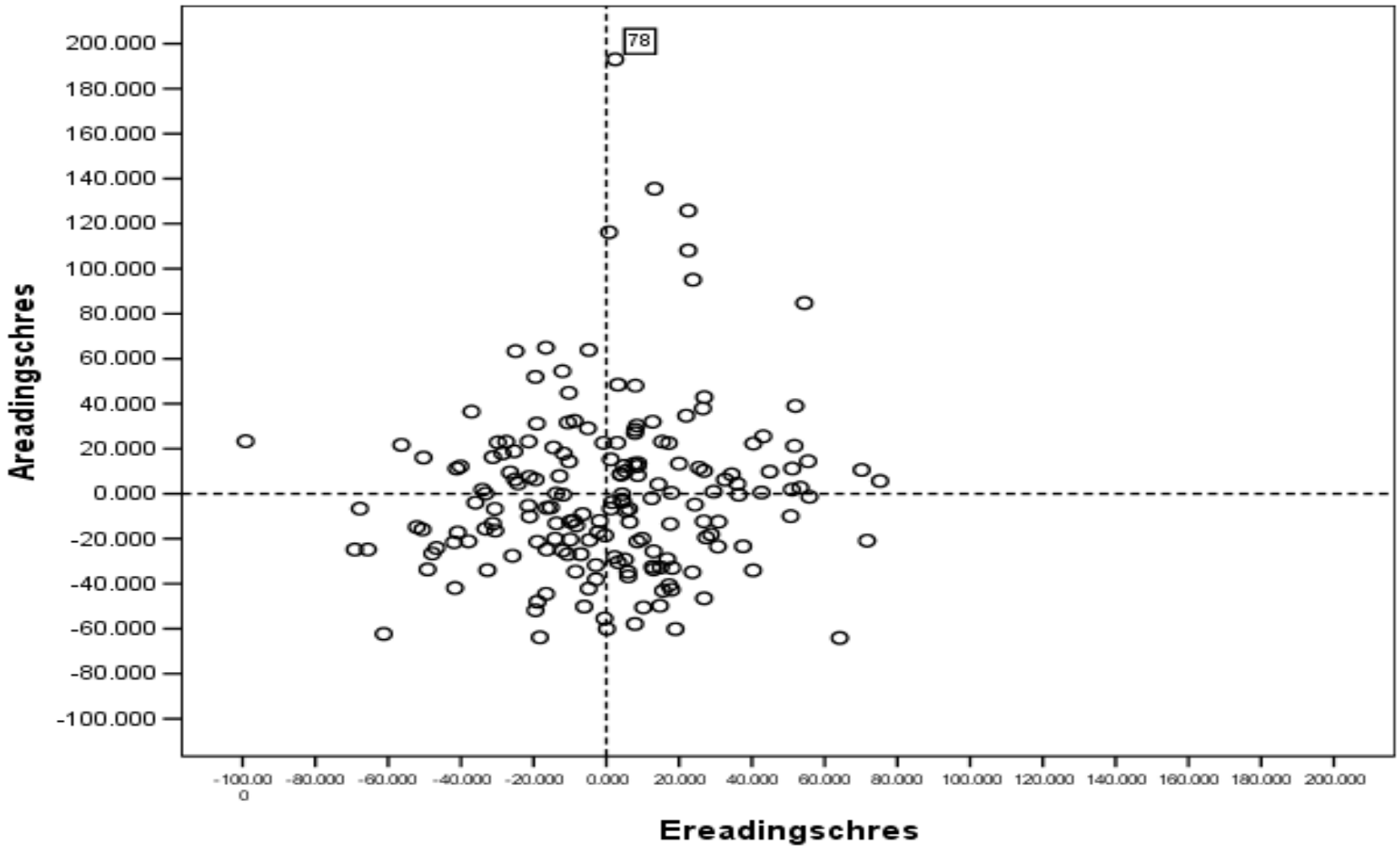
Tz: school residuals: maths (Models A & E)



