Four Reproducible Contributions in Development Economics

Bastiaan Quast

Department of International Economics
The Graduate Institute, Geneva

Jean-Louis Arcand	Thesis director
Richard Baldwin	Internal Reader, President
Michael Kende	External Reader

14 October 2016

Reproducibility

Reproducible

- Same data
- Publish procedures, data (source), CodeBook
- Lower standard than replicability

Motivation:

- Reinhart Rogoff: Growth in a Time of Debt
- Rauchhaus: Evaluating the Nuclear Peace Hypothesis

Tools:

- R
  - publish packages: replicability
- Git (version control)

Motivation

- Two-Sided Market / Cross-side network effects
- WWW content is hard
- Social media content is easier: Facebook vendor lock-in

Table: Protocol Stack and Network Effects (NE)

Soc. Media Website (simple NE, propr.)	Spam (negative NE)
Websites (cross-side NE)	Email (simple NE)
TCP/IP (simple NE)	

Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

Quantifying Content

- using visit counts instead of page counts

Endogeneity

- Maybe Google introduced the interface following increased usage among Setswana speakers?
- Botswana speaks Setswana
- google.co.bw was translated in Setswana
- introduction on google.co.za was a spillover, exogenous (2011)
- google.co.za also introduced Xhosa, but not exogenous

Data NIDS

- 2008 & 2011 (pre), 2013 (post)

Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

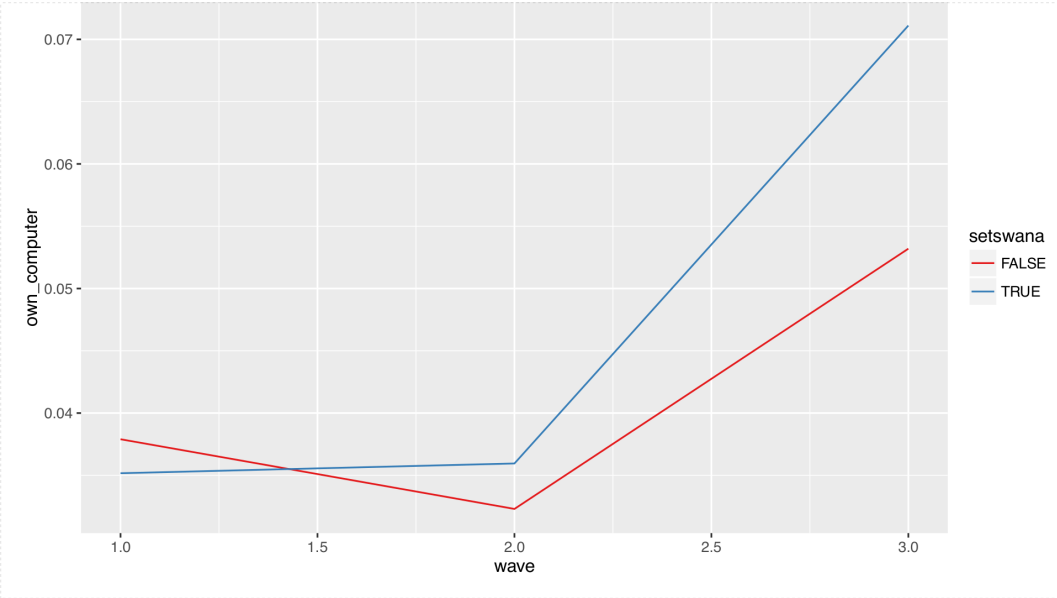
Table: Internet Access and Computer Ownership

	Internet	(P > |t|)	Computer	(P > |t|)
event * setswana	**0.012**	0.00	**0.024**	0.00
event	**-0.012**	0.00	-0.054	0.01
setswana	**-0.014**	0.00	**-0.015**	0.00
income	**0.000**	0.00	**0.000**	0.00
woman	-0.001	0.23	**-0.023**	0.00
education	**0.001**	0.00	**0.006**	0.00
Observation	47665		46464	

Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

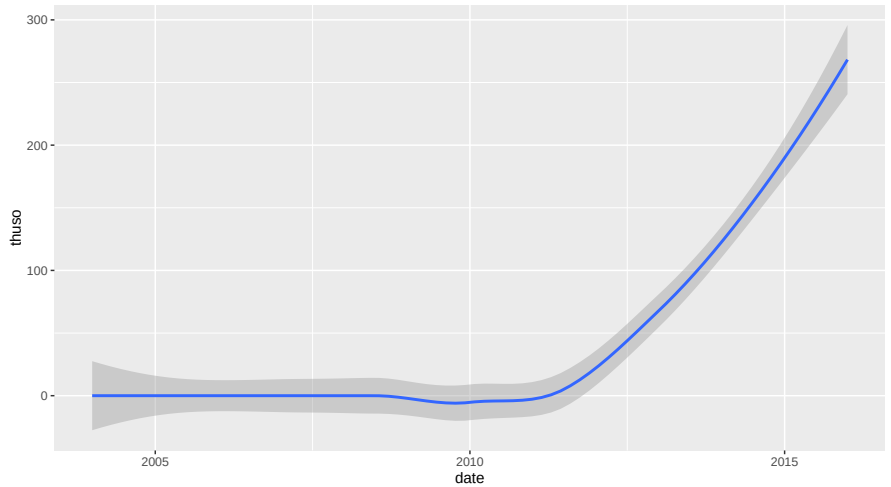
Figure: Computer Ownership Setswana



Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

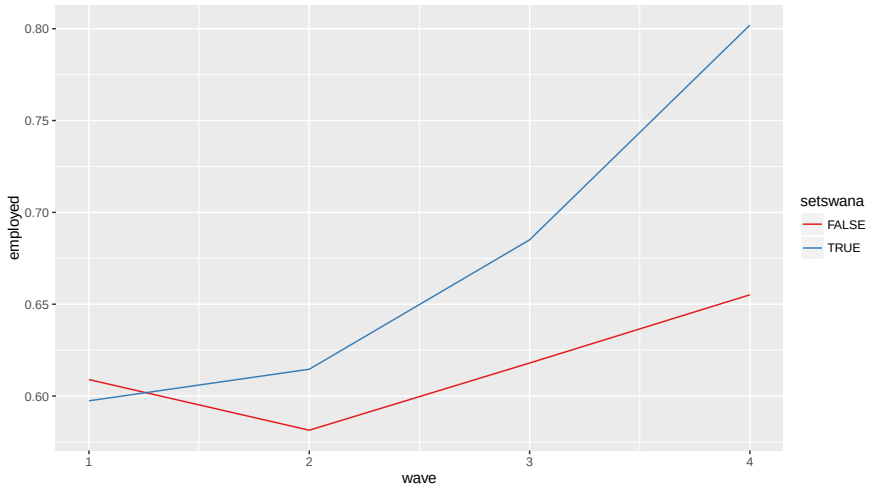
Figure: Effect on online usage of Setswana



Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

Figure: Employment for Individuals who Own a Computer in Wave 3



Grandfathers and Grandsons

Effects of a Male-Only Change in Pensions

Motivation

- Income recipient and growth
- Growth and future income
- Grandmothers and Granddaughters:
  - South African persion, including black population
  - eligibility-age differential: women 65, men 60
  - life expectancy significantly lower: large selection bias

Identification Strategy

- Pension change (2010): men 65 -> 60, to a par
  - still selection bias based on life expectancy
- NIDS: 2008 (pre) & 2011 (post)

Grandfathers and Grandsons

Effects of a Male-Only Change in Pensions

Table: Food and Non-Food Expenditure

	Food	(P > |t|)	Non-Food	(P > |t|)
event * Man 60-65	**103.82**	(0.03)	-0.05	(0.22)
event * Man 65+	0.09	(1.00)	-0.02	(0.35)
event * Woman 60-65	4.69	(0.90)	0.02	(0.36)
event * Woman 65+	**104.24**	(0.00)	0.01	(0.51)
Man 60-65	55.61	(0.20)	206.16	(0.57)
Man 65+	**112.18**	(0.00)	377.43	(0.57)
Woman 60-65	46.88	(0.13)	-356.02	(0.16)
Woman 65+	**-0.68**	(0.00)	-181.57	(0.38)
event	35.23	(0.00)	131.32	(0.08)
Household Income	**0.03**	(0.00)	**0.09**	(0.00)
Girl	-12.49	(0.22)		
Observations	15938		15938	

