Motivation

- Most students learning to read in LMIC's worldwide learn to read in multilingual contexts

  - Either two or more language from the start

  - Learn to read in a language that is not their mother tongue

  - Learn to read in mother tongue and transition later

- A child will not learn to read a language they do not use and understand (Alidou et al., 2006; Benson, 2003; UNESCO, 2012, Evans &Acosta, 2021; Nag et al. 2018 etc.)

- L1 reading and L2 oral lanaguge skills are the strongest predictors of L2 reading (Cummins, 1981; August & Shanahan, 2006; Koda, 2008)

- Yet, we do not know empirically *how much* L1 is needed for L2 reading to begin successfully

Objective

- Provide a cross-country comparison of thresholds for transition from L1 to L2 reading in 6 language pairs across 6 regions in India and Ethiopia

Created with mapchart.net

Background: Ethiopia

- Ethiopia is a multilingual country with about 90 languages spanning 4 language families and multiple scripts (Ethnologue, 2020)

- Current policy is Bilingual, with Mother Tongue followed by English

- Introduction of English as a subject in Grade 1, and as a Medium of Instruction in grades 5, 7, or 9

- Developing new Education Roadmap, and new Three Language Policy

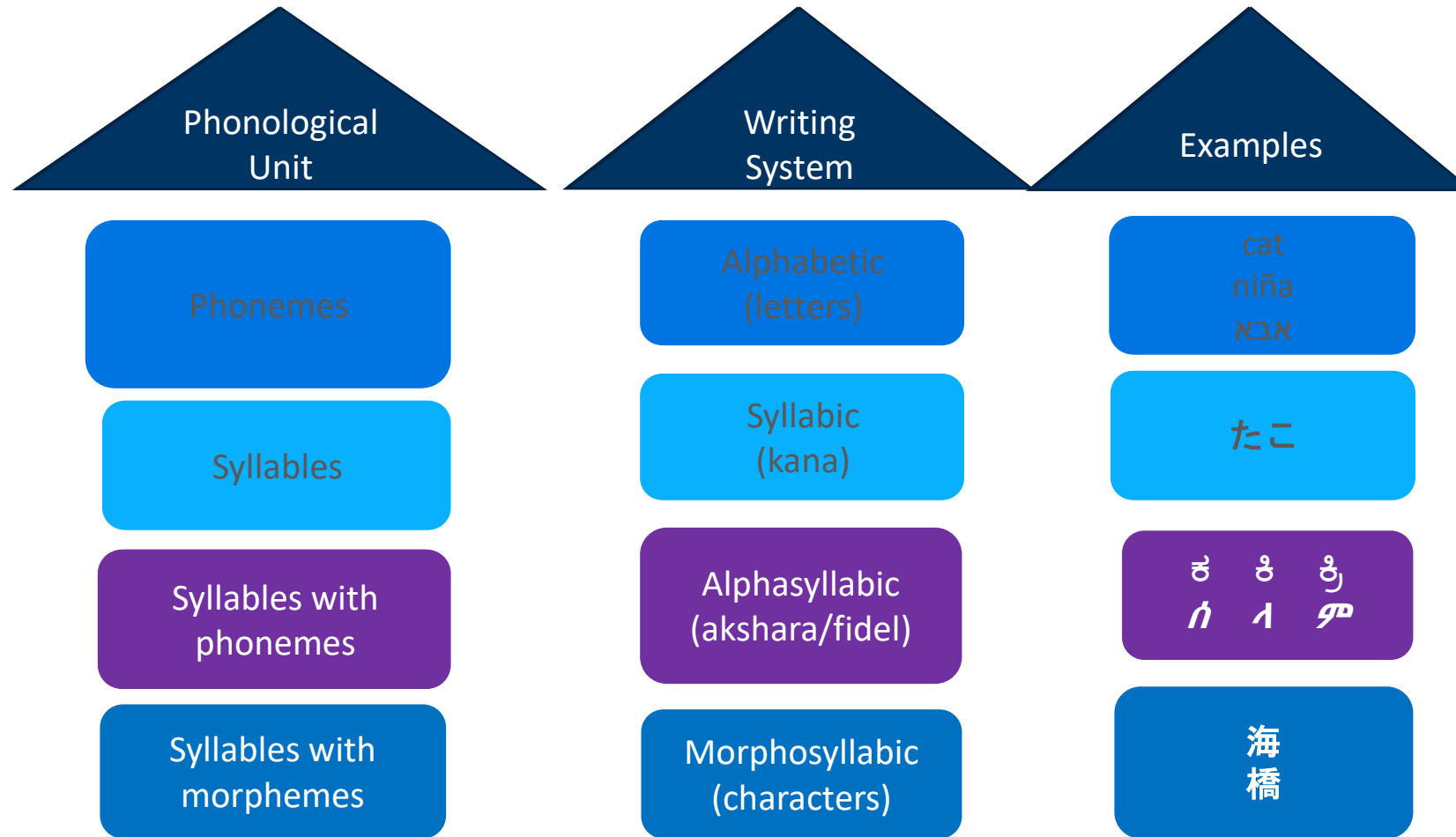- When should English literacy instruction be introduced?

