Is Living in African Cities Expensive?

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Price level differentials within/across countries

- Urban-rural price differences (Deaton & Dupriez 2011; Majmunder, Ray, & Sinha 2012; Brandt & Holz 2006)

- Balassa-Samuelson model (Balassa 1964; Samuelson 1964): difference in the productivity of tradable and non-tradable goods and services

- Bhagwati (1984): difference in factor endowments

- Bergstrand (1991): non-homothetic preferences

Singapore as the most expensive city; Lusaka, Bangalore, and Mumbai as the cheapest?

Economist Intelligence Unit: Worldwide cost of living survey.
http://www.economist.com/blogs/graphicdetail/2016/03/daily-chart-4

Key message

Despite their lower income levels,

living in African cities is costly

— Compared with countries at comparable income levels, goods and services consumed by households in urban Africa are **20 to 30% more expensive**.

Why do our findings matter?

- High food prices impose **a burden on household budget**. Urban households spend 40 to 60% on food; poorer households spend even more.

- High housing and transportation costs force people to **sacrifice living conditions when choosing residence**.

- Firms need to pay workers higher wages to compensate high cost of living, **reducing their competitiveness**.
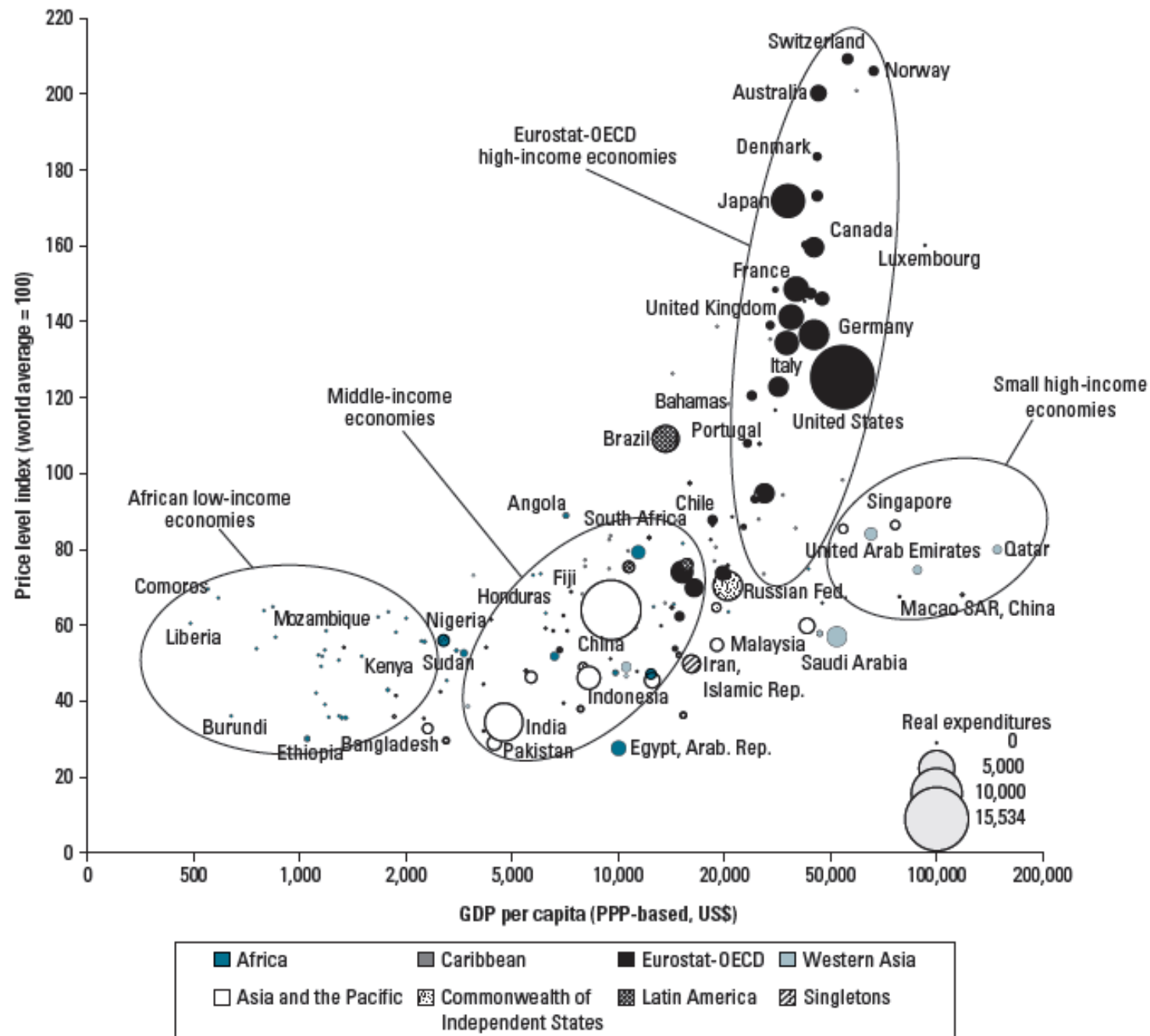
Methodology

Approach: Data sources

- National-level purchasing power parities (PPPs) from the 2011 International Comparison Program (ICP)

- Expressed as price levels (PPP/exchange rate)