Grandfathers and Grandsons

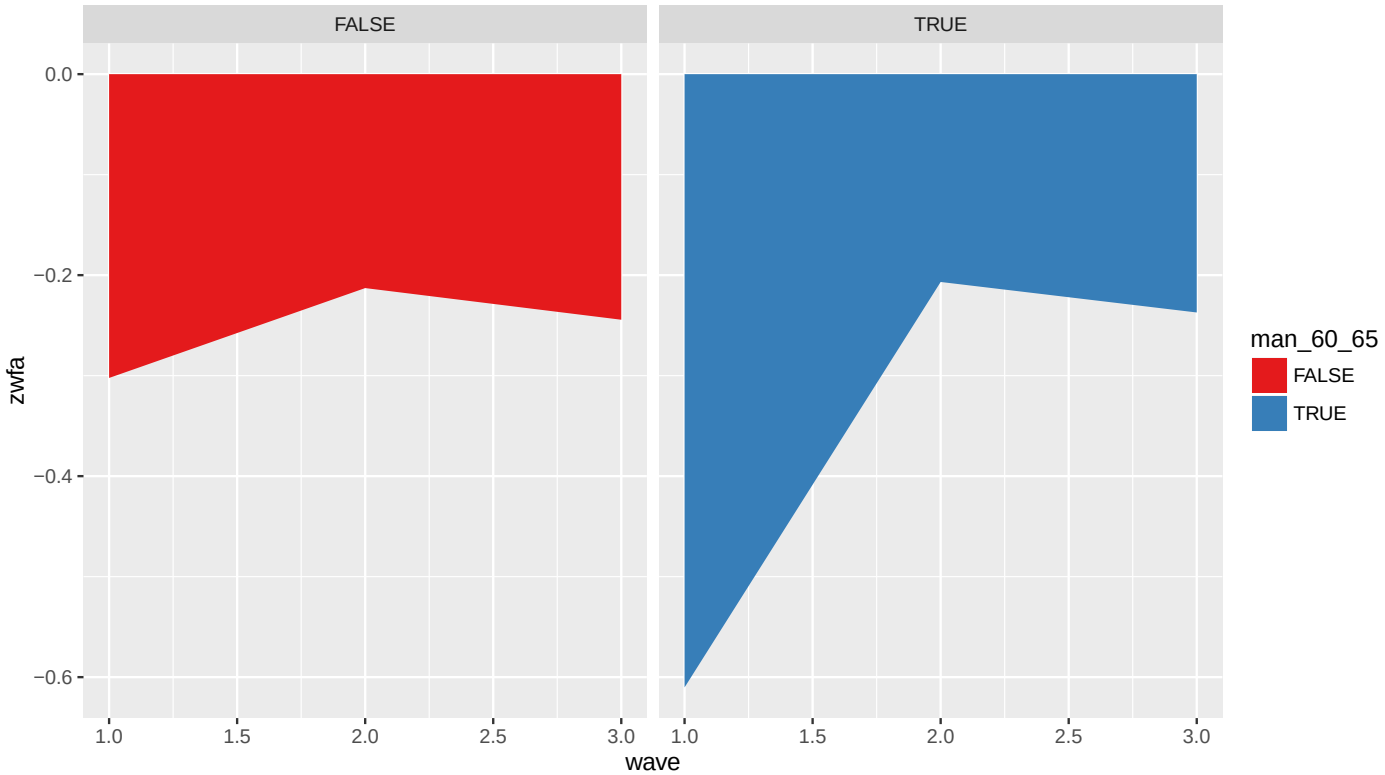
Effects of a Male-Only Change in Pensions

