'Trade openness effects through price channels on firms' informal employment: The case of Peru'

Symposium:
TRADE AND EMPLOYMENT IN DEVELOPING COUNTRIES

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- Estimates the impact of sector specific price shocks on informal employment demand (Peru's economic sectors)
- Develops a structural specification and proposes an additive decomposition ($m_1 + m_2$)
- Results point to:
  - A dominant first component (m_1) implies that regulatory costs are too important
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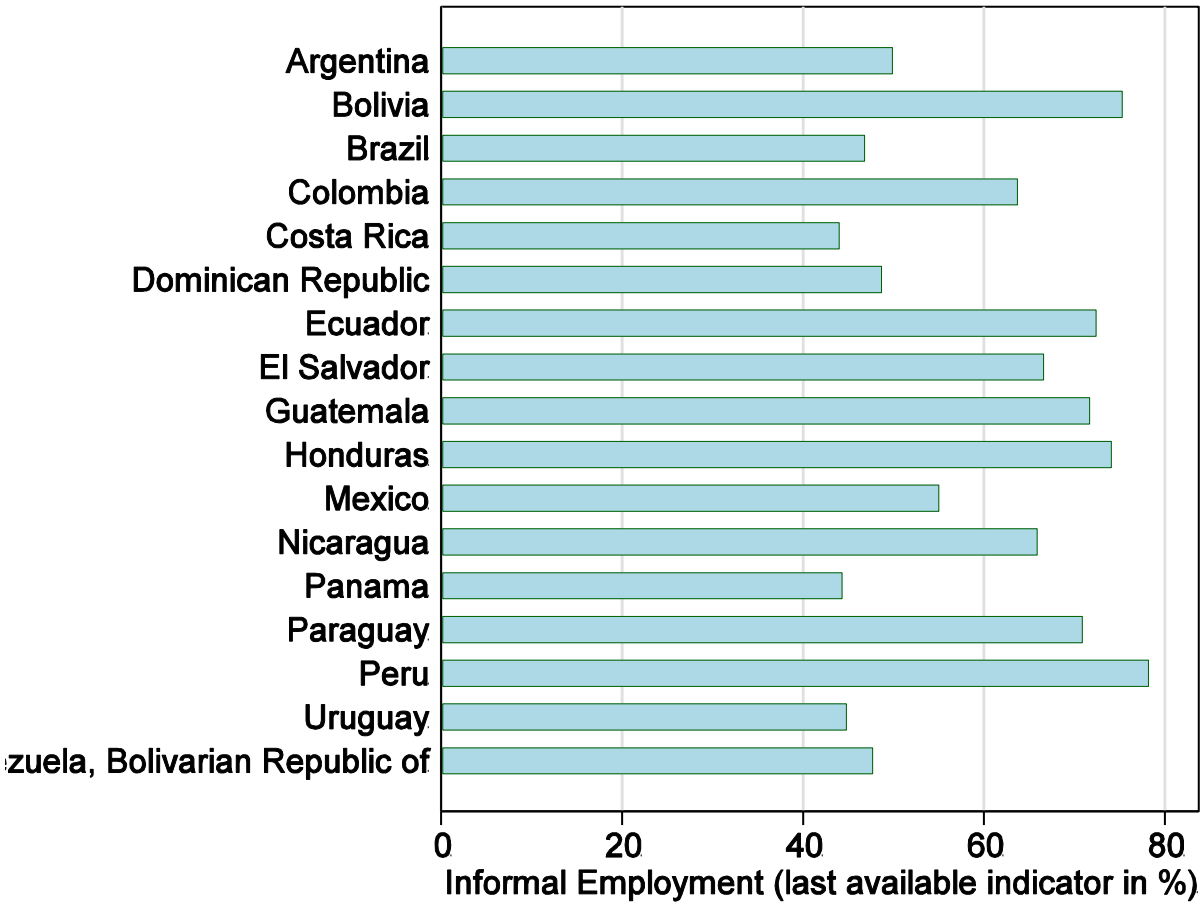