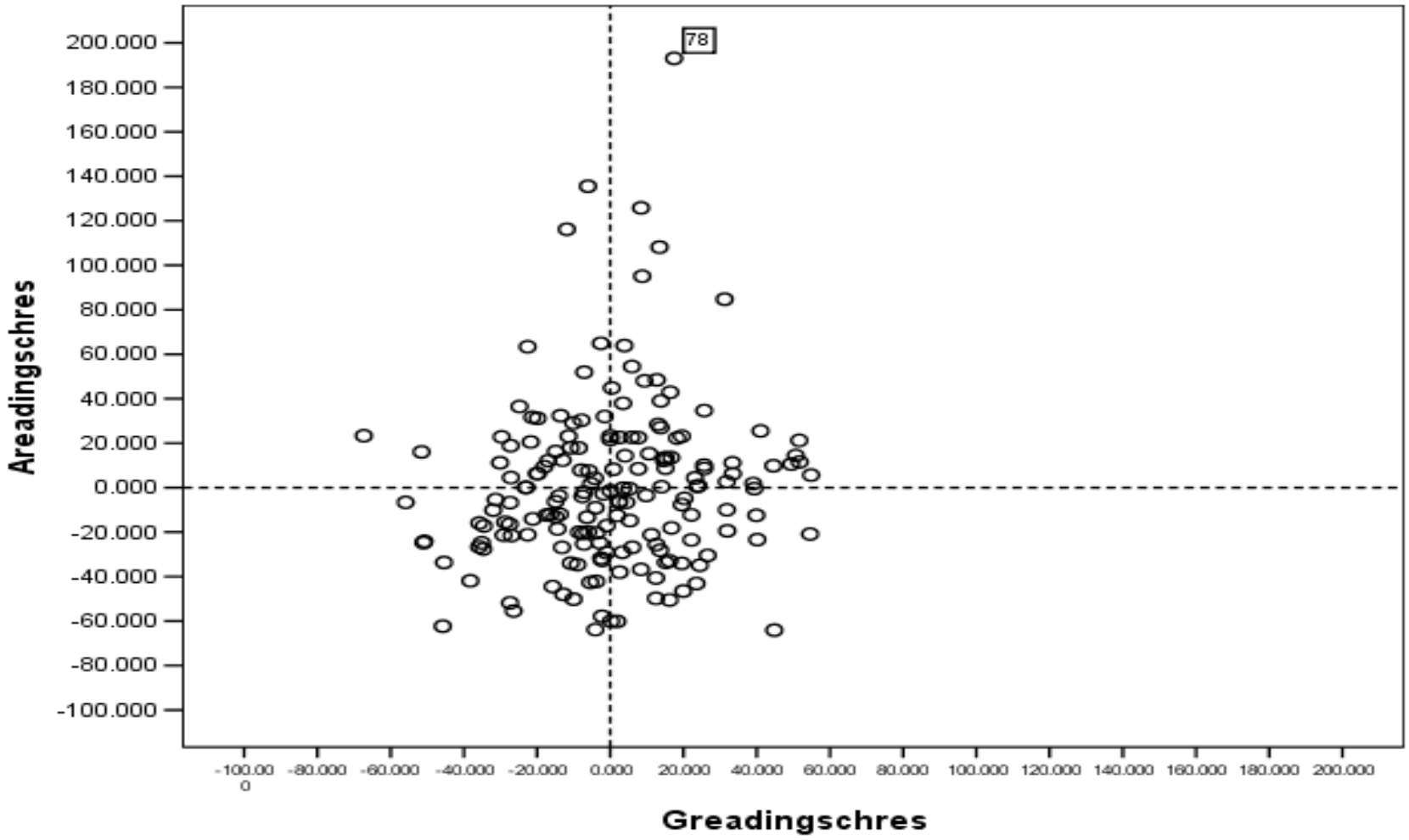
Tz: school residuals: maths (Models A & G)



