Does One Law Fit All? Cross-Country Evidence on Okun's Law

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Global Labor Markets Workshop

Paris, September 1-2, 2016

What the paper does and why

- Provides estimates of Okun's Law for 71 countries
  - 29 'advanced' (high-income) countries compared with 42 'developing' (emerging, frontier, low-income)
- Why study developing countries?
  - that's where the workers are
  - to test presumption that Okun's Law not relevant
    - Structural factors matter more than short-run fluctuations

List of countries

Advanced		Developing	
Australia	Korea	Albania	Kyrgyz Republic(1994)
Austria	Netherlands	Algeria	Malaysia(1985)
Belgium	New Zealand	Argentina	Mexico
Canada	Norway	Belarus(1991)	Moldova(1993)
Czech Republic(1995)	Portugal	Brazil	Morocco(1995)
Denmark	Puerto Rico	Bulgaria(1989)	Nicaragua
Finland	Singapore	Chile	Pakistan(1983)
France	Slovak Republic(1993)	China	Panama
Germany	Spain	Colombia	Paraguay(1983)
Greece	Sweden	Costa Rica	Peru
Hong Kong SAR	Switzerland	Croatia(1992)	Philippines(1985)
		Dominican	
Ireland(1985)	Taiwan Province of China	Republic(1991)	Poland(1990)
Israel	United Kingdom	Ecuador(1988)	Romania(1985)
Italy	United States	Egypt(1990)	Russia(1992)
Japan		Georgia(1996)	South Africa
		Honduras	Sri Lanka(1990)
		Hungary	Tunisia(1990)
		Indonesia(1984)	Turkey
		Iran(1990)	Ukraine(1995)
		Jordan(1984-2014)	Uruguay(1983)
		Kazakhstan(1994)	Vietnam(1990)

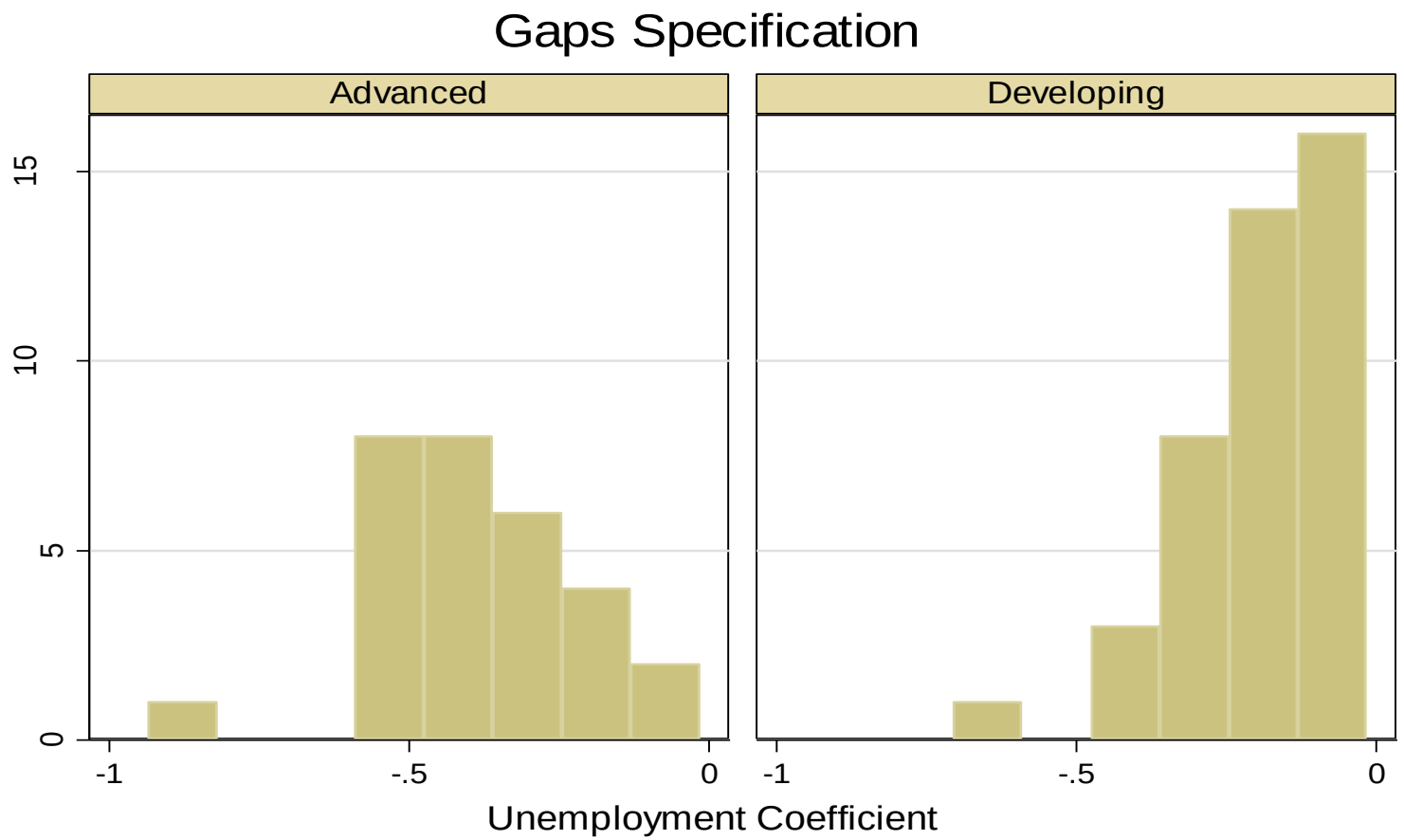
Okun's Law: What we estimate

Gaps version	Changes version
$u_t - u_t^* = \beta(y_t - y_t^*) + \varepsilon_t$	$\Delta u_t = \alpha + \gamma \Delta y_t + \omega_t$
$e_t - e_t^* = \beta^e(y_t - y_t^*) + \varepsilon_{et}$	$\Delta e_t = \alpha^e + \gamma^e \Delta y_t + \omega_{et}$
$l_t - l_t^* = \beta^l(y_t - y_t^*) + \varepsilon_{lt}$	$\Delta l_t = \alpha^l + \gamma^l \Delta y_t + \omega_{lt}$

Main results

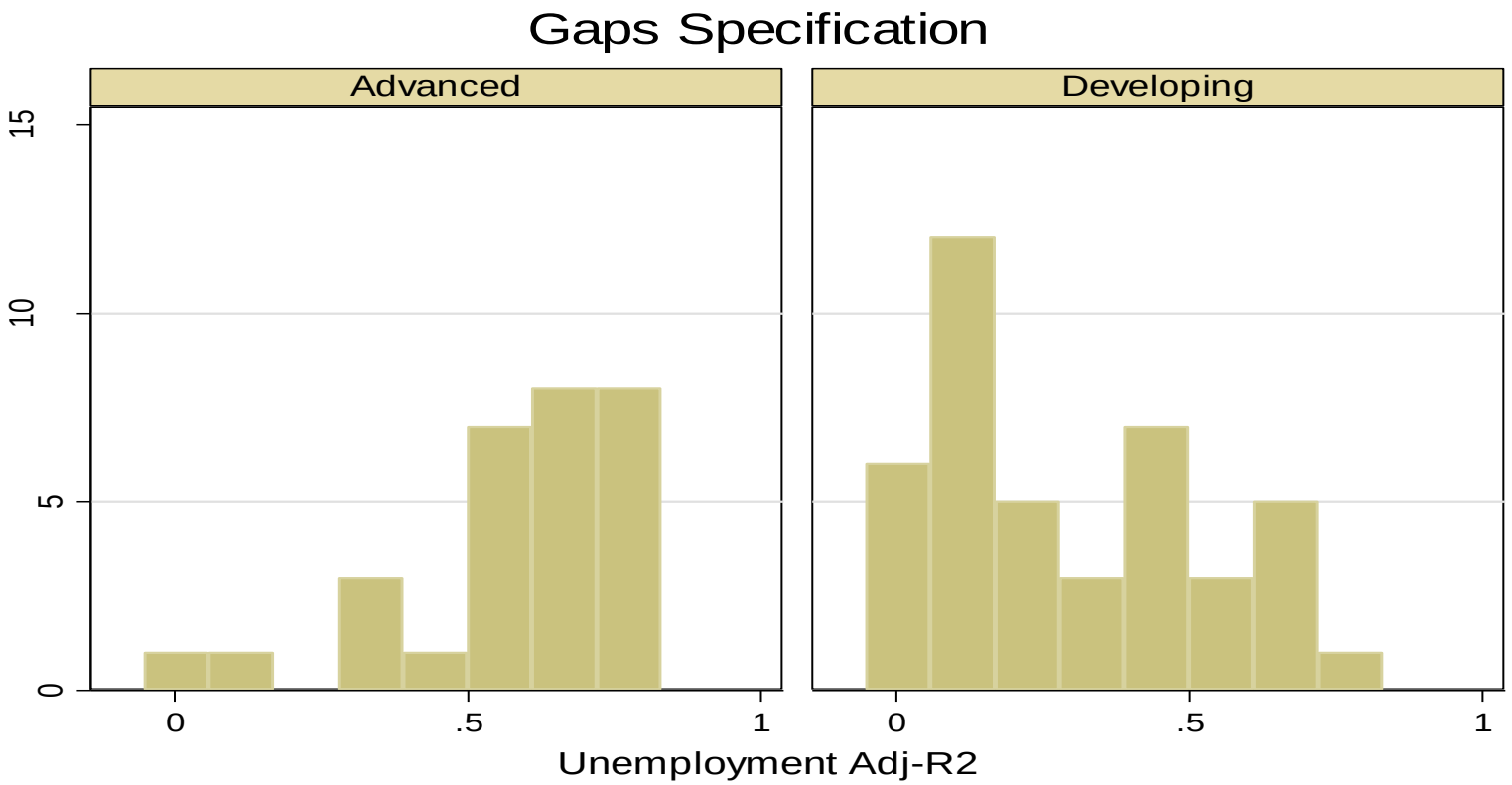
Distribution of Okun coefficients across countries

