

# **Comments on “Wage Adjustment: A Network Approach ”**

## **by Kanat Isakov and Leonardo Bonilla**

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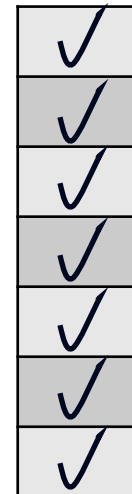
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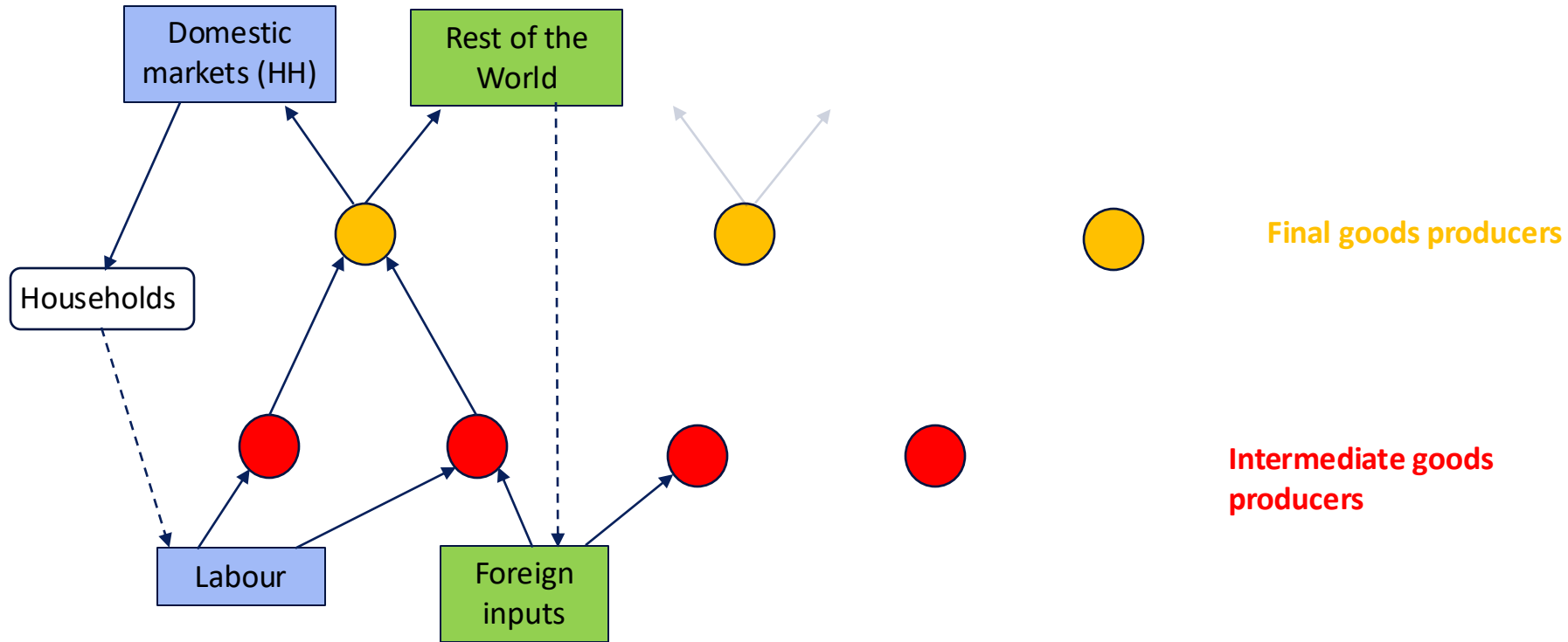
- 
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  - **Strategic interactions, alternative market structures**
  - **Open economy setting; exchange rate pass-through**
  - **General equilibrium model to frame hypothesis**
  - **Bringing model to data through state-of-the-art econometrics**
  - **Macro dynamics: results simulated using model**
  - **Insights for monetary and FX policy**