Tz: school residuals Reading Models A & E



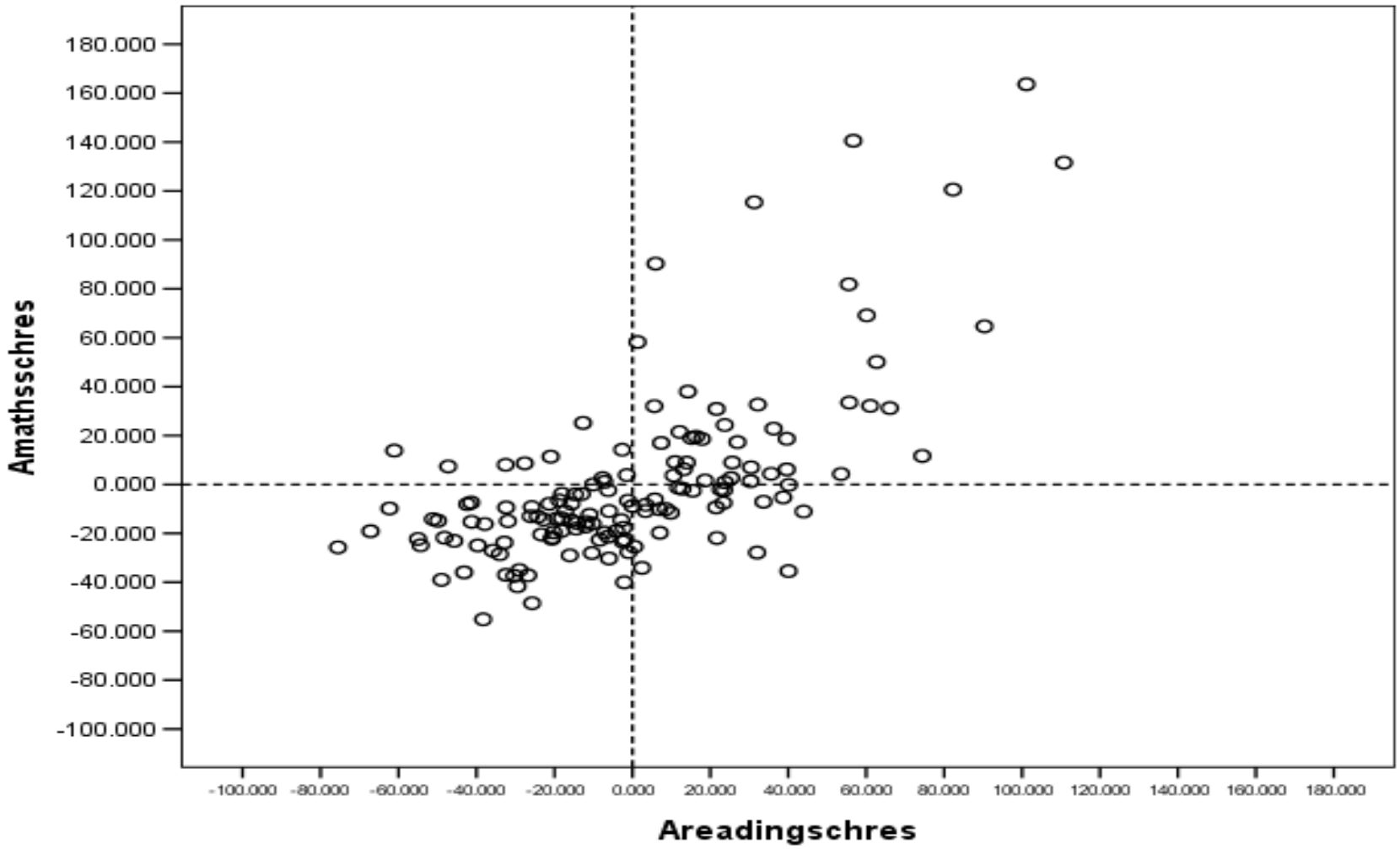
Tz: school residuals Reading Models A & G