Table: Weight for Age

	General	(P > |t|)	Boys	(P > |t|)	Girls	(P > |t|)
event * Man 60-65	**0.33**	(0.02)	**0.44**	(0.03)	0.26	(0.23)
event * Man 65+	-0.03	(0.74)	0.15	(0.31)	**-0.30**	(0.05)
event * Woman 60-65	0.15	(0.18)	0.18	(0.23)	0.13	(0.44)
event * Woman 65+	0.04	(0.58)	0.29	(0.79)	0.03	(0.77)
Man 60-65	**-0.27**	(0.03)	**-0.35**	(0.06)	-0.29	(0.13)
Man 65+	-0.06	(0.47)	**-0.35**	(0.01)	**0.26**	(0.04)
Woman 60-65	**-0.17**	(0.06)	-0.14	(0.27)	-0.18	(0.21)
Woman 65+	0.03	(0.69)	0.09	(0.32)	-0.02	(0.80)
event	**0.00**	(0.00)	0.01	(0.85)	0.06	(0.19)
Household Income	**0.00**	(0.00)	**0.00**	(0.00)	0.00	(0.00)
Girl	**0.09**	(0.00)				
Observations	11740		5878		5862	

WfA households with and without a newly eligible member

Figure: Weight for Age



Grandfathers and Grandsons

Effects of a Male-Only Change in Pensions

Table: Height for Age

	General	(P > |t|)	Boys	(P > |t|)	Girls	(P > |t|)
event * Man 60-65	**-0.52**	(0.09)	**-0.94**	(0.04)	-0.24	(0.57)
event * Man 65+	-0.23	(0.31)	-0.03	(0.92)	-0.36	(0.25)
event * Woman 60-65	0.27	(0.24)	0.55	(0.08)	0.02	(0.95)
event * Woman 65+	-0.00	(0.98)	-0.16	(0.49)	0.14	(0.54)
Man 60-65	0.11	(0.66)	0.35	0.37	-0.06	(0.85)
Man 65+	0.19	(0.29)	-0.07	(0.79)	0.42	(0.08)
Woman 60-65	**-0.32**	(0.08)	-0.26	(0.32)	-0.40	(0.15)
Woman 65+	0.04	(0.74)	0.12	(0.50)	-0.03	(0.88)
event	-0.01	(0.867)	0.01	(0.92)	-0.03	(0.77)
Household Income	**0.00**	(0.00)	0.00	(0.00)	**0.00**	(0.00)
Girl	**0.22**	(0.00)				
Observations	4809		2301		2377	

Global Value Chains in Low Income Countries

R package: decompr

Implement trade decomposition procedures in R

- Leontief (1936)
- Wang Wei Zhu (2013)

Motivation:

- simplify for end users
- consistent and transparent approach

Additional work:

- gvc package: implement indicators
- Interactive demo: http://shiny.qua.st/decompr
- RStudio Add-in: Graphical User Interface (soon)

