Shadow Economies Around the World
What Did We Learn Over the Last 20 Years?

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Motivation

"The informal (shadow, black, unreported) economy comprises economic activities that circumvent costs and are excluded from the benefits and rights incorporated in laws and administrative rules covering property relationships, commercial licensing, labor contracts, torts, financial credit, and social systems"

- Feige (2005)

Why do we care?

We should be interested in measuring the scale and causes of informal economic activity because:

- It is large and persistent, severely limits tax revenues for developing countries
- Low productivity.
- Provides employment and income (safety net).

Literature Review

Direct approach

- Surveys and samples based on voluntary replies, tax audits, other compliance methods

- Results sensitive to the way the questionnaire is formulated or willingness to cooperate

- Therefore, not very successful

Indirect approach / indicator based

Literature Review

Discrepancy between expenditure and income statistics

MacAfee (1980), Yoo and Hyun (1998)

- Theory

  Difference between national expenditures and income approximates informal economy size.

- Drawback

  Assumes all expenditure and income measures constructed without error.

Literature Review

Discrepancy between official and actual labor force

Contini (1981), DelBoca (1981), O'Neil (1983)

- Theory

  If total labor force constant, declines in official labor force imply informal activity.

- Drawback

  Fluctuations in labor force participation.

Literature Review

Electricity approach

Kaufmann and Kalibarda (1996)

- Theory

  Electricity consumption best indicator of GDP, estimated elasticity of close to one.

- Drawback

  - Not all informal activities require electricity.

  - Elasticity may vary across countries and time.

Literature Review

Transaction approach

Feige (1979), Boeschoten and Fase (1984), Langfeldt (1984)

- Theory

  Fischer's quantity equation $M \times V = P \times Q$ use money supply and estimates of velocity to derive informal activity.

- Drawback

  Estimates of velocity may not be constant due to development of check and credit cards.

Literature Review

Currency demand approach

Tanzi (1980)

- Theory

  Increased informal activity rises demand for currency, after controlling for other factors can *isolate* excess demand.
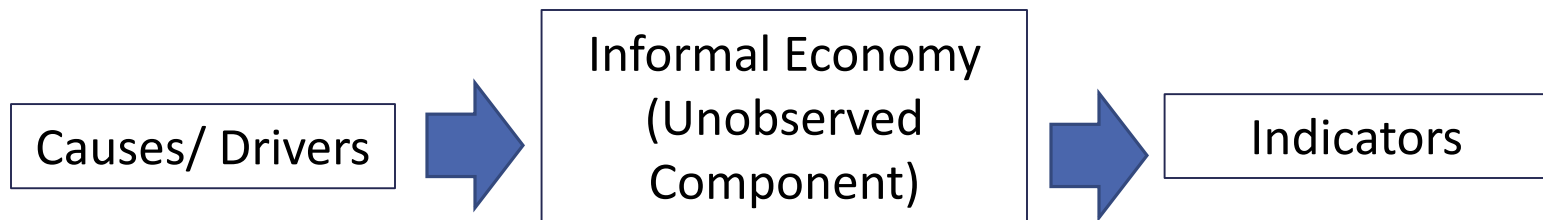
- Drawback

  - Potentially underestimate as all transactions might not be in cash.