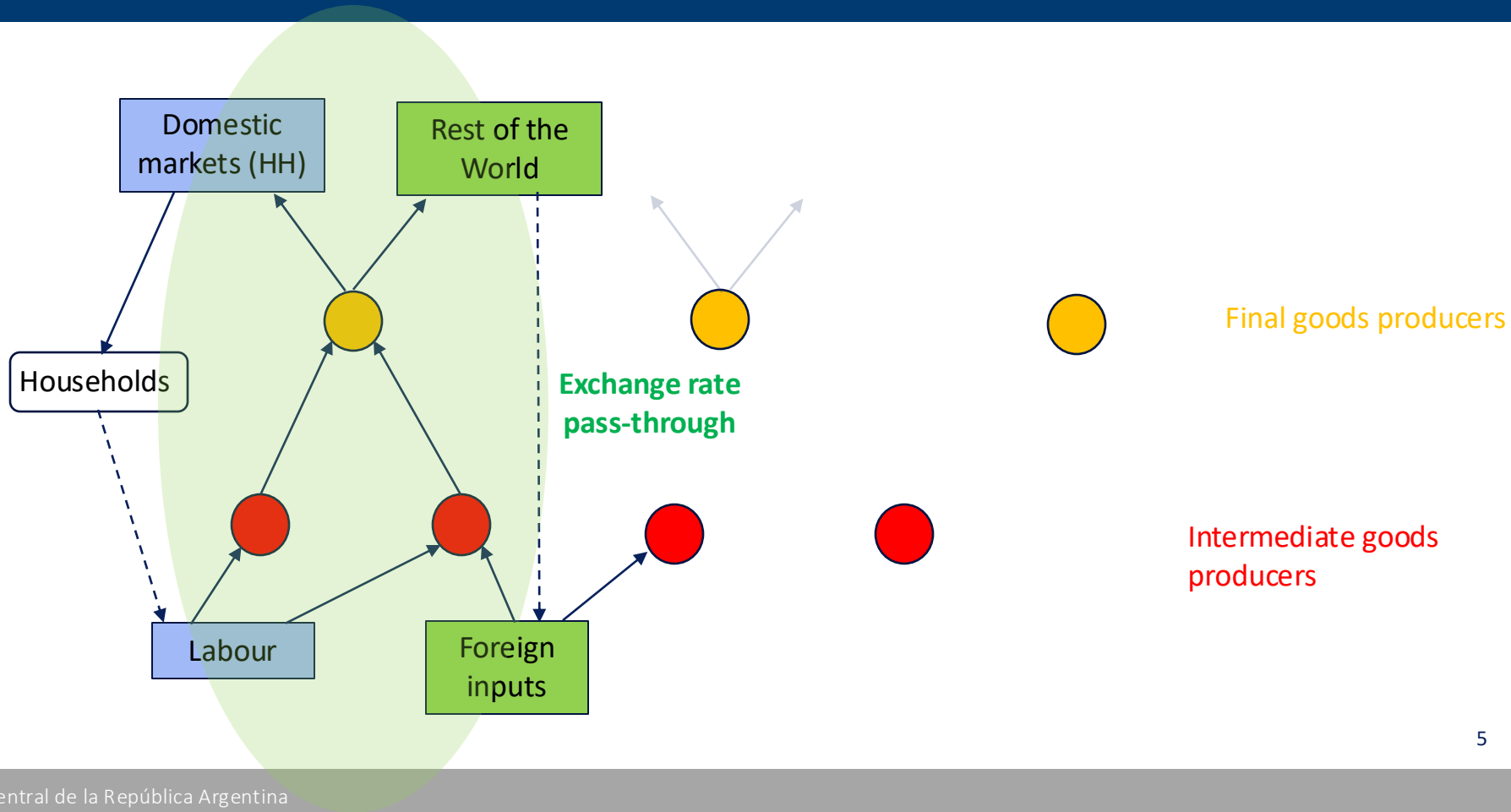
*Note: all views expressed are the discussant's own and do not necessarily represent those of BCRA.*