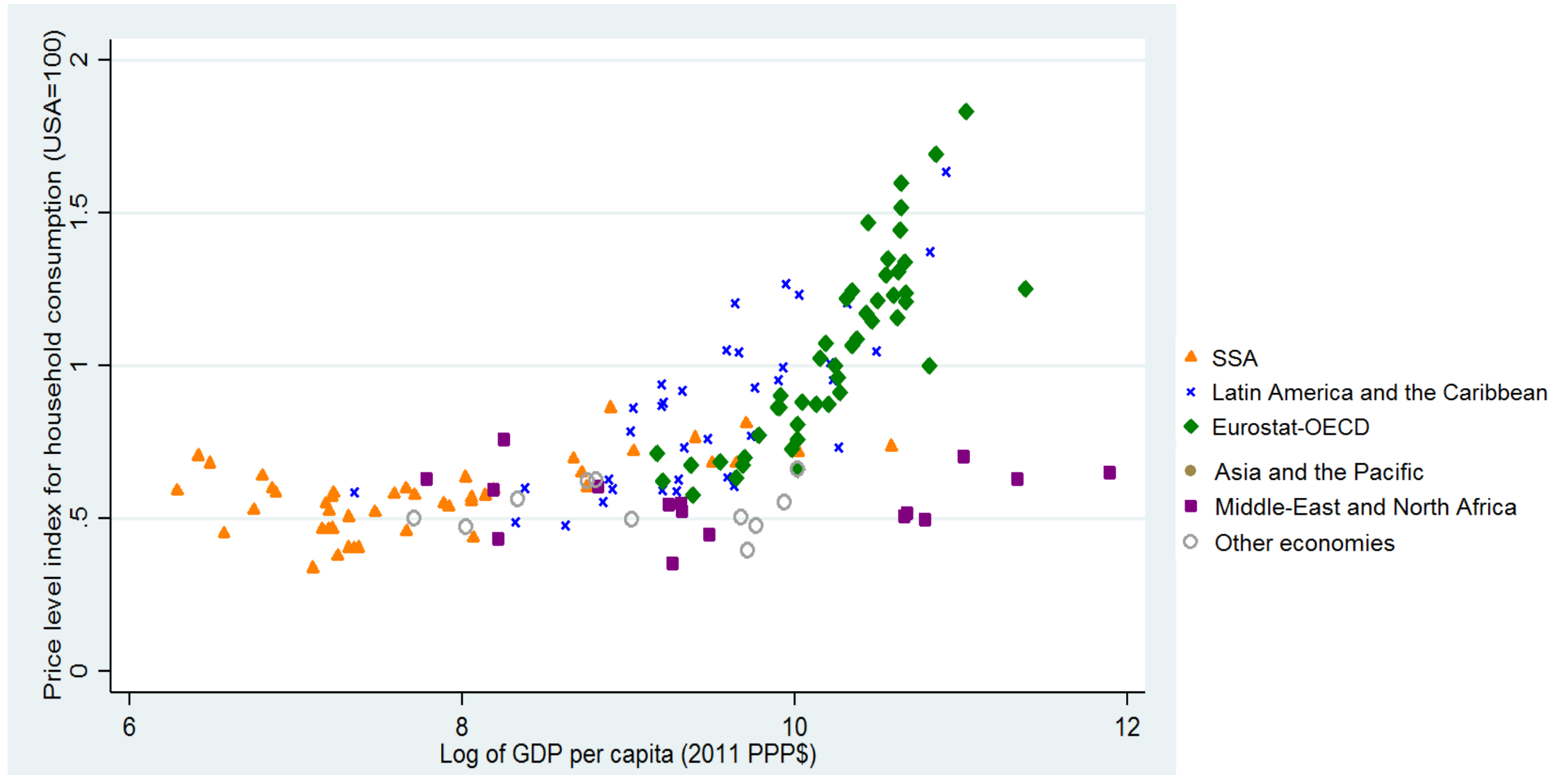- General info: www.worldbank.org\data\icp

What is ICP and how PPPs are calculated?

- www.worldbank.org/data/icp

- Main publications:
  - Purchasing Power Parities and Real Expenditures of World Economics : A Comprehensive Report of the 2011 International Comparison Program
  - Measuring the Real Size of the World Economy : The Framework, Methodology, and Results of the International Comparison Program—ICP
  - Regional ICP Reports

Figure 2.5 GDP Price Level Index versus GDP Per Capita (and Size of GDP Expenditures), ICP 2011

Price level index of household consumption, by region

Approach: Method

1. **Adjust PLIs of African countries** in the ICP data so that they can reflect price levels in urban areas

2. Compare their adjusted PLI with other countries that collected price data **predominantly in urban areas**

3. Adjust PLIs of the rest Asian countries by inflating 10%

4. Estimate a regression model:

$$\log(\text{PLI}_i) = \alpha + \beta_1 \log(\text{GDP per capita}_i) + \beta_2 SSA_i + \beta_3 X_i + \varepsilon_i$$

Why is inflating non-urban Asian countries' PLIs by 10% a valid approach?

PLI adjustment for Asian countries

List of analyzed economies
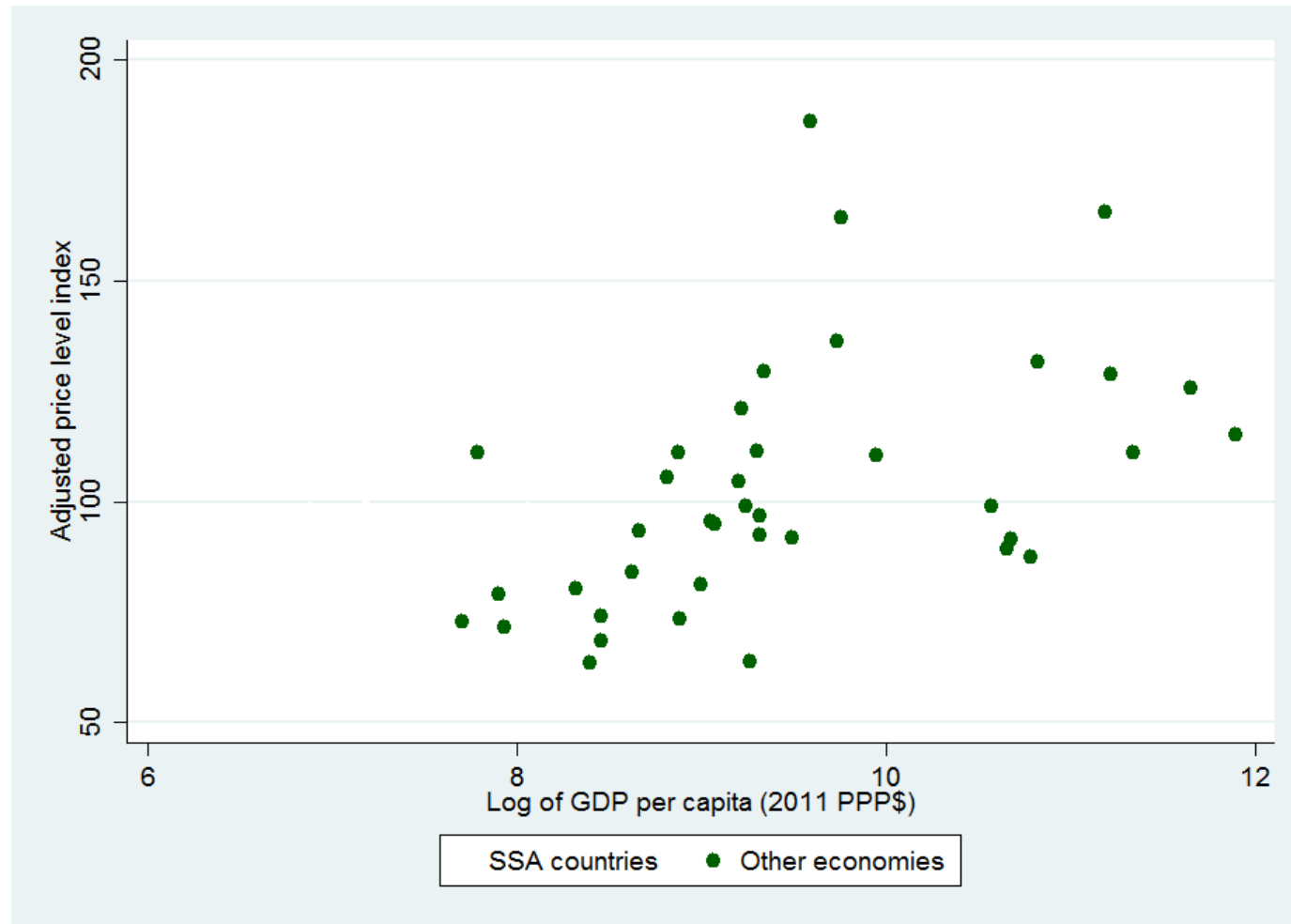
Table 1. List of selected economies