Distribution of Okun coefficients: Unemployment gap equation

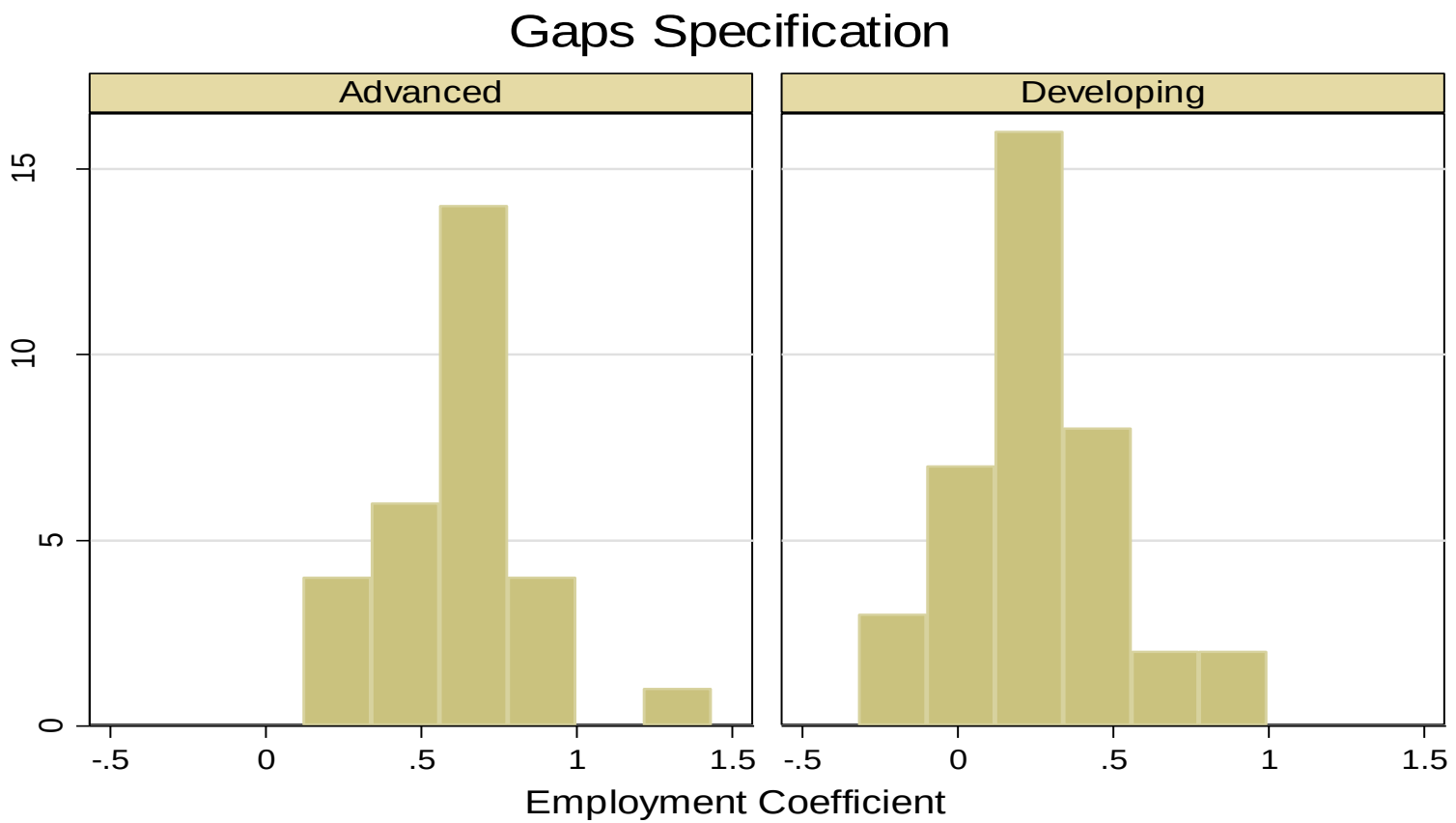


Advanced: Mean = -.39, Sd = .18, N = 29
Developing: Mean = -.2, Sd=.14, N=42

Distribution of R-square statistic: Unemployment gap equation

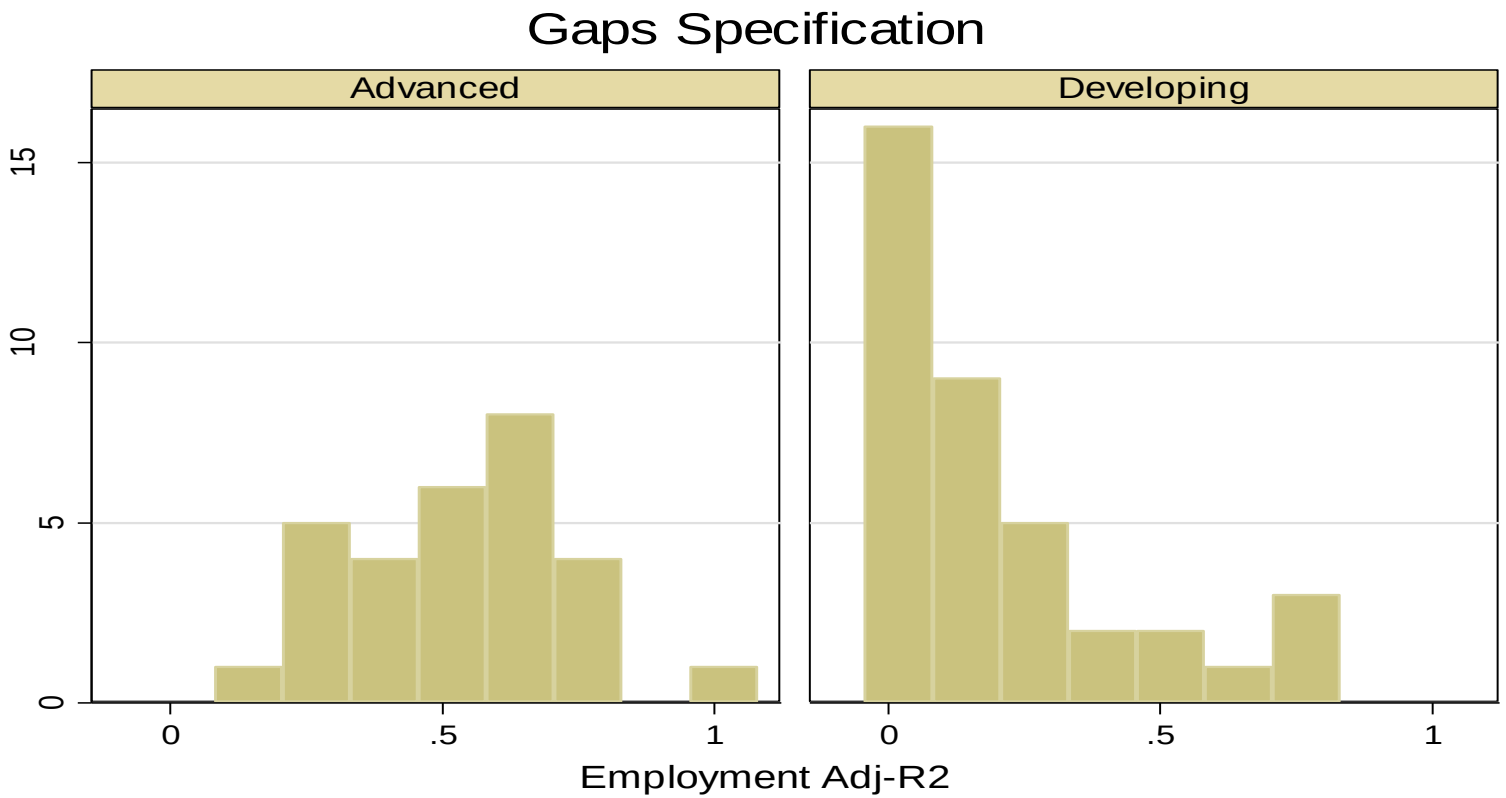


Distribution of Okun coefficient: Employment gap equation



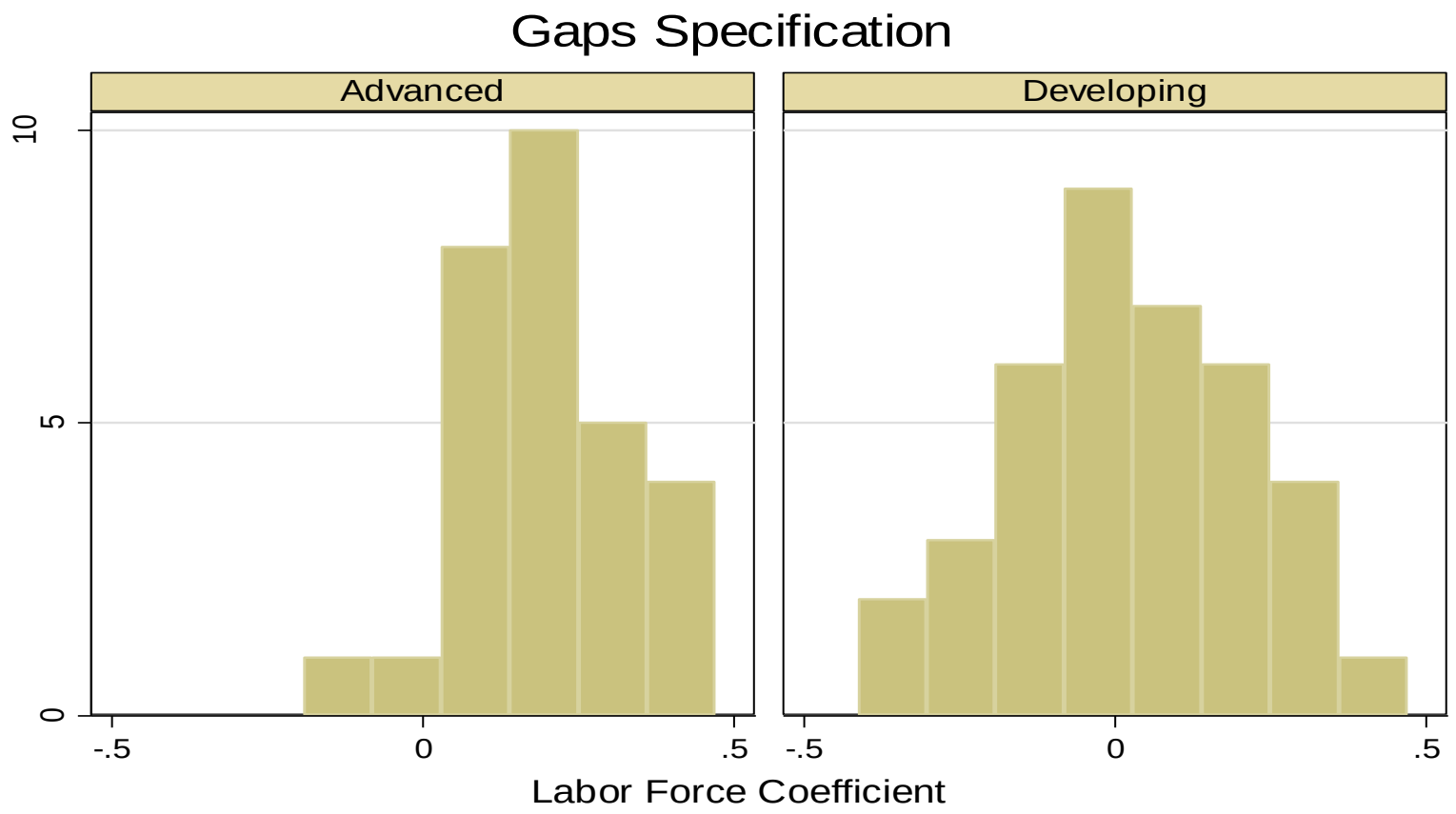
Advanced: Mean = .62, Sd = .25, N = 29
Developing: Mean = .26, Sd=.26, N=38