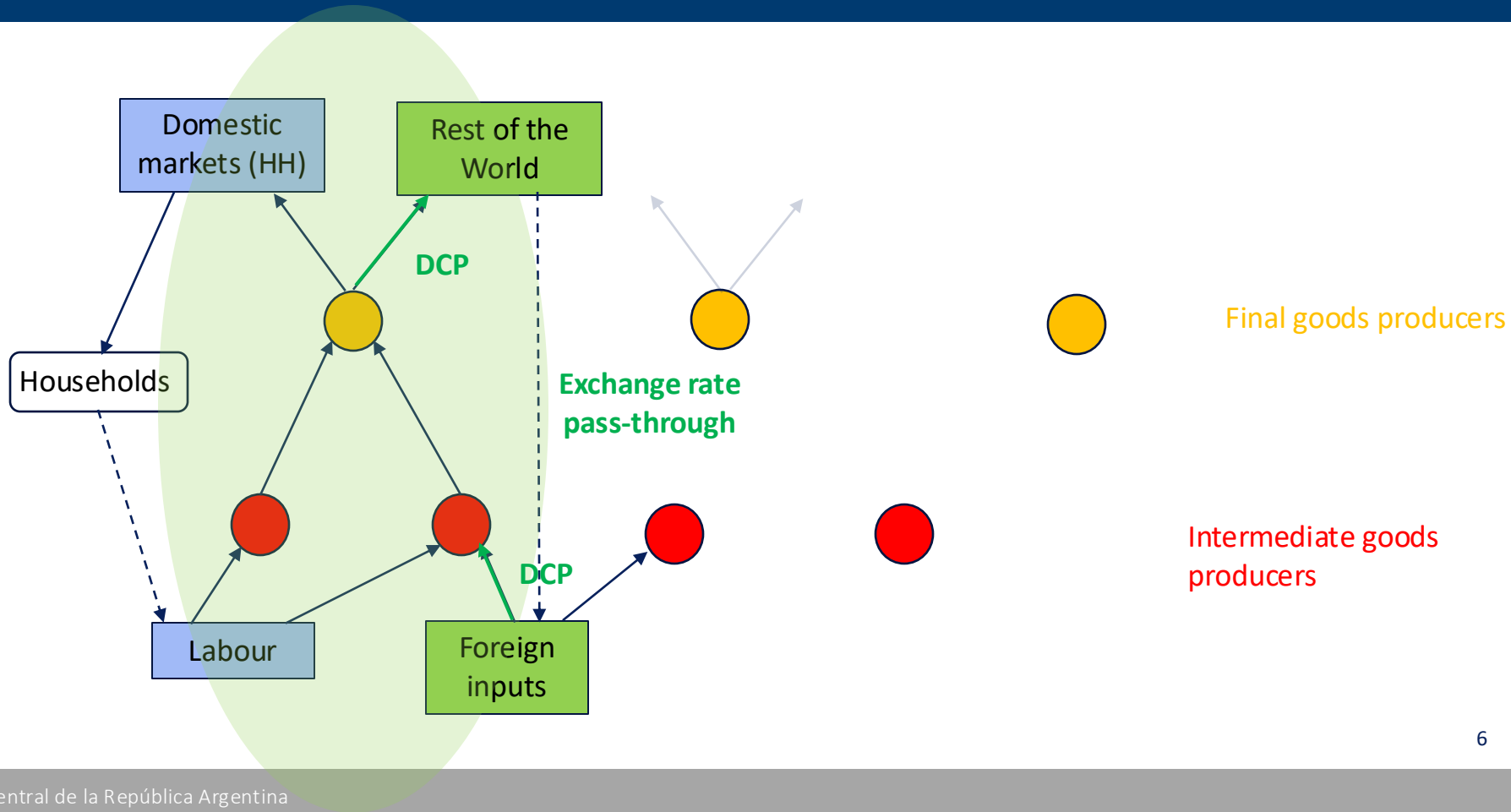


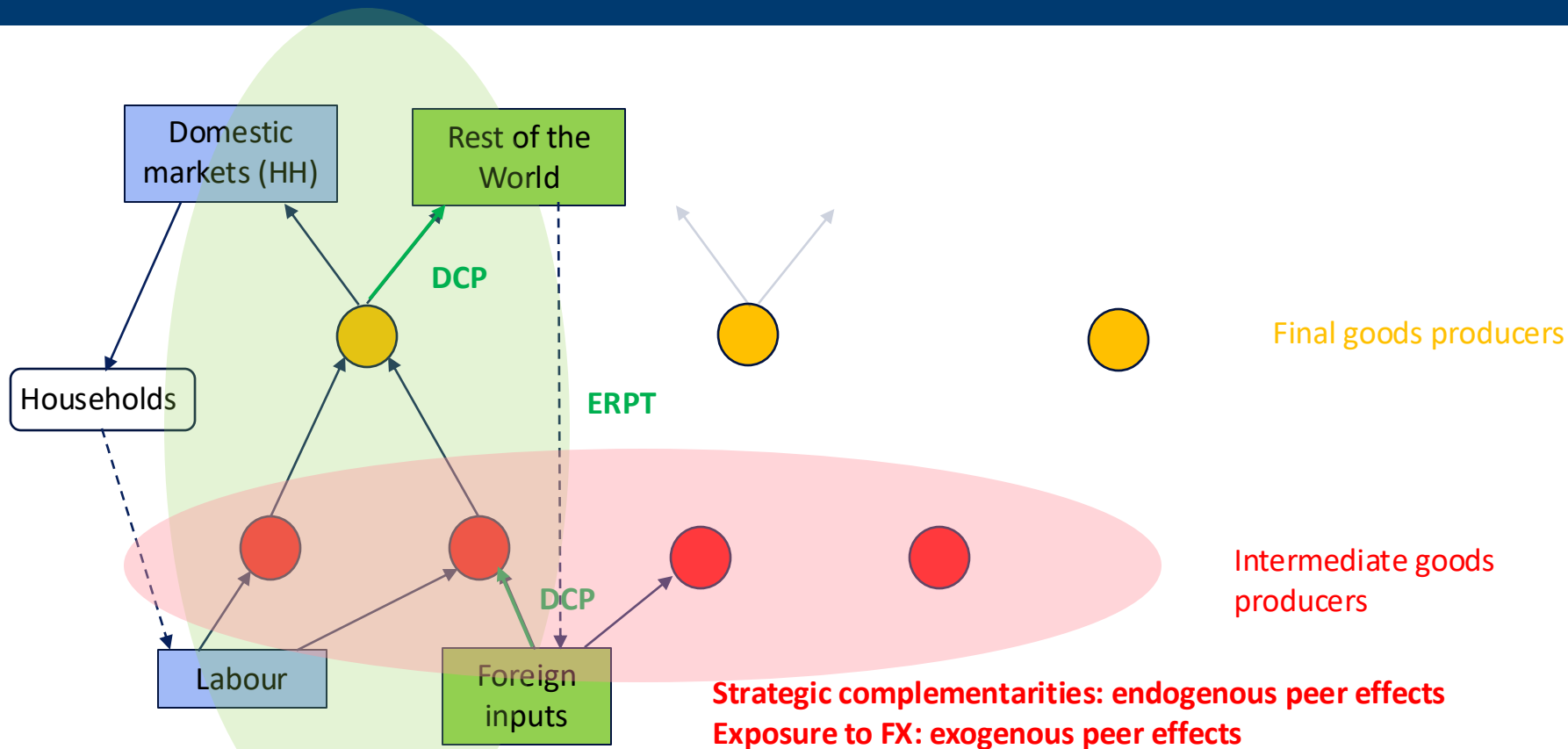