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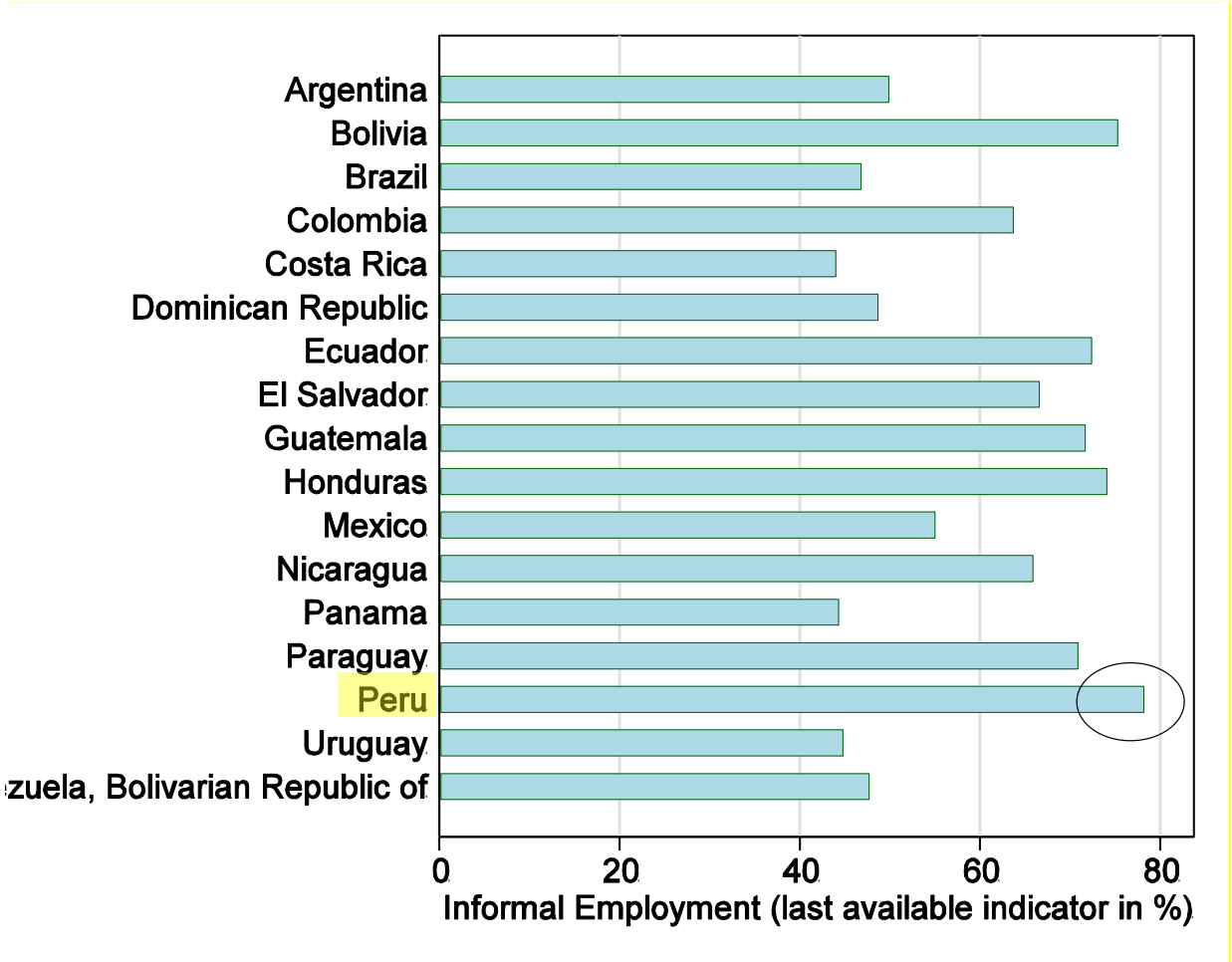

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Informal employment (ILO definition):

