

**Labor Market Adjustments during the Business Cycle in  
Argentina:  
A Cohorts Panel VAR Approach**

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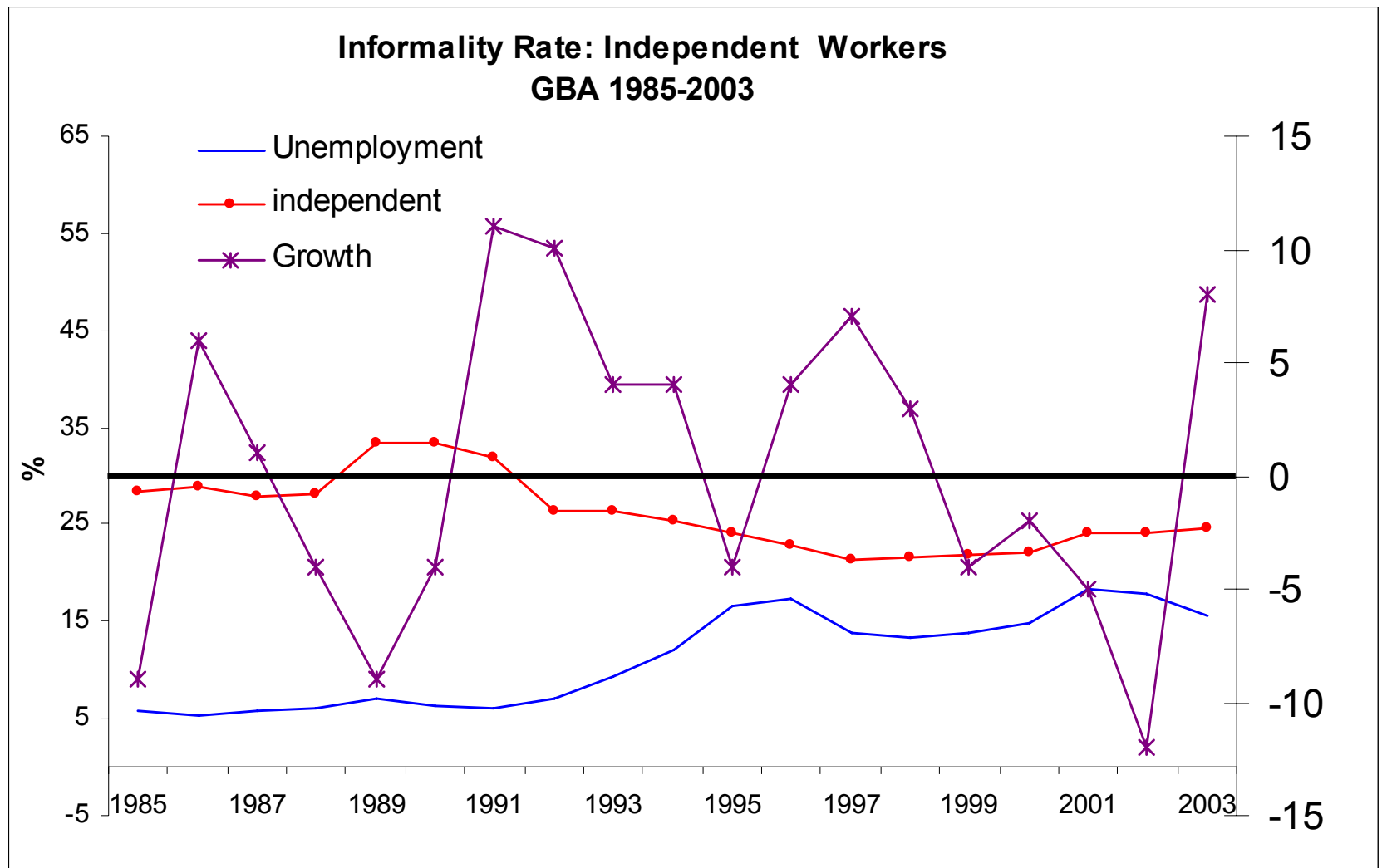
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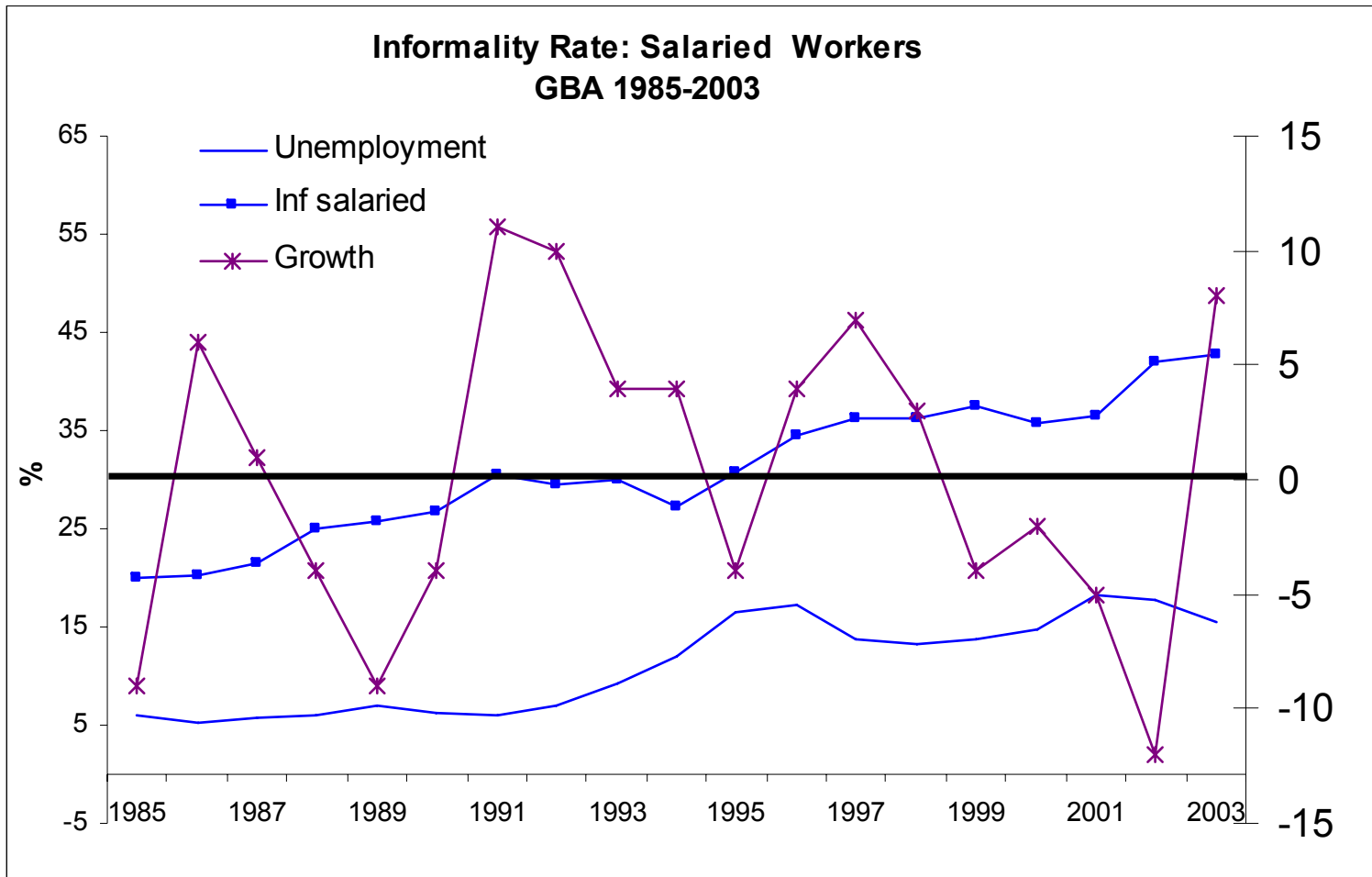
## MOTIVATION