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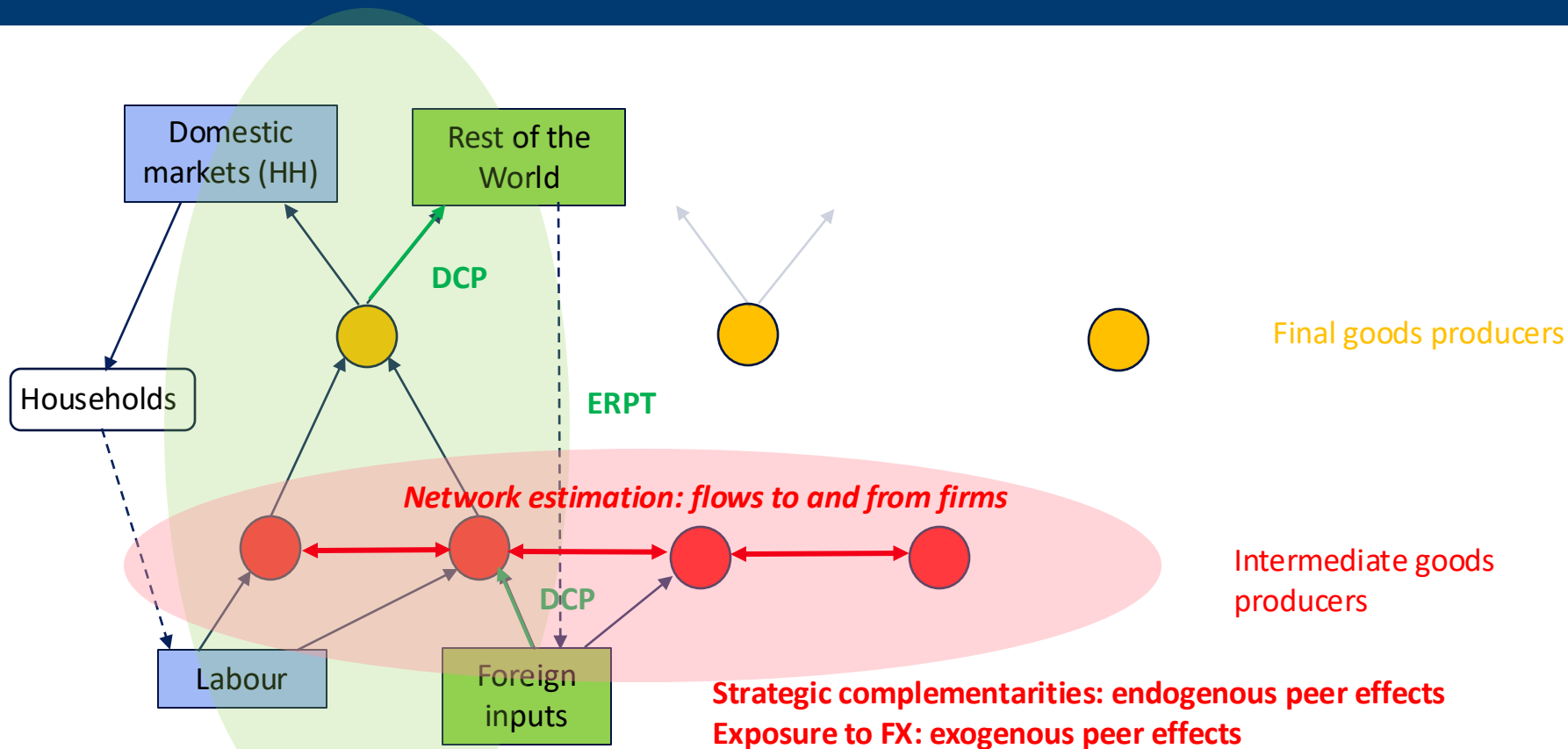