Region (number of economies)	Economies
Sub-Saharan Africa (39)	Angola*, Benin*, Botswana, Burkina Faso*, Burundi, Cameroon, Central African Republic, Chad*, Congo, Dem. Rep., Congo, Rep.*, Equatorial Guinea, Ethiopia, Gabon*, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar*, Malawi, Mali*, Mauritania*, Mauritius, Mozambique*, Namibia*, Niger, Nigeria, Rwanda, Senegal*, Sierra Leone, South Africa*, Sudan, Swaziland, Tanzania, Togo*, Uganda, Zambia*,
Latin America (7)	Bolivia*, Brazil*, Ecuador*, Paraguay*, Peru*, Uruguay*, Venezuela, RB*
East Asia and the Pacific (5)	Brunei Darussalam*, Hong Kong SAR, China*, Macao*, Singapore*, Taiwan, China*
Middle-East and North Africa (11)	Bahrain*, Djibouti*, Egypt, Arab Rep., Iraq*, Jordan*, Kuwait*, Morocco, Oman*, Qatar*, Saudi Arabia*, Tunisia

Note: * indicates economies that collected price surveys predominantly in urban areas.

Results

Prices of goods and services consumed by households in urban Africa are very high relative to their income levels

Adjusted price level index of household consumption

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Adjusted price level index of household consumption

