GROWTH AND INFORMALITY IN COLOMBIA
AGENDA - May, 2018

1. Evidence on Formalization
2. Stylized facts in Colombia
3. Logical Framework
4. Policies to promote Formalization
Evidence on Formalization
There is a negative and significant association between informality and per capita income. Informality reduces economic growth by 1.2 pp (14 countries in Latin America). Loayza N. 1996

GDP variation explains 80% of informal employment variation (42 countries). Loayza y Rigolini 2006


Doubling GDP per capita growth reduces self-employment by 4.9 pp (71 countries).

Regions with higher levels of education have 12% to 30% more formal firms and jobs. La Porta y Shleifer 2014

Source: Fernández, Villar, Gómez y Vaca. 2017, based on country household surveys.
Informality and Productivity: Micro level

Strong positive correlation but no evidence of causality at micro level.

Assets, output, value added, and per relative-worker output

- No impact on access to financial services.
- Impact on profit for the top 10% firms only.
  \(\text{De Mel et. al, 2013}\)
- No impact on firms’ sales or access to funding.
  \(\text{McKenzie & Sakho, 2010}\)
- No evidence of impact on firms’ sales or profits.
  \(\text{Alcázar et al. 2010}\)

Some Stylized Facts for Colombia

GROWTH AND INFORMALITY IN COLOMBIA
Informality is Associated with Lower Growth

Growth is negatively correlated with informality at the regional level.

Informality 2016 (pensions) and regional GDP. Colombia, 2015.

Source: DNP based on GEIH, DANE.
Informality is Associated with Poverty
Informality is positively correlated with poverty at the regional level.

Informality 2016 (pensions) and regional poverty (%) 2016. Colombia.

Source: DNP based on GEIH, DANE.
Informality is Associated with Inequality

Though slightly, informality is positively correlated with inequality at the regional level.

Informality 2016 (pensions) and regional inequality 2016. Colombia.

Source: DNP based on GEIH, DANE.
Informality Varies Across Areas and Sectors

Rural areas, the self-employed, and agriculture, commerce and construction sectors exhibit higher informality rates.


<table>
<thead>
<tr>
<th>Area</th>
<th>Informality Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cabecera</td>
<td>55</td>
</tr>
<tr>
<td>Resto rural</td>
<td>85</td>
</tr>
<tr>
<td>Asalariado</td>
<td>35</td>
</tr>
<tr>
<td>CuentaPropia</td>
<td>86</td>
</tr>
</tbody>
</table>

Source: DNP based on DANE.
Features of the Average Informal Worker

On average, the informal worker has less education and is poorer than the formal worker.

Average years of education. 2017.

<table>
<thead>
<tr>
<th></th>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asalariado</td>
<td>12.1</td>
<td>8.1</td>
</tr>
<tr>
<td>Cuenta Propia</td>
<td>12.6</td>
<td>7.4</td>
</tr>
</tbody>
</table>

Poverty (%). 2017.

<table>
<thead>
<tr>
<th></th>
<th>Formal</th>
<th>Informal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asalariado</td>
<td>4.0</td>
<td>17.5</td>
</tr>
<tr>
<td>Cuenta Propia</td>
<td>5.0</td>
<td>29.4</td>
</tr>
</tbody>
</table>

Source: DNP based on DANE
Formalization in Firms: Low Levels in Registration

The share of non-registered firms is high and there are no reliable information sources to monitor changes in registration.

Registered micro-establishments (micro-establishments surveys)

- 2004: 44%
- 2006: 46%
- 2007: 45%
- 2008: 45%
- 2009: 44%
- 2010: 43%

Registered micro-businesses (Household surveys GEIH)

- 2013: 27%
- 2014: 29%
- 2015: 25%
- 2016: 27%

Source: Micro-establishments Survey, GEIH Micro-businesses module, DANE
Heterogeneity Across Firms and Informal Workers

Different types of workers stay in informality for different reasons

- **Voluntarios**: gets net higher income in informal sector.
- **Inducidos**: preference for formal sector, mean productivity, but high costs that prevent entering the formal sector.
- **Subsistencia**: low productivity and preference for formal sector.