1. **Network estimation:** job-to-job flows (endogenous), 2013-2018
2. Identification: using previous estimates, **predict networks in consecutive years**
3. Estimate **aggregate wage dynamics**

Strategic complementarities

Firm's direct exposure to FX

$$\Delta \log W_{xjt} = \lambda_x \sum_{k \neq j} \pi_{j,k} \Delta \log W_{xkt} + \beta_1^{\text{exp}} \tilde{\gamma}_j \Delta \log \mathcal{E}_t + \beta_1^{\text{imp}} \tilde{\alpha}_j \Delta \log \mathcal{E}_t + \beta_2^{\text{exp}} \sum_{k \neq j} \pi_{j,k} (\tilde{\gamma}_k - \tilde{\gamma}_j) \Delta \log \mathcal{E}_t + \beta_2^{\text{imp}} \sum_{k \neq j} \pi_{j,k} (\tilde{\alpha}_k - \tilde{\alpha}_j) \Delta \log \mathcal{E}_t + u_{xjt},$$

Firm's indirect exposure to FX

**Nominal or real wages?**

Wage dynamics for job stayers: how to factor in **unemployment / cyclical factors?**

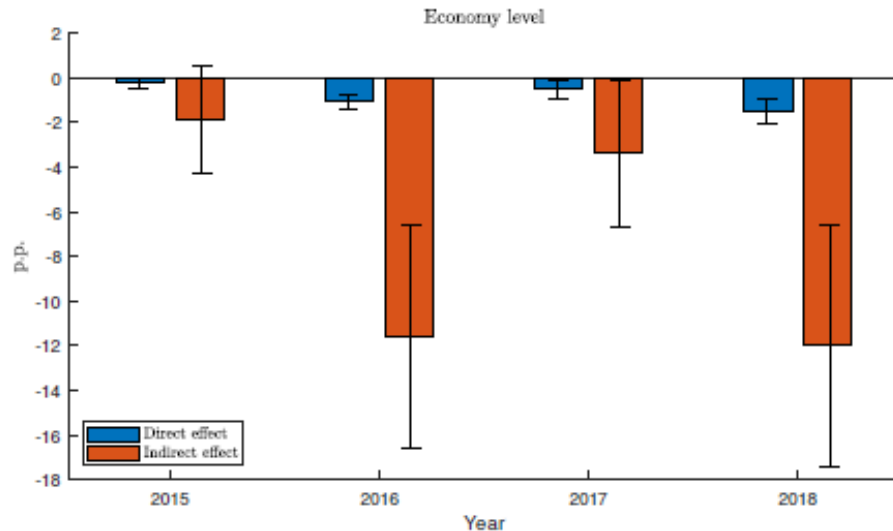
- Clustering: age, gender, skills
- Workers flow toward higher-paying and import-exposed firms
- Conditional on FX depreciation, workers flow less to import-exposed firms
- **Distance between firms:** more or less flows. **Why not use geo-referenced data?**
- **Firms more vs. less exposed to imports:** **labour intensity?**

	(1)	(2)	(3)
$\log(\text{empl}_j)$	0.326 *** (0.003)		
$\log(\text{empl}_k)$	0.314 *** (0.003)	0.387 *** (0.003)	
distance in worker pay composition	-0.083 *** (0.004)	-0.127 *** (0.004)	-0.153 *** (0.004)
distance in age composition	-0.018 *** (0.005)	-0.022 *** (0.005)	-0.017 *** (0.006)
distance in gender composition	-0.128 *** (0.004)	-0.157 *** (0.005)	-0.187 *** (0.005)
$\log(\text{Firm pay}_k - \text{Firm pay}_j)$	0.803 ** (0.332)	0.269 (0.223)	1.545 *** (0.304)
$\log(\tilde{\gamma}_k - \tilde{\gamma}_j)$	-0.650 * (0.359)	-0.636 * (0.337)	-0.202 (0.408)
$\log(\tilde{\alpha}_k - \tilde{\alpha}_j)$	3.316 *** (0.790)	2.205 *** (0.919)	15.905 *** (1.025)
$\log(\text{Firm pay}_k - \text{Firm pay}_j) \times \log \mathcal{E}_t$	-0.101 ** (0.042)	-0.069 ** (0.028)	-0.090 ** (0.037)
$\log(\tilde{\gamma}_k - \tilde{\gamma}_j) \times \log \mathcal{E}_t$	0.087 * (0.046)	0.092 * (0.048)	0.098 * (0.051)
$\log(\tilde{\alpha}_k - \tilde{\alpha}_j) \times \log \mathcal{E}_t$	-0.352 *** (0.100)	-0.409 *** (0.116)	-0.438 *** (0.125)
MSA fixed effects	/		