Distribution of R-square statistic: Employment gap equation



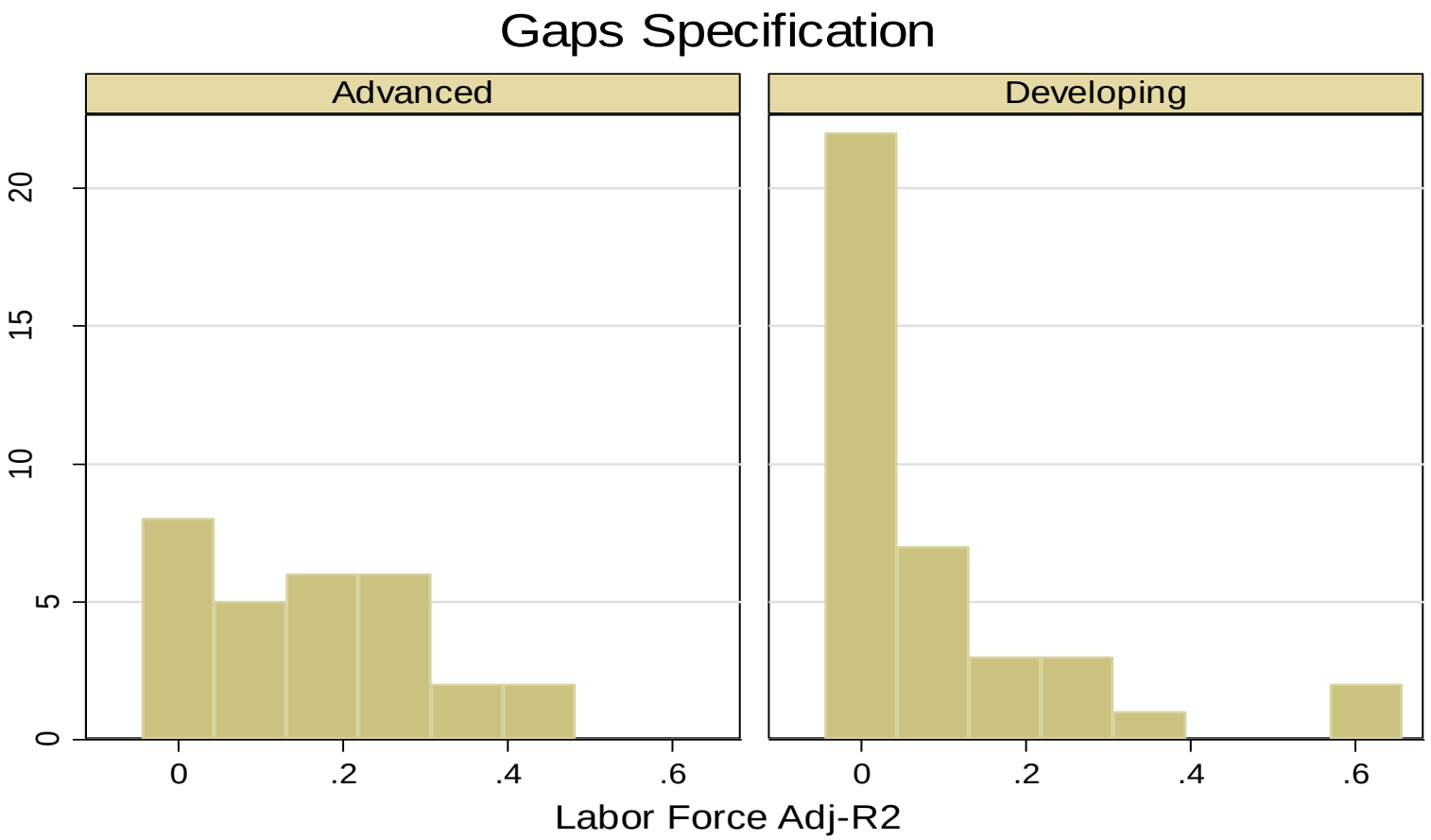
Advanced: Mean = .53, Sd = .2
Developing: Mean = .2, Sd=.23

Distribution of Okun coefficient: Labor force gap equation



Advanced: Mean = .18, Sd = .14, N = 29
Developing: Mean = .02, Sd=.2, N=38

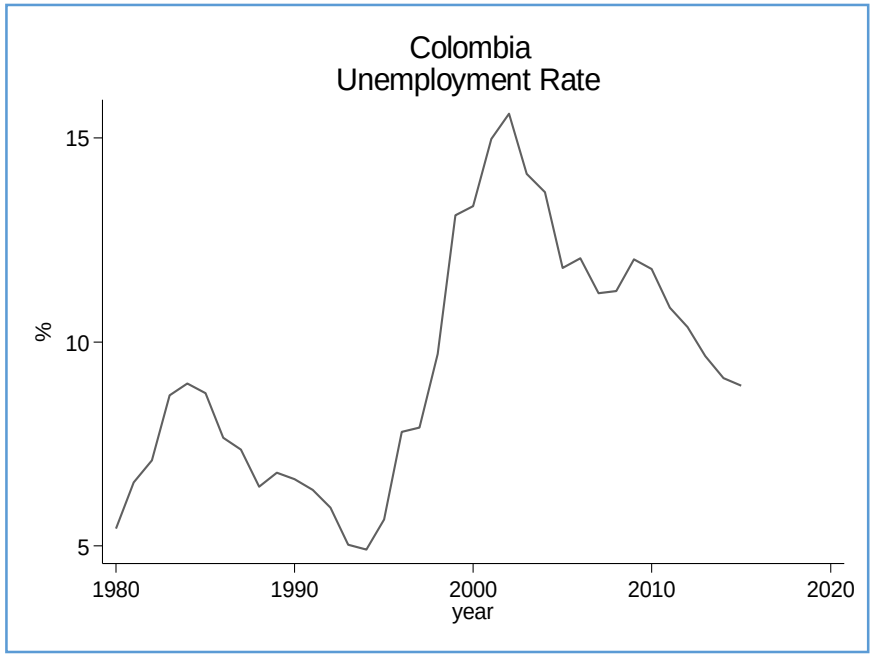
Distribution of R-square statistic: Labor force gap equation

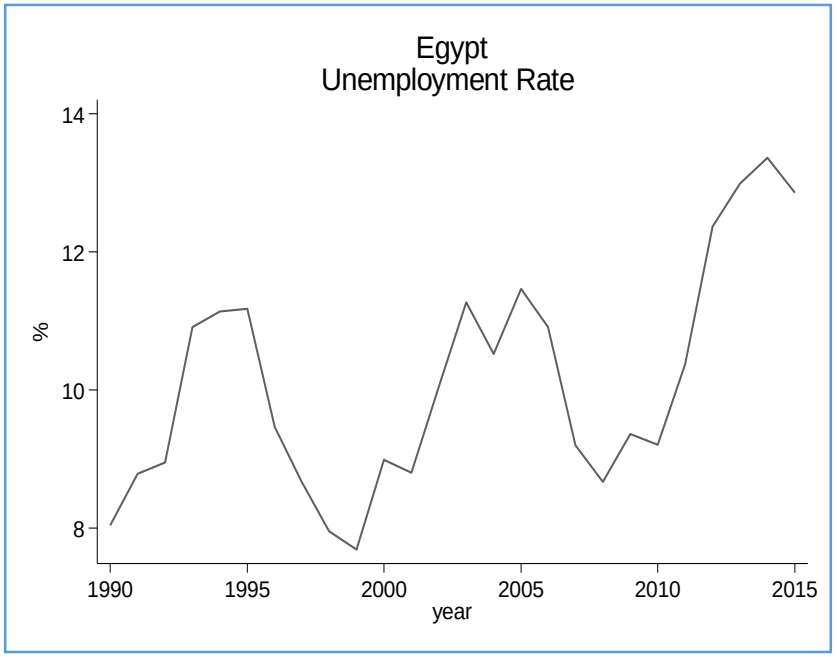


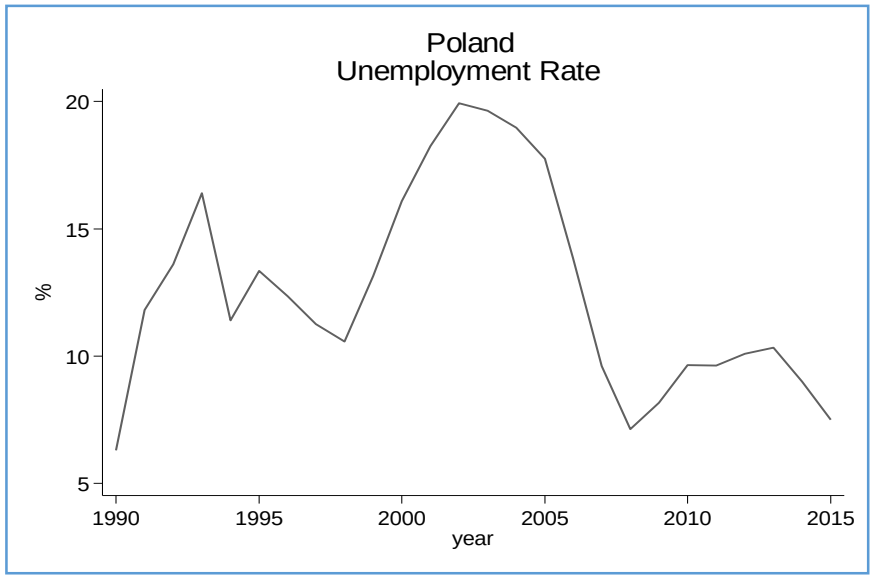
Advanced: Mean = .17, Sd = .14
Developing: Mean = .09, Sd=.16