- Argentina presents a unique case to study the dynamics of labor market adjustment during the business cycle (high volatility, rigid labor legislation)
- Largest sustained increase in informal employment
  - 2005, 35% of the workers were informal employees and 23% were independent workers.
  - Informal employment rose 17.4 points in Greater Buenos Aires during 1980-2003.
- Unemployment also rose substantially over this period.
- Many factors affecting labor trends (macro, demographic, structural economic reforms, labor legislation): “exogenous changes” to study interactive adjustments

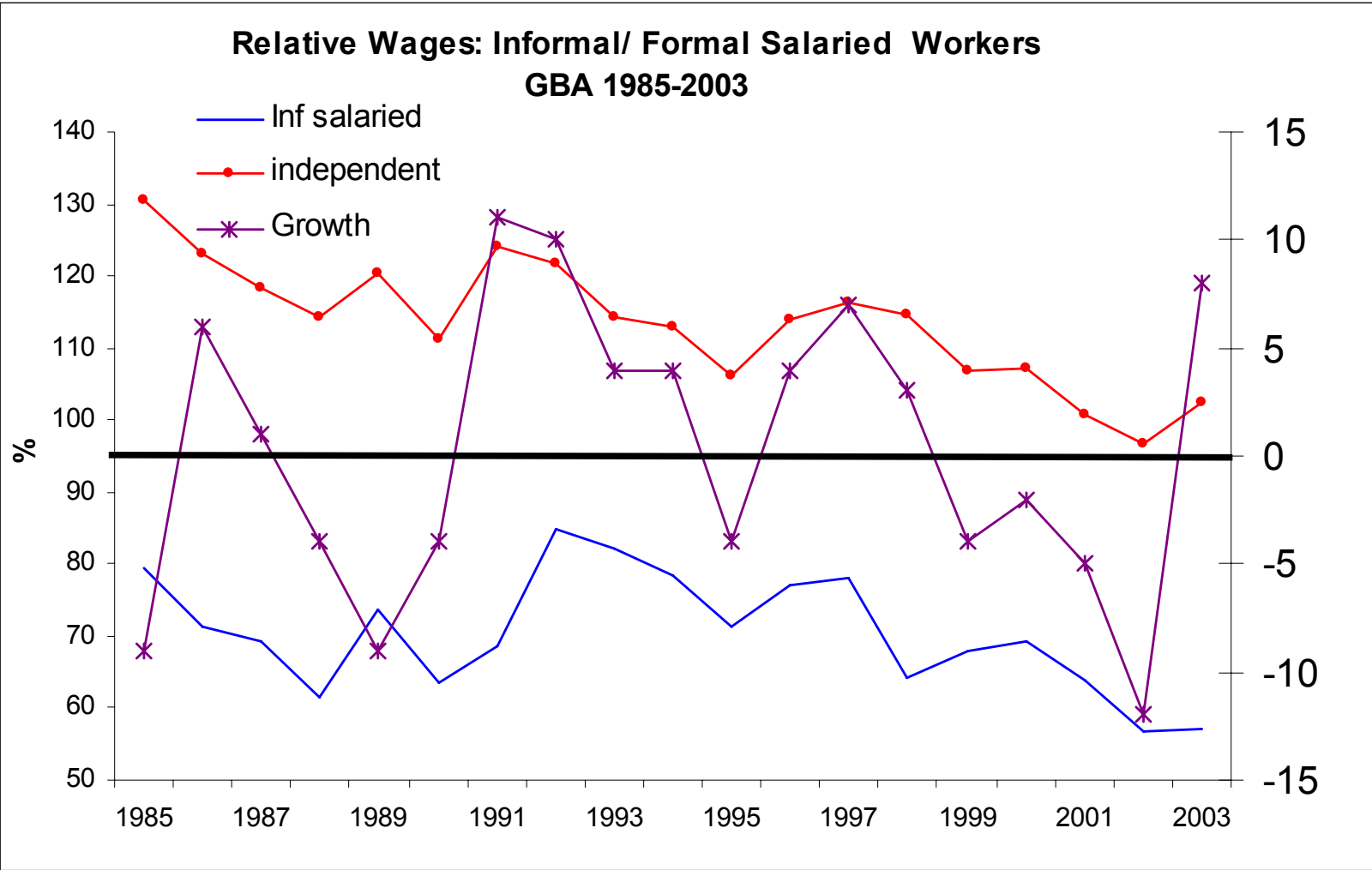
# Declining Informal Self-employment trend; moderately counter-cyclical



# Increasing Informal Salaried Employment and Unemployment trends; slightly counter-cyclical



# Declining Informal Hourly Earnings trends; pro-cyclical



## Competing causal theories for the dynamic interrelations in labor market adjustments

Informality affects ‘quantity’ vs. ‘price’ adjustments. Two main views.

The *segmentation view* predicts that:

- Informal workers are *pushed* towards informality. Changes in relative earnings *follow* rather than precede movements in the informal salaried rate, and the latter comoves with the unemployment rate.
- Informality countercyclical. Higher unemployment would tend to induce individuals to accept lower pay as informal salaried or self-employed.