- Evidence of **strategic interactions**
- **Asymmetric wage adjustment** (elasticity to Fx appreciation lower than to depreciation)
- **“Conditional on firms’ exposure to external shocks, firms avoid adjusting wages when competitors face shocks”**

	2014-15	2014-16	2014-17	2014-18
$\pi \Delta \log W$	0.235*** (0.034)	0.217*** (0.022)	0.261*** (0.016)	0.346*** (0.014)
$\tilde{\gamma} \Delta \log \mathcal{E}$	0.007 (0.037)	0.002 (0.064)	0.257*** (0.085)	0.254*** (0.070)
$\tilde{\alpha} \Delta \log \mathcal{E}$	-0.228*** (0.078)	-0.875*** (0.135)	-1.263*** (0.177)	-1.595*** (0.150)
$(\pi \tilde{\gamma} - \tilde{\gamma}) \Delta \log \mathcal{E}$	0.023 (0.038)	0.019 (0.066)	0.236*** (0.088)	0.234*** (0.072)
$(\pi \tilde{\alpha} - \tilde{\alpha}) \Delta \log \mathcal{E}$	-0.263*** (0.082)	-1.007*** (0.142)	-1.454*** (0.188)	-1.927*** (0.160)
MSA fixed effects	✓	✓	✓	✓
# of firms	162,577	133,817	110,233	98,549
# of balanced workers	3,410,686	2,990,038	2,690,508	2,561,246

Figure 3. Contribution of indirect external shocks via network



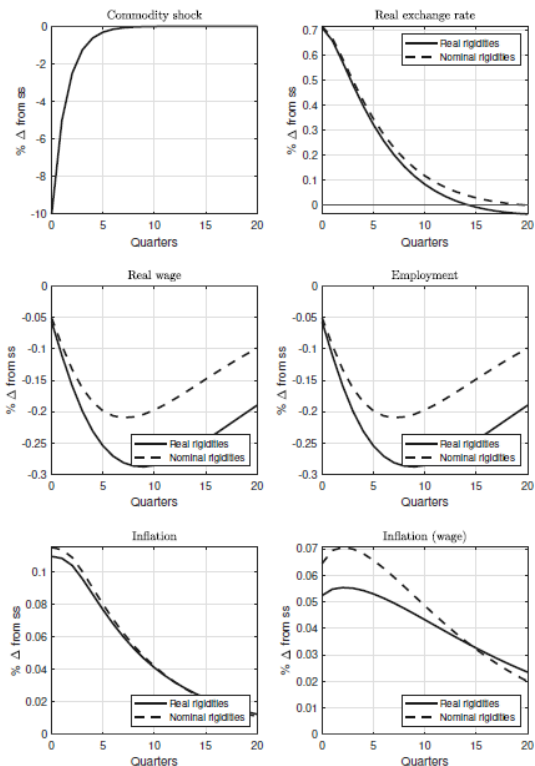
- *Sluggish* wage adjustment?
- FX depreciation impact on wages is **amplified through network** effects
- A “multiplier”

*Notes:* The source of data is authors' computation. The bars represent contribution of external shocks to aggregate metropolitan wage adjustment through the direct and indirect channels. The contributions are computed for the entire economy (10 largest metropolitan areas) over 2015 to 2018 years. Standard errors are computed using the delta method.

- **Short term:** direct and indirect impact on importing firms. **Lower wages,** “expenditure reducing”
- **“Long” term:** also direct and indirect impact on exporting firms. **Higher wages,** “expenditure switching”, but negative impact on importing firms dominates
- Compare to balance sheet impact of FX: Culiuc (2020)

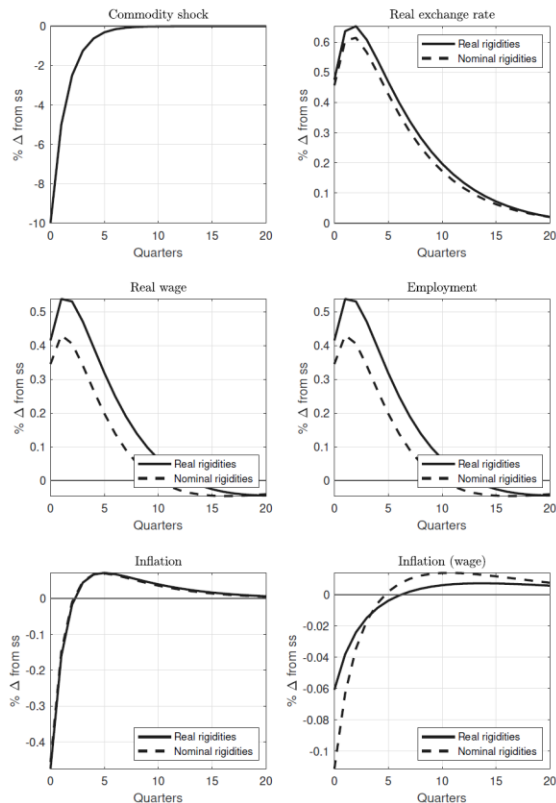
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Figure B.10. Impulse response functions to a commodity shock: Taylor rule