Source: Fernández, Villar, Gómez y Vaca, 2017 based on country household surveys.

Note: **Voluntary** gets net higher income in informal sector. **Induced**: preference for formal sector, mean productivity, but high costs that prevent entering the formal sector. **Subsistence**: low productivity and preference for formal sector.
Heterogeneity Across Firms and Informal Workers

Across social security benefits, there are different levels of informality.

Sources:
- Salud: Sistema Integral de Información de la Protección Social
- Riesgos laborales: MinTrabajo (Dir. Riesgos Laborales)
- Cajas de Compensación: SuperSubsidio Familiar Cesantías, SuperFinanciera, y Fondo Nacional del Ahorro (FNA)
- Pensiones: SuperFinanciera

Number of workers who contribute to social security
Millions of people (January 2018)
## Compliance Across Formality Requirements for Micro-establishments

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Compliance Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contabilidad con P y G o balance general</td>
<td>16%</td>
</tr>
<tr>
<td>Contabilidad con libro diario de operaciones</td>
<td>23%</td>
</tr>
<tr>
<td>Establecimiento paga la ARL</td>
<td>24%</td>
</tr>
<tr>
<td>Establecimiento paga las prestaciones…</td>
<td>24%</td>
</tr>
<tr>
<td>Establecimiento paga la salud y pensión</td>
<td>31%</td>
</tr>
<tr>
<td>Contabilidad informal</td>
<td>31%</td>
</tr>
<tr>
<td>Establecimiento paga los sueldos y salarios</td>
<td>47%</td>
</tr>
<tr>
<td>Con Registro Mercantil</td>
<td>73%</td>
</tr>
<tr>
<td>Con RUT</td>
<td>78%</td>
</tr>
</tbody>
</table>

### Compliance Percentages

- **RUT**:
  - 77% Compliance
  - 24% Labor

- **Registro Renovación**: (Registry Renovation)
  - 79% Compliance
  - 76% Labor

- **Labor**: (Unidades Productivas)
  - 24% Compliance
  - 88% Labor

Heterogeneity Across firms and Informal Workers
Compliance varies across formality requirements

I: Total informality
II: Partial informality
III: Partial formality
IV: Total formality

I
38.7%

II
Accounting
5.5%

III
Registry
18.3%

II
13.5%

III
5.1%

III
Social security contributions*
2.8%

IV
3.8%

Logical Framework
An approach to Informality

Hamman & Mejía (2011) use a dynamic partial-equilibrium model to analyze how the legal framework and different formalization policies affect the size of the informal sector.

What is the impact of four formalization policies?

- Reduction of corporate income tax
- Elimination of non-wage labor costs
- Reduction of costs to open a new business
- Reduction of costs to close a business
An approach to Informality

Entrepreneurs analyze costs and benefits from both sectors and decide to operate in one of two.

Model:

\[ z_{t+1} = \rho z_t + \varepsilon_{t+1} \]

\( \rho \): autocorrelation coefficient

\( \varepsilon \): independent random variable

\( z \in Z \): entrepreneur ability level (only source of uncertainty)

Agents preferences are:

\[ U = E \sum_{t=0}^{\infty} \beta^t u(c_t) \]

\( 0 < \beta < 1 \): intertemporal discount factor

\( u : \mathbb{R}^2_+ \to \mathbb{R} \): instantaneous utility function

Entrepreneurs face two decisions:

- **Static model**: choose optimal demand for factors of production to operate
- **Dynamic model**: choose which sector (formal or informal) to operate in the next period and the optimal accumulation of risk-free assets
An Approach to Informality

Static model: entrepreneurs choose optimal demand for factors of production to operate

Operation technology of an entrepreneur with ability $z$ and

$$y_t^s(z_t) = z_t(k_t^s)^\kappa(n_t^s)^\mu$$

Where:

$k_t^s, n_t^s$: capital and work employed

$w^f$: cost of hiring a unit of work in the formal sector $\tau^f > 0$ constant corporate income tax

$w^i$: cost of hiring a unit of work in the informal sector $\tau^i = 0$ corporate income tax

Static problem of an entrepreneur with ability $z$ and in sector $s$:

$$\max_{k^s, n^s \geq 0} \pi^s(z) = z(k^s)^\kappa(n^s)^\mu - w^s n^s - R^s k^s$$

where $R^s = 1 + r^s$ : capital cost

Indirect utility function of an entrepreneur with ability $z$ and in sector $s$:

$$\pi^s(z)^* = z(k^s(z)^*)^\kappa(n^s(z)^*)^\mu - w^s n^s(z)^* - R^s k^s(z)^*$$
An Approach to Informality

Dynamic model: entrepreneurs choose which sector (formal or informal) to operate in the next period and the optimal accumulation of risk-free assets.

The problem of an entrepreneur with ability $z$, assets $a$ and in sector $s$:

$$ v(z, a, s) = \max_{c, a', s'} \left\{ u(c) + \beta \sum_{z'} p(z', z) v(z', a', s') \right\} $$

subject to: $a' = R^* a + (1 - \tau^s) \pi^s(z)^* - c - \eta^s 1_{-s}$

Where:

$a_t \geq 0$

$1_{-s}$: indicative variable set to one if entrepreneur was not in $s$ sector in previous period; otherwise, zero.
An Approach to Informality

Results show that reducing corporate income tax, eliminating non-wage labor costs and reducing costs to open a new business increase the size of the formal sector

<table>
<thead>
<tr>
<th>Formalization policies</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction of corporate income tax</td>
<td>Increases relative size of the formal sector</td>
</tr>
<tr>
<td>Elimination of non-wage labor costs</td>
<td>Increases relative size of the formal sector</td>
</tr>
<tr>
<td>Reduction of costs to open a new business</td>
<td>Has the largest effect on relative size of the formal sector</td>
</tr>
<tr>
<td>Reduction of costs to close a business</td>
<td>No effect</td>
</tr>
</tbody>
</table>
## Types of Informality

Informal agents are heterogeneous. Subsistence units should be treated as individuals, not firms.

<table>
<thead>
<tr>
<th>Type of informality</th>
<th>Workers</th>
<th>Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voluntary</td>
<td>$PMgL &gt; W_{min}$</td>
<td>$VPN\pi(\theta^f) &gt; VPN\pi(\theta^i)$</td>
</tr>
<tr>
<td>Induced</td>
<td>$PMgL &lt; W_{min}$</td>
<td>$VPN\pi(\theta^f) &lt; VPN\pi(\theta^i)$</td>
</tr>
<tr>
<td>Subsistence</td>
<td>$PMgL \leq \bar{W} &lt; W_{min}$</td>
<td></td>
</tr>
</tbody>
</table>

* $PMgL$: labor productivity
* $W_{min}$: minimum labor formal cost
* $\bar{W}$: subsistence income
* $VPN\pi$: net present value of business profit
* $\theta^f$: business development level and costs and benefits factors associated to formality
* $\theta^i$: business development level and costs and benefits factors associated to informality
Policies to Promote Formalization
Formalization as a Multidimensional Process

Formality is a multidimensional process, not a binary state. A firm is entirely formal when it complies with all applicable regulation.

**Entry**
- Registration
- RUT

**Inputs**
- Labor force hiring
- Land use
- Titles to property

**Production**
- Sanitary requirements
- Technical regulation
- Product quality
- Environmental regulation

**Taxes**
- Accounting
- Declaration
- Payment

Source: DNP.
### Regulatory Costs of Formality

In Colombia, costs of formality correspond to 45% of gross profit.