Background: India

- India is a multilingual country with 122 **major** languages, 26 of them used as mediums of education

- Three Language Formula

    – All children required to learn 3 languages (MT, Hindi, English) by end of secondary school

    – Order of acquisition depends on region and school type

Theoretical Framework

- Basic reading comprehension is a product of both

  - Decoding skills (fluency)

  - Oral language comprehension (Hoover & Tunmer, 2020)

- Across languages and scripts (Florit & Cain, 2011; Megherbi et al., 2006; Joshi et al., 2012)

- Across mother tongues and later acquired languages (Lervåg & Aukrust, 2010; Verhoeven & van Leeuwe, 2011)

Theoretical Framework: Reading across scripts (Verhoeven & Perfetti, 2017)

Phonological Unit	Writing System	Examples
Phonemes	Alphabetic (letters)	cat niña אבא
Syllables	Syllabic (kana)	たこ
Syllables with phonemes	Alphasyllabic (akshara/fidel)	ಕ ಕಿ ಕೀ ካ ኪ ጣ
Syllables with morphemes	Morphosyllabic (characters)	海橋

Orthographies

- Ethiopia:

    - L1 Amharic: fidel script (alphasyllabic)

    - L1 Afaan Oromo, Berta, Wolayttatto: Roman alphabet (alphabetic)

    - L2 English

- India:

    - L1 Kannada, Telugu: akshara script (alphasyllabic)

    - L2 English

Theoretical Framework: Biliteracy Transfer
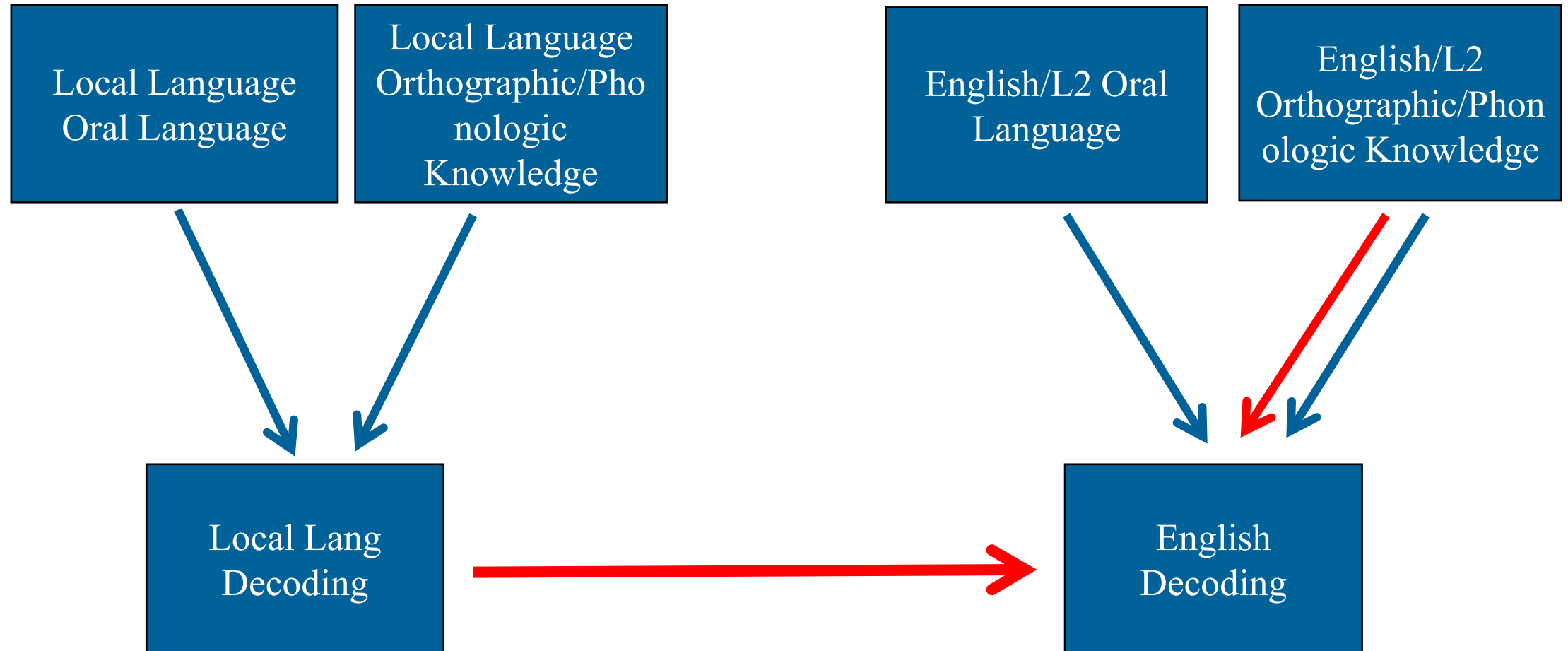
Research questions