## Competing causal theories for the dynamic interrelations in labor market adjustments

The *integrated or voluntary view* postulates that:

- Workers are *pulled* into informal salaried or self-employment by attractive movements in informal earnings relative to formal earnings, so that increases in relative earnings *precede* increases in informal employment.
- Informality could be pro- or countercyclical, depends on pattern of growth. Informal employment need not commove with unemployment, ie., it does not function as a safety net for the disguised unemployed.

- Dynamic interactions can be learned by studying the **time series** properties of informality rates, wage differentials and unemployment.
- At the micro level, this requires rather long panel data. Standard household surveys (EPH) provide a very short time span.
- Fliess et al. (20072) work at the national level with a panel of three countries (Brazil, Colombia, Mexico and Argentina) to study the comovements between informality rates, relative incomes and exchange rates using standard time series techniques. Potential composition biases may arise due to aggregation.

- An intermediate empirical strategy: **synthetic cohorts** of individuals.
- This preserves part of the microeconomic structure of informality (age or educational profiles) whereas it allows identifying temporal and cohorts effects, including structural breaks, due to the longer-time span of the series which allows the use of time series methods.
- We use a **panel VAR (PVAR)** approach: a flexible statistical framework to study dynamic interactions when there are no clear causal theories.
- The goal is to assess the importance of general cyclical movements, the interactions between unemployment and informality and the responses to exogenous changes in each of them as well as exploring the relevance of structural changes.

- Intermediate strategy between the very short panels in household surveys, and aggregate time series.
- **Cohort:** group of individuals that share a characteristic (i.e., born in the same year). Can be followed over time.
- Coexistence of several cohorts provides cross sectional variation.
- Cohorts may help mitigate measurement errors, by aggregation. Short run random episodes may induce spurious mobility in the informality status mostly due to this shocks that mechanically work like measurement errors.
- Output: Deaton decomposition

$$i_{ct} = \beta + \alpha_a + \gamma_c + \psi_t + \mu_{ct}$$

requires a normalization for identification purposes (we use the standard one).

A PVAR:

$$w_{it} = \mu_i + \Phi w_{i,t-1} + \epsilon_{it}, \quad i = 1, \dots, N, t = 1, \dots, T$$

$w$  is a vector of  $K$  variables.

- A system of dynamic panels.
- We estimate it using a system-GMM strategy (Arellano and Bover (1985), Love(2006)).
- Standard 'VAR' output: Granger causality, impulse-response, variance decomposition.

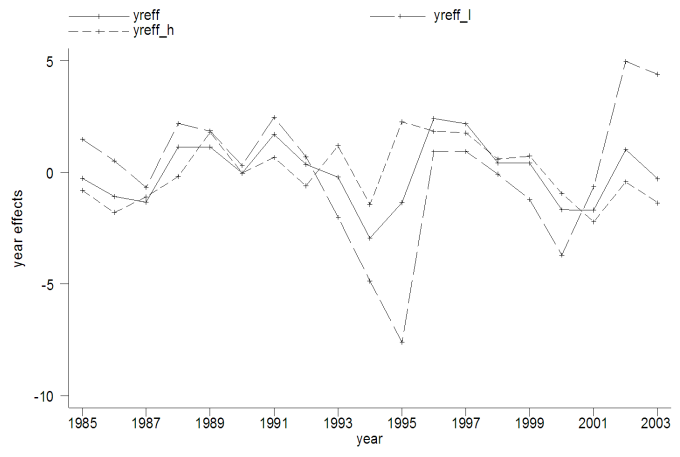
## Variables

- Informality rates: informal salaried, informal independent.
- Unemployment rate.
- Relative wage (informal/formal)
- We estimated models for both concepts of informality, and for different levels of educations.

# Empirical results

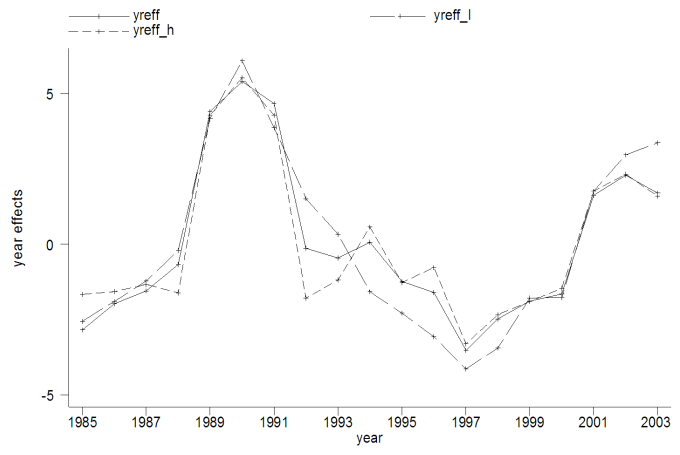
**Year Effect** (Deaton decomposition, measures cycles)