#### Example: additional costs of formality as % of gross profit

<table>
<thead>
<tr>
<th>Type of Business</th>
<th>Employees</th>
<th>Assets (mm)</th>
<th>Costs (mm)</th>
<th>Sales (mm)</th>
<th>Gross profit (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microenterprise</td>
<td>Microempresa</td>
<td>2</td>
<td>250</td>
<td>80</td>
<td>158</td>
</tr>
<tr>
<td>Small Enterprise</td>
<td>Empresa Pequeña</td>
<td>13</td>
<td>3,000</td>
<td>3,300</td>
<td>4,500</td>
</tr>
<tr>
<td>Medium Enterprise</td>
<td>Empresa Mediana</td>
<td>56</td>
<td>5,000</td>
<td>6,150</td>
<td>9,500</td>
</tr>
</tbody>
</table>

Source: DNP based on EAM, EAC y micro-establishments survey.

* Labor costs. 2016 ** Taxes included: Renta, IVA, ICA y Riqueza
In Colombia, the formalization process entails 30 procedures approximately.

**Example: additional procedures due to formality during the first year of being formal**

**Microempresa**
- Employees: 13
- Assets: 250 mm
- Costs: 80 mm
- Sales: 158 mm
- Gross profit: 79 mm

**Pequeña empresa**
- Employees: 11
- Assets: 3,000 mm
- Costs: 3,300 mm
- Sales: 4,500 mm
- Gross profit: 2,200 mm

**Mediana empresa**
- Employees: 14
- Assets: 5,000 mm
- Costs: 6,150 mm
- Sales: 9,500 mm
- Gross profit: 3,400 mm

Source: DNP, world Bank based on regulation 2017. Non-comparable procedures for specific activities not included.

Firms creation:
✓ No bank certification required to get RUT
✓ Set up of Centros de Atención Empresarial (CAE)

Construction permit:
✓ Up-to-date POT and no “paz y salvos”

Property registry:
✓ Ventanilla Única de Registro (VUR)
✓ Virtual access to “certificado de libertad y tradición”

Tax payment:
✓ Lower tariffs and e-payment

Entry: Lower Registration Costs
A revenue-neutral reform in registration costs could improve formalization

Source: Salazar, Mesa, & Navarrete (2017).
Revenue-neutral reform on the amount of the registration tariff:

- Criteria: simplicity, horizontal and vertical equity, efficacy-efficiency, transparency.
- Considering not taxing firms’ assets but their flow (e.g. gross income). Tariff linked to CPI (no minimum wage).

E-procedures:

Ventanilla Única Empresarial (VUE)
**Inputs: Temporary Costs Reduction**

Law 1429 established temporary exemptions regarding registration and labor costs, and taxes. The following findings of its impact were as follows (Econometría, 2013):

<table>
<thead>
<tr>
<th>Impact on Small Enterprises</th>
<th>Impact on Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive impact on</strong></td>
<td><strong>Positive impact on</strong></td>
</tr>
<tr>
<td>• <strong>Activity length</strong>: 13.4 months higher on treated</td>
<td>• <strong>Formalization length</strong>: 27 months treated vs. 3 months control (2010 through 2013).</td>
</tr>
<tr>
<td>• <strong>Hired workers</strong>: 0.66 higher on treated</td>
<td>• <strong>Permanence</strong>: 86% of treated who were hired on 2011 continued through 2013 vs. 10% of control.</td>
</tr>
<tr>
<td>• <strong>Access to loans</strong>: 6% higher on treated</td>
<td>No impact on</td>
</tr>
<tr>
<td>No impact on</td>
<td><strong>Income</strong></td>
</tr>
<tr>
<td>• <strong>Earnings</strong></td>
<td>No impact on</td>
</tr>
</tbody>
</table>

Non-wage labor cost by wage level (% of wage, 1982-2017)