Mozambique
Adjusted PLI = 108
GDP per capita = PPP$951

Peru
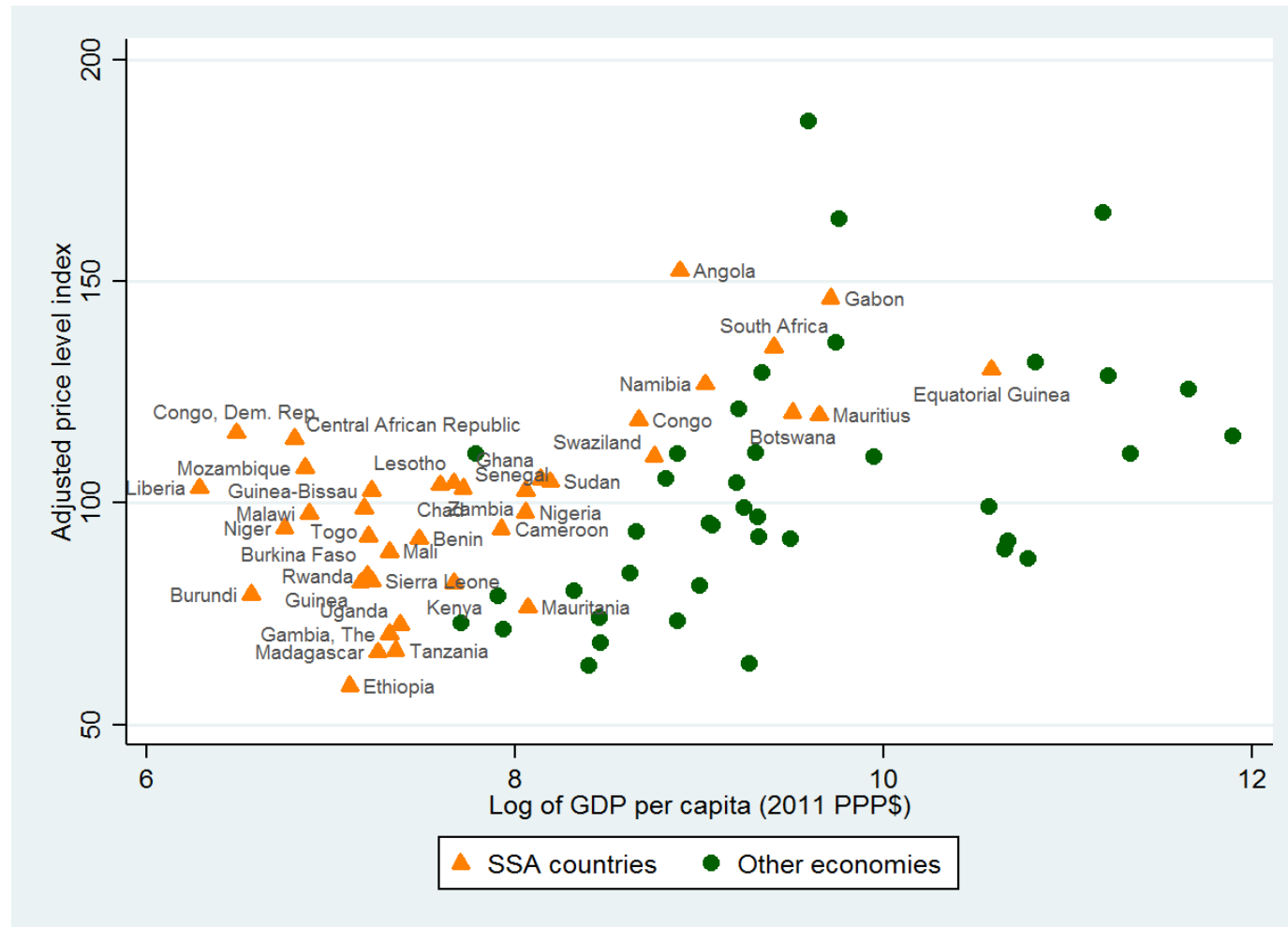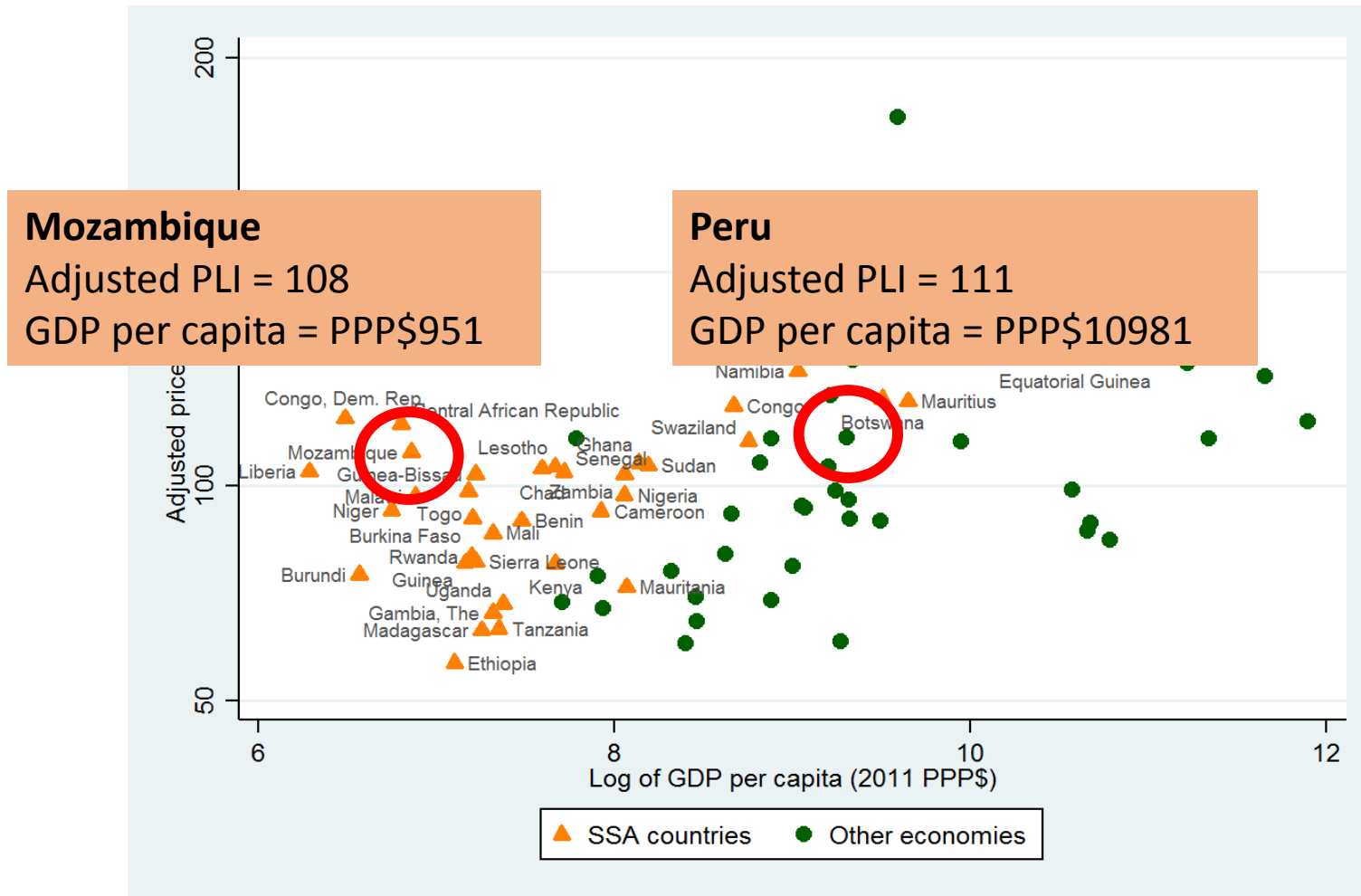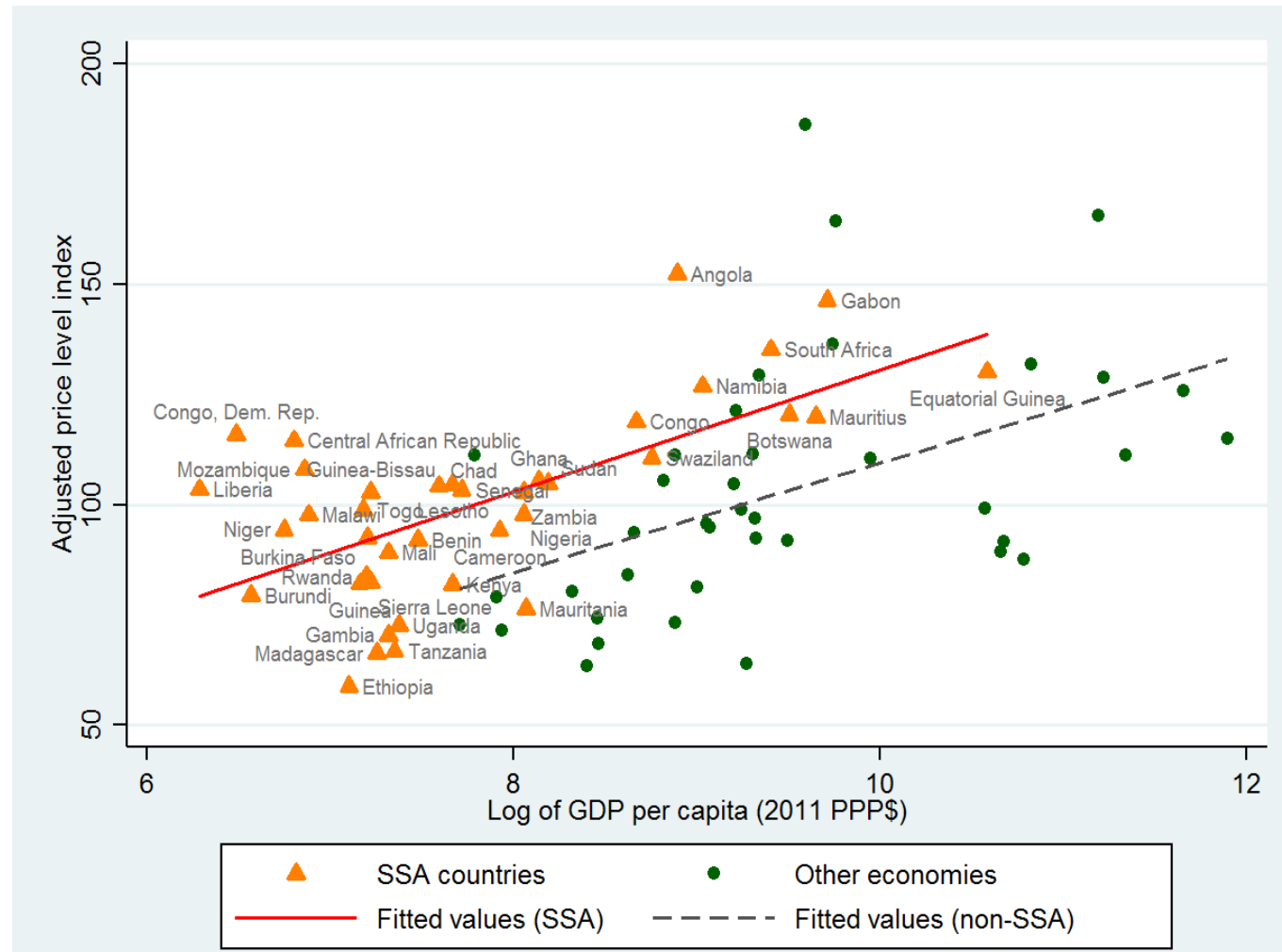Adjusted PLI = 111
GDP per capita = PPP$10981