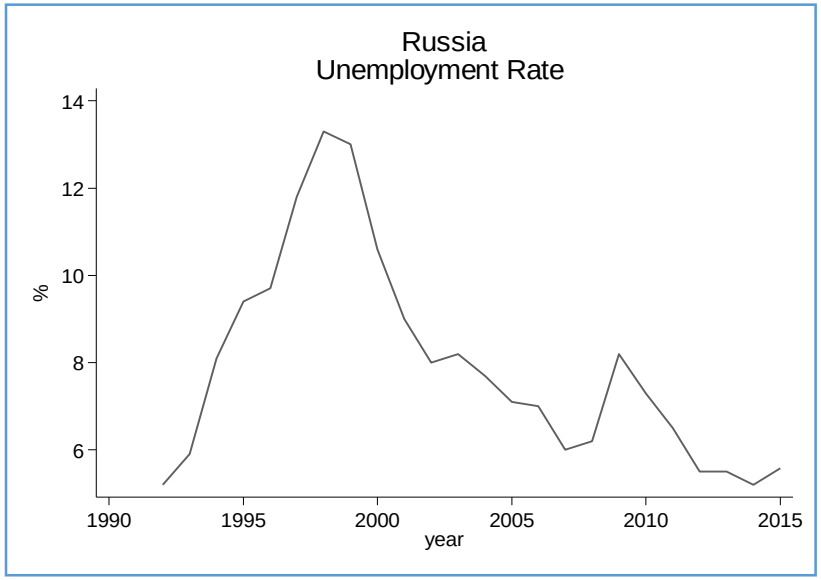
Country cases

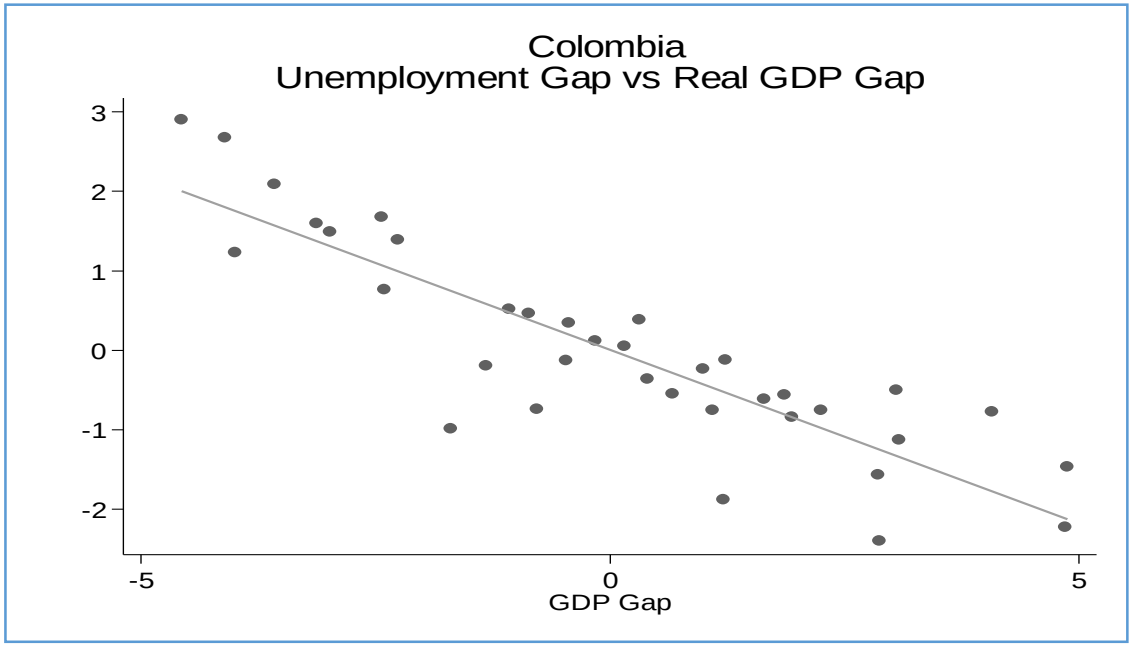
- Colombia, Egypt, Poland, Russia
- Summary matrix