## Inputs: lower non-wage labor costs


### Expected impact

<table>
<thead>
<tr>
<th>Reference</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hamman &amp; Mejía, 2011</td>
<td>Reform would increase the size of the formal sector by 3.0 to 4.5 pp</td>
</tr>
<tr>
<td>Mondragón-Vélez, Peña &amp; Wills, 2010</td>
<td>Increase in 10 pp in non-wage labour costs would increase the probability of being informal by 5 to 8 pp.</td>
</tr>
<tr>
<td>Kugler &amp; Kugler, 2009</td>
<td>10% increase in payroll taxes lowers formal employment by 4% to 5%</td>
</tr>
<tr>
<td>Cardenas &amp; Bernal, 2003</td>
<td>A 10% increase in wages lowers labour demand by 5%</td>
</tr>
</tbody>
</table>

### Measured impact

<table>
<thead>
<tr>
<th>Reference</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kugler, Kugler and Herrera, 2017</td>
<td>Impact of 11.1 pp on the likelihood of being employed in jobs with contributions to pension funds.</td>
</tr>
<tr>
<td>Fernández and Villar, 2016</td>
<td>Informality rate reduction between 2.0 and 3.1 pp (13 main metropolitan areas) and between 1.2 and 2.2 pp (total national)</td>
</tr>
<tr>
<td>Bernal, Eslava, Meléndez and Pinzón, 2015</td>
<td>Positive impact between 1.2 to 2.2 pp on the informality rate of the whole country.</td>
</tr>
</tbody>
</table>
Inputs: lower non-wage labor costs
For the first time, there are more formal than informal workers in the main 13 cities.
Inputs: Procedures Required to Hire a Formal Worker

Affiliation to social security is burdensome for employers: procedures and forms vary across providers

Current procedure for social security affiliation (for employer)

- **Health**
  Employee chooses among 44 providers

- **Pension**
  Employee chooses among 5 funds

- **Labor risks insurance**
  Employer chooses company

- **Caja de Compensación Familiar**
  Employer chooses company

It takes at least 6 working days, up to 8 forms and up to 12 procedures to affiliate a worker to social security
Relatively High Minimum Wage

Costs of formal jobs are high compared to other countries in the region and to OECD countries

Minimum wage as % of median wage, 2016

Source DNP, based on OCDE (2016) and DANE (2016).
Nota: Calculations do not include non-wage labor costs.
Minimum Wage and Informality

Relative minimum wage is associated to labor informality

<table>
<thead>
<tr>
<th>Region</th>
<th>Informality Rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Córdoba</td>
<td>90%</td>
</tr>
<tr>
<td>Nariño</td>
<td>80%</td>
</tr>
<tr>
<td>Cauca</td>
<td>70%</td>
</tr>
<tr>
<td>La Guajira</td>
<td>60%</td>
</tr>
<tr>
<td>Boyacá</td>
<td>50%</td>
</tr>
<tr>
<td>Magdalena</td>
<td>40%</td>
</tr>
<tr>
<td>Caquetá</td>
<td>30%</td>
</tr>
<tr>
<td>Atlántico</td>
<td>20%</td>
</tr>
<tr>
<td>Santander</td>
<td>10%</td>
</tr>
<tr>
<td>Colombia</td>
<td>0%</td>
</tr>
</tbody>
</table>

Mean wage/minimum wage

Source: DNP based on DANE.
Productivity growth is a key determinant of labor informality in the long run.

Note: Difference in growth of labor productivity and minimum wage is half percentage point (-0.5pp current, +0.5pp reform, 0pp keep difference in levels).


Growth and Informality in Colombia
May 2018

GOBIERNO DE COLOMBIA
Inputs: Public Policy Approach

**Social security affiliation:**
- Unified paper affiliation form
- Unified Affiliation System: “Mi Seguridad Social” + online employer registration

**Virtual procedures:**
- Expansion to all Chambers of Commerce (57)
- Online affiliation of all workers to social security

**Commission on labor costs:**
- Minimum wage:
  - Methodology for annual minimum wage definition
  - Unlink tariffs, taxes, and other factors from minimum wage
- Non-wage labor costs:
  - More flexibility
  - Specific characteristics of rural areas
Production: Processes and Critical Costs
Processes, procedures and requirements for firms constitute an obstacle to formalization and survival of businesses.