Prices of goods and services consumed by households in urban Africa are very high relative to their income levels

Adjusted price level index of household consumption

Results without Asian countries

Table 3. Estimation results for household consumption except for housing rent

	No adjustment		Adjusted			
	(1)	(2)	(3)	(4)	(5)	(6)
Log of GDP per capita	0.097***	0.047	0.049	0.049*		
	(0.026)	(0.030)	(0.030)	(0.028)		
Log of GVA per capita					0.061	0.084**
					(0.036)	(0.035)
SSA dummy	0.095	0.229**	0.224**	0.225***	0.276***	0.306***
	(0.078)	(0.089)	(0.090)	(0.084)	(0.092)	(0.086)
Log of population		0.000	-0.001	-0.116***	0.015	-0.125**
		(0.019)	(0.020)	(0.043)	(0.024)	(0.053)
Urban population rate		0.006***	0.006***	-0.026**	0.007***	-0.031**
		(0.002)	(0.002)	(0.011)	(0.002)	(0.013)
Log population × Urban rate				0.002***		0.002***
				(0.001)		(0.001)
Constant	3.511***	3.543***	3.554***	5.394***	3.110***	5.227***
	(0.259)	(0.480)	(0.482)	(0.773)	(0.535)	(0.875)
Adjusted R squared	0.220	0.309	0.308	0.389	0.400	0.482
Obs.	62	62	62	62	53	53

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Dependent variables are log of price level index (PLI). Columns (3) to (6) are based on PLIs adjusted based on capital-city-to-national price-level ratio in Africa. We also estimated models with the squared term of the log of GDP (or GVA) per capita, but obtained similar results (not reported).
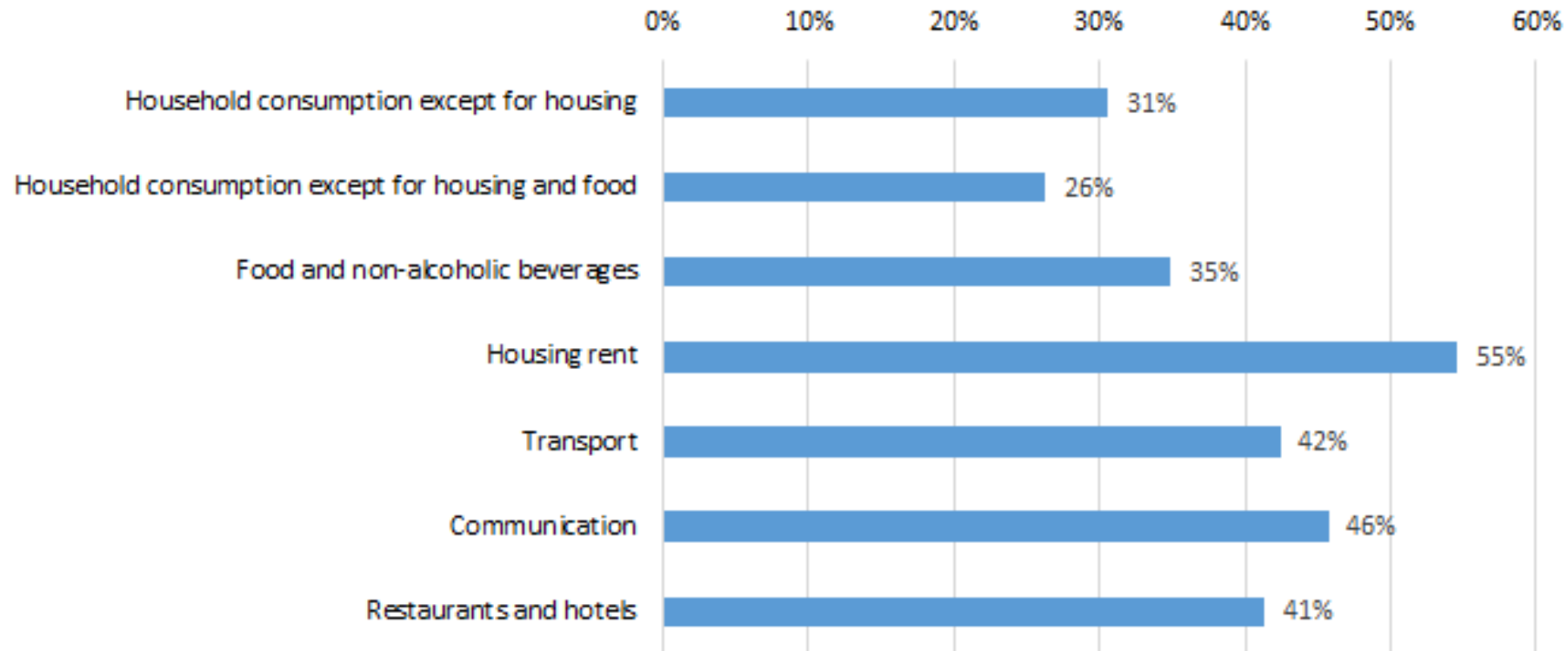
Results with Asian countries

Table 4. Estimation results for household consumption except for housing (with Asian countries)