- With "real rigidities": **lower real wages *and* lower employment (!)**
- With or without “real rigidities”, the **RER does not seem to absorb the shock**
- Due to **DCP plus strategic complementarities (?)**
- Real wage adjustment: the **“dark side” of low ERPT?** See also Amiti et al (2019)
- “Real wage rigidities”? Blanchard and Galí (2007)
- Commodity shock as “income effect” (no relative price change)

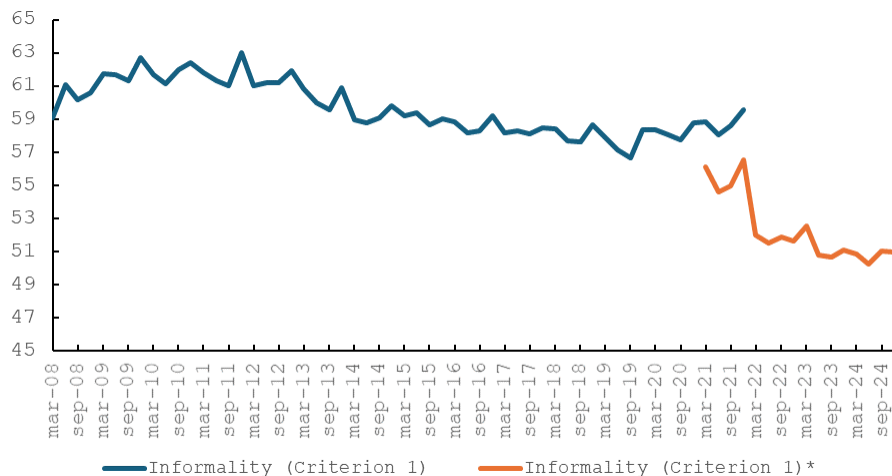
Figure B.11. Impulse response functions to a commodity shock: Peg regime



- **Further motivation for broader policy toolkits:** MFSF (BIS: Borio, Shim and Shin, 2022), IPF (IMF); **but based on labour market implications**
- Relate to work on FXI
- **Results for the economy at large?** Monetary policy across sectors (formal/informal)

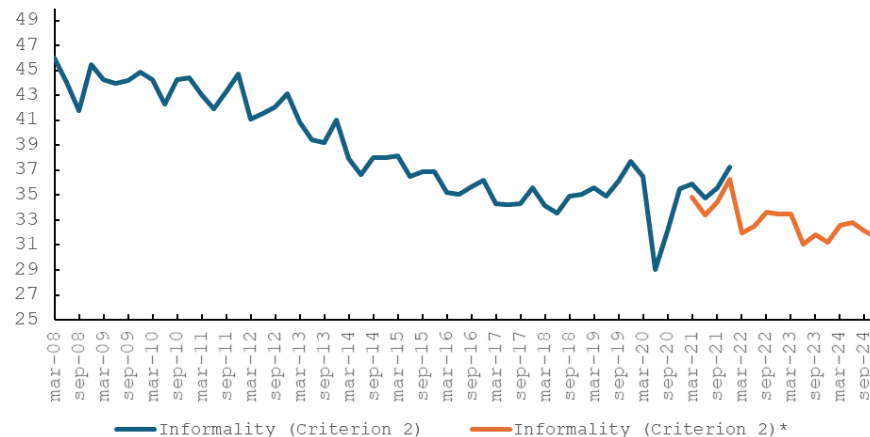
# Colombia: labour informality

Share of adults in informal jobs



Criterion 1: Informal=salaried workers in small firms, non-professional self-employed and zero-income workers