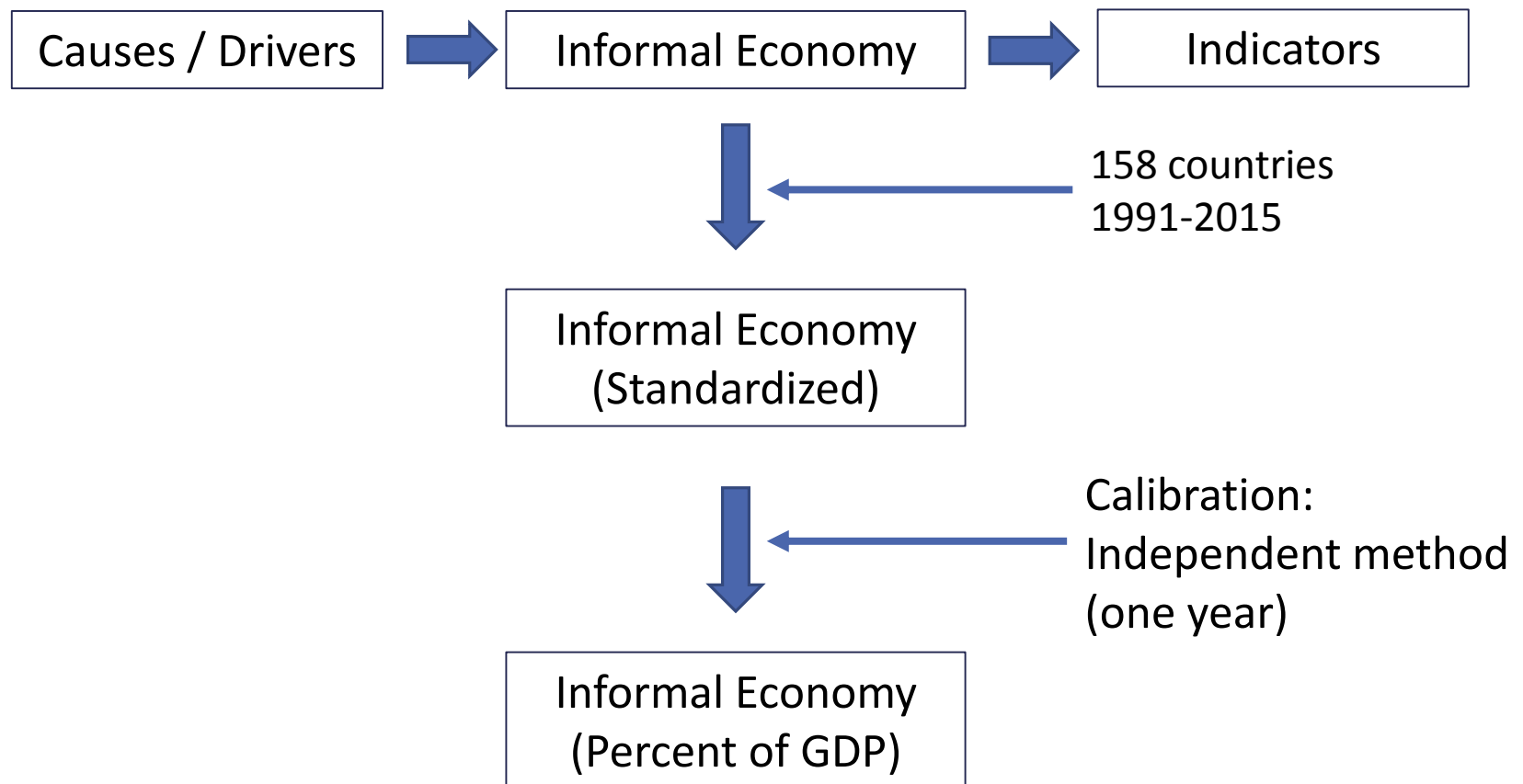 - Arbitrary to assume equal velocity in both sectors.

Literature Review

Multiple Indicators Multiple Causes (MIMIC)

Schneider and Enste (2000)

| Causes/ Drivers | → | Informal Economy (Unobserved Component) | → | Indicators |

- The MIMIC method treats the informal economy as a latent, unobserved variable which we cannot measure directly.
- We have measures for its potential causes and indicators.
- By setting up a system of equations, under a set of assumptions, we can infer a standardized measure for the informal economy.

Size of the informal economy

| Causes / Drivers | → | Informal Economy | → | Indicators |

↓ ← 158 countries 1991-2015

Informal Economy (Standardized)

↓ ← Calibration: Independent method (one year)

Informal Economy (Percent of GDP)

Size of the informal economy

- Drivers of the informal economy:
  - *Fiscal freedom.* Measure of tax burden on the economy
  - *Institutions.* Lack of respect for the law or high corruption would encourage informal economic activity.
  - *Unemployment.*
  - *Trade openness.* As international trade increases, harder to hide trade from authorities
- Indicators of the informal economy:
  - ***Currency*** as a fraction of brad money (People engaged in the informal economy usually conduct their activities in cash).
  - ***Labor force participation***.
 - A measure of the *size of the economy* using ***night lights***.

Baseline results

	(1)	(2)	(3)	(4)	(5)	(6)
Causes						
Trade openess	-0.086***	-0.085***	-0.137***	-0.086***	-0.086***	-0.113***
GDP per capita	-0.332***	-0.335***	-0.370***	-0.298***	-0.302***	-0.334***
Unemployment rate	0.051**	0.054***	0.069***	0.053**	0.057***	0.069***
Size of government	0.102***	0.102***	0.111***			
Fiscal freedom				-0.131***	-0.134***	-0.147***
Rule of law	-0.049***			-0.060***		
Control of corruption		-0.042***			-0.046**	
Government stability			-0.054***			-0.015
Indicators						
Currency	1	1	1	1	1	1
Labor force participation rate	-0.521***	-0.532***	-0.310***	-0.452***	-0.468***	-0.249***
Growth of GDP per capita	-0.208**	-0.245***	-0.386***	-0.113	-0.144*	-0.157***
Statistical Test						
RMSEA	0.073	0.073	0.067	0.078	0.078	0.055
χ^2	513.407	506.43	649.062	508.189	500.667	535.332
Observations	1897	1892	2350	1758	1757	1998
Countries	151	151	122	144	144	120