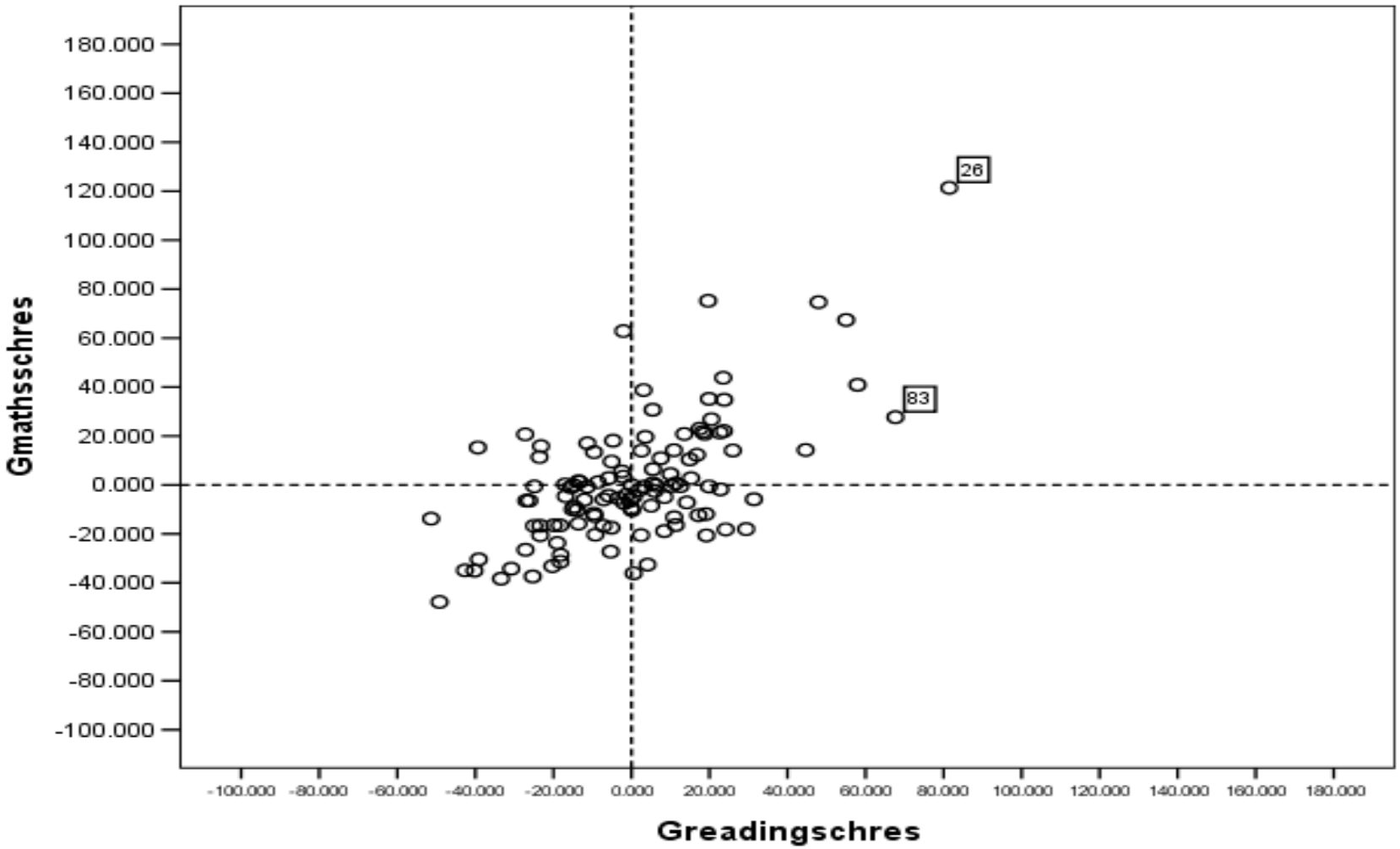
Zanzibar data (2-level)

- The same models developed from data across the 14 countries were tested using Zanzibar data only (school- and pupil-level analyses)