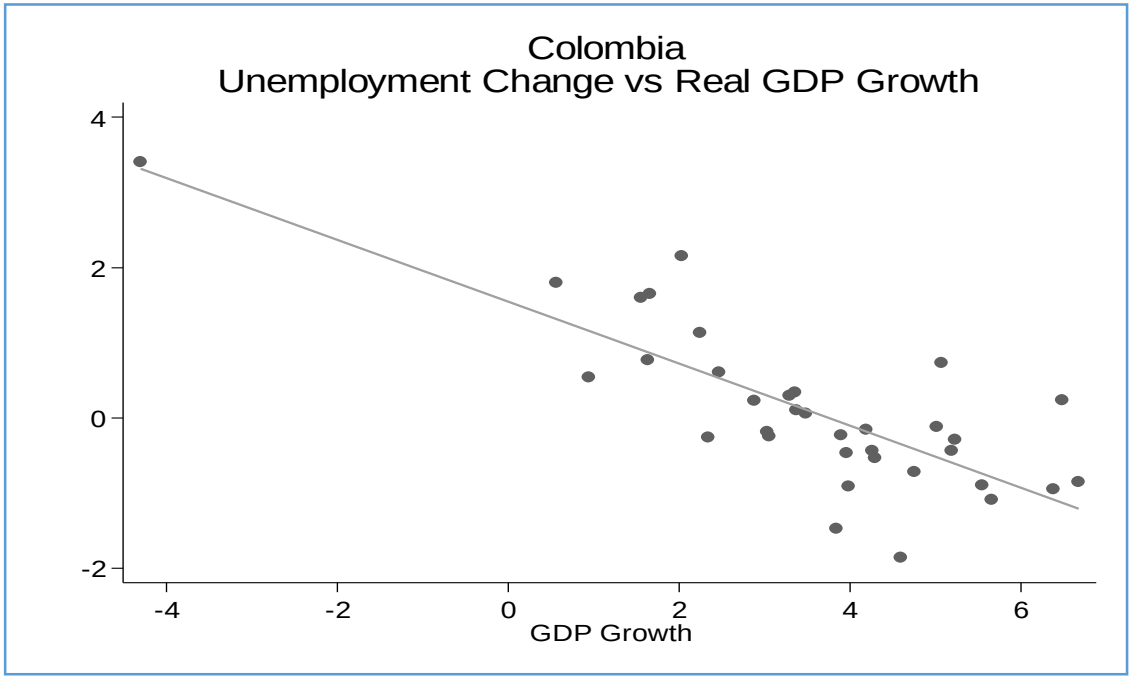

Colombia
Unemployment Rate
%
15
10
5
1980
1990
2000
2010
2020
year

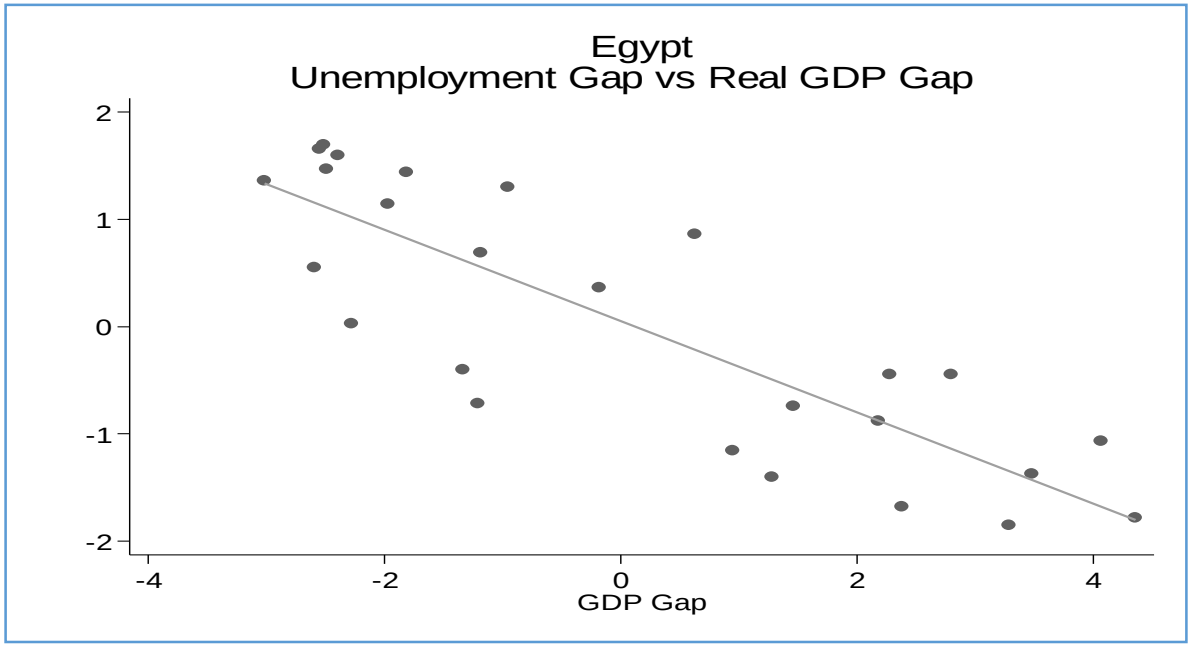

Egypt
Unemployment Rate
%
14
12
10
8
1990
1995
2000
2005
2010
2015
year

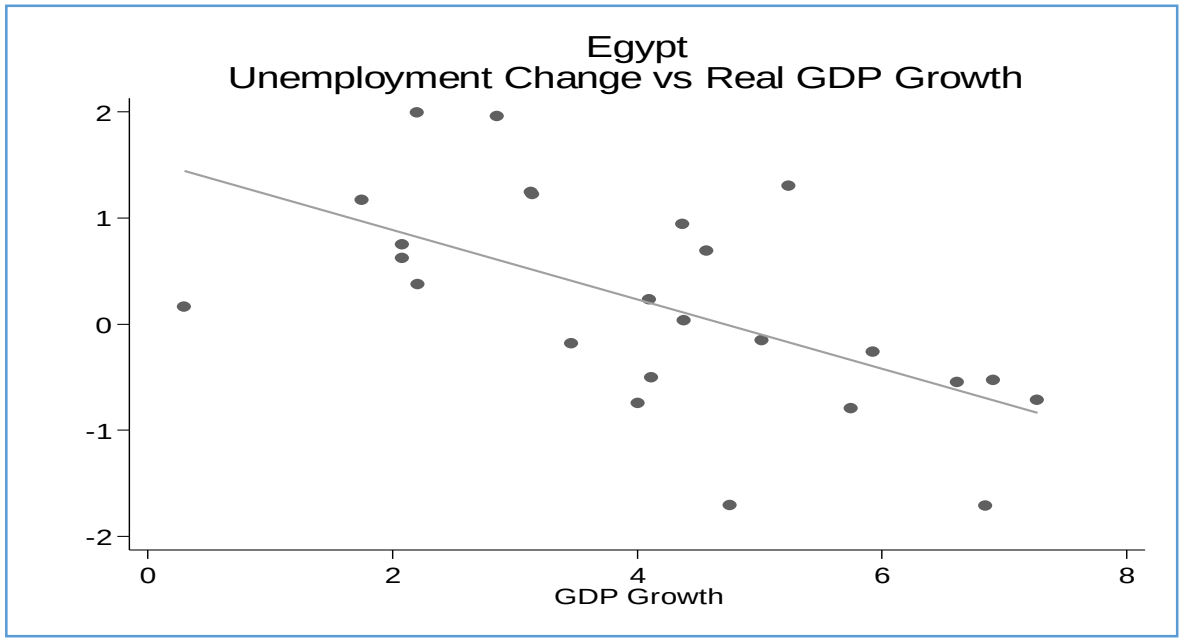

Poland
Unemployment Rate
%
20
15
10
5
1990
1995
2000
2005
2010
2015
year

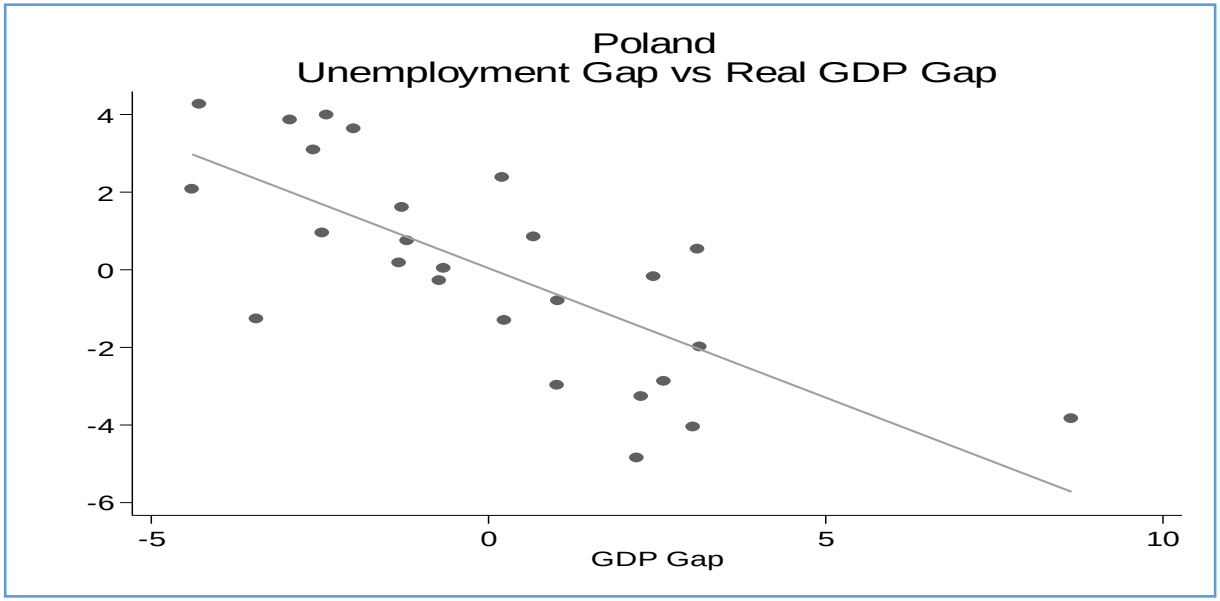

Russia
Unemployment Rate
%
14
12
10
8
6
1990
1995
2000
2005
2010
2015
year

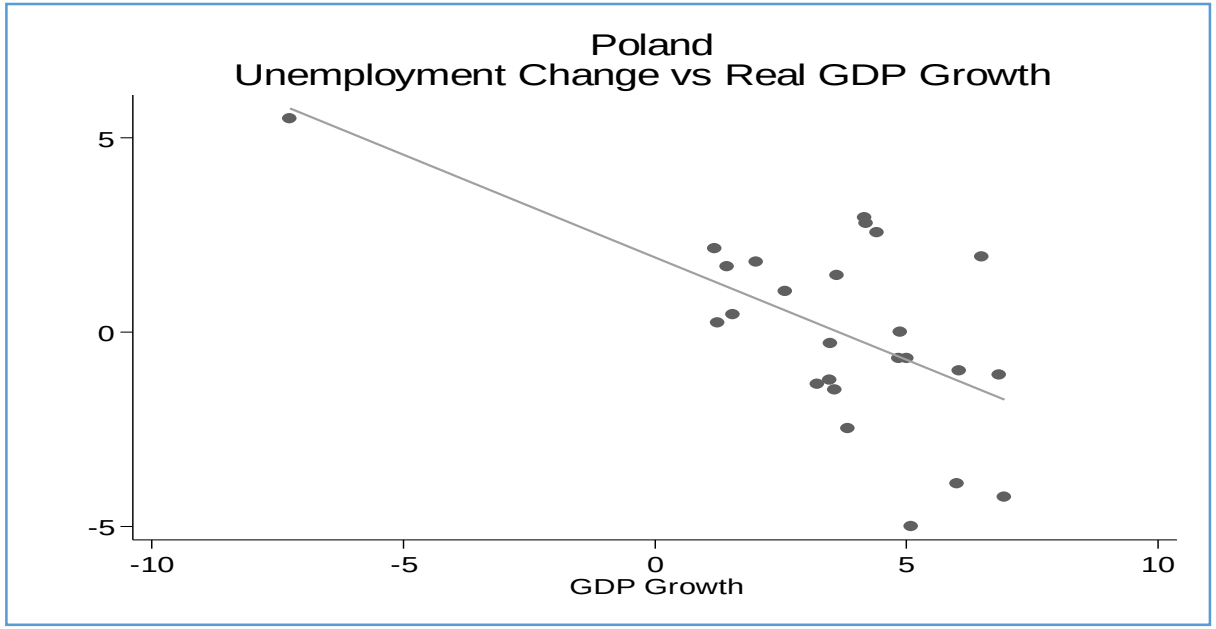

Colombia
Unemployment Gap vs Real GDP Gap
3
2
1
0
-1
-2
-5
0
5
GDP Gap

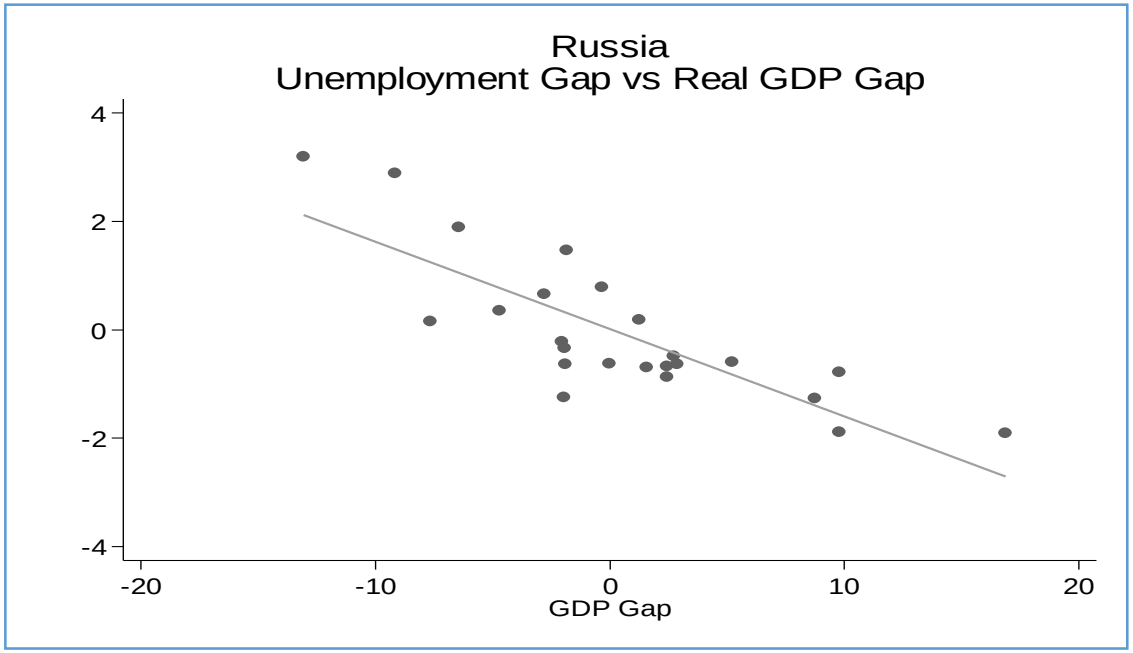

Colombia
Unemployment Change vs Real GDP Growth
4
2
0
-2
-4
-2
0
2
4
6
GDP Growth

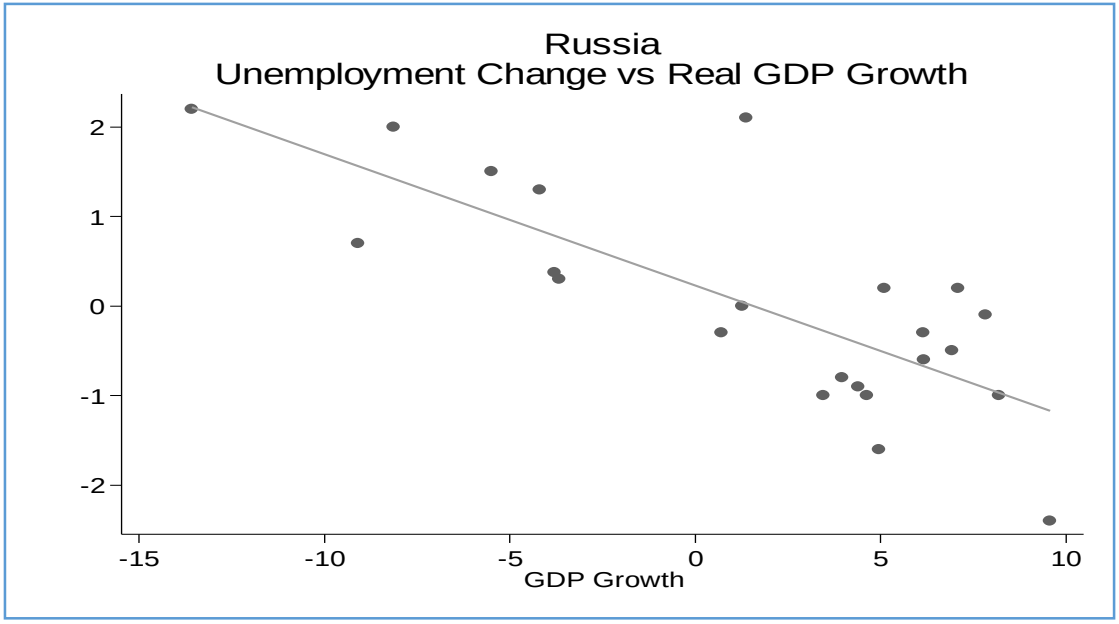

Egypt
Unemployment Gap vs Real GDP Gap
2
1
0
-1
-2
-4
-2
0
2
4
GDP Gap


Egypt
Unemployment Change vs Real GDP Growth
2
1
0
-1
-2
0
2
4
6
8
GDP Growth


Poland
Unemployment Gap vs Real GDP Gap
4
2
0
-2
-4
-6
-5
0
5
10
GDP Gap


Poland
Unemployment Change vs Real GDP Growth
5
0
-5
-10
-5
0
5
10
GDP Growth


Russia
Unemployment Gap vs Real GDP Gap
4
2
0
-2
-4
-20
-10
0
10
20
GDP Gap


Russia
Unemployment Change vs Real GDP Growth
2
1
0
-1
-2
-15
-10
-5
0
5
10
GDP Growth