	Labour status					
	Formal employment		Informal employment		Total	
	Col %	Row %	Col %	Row %	Col %	Row %
Production unit						
Formal sector	95.2	65.7	24.4	34.3	47.8	100.0
Informal sector	2.5	1.7	71.5	98.3	48.8	100.0
Households	2.3	22.1	4.0	77.9	3.5	100.0
Total	100.0	33.0	100.0	67.0	100.0	100.0

Informal employment exists in formal enterprises (public sector as well)

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Total	100.0	33.0	100.0	67.0	100.0	100.0

As expected, informality is mainly concentrated in informal firms

Economic model: core assumptions

a. Under autarky (in a single sector), local prices may be above or below international ones
b. As trade openness increases, local prices converge to international ones. This implies that local prices (and firms' profits) may increase or diminish
c. Smaller firms, are less likely to be controlled by fiscal and regulatory institutions $\Rightarrow$ more likely to allocate informal jobs (Almeida and Carneiro, 2009). Informal jobs are less costly

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Economic model: a-priori implications

d. From (b) and (c), trade openness increase will encourage informal employment if international prices are below autarky ones (positive relationship).

e. From (d), higher international prices, with respect to autarky ones, imply a negative relationship.

Formally...

Production function

$$q = a l^{\alpha} \tilde{l}^{\beta} k^{\gamma} \quad ; \quad q = a_k l^{\alpha} \tilde{l}^{\beta}$$

For the sake of simplicity, capital is assumed fixed such that $a_k = aK^{\gamma}$

Firms maximize their expected profit:

$$\tilde{p}q - (wl + \tilde{w}\tilde{l} + \psi\delta\tau) \tag{1}$$

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Expected regulation cost:

$$\psi\delta\tau$$

- ψ Probability to be controlled

$$\psi = I\frac{I+\tilde{I}}{\lambda} \quad ; \quad I(I+\tilde{I}) < \lambda \quad \Rightarrow \quad \psi \,\epsilon\, [0,1)$$

- δ Firm's informality degree

$$\delta = \frac{\tilde{I}}{\tilde{I}+I} \quad \Rightarrow \quad \delta \,\epsilon\, [0,1]$$

- τ Maximum penalty fee...$\tau\delta$ penalty fee is proportional to informality degree

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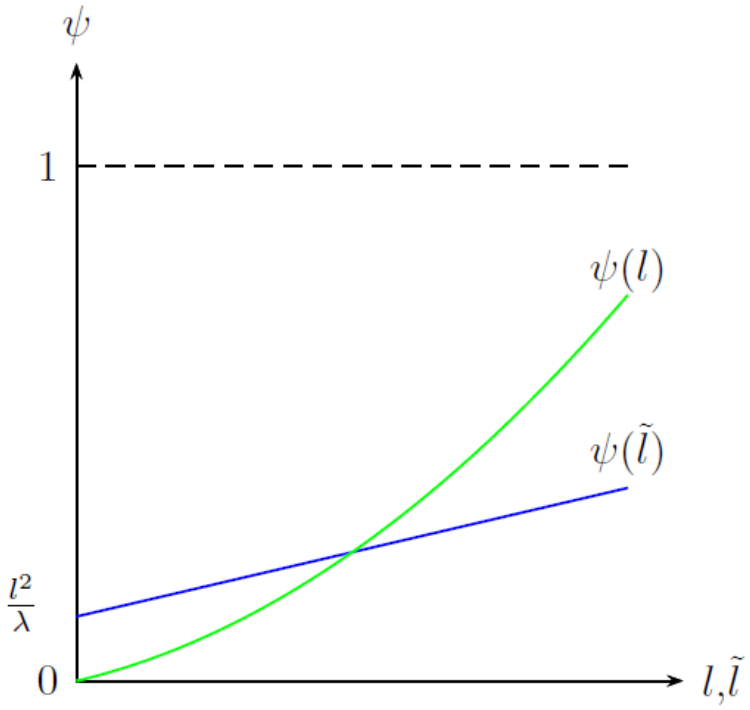