Share of salaried workers in informal jobs

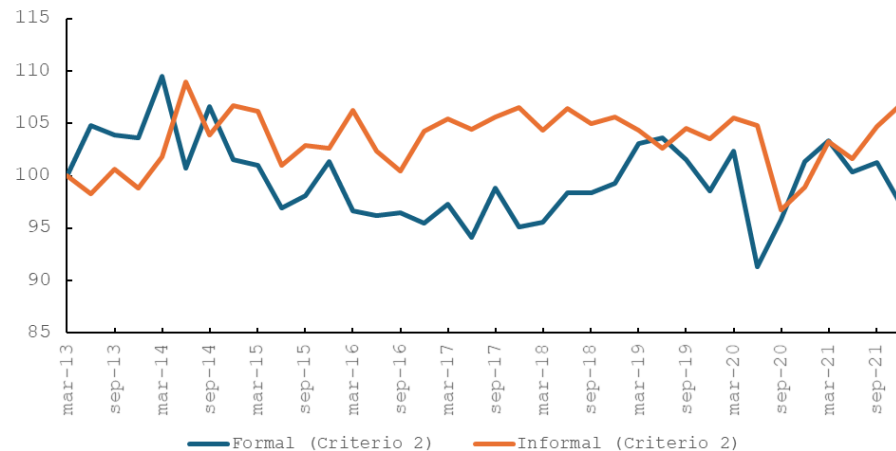
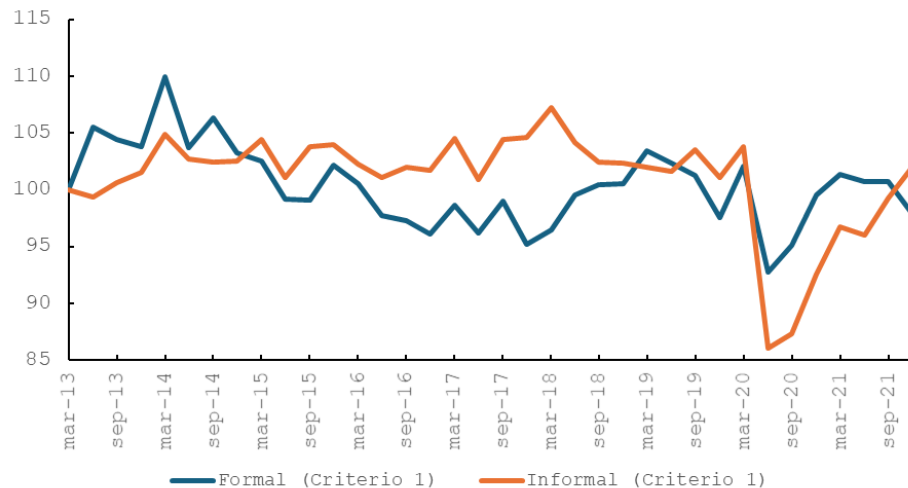


Criterion 2: Absence of social security rights

Source: *Base de Datos Laborales para América Latina y el Caribe* – LABLAC (CEDLAS and World Bank)



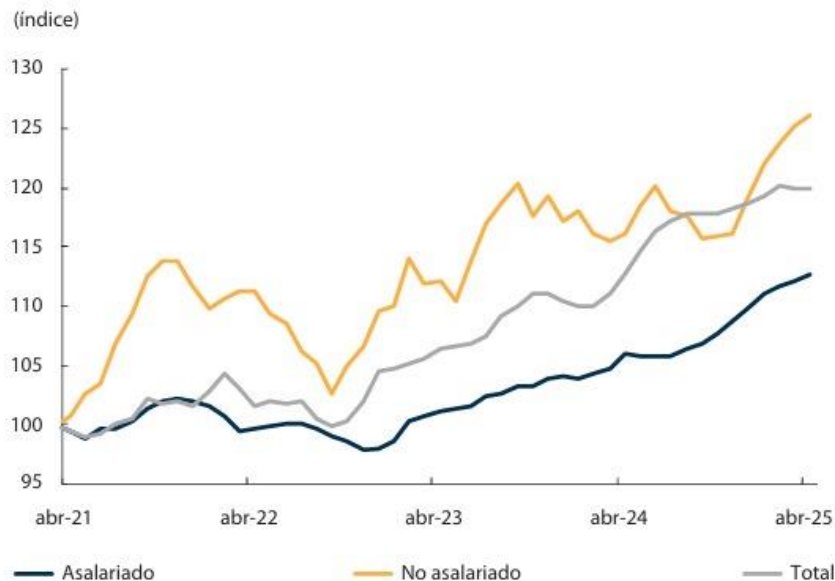
### Colombia: real wages, formal vs informal workers (index, Mar-13=100)



**Note: formal wages 3x / 2x informal wages**

Source: *Base de Datos Laborales para América Latina y el Caribe* – LABLAC (CEDLAS and World Bank)

Gráfico 16  
Índice de ingreso laboral mediano real mensual  
Agregado nacional (abr-21 a abr-25)



Nota: base 100 = marz-2021. Datos en trimestre móvil y desestacionalizados.  
Fuente: DANE (GEIH); cálculos del Banco de la República.



- **Strategic interactions: amplification (direct plus indirect effect of FX depreciation), hence no real wage “sluggishness”**
- **Scope: formal labour market**
- **DCP+ SC = FX no shock absorber**
- **“Floats and pain”: FX depreciation plus lower real wages**
- **Real rigidities or coordination failures? (Leijonhufvud, 1980; Howitt, 2003)**

# Congratulations!