- Is there a structural break in the relationship between the decoding in the MT and in English?

- Is there a structural break in the relationship between L2 oral language and L2 decoding?
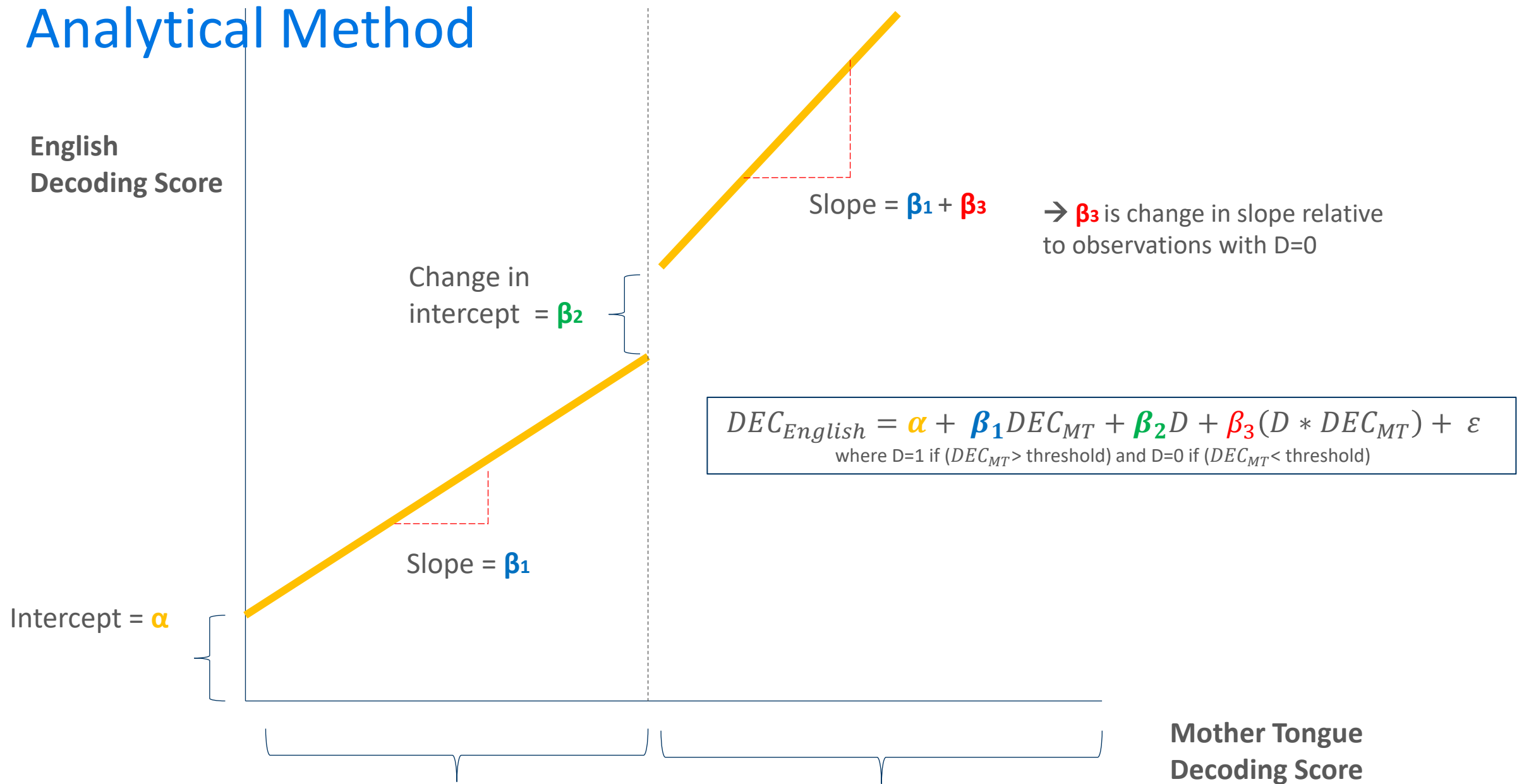
Analytical Method