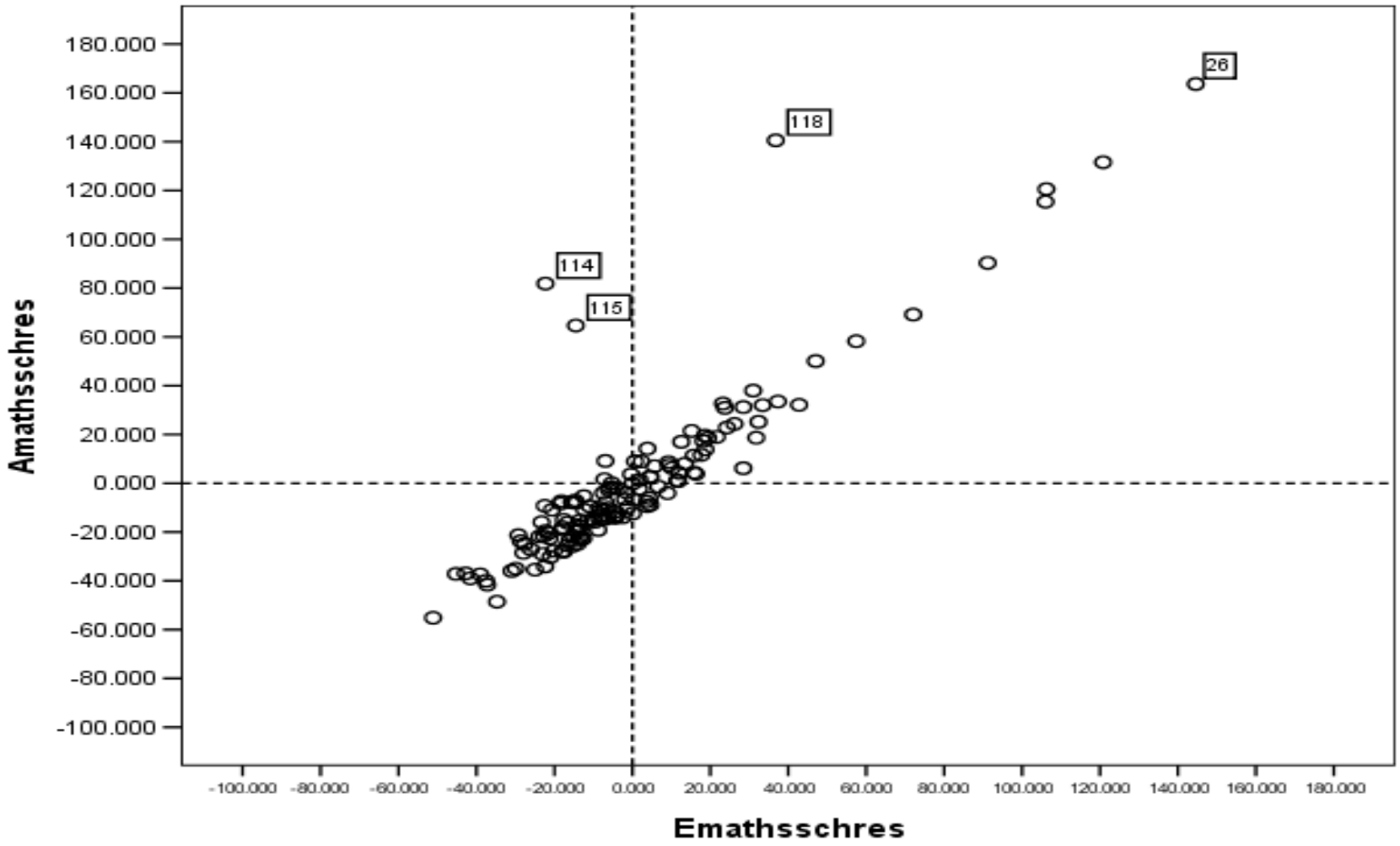
Zn: school residuals Model A reading vs maths