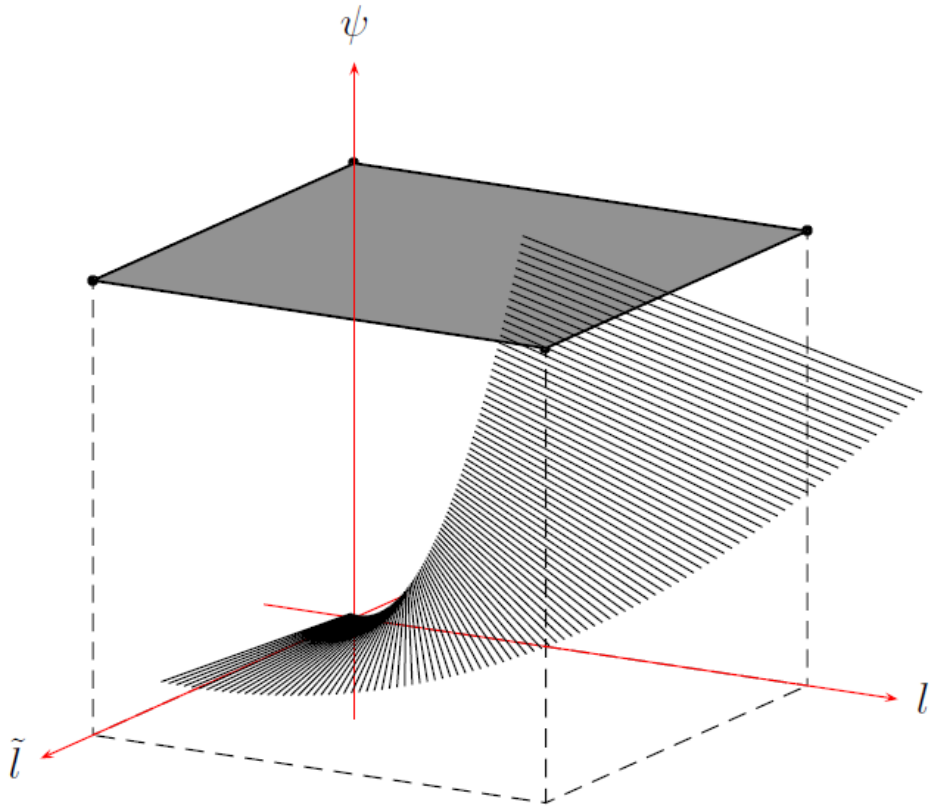

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'Local' prices faced by the firm $\tilde{p}$

$$\tilde{p} = p^{1-\omega_0}\, p_0^{\omega_0} \quad ; \quad \omega_0 = \frac{1}{1+\eta}\,, \quad \eta \,\epsilon\, [0, \infty) \tag{2}$$

- p_0 autarky price
- p international price
- η Trade-openness

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From the latter,

$$d\ \log(\tilde{p}) = \frac{1}{(1+\eta)^2} \log(\frac{p}{p_0}) d\eta \tag{3}$$

A multiplier with respect to η relates to $d \log \tilde{p}$

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Informal employment relative demand $(\tilde{l}/l)$ elasticity:

$$\frac{d\,\tilde{l}}{\tilde{l}} - \frac{d\,l}{l} = \Bigg(\underbrace{\frac{(2-\alpha-\beta)(\beta-\alpha)}{(1-\alpha)(1-\beta)}}_{m_1} + \underbrace{\frac{(2-\alpha-\beta)wl}{(1-\beta)\psi\delta\tau} - \frac{(2-\alpha-\beta)\tilde{w}\tilde{l}}{(1-\alpha)\psi\delta\tau}}_{m_2} \Bigg) \frac{d\,p}{p}$$

Informal employment relative demand ($\tilde{l}/l$) elasticity:

- m_1's sign depends on $\beta - \alpha$ i.e. firms increase the demand of their intensive labour (informal or formal)
- m_2's sign depends on $(1-\alpha)wl - (1-\beta)\tilde{w}\tilde{l}$ i.e.firms increase the demand of the 'cheaper'[2] labour
  - m_2's effect diminishes with the regulatory cost $\psi\delta\tau$

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Data:

- Households Survey, employment module (ENAHO) 2004-2013
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From theoretical labour shares...

$$\frac{wl}{pq} = \alpha - \frac{\psi\delta\tau}{pq} + \theta\frac{l}{pq} \equiv \alpha - \frac{\tau}{\lambda}\frac{\tilde{l}\,l}{pq} + \theta\frac{l}{pq}$$

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m_1 component

Table 4: Informality sensitivity to price shocks, tradable sectors (m_1-multiplier)

Sector	$\hat{\alpha}$ (F)	$\hat{\beta}$ (I)	**Multiplier**	Confidence interval (95%) Lower bound	Upper bound
Fishing	0.057 *	0.27 **	**0.52**	0.42	0.63
Minerals, petrol. & gas	0.163 **	0.067 **	**-0.22**	-0.33	-0.13
Manufacture	0.12 **	0.18 **	**0.14**	0.029	0.22
Commerce	0.038	0.197 **	**0.36**	0.26	0.47
Transports & comm.	0.025	0.208 **	**0.42**	0.31	0.50
Hotels and restaur.	0.048	0.112 **	**0.14**	0.01	0.32
Telecomunications	0.224 **	0.083 **	**-0.33**	-0.51	-0.17
Financial sevices	0.412 **	0.109 **	**-0.85**	-1.29	-0.93
Services to entreprises	0.289 **	0.046 **	**-0.59**	-0.35	-0.95
Other services	0.196 **	0.318 **	**0.33**	0.21	0.44

* $p < 0.05$; ** $p < 0.01$

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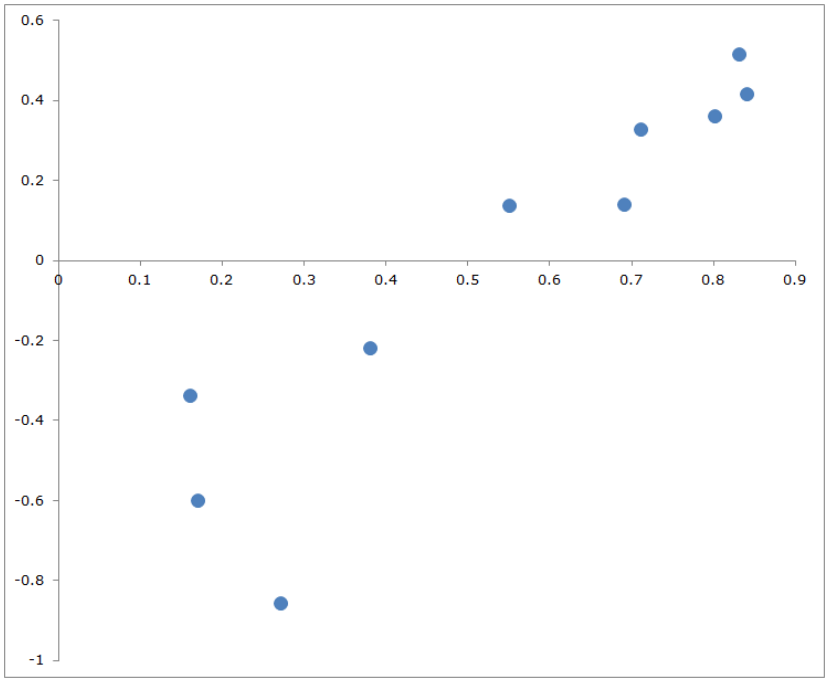
Figure: m_1 multiplier (vertical) and Informality degree (horizontal)