Distribution matrix: gaps specification

		Adj -R2		
		Smaller than developing countries average	Higher than developing countries average but smaller than Advanced countries average	Higher than advanced countries average
β	Higher than advanced countries average (in absolute value)		Poland	Colombia, Egypt
	Higher than developing countries average but smaller than advanced countries average	Algeria, Philippines, South Africa, Tunisia, Vietnam	Albania, Brazil, Bulgaria, Chile, Costa Rica, Croatia, Panama, Uruguay	Hungary
	Smaller than developing countries average (in absolute value)	Argentina, China, Dominican Republic, Ecuador, Georgia, Honduras, Indonesia, Iran, Jordan, Kyrgyz Republic, Mexico, Morocco, Nicaragua, Pakistan, Paraguay, Romania, Turkey, Ukraine	Malaysia, Moldova, Peru, Sri Lanka	Belarus, Kazakhstan, Russia

Distribution matrix: changes specifications

		Adj- R2		
		Smaller than developing countries average	Higher than developing countries average but less than advanced countries average	Higher than advanced countries average)
β	Higher than advanced countries average (in absolute value)	Algeria	Egypt, Poland, Tunisia	Chile, Colombia, Hungary
	Higher than developing countries average but less than advanced countries average	Brazil, Ecuador, Iran, South Africa	Argentina, Bulgaria, Costa Rica, Uruguay	Mexico, Moldova, Panama
	Smaller than developing countries average (in absolute value)	Albania, China, Croatia, Dominican Republic, Honduras, Indonesia, Jordan, Kyrgyz Republic, Morocco, Nicaragua, Pakistan, Paraguay, Peru, Philippines, Romania, Sri Lanka, Turkey, Ukraine, Vietnam		Belarus, Kazakhstan, Malaysia, Russia

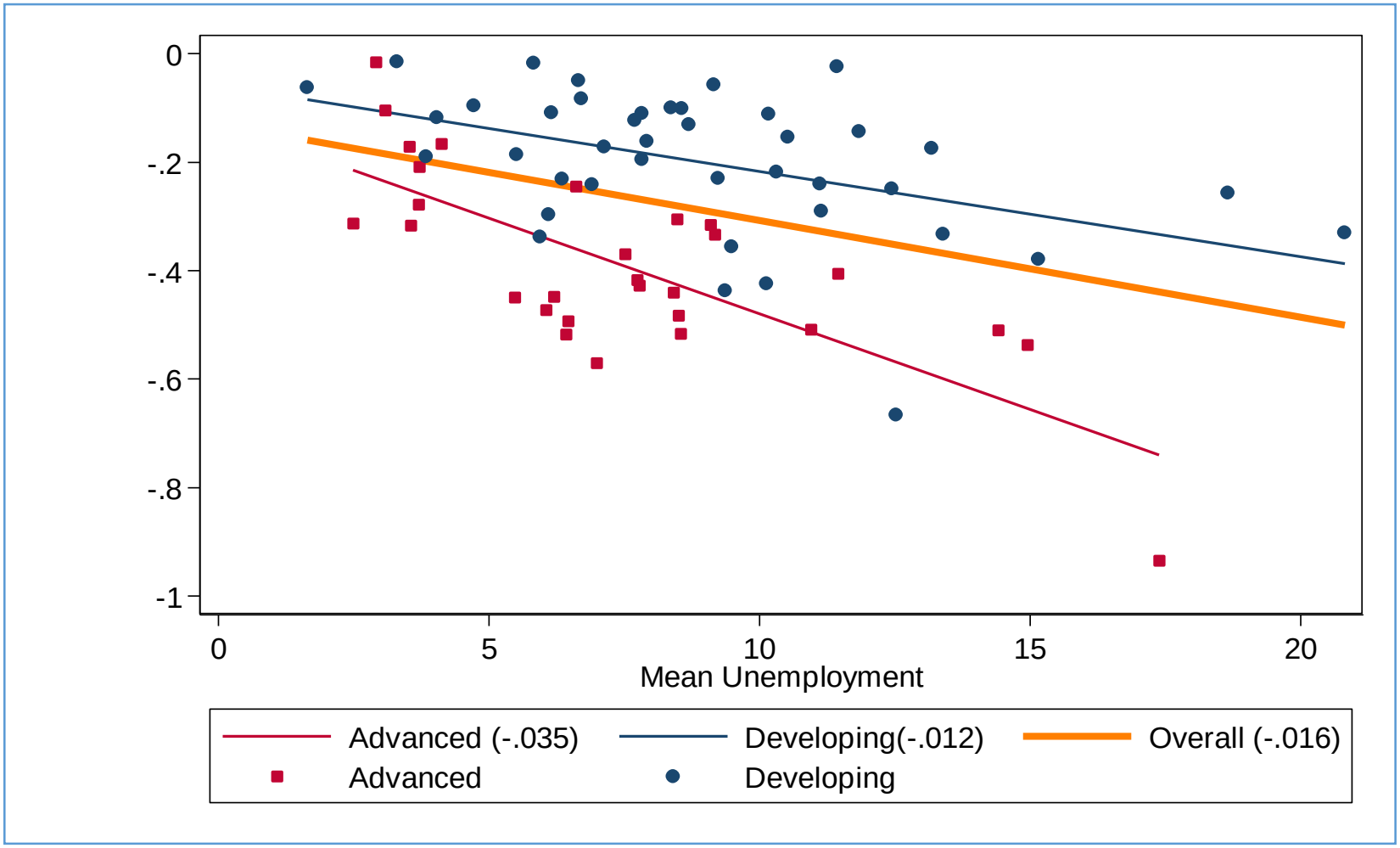
Probing the cross-country heterogeneity

- Bivariate relationships
- Regressions

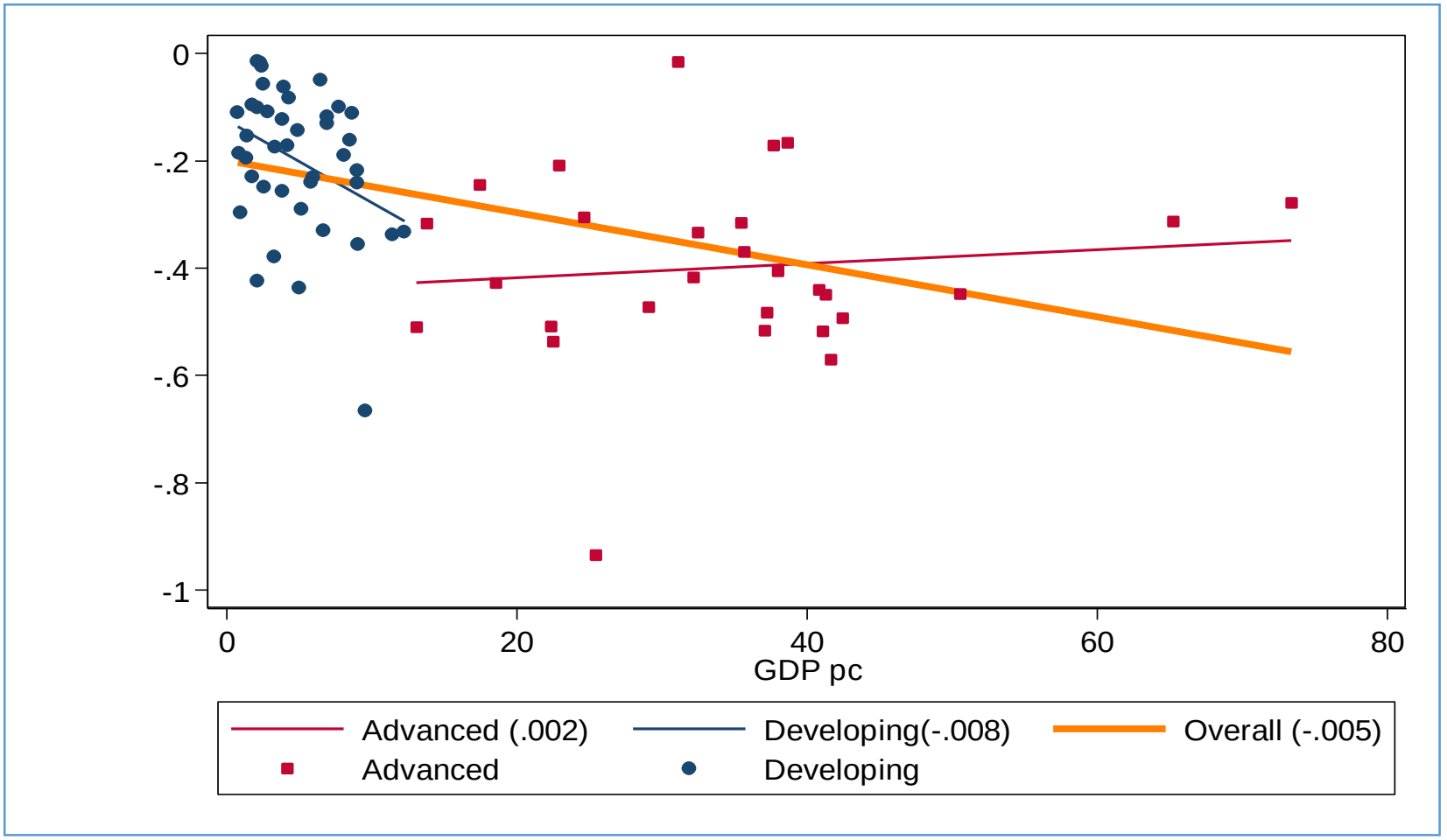
Potential drivers of heterogeneity in Okun coefficients: summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Units
Mean Unemployment	71	8.41	3.87	1.64	20.82	%
Per Capita GDP	70	16.66	17.07	0.76	73.41	Thousands
Shadow Economy	70	28.32	13.40	8.50	65.80	% of official GDP
Services	69	59.19	11.78	12.61	91.38	% of GDP
Skill Mismatch Index	57	0.10	0.08	0.01	0.35	Index- higher values ->higher skill mismatch
Labor market regulations	65	5.89	1.23	3.76	9.13	Rating- higher values -> less regulation
Business regulations	65	6.13	0.84	4.26	8.17	Rating- higher values -> less regulation