Informality Rate: Informal salaried



## Year Effect (Deaton decomposition, measures cycles)

Informality Rate: Informal independent



- Both informal salaried and independent employment are countercyclical.
- Independent employment tends to show larger swings under periods of high price instability. This is consistent with the idea that during economic expansions the opportunity cost of being informal is higher, and that during noisy price environment independent employment offers more flexibility to accommodate real earnings movements.

**TABLE 1. PVAR(1) estimates: Informality rates and relative wages  
A Definition**

	b	se	t
<b>Informality Rate</b>			
Lir	0.65194	0.18888	3.45166
Lrw	0.03423	0.03962	0.86400
Lur	0.58203	0.08827	6.59363
<b>Relative Wage</b>			
Lir	-3.27878	1.72183	-1.90424
Lrw	-0.67007	0.42447	-1.57859
Lur	-2.04342	0.92709	-2.20413
<b>Unemployment Rate</b>			
Lir	0.57802	0.25112	2.30178
Lrw	0.08543	0.06040	1.41446
Lur	0.78814	0.12167	6.47778

Sample: individuals between 15 and 64 years old

**Informality Definition: (INFORMAL SALARIED RATE)** salaried workers  
lacking contributions to social security in their current job

## B Definition

PVAR(1) estimates: Informality rates and relative wages

	b	se	t
<b>Informality Rate</b>			
Lir	0.92875	0.34878	2.66286
Lrw	0.05882	0.04327	1.35946
Lur	0.24641	0.26388	0.93382
<b>Relative Wage</b>			
Lir	-5.62432	2.72342	-2.06517
Lrw	-0.63687	0.33390	-1.90740
Lur	-5.17871	2.08998	-2.47788
<b>Unemployment Rate</b>			
Lir	0.95003	0.51012	1.86237
Lrw	0.10538	0.06288	1.67584
Lur	1.47324	0.38407	3.83585

Sample: individuals between 15 and 64 years old

**Informality Definition: (INDEPENDENT WORKERS RATE)** self-employed  
(professionals and non-professionals) and owners  
of micro firms (<6 employees)

- Both informal salaried work and independent employment Granger-cause relative informal-formal earnings, negatively, that is increases in the relative shares of either kind of informal employment are followed by declines in their relative earnings (and the converse). In contrast, exogenous shocks to relative informal-formal earnings do not help predict movements in and out informality.
- This is consistent with the push hypothesis by which workers are forced to take on informal jobs rather than being attracted by better earnings prospects.
- Independent workers: conflicting effects, involuntary counter-cyclical component vs. voluntary idiosyncratic component depends on type of boom and K constraints.

We implement an intermediate cohorts/PVAR approach, that provides cross sectional variation and long time series span to study dynamic interrelations.

Overall, the findings support:

- The exclusion view of informal salaried workers by which these workers are pushed towards informality lacking better employment options. In Argentina this may reflect labor rigidities (high firing costs) that segment the labor market or implicit collusion to evade income, payroll and other taxes.
- In the case of independent workers, the evidence suggests a two tier sector. A majority voluntary component that stay there longer, and a second countercyclical component that serves as a safety net during economic deceleration or crisis.

## CONCLUSIONS

Findings are consistent with other evidence for Argentina:

- HH Survey responses: around 2/3 of independent workers say they choose to be so voluntarily.
- Arias and Khamis (2009) show that self-employment choices and earnings are consistent with comparative advantage and compensating differentials, but not the case for the informal salaried workers.
- World Bank (2008) show that self-employed self-rate as poor, *ceteris paribus*, as formal salaried workers, while the informal salaried have much higher propensity to self-rate poor.

## BROAD POLICY IMPLICATIONS

- Informal salaried most vulnerable to business cycle fluctuations: a focus of active labor market policies and actions to safeguard viable small businesses.
- Informal earnings offer a grease to labor market adjustment in economies with rigid labor regulations
- The latter imply the need for policies that offer protection from earnings declines, not just from unemployment shocks (e.g., CCTs)