	No adjustment		Adjusted			
	(1)	(2)	(3)	(4)	(5)	(6)
Log of GDP per capita	0.125***	0.051*	0.053*	0.057**		
	(0.022)	(0.027)	(0.027)	(0.025)		
Log of GVA per capita					0.070**	0.091***
					(0.031)	(0.029)
SSA dummy	0.194***	0.226***	0.225***	0.209***	0.229***	0.218***
	(0.058)	(0.058)	(0.058)	(0.055)	(0.058)	(0.053)
Log of population		0.007	0.006	-0.088***	0.009	-0.108***
		(0.014)	(0.014)	(0.032)	(0.017)	(0.037)
Urban population rate		0.006***	0.006***	-0.023**	0.006***	-0.029***
		(0.001)	(0.001)	(0.009)	(0.002)	(0.010)
Log population × Urban rate				0.002***		0.002***
				(0.001)		(0.001)
Constant	3.415***	3.630***	3.628***	5.135***	3.461***	5.271***
	(0.208)	(0.365)	(0.367)	(0.577)	(0.373)	(0.621)
Adjusted R squared	0.288	0.422	0.420	0.488	0.489	0.566
Obs.	78	78	78	78	68	68

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Dependent variables are log of price level index (PLI). Columns (3) to (6) are based on PLIs adjusted based on capital city-to-national price level ratios in Africa. PLIs for Asian countries, except for those that collected price information predominantly in urban areas, are inflated by 10%.

Particularly expensive items are food, housing, and transport

Summary of estimation results

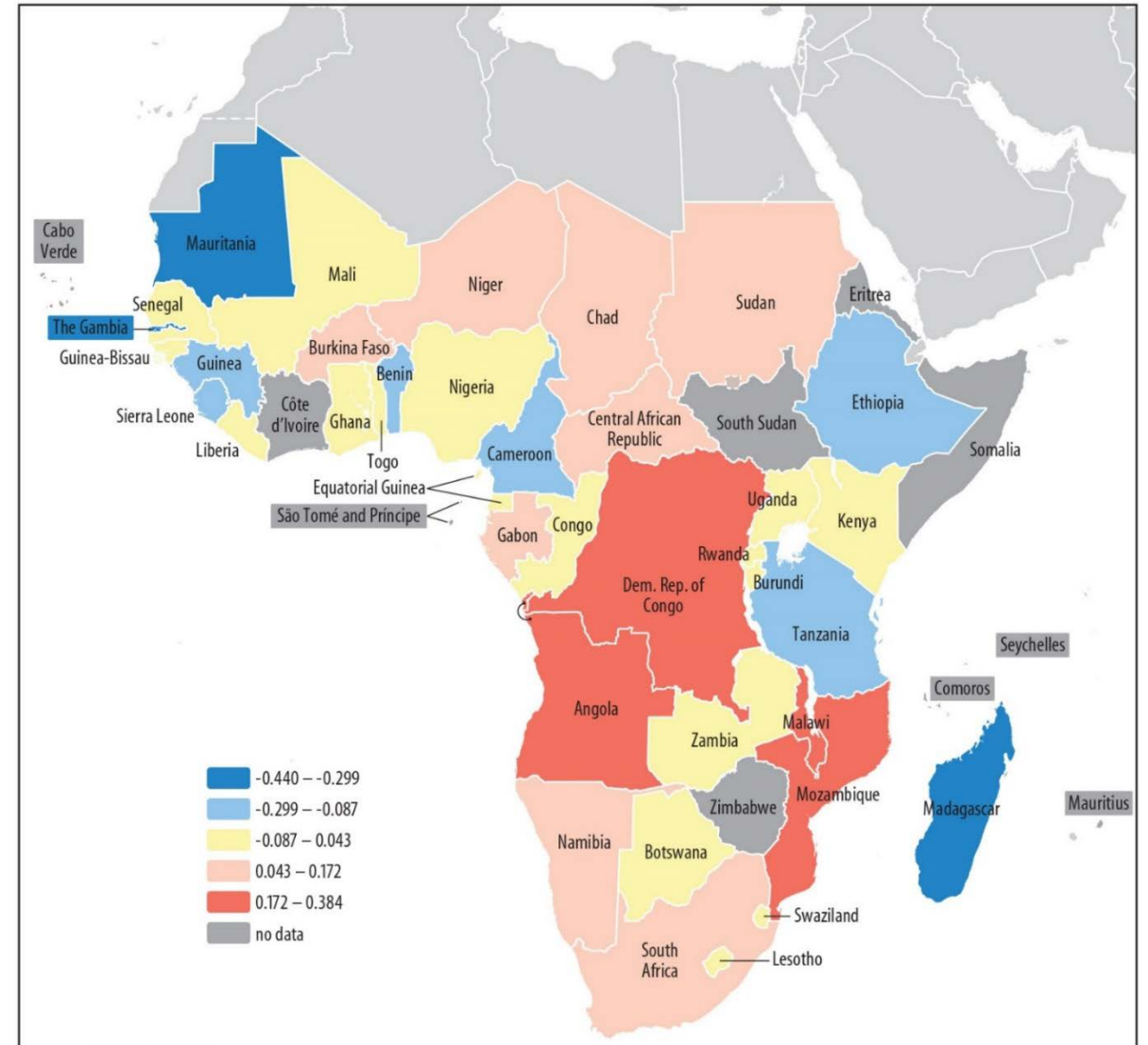| Category	Percentage
Household consumption except for housing	31%
Household consumption except for housing and food	26%
Food and non-alcoholic beverages	35%
Housing rent	55%
Transport	42%
Communication	46%
Restaurants and hotels	41%

Relatively expensive/cheap countries

Expensive (red):
Angola, DRC, Mozambique, Malawi, and Chad

Less expensive (blue):
Gambia, Mauritania, Madagascar, and Tanzania

Residuals

Analysis of price level index based on Economist data

Price level index in EIU data

Similar results between ICP and EIU

Table 7. Summary of regression analysis with EIU data

	Household consumption				Food and non-alcohol beverages			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log of GVA per capita	0.072	0.098*	0.189***	0.147***	0.042	0.067	0.169***	0.103***
	(0.060)	(0.058)	(0.026)	(0.033)	(0.064)	(0.061)	(0.027)	(0.031)
Log of GVA per capita squared	0.018*	0.021**			0.018*	0.022**		
	(0.009)	(0.009)			(0.010)	(0.009)		
SSA dummy	0.268***	0.296***	0.307***	0.284***	0.192**	0.228***	0.242***	0.200**
	(0.084)	(0.081)	(0.080)	(0.090)	(0.090)	(0.084)	(0.084)	(0.084)
Log of population		0.013	0.006	0.043		0.045**	0.039*	0.058**
		(0.020)	(0.021)	(0.029)		(0.021)	(0.021)	(0.028)
Log of population density		0.102***	0.098***	0.005		0.107***	0.103***	-0.041
		(0.034)	(0.034)	(0.057)		(0.035)	(0.035)	(0.053)
Euro-OECD dummy			0.132**				0.124**	
			(0.058)				(0.061)	
Constant	4.104***	3.012***	3.017***	3.630***	4.204***	2.783***	2.777***	4.049***
	(0.090)	(0.327)	(0.327)	(0.507)	(0.097)	(0.340)	(0.343)	(0.475)
Adjusted R^2	0.578	0.617	0.616	0.339	0.461	0.540	0.534	0.282
Obs.	125	125	125	70	125	125	125	70

Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Dependent variables are the log of price level index. Columns (4) and (8) exclude high-income cities. Control variables include log of GVA per capita (Oxford Economics, 2015), log of population (Oxford Economics, 2015), log of population density (Demographida, 2015), and a dummy indicator about Euro-OECD countries.