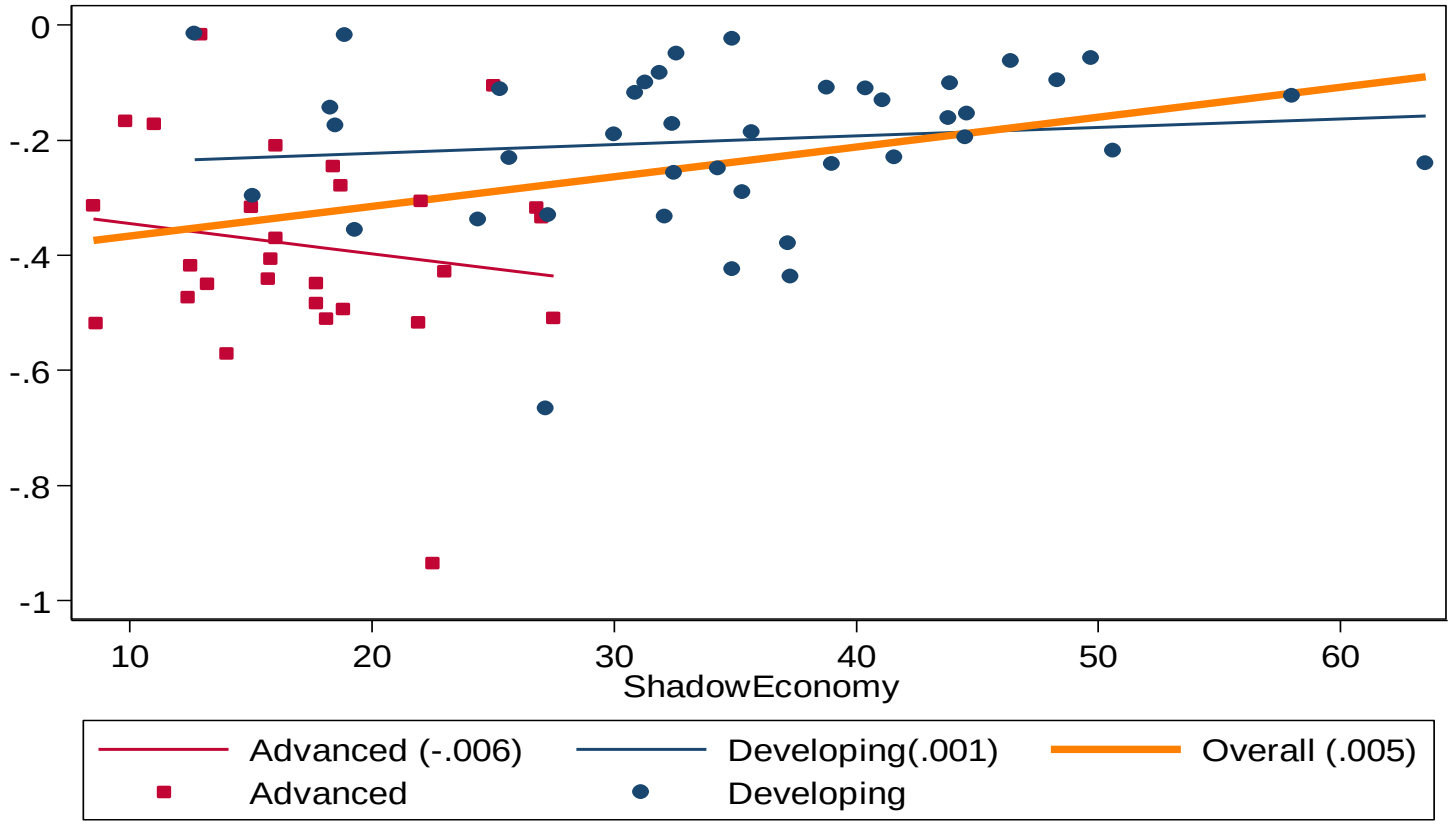
Okun coefficient vs. mean unemployment



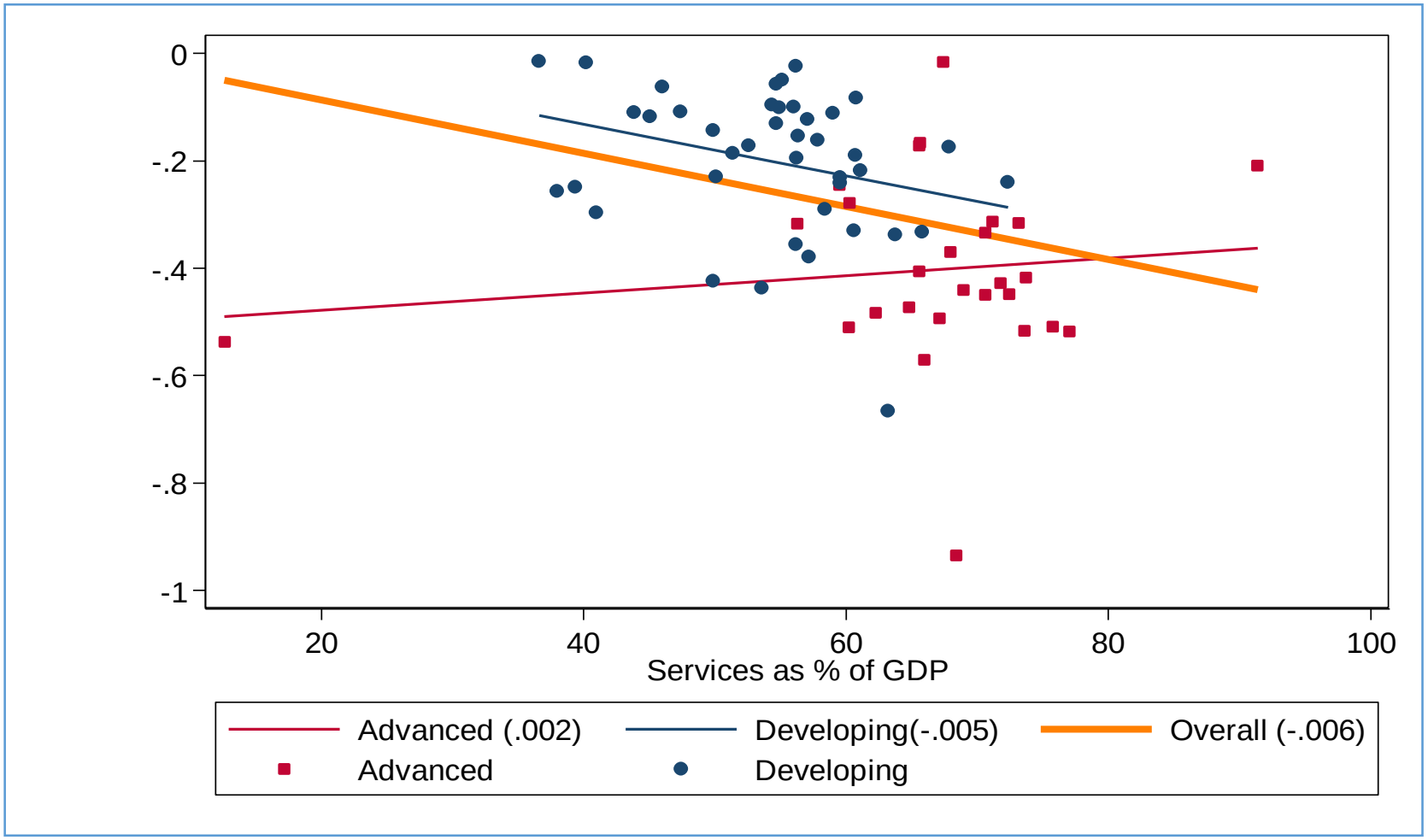
Okun coefficient vs. GDP per capita



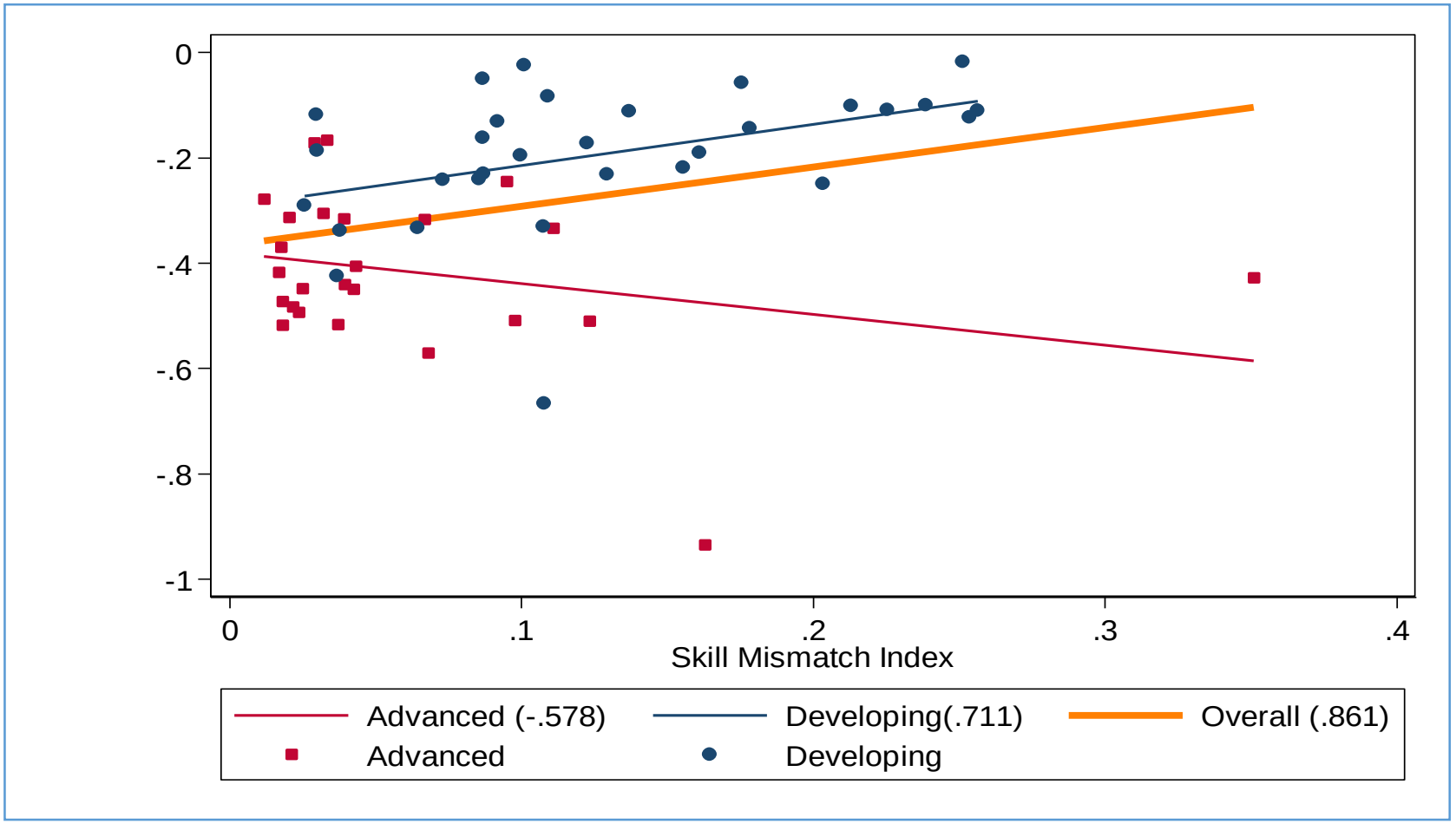
Okun coefficient vs. size of shadow economy