Size of the informal economy
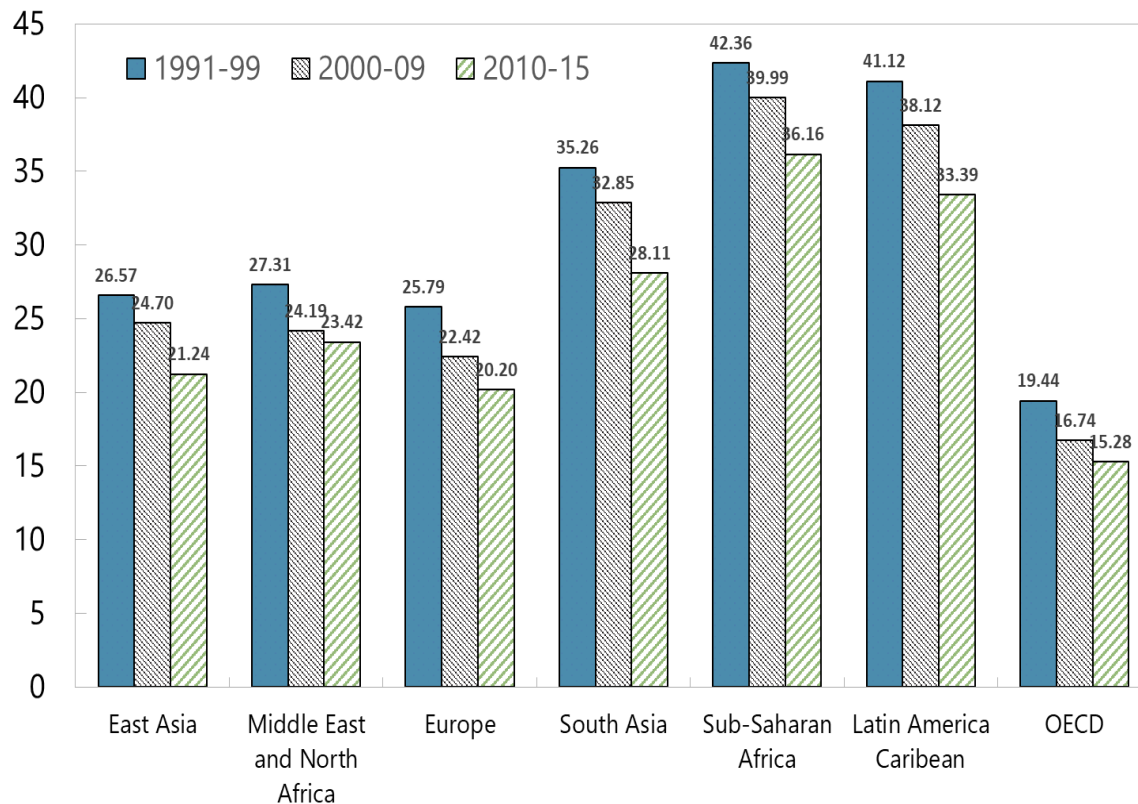
- Size of the informal economy (% of GDP) large in SSA and Latin America.
- Informality has decreased overtime.
- Wide variety within regions.