Global Value Chains in Low Income Countries

TiVa analysis: Confirming Existing Understanding 1995-2011

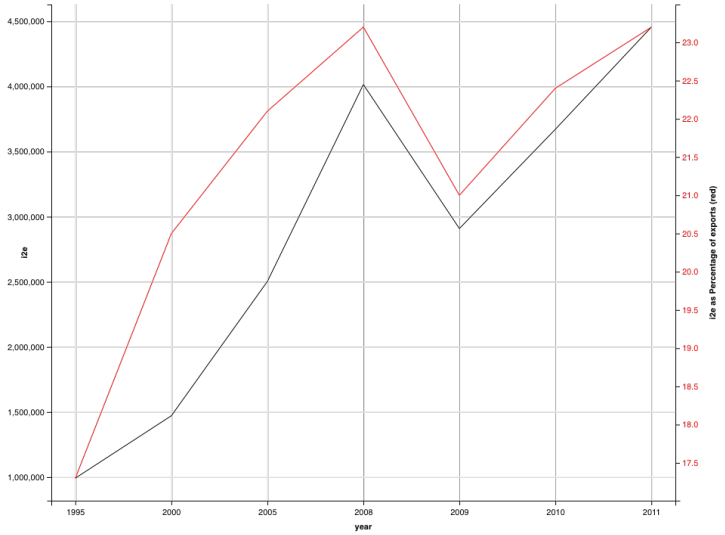


Figure: GVC integration

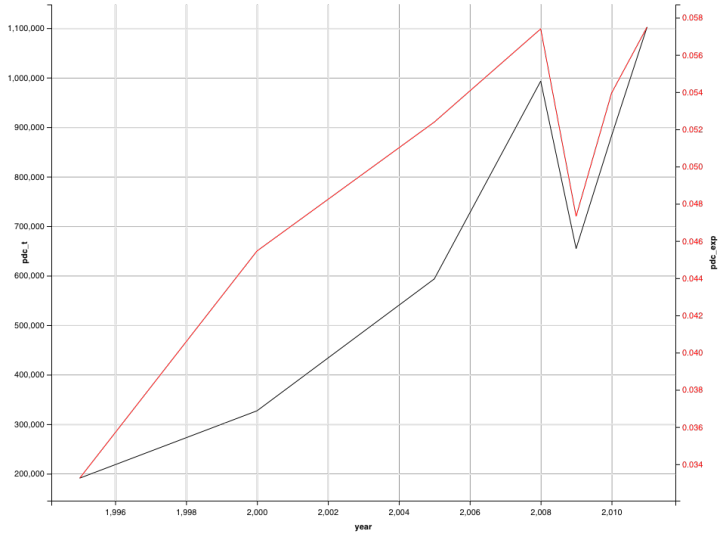


Figure: double counted trade

- GVC intensity: importing 2 export (equiv. e2r)
  - i2e grew ~350%
  - i2e share of total exports 17% -> 23%
- Wang Wei Zhu (2013)
  - pdc (proxies GVC length) share of total exports rose 73%

Global Value Chains in Low Income Countries

TiVa Analysis: Developing Country trends: New evidence

Figure: Share of value added sourced from (i2e) or sold to (e2r) L(M)IC economies for export production

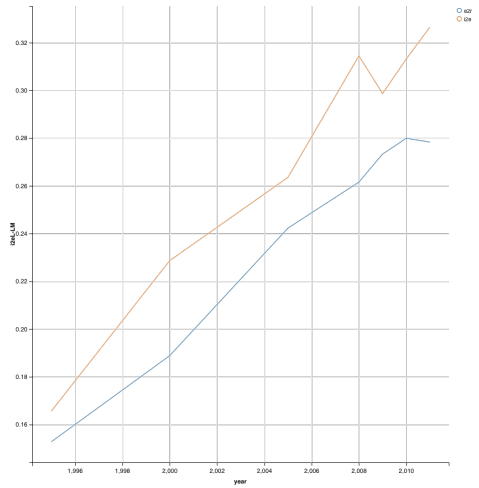


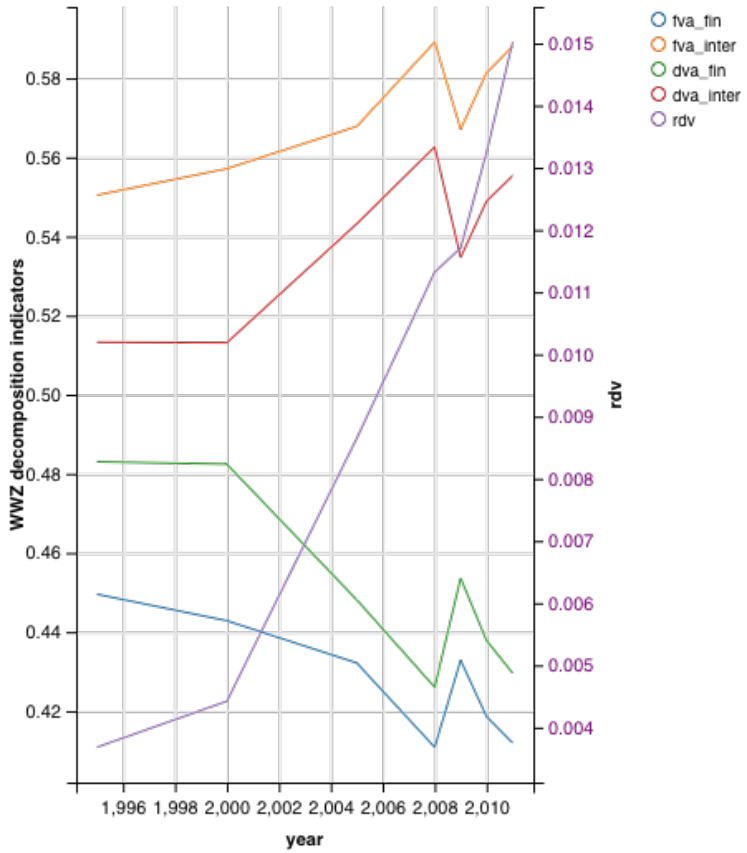
Table: WWZ decomposition results by income

