The effect of local industry competition and trade on firm productivity. Evidence from the Mexican manufacturing industry

Oscar Barriga-Cabanillas, Ph.D. Candidate in Agriculture and Resource Economics at the University of California, Davis
Email: obarriga@ucdavis.edu

Luis Felipe Lopez-Calva, The World Bank
Carlos Rodrigues Castelan, The World Bank

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**RESEARCH QUESTION**

Economic productivity in Mexico has not kept pace with productivity growth of other developed economies even when factor accumulation was faster in the country. There are several potential explanations for this small TFP growth:

1. Inefficient allocation of factors of production (without misallocation there will not be TFP dispersion, Levy, 2017).
2. Incentives to maintain a large informal sector.
3. Excess in regulatory policies that penalize large firms and creates barriers to entry of new firms (market concentration).

Our goal is to understand how local industry competition (and trade) affects productivity.

**BACKGROUND**

By late 1970s, Mexico was fundamentally an oil-exporting economy. Since 1985, several initiatives were taken to promote non-oil exports. This efforts culminated with the signing of NAFTA. In 2015, it represented about 85 percent of total exports.

However, economic productivity growth in Mexico has not kept pace with productivity growth of other developed economies: TFP had kept pace, relative income per capita would be 24 percent higher in 2008 vs. 1960 (see Busso et al., 2012).

Standard models of endogenous technological change are ambiguous about the relationship between market competition and economic productivity because of rent dissipation (Aghion et al., 2003). Empirical research finds market concentration reduces productivity growth (Aghion et al. , 2005).

**CONTRIBUTION**

There is little evidence of the dynamic role of market concentration and productivity in developing countries. Where evidence exists, it relies on cross-country analysis which usually ignores the effects at firm-level productivity.

The role of the interactions between local market competition and access to international markets is sparse. We aim to fill this gap. As the Mexican economy becomes more open, the relevant market to measure concentration changes.

Our data allows us to explore the long term evolution of productivity, over a period when the Mexican market opened to international competition.

**DATA**

1. Mexican Economic Census: It has detailed establishment level data for over twenty years: 1994, 1999, 2004, 2009 & 2014. * * * denotes panel. This allows us to explore the long term evolution of productivity, over a period when the Mexican market opened to international competition.
2. Mexican Atlas of Economic Complexity. We use it to test if exposure to international markets eliminates the negative effects of market concentration on productivity. It covers the census of 2004, 2009 and 2014.

3. This rich dataset allows us to run several robustness checks:
   - Panel of metro areas allow us to run fixed effects models
   - Baltick-type instruments to separate the component of local concentration that depends on local dynamics
   - Olley-Pakes correction. A robust estimation of the production function in a panel data of firms.
4. Level of aggregation: Industry concentration and external competition

We explore the effect of industry concentration at the level of metropolitan areas. They are defined by the NSO as areas that “... have a high degree of social and economic integration or are relevant for urban politics and administration.” (around 70% of the Mexican population lives in one)

**ESTIMATION STRATEGY**

Out TFP measure is estimated at the firm level

\[ \ln(\text{TFP}) = \beta_0 + \beta_1 \ln(\text{capital}_{i, j, r, t}) + \beta_2 \ln(\text{labour}_{i, j, r, t}) + \beta_3 \ln(\text{inputs}_{i, j, r, t}) + \gamma_r + \text{Region}_i + \text{Sector}_j + \varepsilon_{i, j, r, t} \]

The main specification:

\[ \text{TFPR}_{i, j, r, t} = \beta_0 + \beta_1 \ln(\text{HHI}_{i, j, r, t}) + \sum \beta_j \ln(\text{production}_{i, j, r, t}) + \gamma_r + \text{Region}_i + \text{Sector}_j + \varepsilon_{i, j, r, t} \]

To circumvent potential endogeneity problems between concentration at the regional level and local conditions that affect productivity, we implement a Bartik (1991) instrument approach.

**OVERVIEW OF THE RESULTS**

There is a consistent negative effect of concentration on productivity that holds under FEs and I.V. Non-linearities seem to exist.

The effects of market concentration on economic productivity in the manufacturing sector in Mexico, 1993-2014

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The impact varies by industry. The channels that determine the existence of a negative impact must be further explored.

**CONCLUSIONS AND NEXT STEPS**

1. Most studies of market concentration ignore the role of external competition. We add to the information by showing, not only the negative relationship between industry concentration and economic productivity, but also showing how the exposure to international markets matters.

2. Mexico has struggled in its quest of sustained economic growth:
   - 1. Our results show that more exposed markets are also more productive.
   - 2. Middle income countries with low levels of economic competition and less exposure to external markets may be experiencing a double negative effect on economic productivity.
   - 3. Policies which aim to reduce cost of entry for new firms combined with promotion of trade will be the most effective to boost productivity in manufacturing in these types of countries.

**ACKNOWLEDGMENTS AND CONTACT**

Comments and ideas are appreciated. Email us at oscarbarriga@ucdavis.edu