Conclusion and next research agenda

- **Yes, cost of living in urban Africa is high, but...**

- **Why** is cost of living in African cities so high?

- How would such a high cost of living affect **poverty** (and its measurement) in urban Africa?

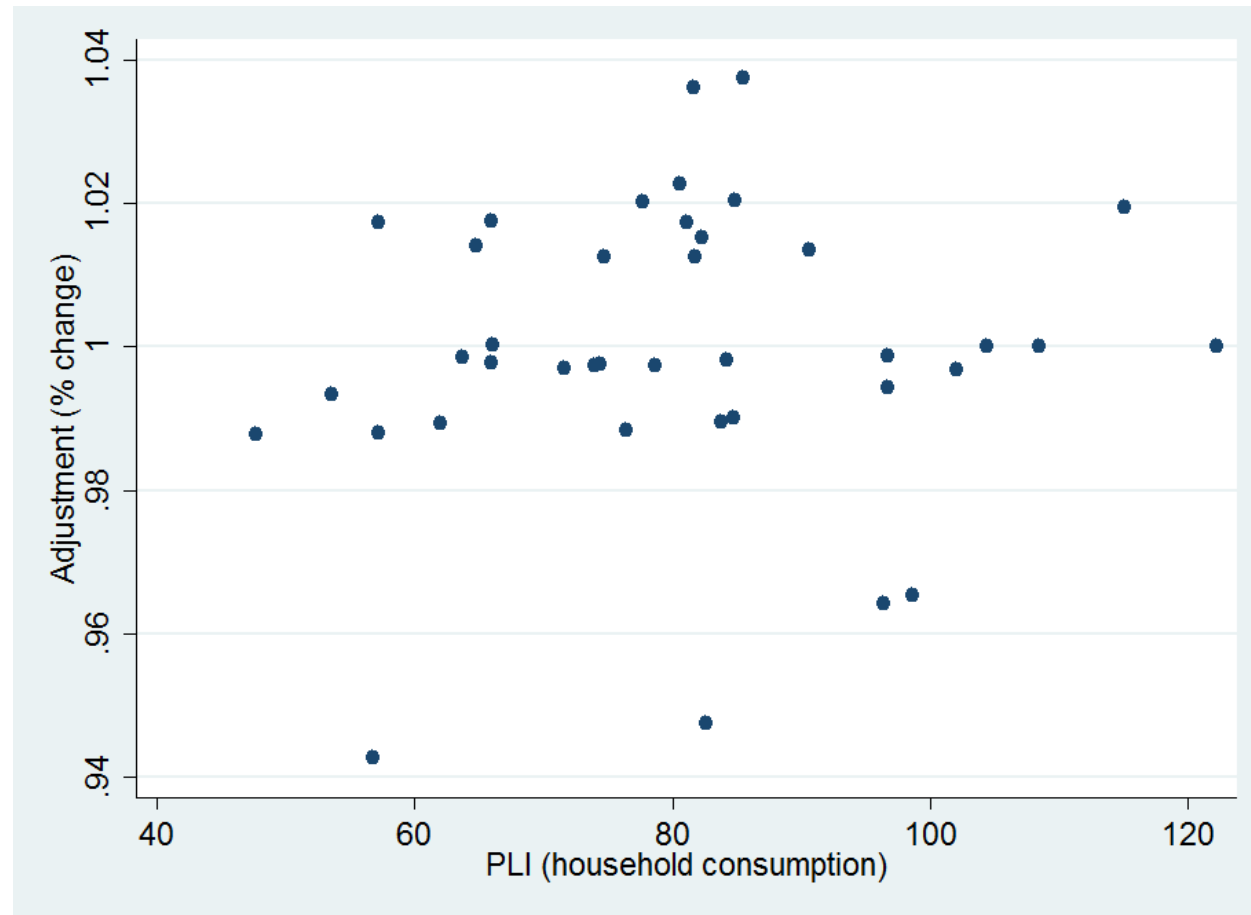- How has been the cost of living in African cities **changing**?

How reliable is the EIU data for the purpose of the study?