Processes and administrative costs
910 requirements/procedures/processes for businesses identified by business owners*

Fulfilment of minimum quality standards
Sanitary certification takes time and is prone to mistakes (paper form - 1,800 correction requests to INVIMA each year). Intermediation increases indirect costs.

Public policy approach
• VUE committee – simplification of business procedures
• Specific Regulation Impact Analysis for regulation affecting Micro, small and medium enterprises
• Virtual sanitary certification
• Police code regulation

* Campaña Menos Trámites, Más Simples.
Taxes: Improvement of Single Tax (monotributo)

In most cases, single tax payment is higher than in ordinary tax regime

Source: DNP based on Law 1819 of 2016.
Taxes: Public Policy Approach

**Single tax**
- For all sectors
- Only option for firms (person) with income < 3,500 UVT pro-rata tariff
- Simplification of registry (through VUE) and tariff
- Inclusion of Social security contributions
- Evaluation

**ICA**
- Online publication of tariffs
- Use of unified form and evaluation at the local level (best practices report)
Benefits of Formality

Business support based on development degree

Business development degree

Productive Development Policy
Entrepreneurship
Scaling-up
Social skills

Centers for Business Development
Support on definition of entrepreneurial projects.
Training to entrepreneurs on managerial skills, costs and formalization.
Funding (FE)

Quality
Technological extension
Innovation
Pilot for exports
Funding
Increasing the Benefits of Formalization: Policy
Mechanisms for effective realization of the benefits of formality

**Technical assistance**
- Rigorous selection of firms with growth potential
- Segmented technical assistance based on firm development and activity
- Focus on client
- Clear and profitable business model
- Managerial practices

**Measures to increase and facilitate access to benefits**
- Free and online access to RUES
- Funding tailored to firm needs at lower cost
- Access to public sector procurement processes
- Access to arbitrage and conciliation services
Control and Surveillance
High administrative cost, low coverage, no follow-up and control

ILLEGAL

NON-REGISTERED

REGISTERED

Cross-database analysis to identify evasion based on the universe of firms with some degree of formalization (RUES, PILA, DIAN, etc.)

Strong incentive to stay informal

Closing and sanction
- Fiscalía
- Police
- Majors

Control and Surveillance
- Secretaries
- Superintendencies
- Government agencies. (e.g. INVIMA, ICA)
- Ministries
- Private (e.g. Sayco y Acinpro)
- Major + 50
Control and Surveillance (CS): Policy Approach

More objective and broader, based on risks

SHORT RUN

• Agencies in charge of CS with access to a centralized, census, database
• Objective risk assessments for regulation design and implementation
• Information and persuasion strategies on CS
• Objective sanctions proportional to risks and affected population
Income-Generating Programs for Vulnerable Population

Policies and programs for employability

- Registry
- Orientation
- Training
- Labor intermediation
- Psychological support (victims of conflict)
- Skills certification

Source: DNP
Income-Generating Programs for Vulnerable Population

Results

- 238 municipalities and cities - 31 departments
- 144,000 beneficiaries (2014-2018)
- 66 projects - $300 mm

✓ 136,000 victims of conflict who found a job through labor intermediation services (2014-2018)

Source: DNP
Productive Inclusion: Policy Approach

Measures to promote social and productive inclusion, as well as building human capital for workers at the subsistence productive units

**SHORT RUN**
- Identification of informal subsistence workers (Sisben and other databases).
- Routes to access programs (conditional and no-conditional transfers, and income generating programs) based on features of the informal worker and household.

**LONG RUN**

**Education and training**
- Access to education and training for informal workers and household members
- Human Capital Strategy
  - Information on needs of labor markets
  - Quality of education and training programs
  - National Qualifications Framework