- General principle: Test if there is a difference in relationship between MT decoding and English decoding outcomes below and above a given threshold

- One common test is Chow (1960) test, which assumes we know where the structural break occurs.

- Use linear multivariate regression analysis that includes a dummy variable for children above and below a potential threshold value:

$$DEC_{English} = \alpha + \beta_1 DEC_{MT} + \beta_2 D + \beta_3 (D * DEC_{MT}) + \beta_4 X + \varepsilon$$

  where D=1 if (DEC_{MT} > threshold) and D=0 if (DEC_{MT} < threshold)

- Use F-test to determine whether there is a structural break in the relationship between the two decoding variables (i.e. see if hypothesis i.e., $\beta_3 = 0$ can be rejected)
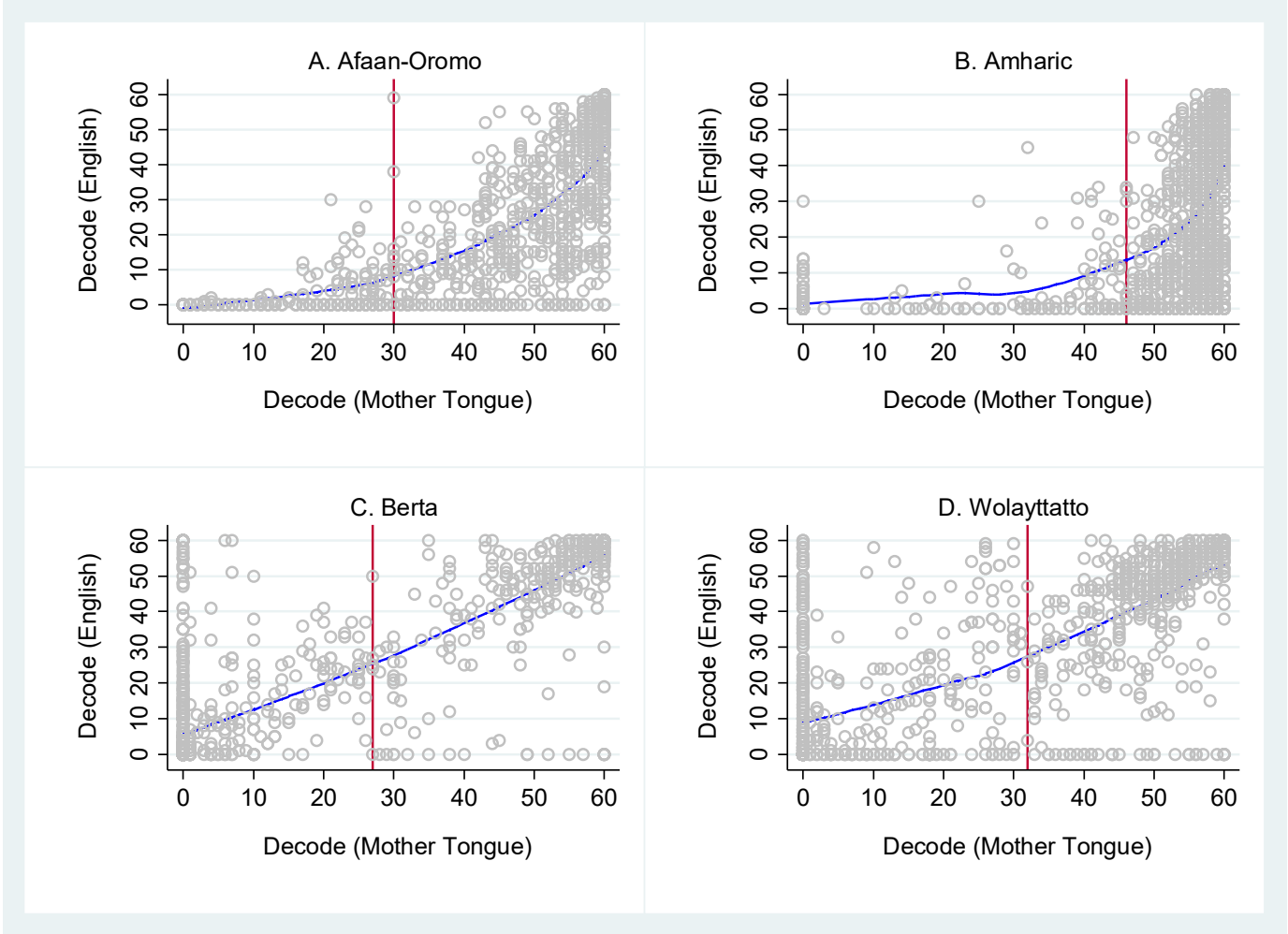
Analytical Method