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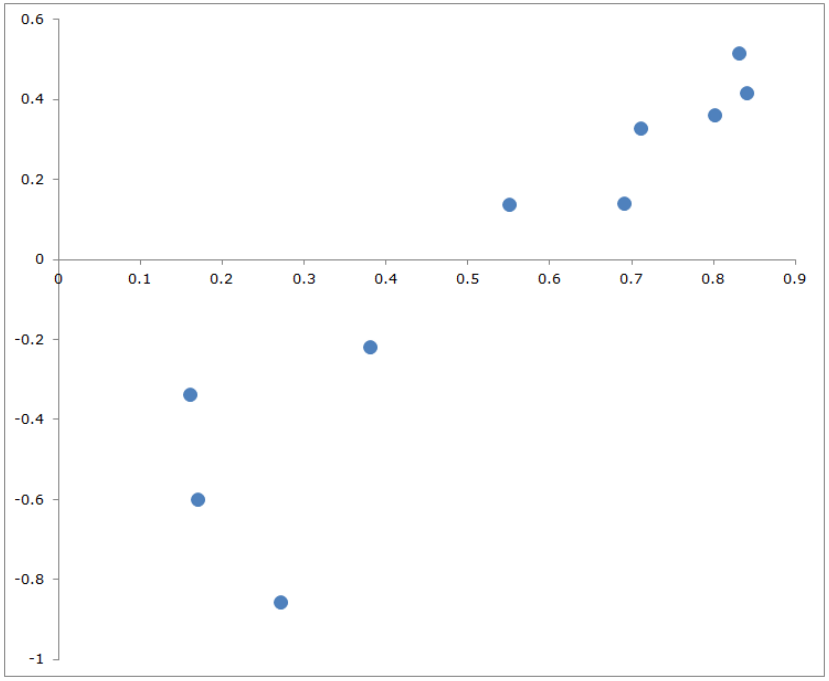

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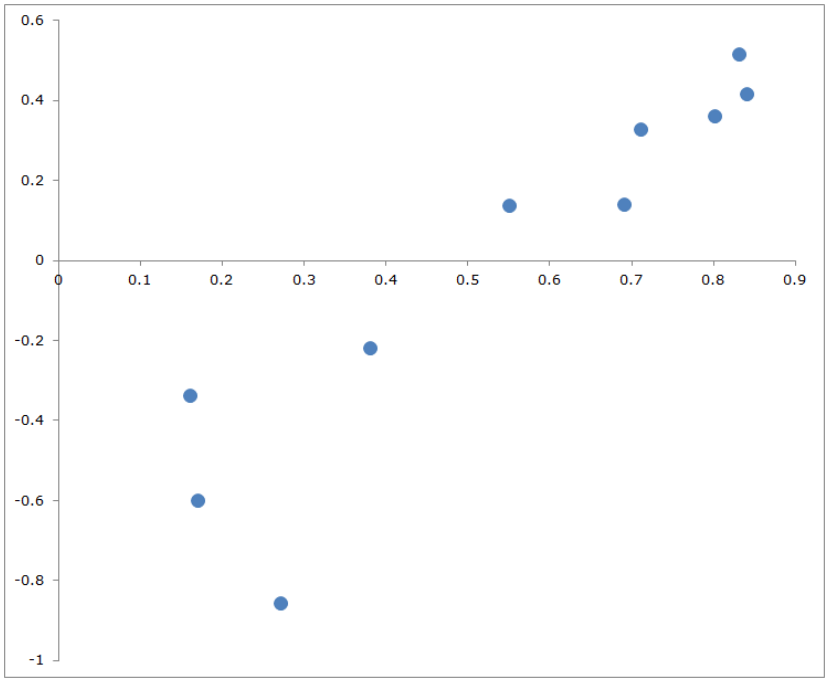

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Table 5: Informality sensitivity to price shocks, exporting sectors (m_2-multiplier)

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Concluding remarks

- m_1 dominates m_2 which implies the existence of sectoral informality traps!
- Regulatory framework is homogenous. Results suggest that sectors/firms prone to informality could receive some regulatory incentives to create formal jobs
- Peru's slight improvements in informality are could be explained by slight structural changes.

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