Size of the informal economy
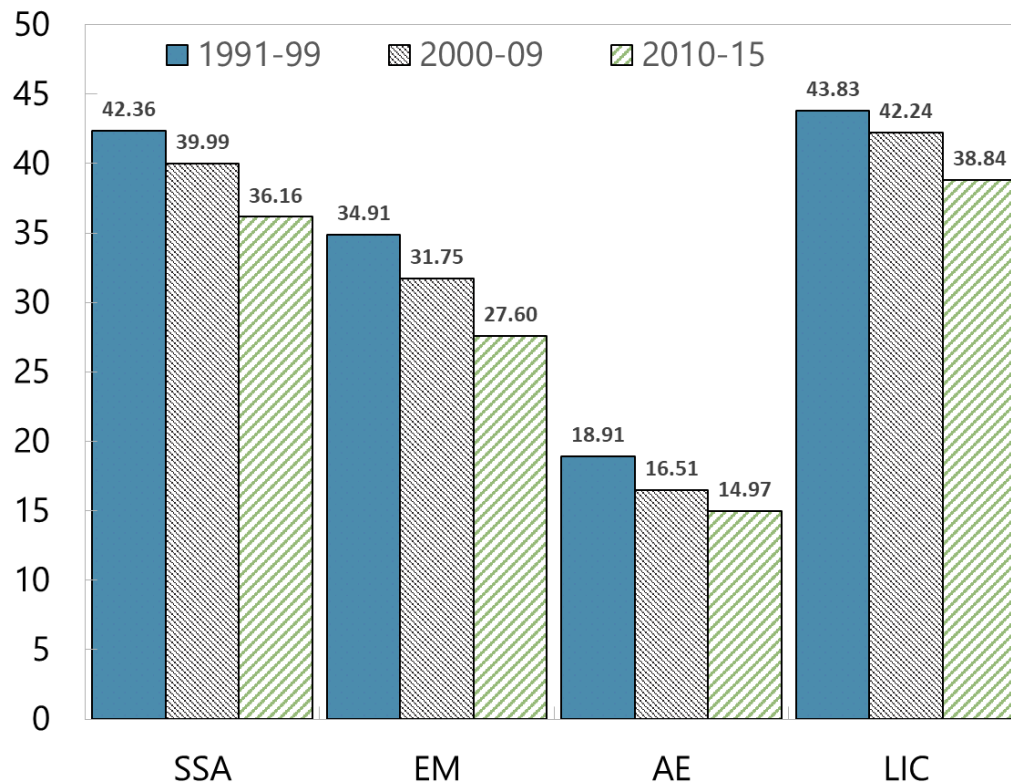
- Informality around the globe seems to fall with income, but particularly high in low-income countries.

Three robustness tests

1. Night lights instead of GDP

	(1)	(2)	(3)	(4)	(5)	(6)
Causes						
Trade openess	-0.172***	-0.167***	-0.106***	-0.178***	-0.175***	-0.161***
Unemployment rate	0.062**	0.061**	0.008	0.067**	0.068***	0.056**
Size of government	0.106***	0.101***	0.036*			
Fiscal freedom				-0.150***	-0.153***	-0.162***
Rule of law	-0.065***			-0.068**		
Control of corruption		-0.042			-0.035	
Government stability			-0.183***			-0.132***
Indicators						
Currency	1	1	1	1	1	1
Labor force participation rate	-0.457***	-0.503***	-0.478***	-0.226*	-0.244*	-0.230**
Growth of GDP per capita	-0.346**	-0.372***	-1.838***	-0.275***	-0.289***	-0.661***
Statistical Test						
RMSEA	0.023	0.027	0.079	0.052	0.053	0.082
χ^2	125.015	116.891	548.593	158.781	151.93	307.091
Observations	1341	1336	1767	1211	1210	1498
Countries	148	148	120	139	139	116

Three robustness tests

2. Compare results with National Accounts

(Rank correlation of 85 percent)

Country	National Authorities	MIMIC
Benin	55.6	49.0
Mali	55.0	40.4
Guinea-Bissau	53.4	38.0
Guinea	48.1	37.0
Senegal	47.5	40.0
Burkina Faso	43.1	32.0
Togo	40.1	28.0
Cote d'Ivore	34.0	35.0

Three robustness tests

3. Predictive Mean Matching (PMM)

- PMM (Rubin, 1987) treats the empirical challenge in estimating informal economy size as a missing data problem. We have estimates from some national authorities but not all.

- Using Bayesian techniques to produce estimates of informal economic activity, then grouping countries by similar informal economy size, and repeating, we produced lists of countries by *low* (less than 20%), *middle* (20 to 40%), and *high* (greater than 40%) informal economies.

Main findings

- Size of the informal economy is large in some regions (LAC and SSA) especially in SSA oil exporters and fragile states.

- Heterogeneity within regions.

- Informal sector acts as a safety net.

- Informal sector has low productivity and keeps productivity low in a vicious cycle.

- *Governance*, *Doing Business*, and *Competitiveness Indicators* are generally associated with the size of the informal sector.

Policy implications

- Require a balanced approach for transition from the informal to the formal sector.

- Key policy recommendations to formalize the informal sector:

  - Improve *Governance,* a necessary condition.

  - Enhance *Doing Business* and *Competitiveness Indicators*, focusing on the indicators where the gap is largest compared to countries with smaller informal sectors.

  - In particular, efficiency of financial markets

Thanks!

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