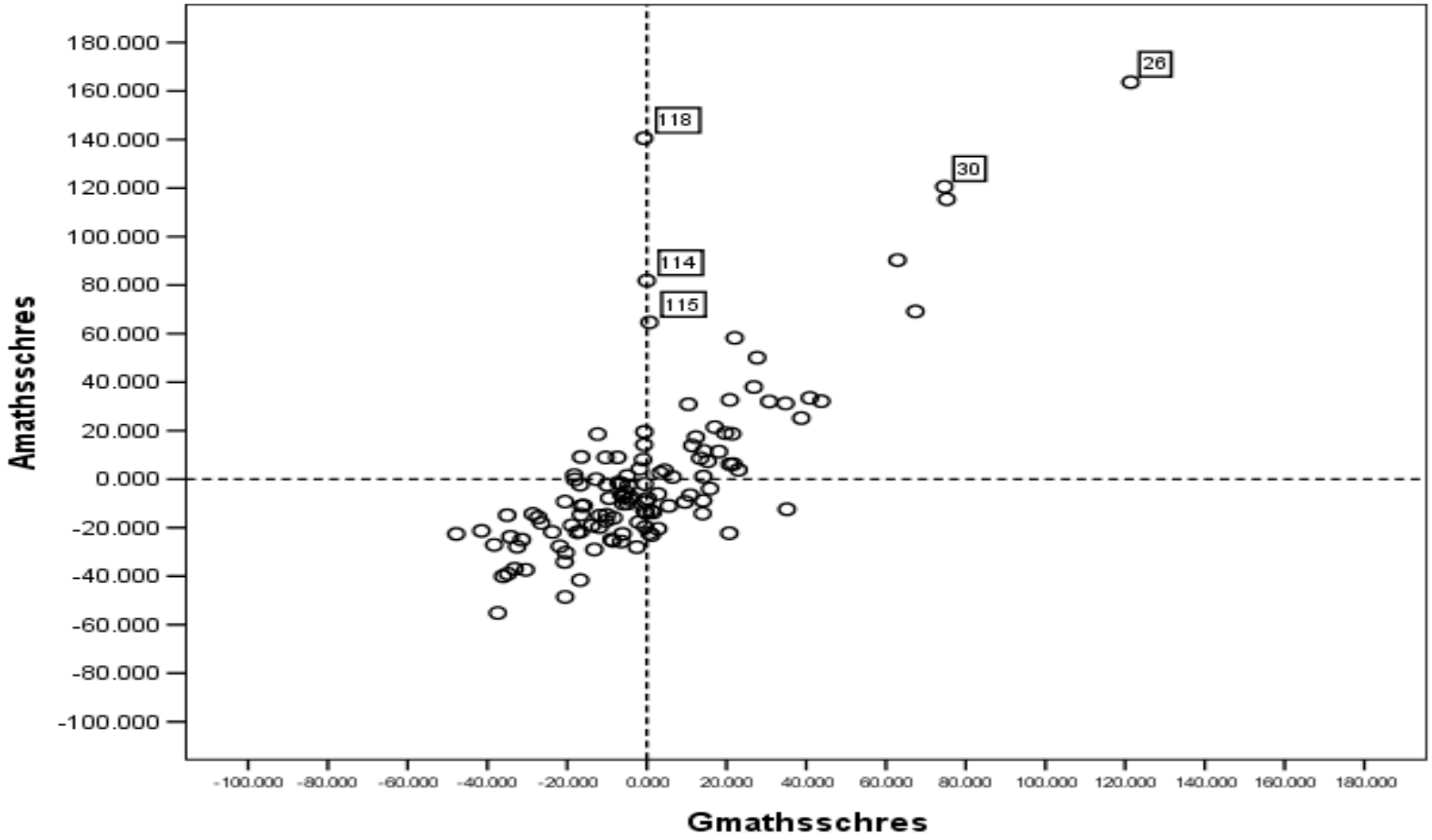
Zn: school residuals Model G reading vs maths