English Decoding Score

Slope = **β₁** + **β₃**

→ **β₃** is change in slope relative to observations with D=0

Change in intercept = **β₂**

$$DEC_{English} = \alpha + \beta_1 DEC_{MT} + \beta_2 D + \beta_3 (D * DEC_{MT}) + \varepsilon$$

where D=1 if (DEC_{MT} > threshold) and D=0 if (DEC_{MT} < threshold)

Slope = **β₁**

Intercept = **α**

Mother Tongue Decoding Score

D=0

D=1

Results from India

(Nakamura, de Hoop, and Holla, 2018)
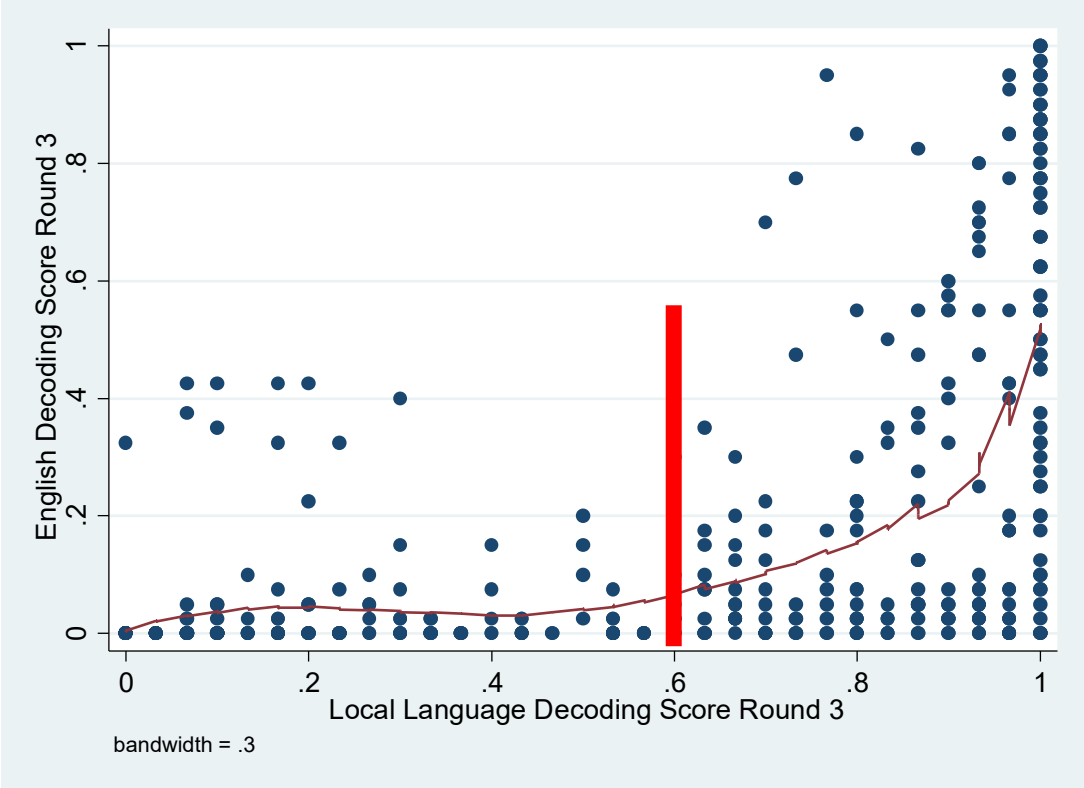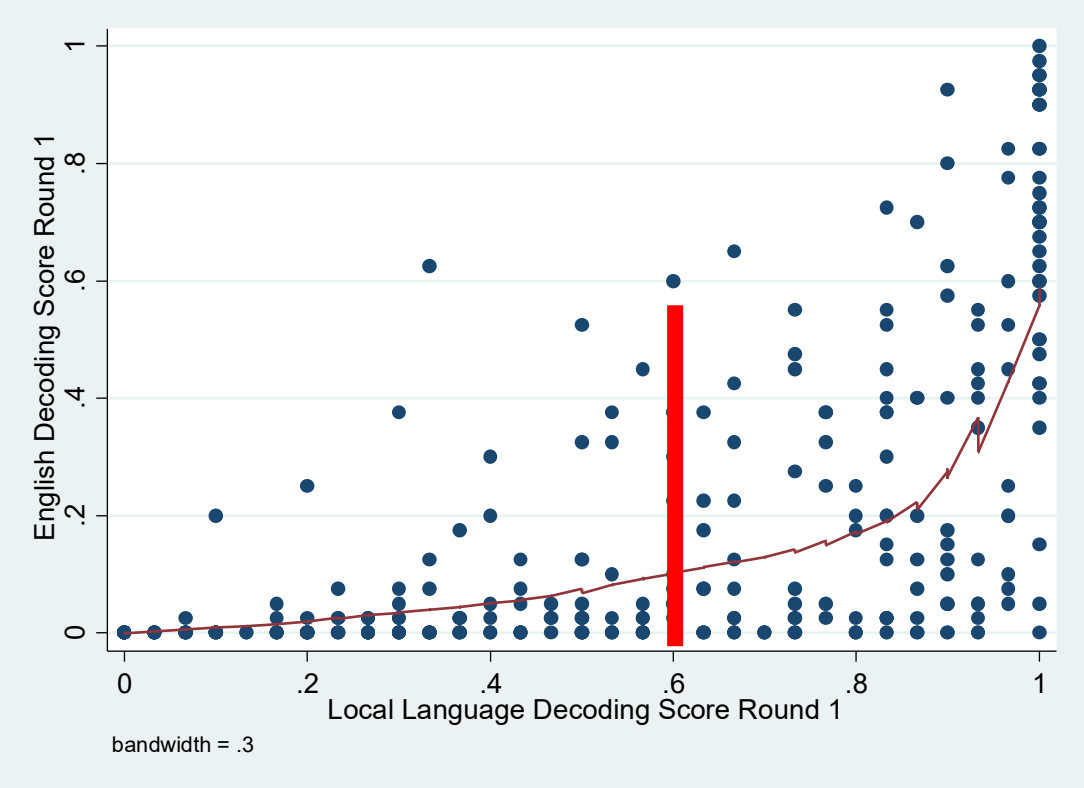
Results from Ethiopia (USAID READ M&E, 2020)

Discussion

- In all language pairs, there is a significant point of transfer readiness

- The point is reliant:

  – On nature of the two scripts in questions

  – The degree of exposure the child has to both languages

Skill-Based Transitioning Curricular and Design Implications

	Pre-School/Kindergarten	Lower elementary	Mid- upper elementary	Upper-elementary (and/or beyond)
L1 oral	From the beginning			
L1 decoding	Soon after L1 oral is introduced			
L2 basic oral		After L1 oral		
L2 basic literacy instruction		Introduce after L2 oral	After L1 decoding thresholds is reached	
L2 academic vocab/subject knowledge				After L2 oral language and reading comp is strong
L2 Medium of instruction				After L2 oral language and reading comp is strong
L3 as a subject				After transition to L2 as medium of instruction

Language status and political will

Resources (teacher, material) to teach each language

Teachers trained to teach that language as a foreign language subject

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