group	*fva_fin*	*fva_inter*	*dva_fin*	*dva_inter*	*rdv*
L(M)IC	42.07%	57.93%	44.09%	54.73%	1.18%
High	39.38%	60.62%	40.73%	56.85%	2.42%

Global Value Chains in Low Income Countries

TiVa Analysis: Developing Country Trends: New evidence

Figure: WWZ decomposition indicators



Global Value Chains in Low Income Countries

TiVa Analysis: Regional Specifics

South East Asia:

- Primarily backward linkages, esp. Cambodia and Vietnam
- Philipines has forward linkages

Latin America

- Argentina and Colombia: Low backward and forward linkages
- Chile and Costa Rica: Better linkages & intermediaries

Africa

- Tunisia
  - Mainly backward linkages
  - Moving up in value chain
- South Africa
  - Low levels of integration
  - Benefits from comodities boom

Making the Next Billion Demand Access

The Local-Content Effect of google.co.za in Setswana

Theoretical Model

- JC Rochet and J. Tirole. Two-Sided markets: a progress report.
  RAND Journal. 37(3):645–667, 2006.

Household vs. individual effect

- Angrist (1991)

Usage of wave 4 in regressions

- ATM basic info available: employment status

General motivation

- Social media content is easier: Facebook vendor lock-in
- Open web is harder to create then social media
- Vendor lock-in

Grandfathers and Grandsons
Effects of a Male-Only Change in Pensions

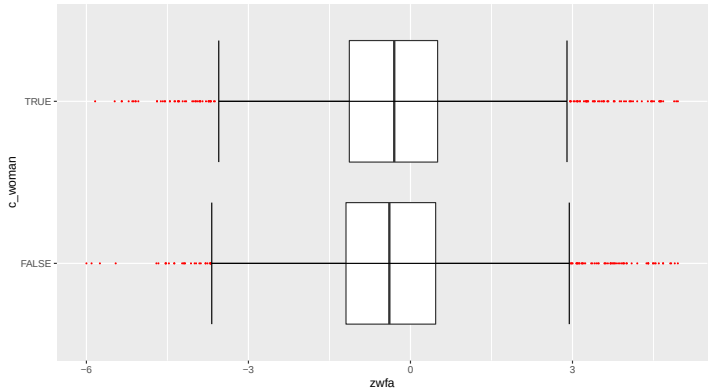
theoretical model:

- D. Thomas. Intra-Household Resource Allocation. *Journal on Human Resources*. XXV(4):635–664, 1990.

Interpretation of the treatment coefficient

- bargaining power

Figure: ZWFA Distributions



outliers driving the result

- "The upper whisker extends from the hinge to the highest value that is within 1.5 * IQR of the hinge, where IQR is the inter-quartile range, or distance between the first and third quartiles. The lower whisker extends from the hinge to the lowest value within 1.5 * IQR of the hinge. Data beyond the end of the whiskers are outliers and plotted as points (as specified by Tukey)."

Global Value Chains in Low Income Countries

implications:

- good for development: address private sector concerns
  - protection of assets
  - connect factory / processes

strictly comparable indicators

- gvc package

notation

- Hamamard products