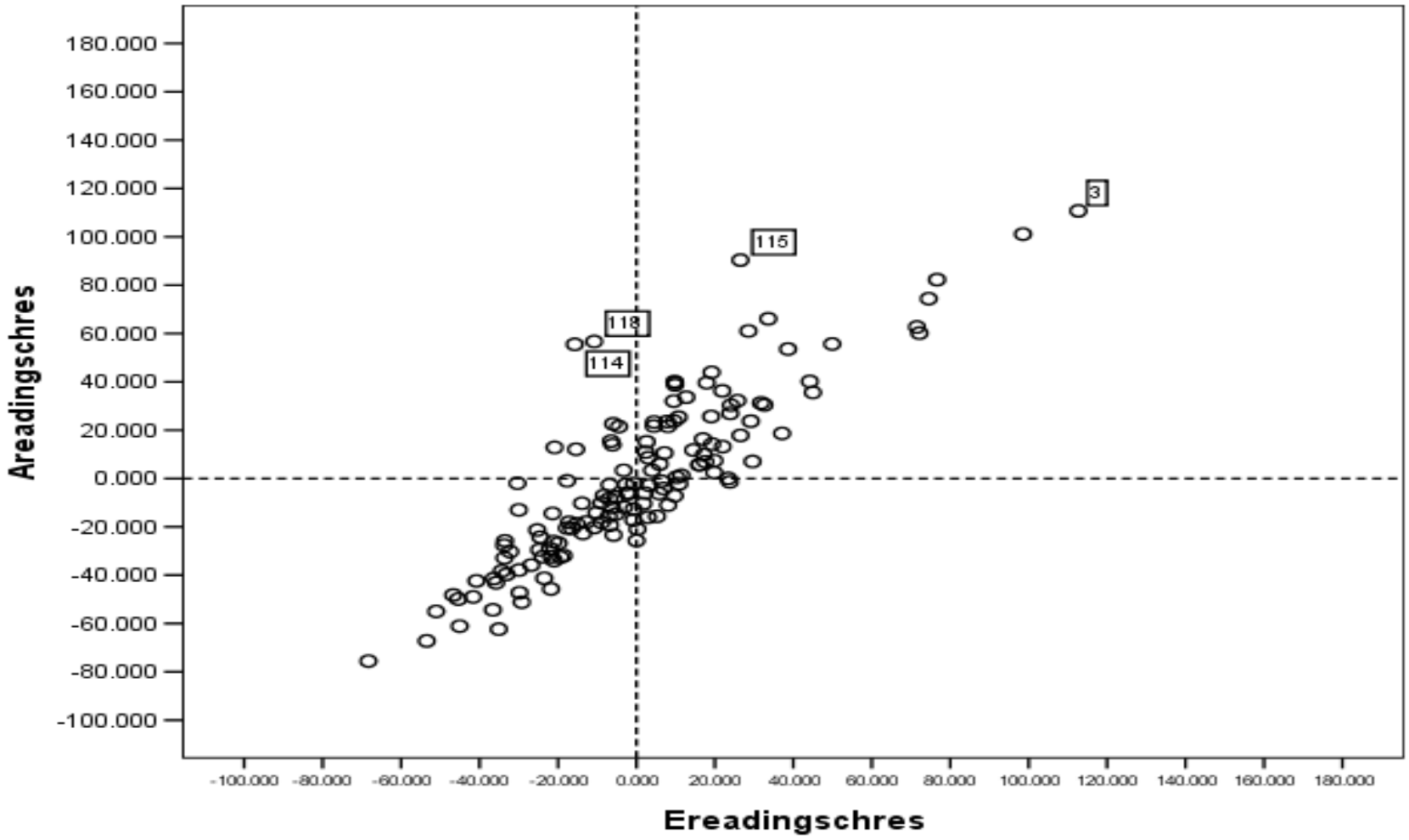
Zn: school residuals maths Models A & E



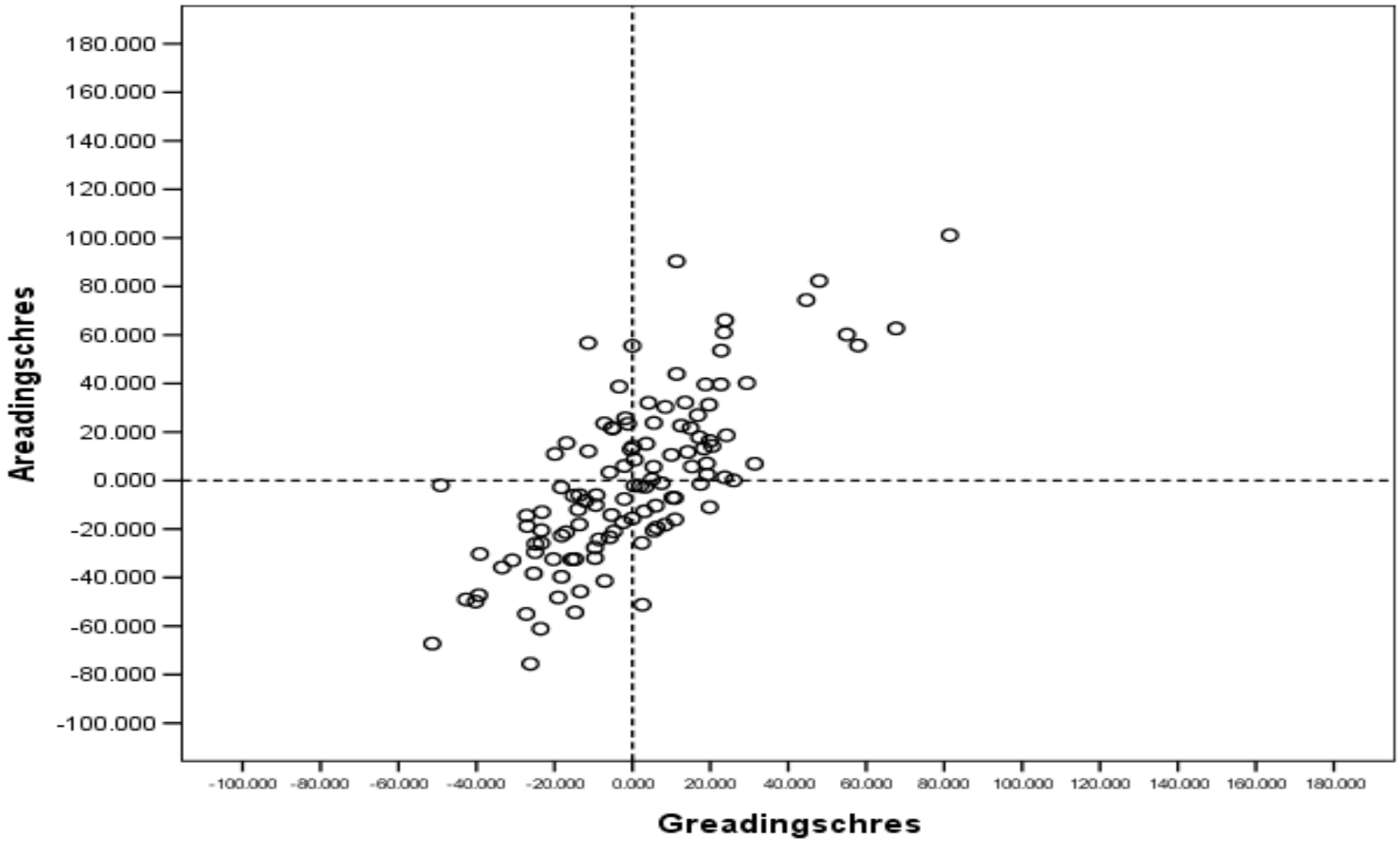
Zn: school residuals maths Models A & G



Zn: school residuals reading: Models A & E



Zn: school residual: Reading: Models A & C



Summary of findings for discussion

- Overall quite poor “goodness of fit” for all models
- But slightly better fit for reading (38% total variance explained) than mathematics
- And: see Working Paper No.1

Further analyses, e.g.

(1) differential effects for different student groups (eg gender, socio-economic class);

(2) country comparisons &

(3) country specific models to be developed

(4) Stakeholders' views: findings from consultation workshops