- Limited number of items

- Items mostly oriented toward expatriates

- Weights of rich countries

- Index number issue (Laspeyres index)
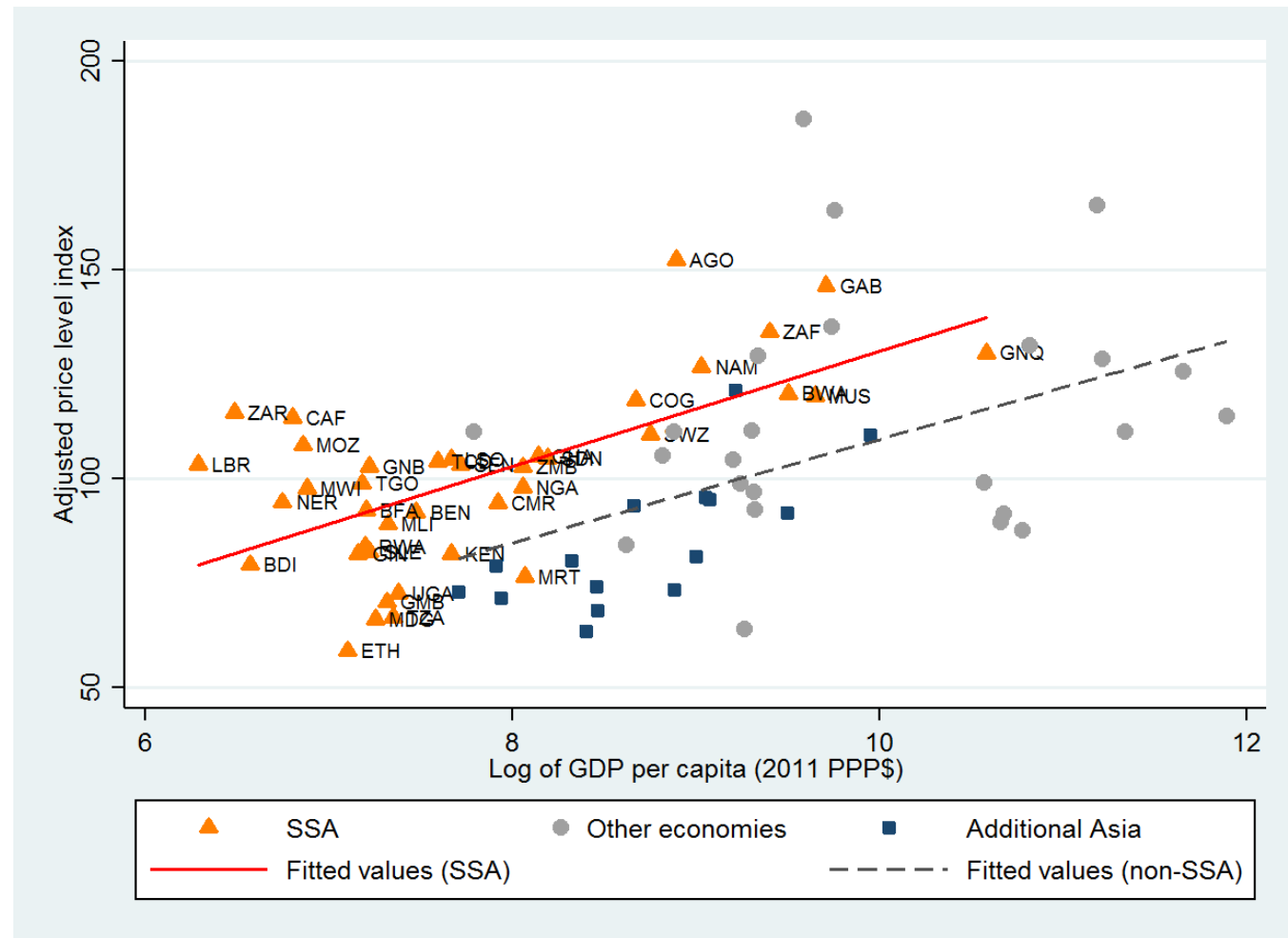
Additional slides

How do African countries' adjusted PLIs differ from their non-adjusted PLIs?

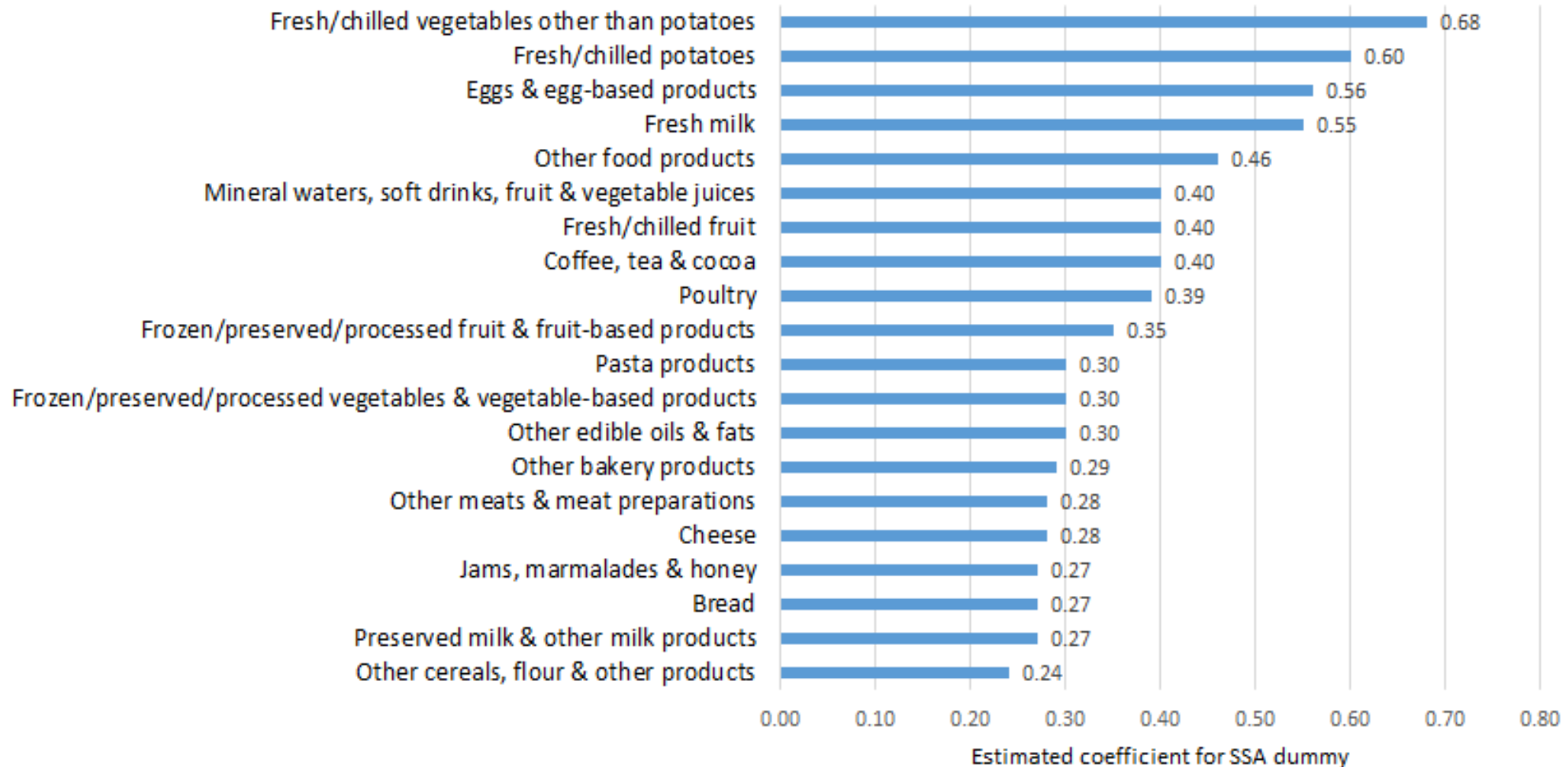
National to urban PLI adjustment in African countries

Why is inflating non-urban Asian countries' PLIs by 10% a valid approach?

Adjusted price level ratio with additional Asian countries

Which food items are more expensive in urban Africa?

Estimated price premium by food category

How much do the urban poor spend for food in Africa?

Share of food in household expenditure in urban Africa