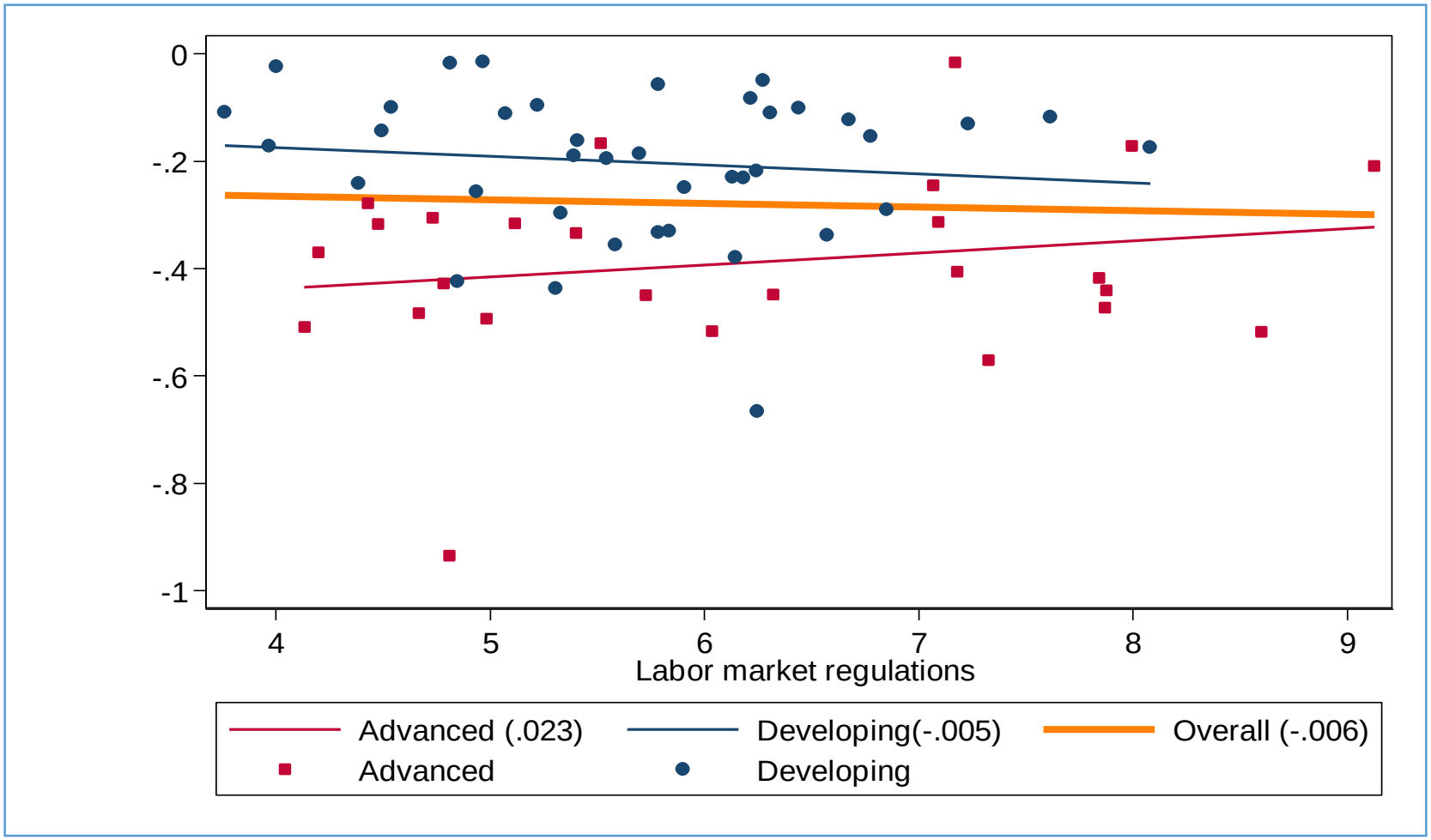
Okun coefficient vs. share of services in GDP



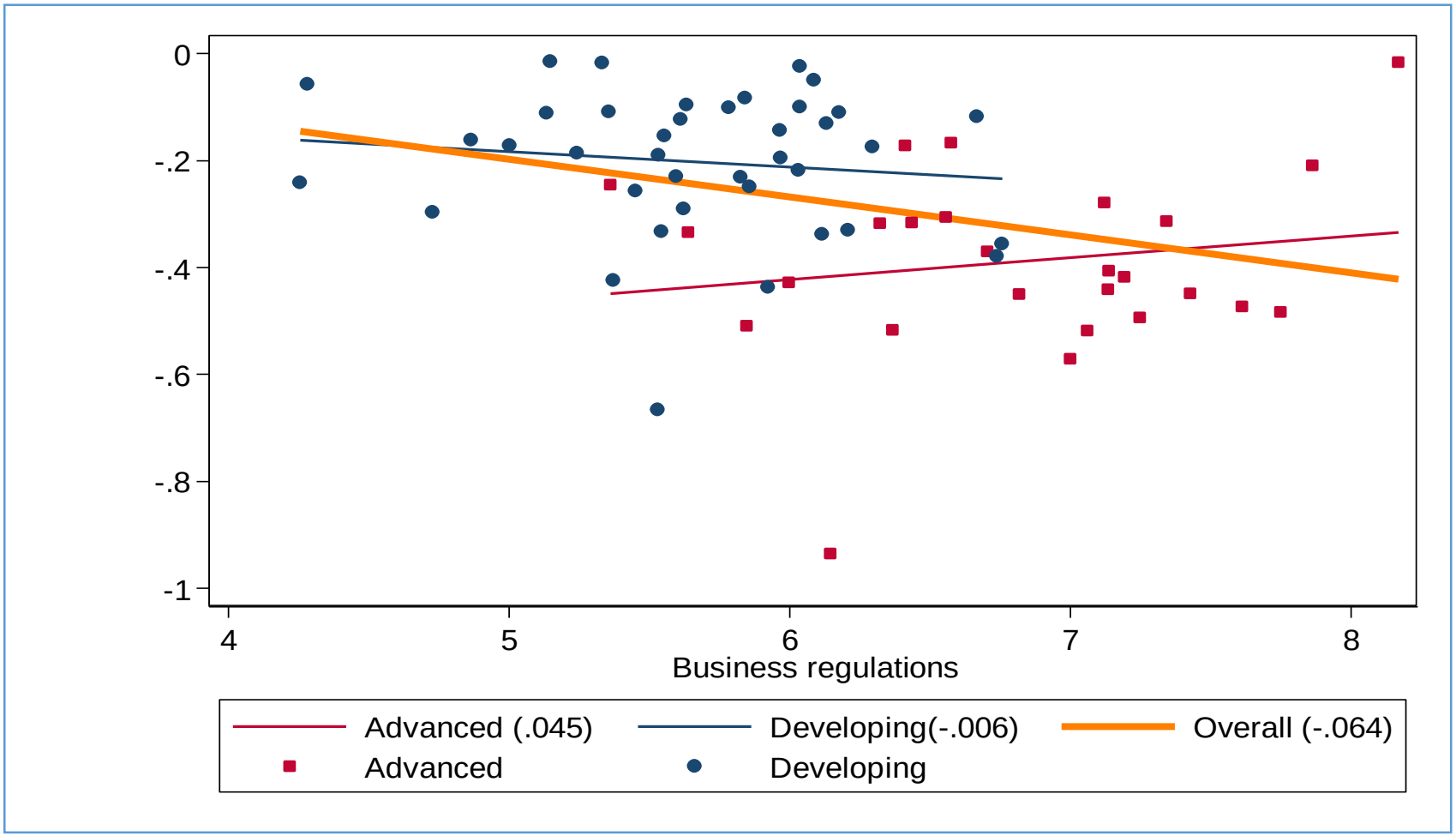
Okun coefficient vs. skill mismatch index



Okun coefficient vs. labor market regulations



Okun coefficient vs. business regulations



Explaining cross-country heterogeneity in Okun coefficients: regressions

	β			β^e		
GDP pc (1000's)	-0.0019	0.0001		0.0042	0.0005	
	(0.0019)	(0.0021)		(0.0037)	(0.0039)	
Services as % of GDP	-0.0070**	-0.0104***	-0.0124***	0.0060	0.0105*	0.0179***
	(0.0028)	(0.0031)	(0.0019)	(0.0051)	(-0.0054)	(0.0039)
Shadow Economy	0.0019	0.0025		-0.0037	-0.0051	
	(0.0022)	(0.0026)		(0.0043)	(0.0067)	
Skill Mismatch Index	0.1804	0.1697		-0.3870	-0.3320	
	(0.2728)	(0.3150)		(0.5270)	(0.5810)	
Business Regulations	-0.0199	-0.0213		0.0492	0.0482	
	(0.0321)	(0.0370)		(0.0605)	(0.0669)	
Labor Market Regulations	0.0064	0.0162		0.0062	-0.0106	
	(0.0166)	(0.0190)		(0.0320)	(0.0349)	
Mean Unemployment	-0.0228***		-0.0178***	0.0348***		0.0226**
	(0.0055)		(0.0052)	(0.0103)		(0.0101)
Constant	0.3708	0.2733	0.6029***	-0.4910	-0.2690	-0.8341***
	(-0.2490)	(0.2860)	(0.1256)	(0.4750)	(0.5200)	(0.2555)
Observations	56	56	56	54	54	54
R-squared	0.58	0.42	0.50	0.48	0.349	0.33
Adjusted R-squared	0.52	0.35	0.48	0.40	0.266	0.31

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusions

- How well does Okun's Law hold in developing countries?
  - Results have a 'half as well' as in advanced economies flavor
- Mean unemployment and share of services in GDP help account for half of cross-country variation in Okun coefficients.
- Several directions for future research