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**2019 Junior Faculty Investigator Award**

### **Quantifying the Productive Advantages of Big Cities**

#### I. Summary of research agenda

One of the most fundamental questions in urban economics is quantifying the productive advantages of big cities and understanding their nature. The productive advantages of big cities or agglomeration effects are reflected in higher nominal earnings, as firms are willing to pay more to workers in order to benefit from higher levels of productivity. Using rich administrative data that follow workers over their lives, researchers have found that workers in big cities do not have higher initial ability as reflected in worker fixed effects. Instead, workers obtain an immediate static premium while working in a big city and accumulate more valuable experience as they spend more time there (DeLaRocaandPuga,2017). The additional value of experience in big cities persists when workers relocate to smaller cities, indicating there is a strong learning component behind the city-size earnings premium. Further, the value of big-city experience is stronger for those workers with higher initial ability, revealing a positive complementarity between workers' skills and city size.

The estimation of agglomeration effects using worker-level data has focused mainly on developed countries. There is an increasing trend to learn more about the effects of agglomeration in developing countries where huge waves of urbanisation have taken place and will continue throughout this century. The limited number of studies available indicate that agglomeration effects appear to be larger in developing countries—for instance, while the elasticity of earning with respect to city size ranges from 0.03 to 0.05 in developed countries, it is much larger in countries like India (0.08) and China (0.19) (Chauvin, Glaeser, Ma, and Tobio, 2017).

Studies on agglomeration in developing countries face two important limitations. First, they use lower-quality data as they need to rely on household or labor force surveys that do not follow workers over time or when they move across cities. Second, they tend to replicate the estimation framework used for developed countries and ignore the presence of a sizeable informal labor market (see Duranton, 2016, for an exception).

In ongoing research with Daniel Velásquez we aim to partially overcome both limitations. We first estimate agglomeration effects in Peru, a middle-income country, using pooled cross-sections of large household surveys and examine how the effects differ for workers in the formal and the informal sector. In preliminary results we obtain an elasticity of earnings with respect to city size of 0.046, in line with estimates for developed countries. However, while the elasticity for workers in the informal sector is large and statistically significant (0.048), the elasticity for workers in the formal sector is small and not significantly different from zero. We also do not find evidence of complementarities between skills and city size. Further, using panel data on workers, we do not find a higher value of experience acquired in big cities for formal workers, contrary to the extant evidence for developed economies.

The explanation behind this marked difference in the elasticities remains a puzzle. Formal workers in small Peruvian cities do not receive lower wages despite the lower urban costs they face (as reflected by a positive elasticity of housing costs with respect to population). One plausible explanation is that amenities in small cities are of much lower quality than in big cities and, thus, formal workers need to be compensated to locate in small localities. We plan to examine whether location decisions of formal workers respond to these (inferred) differences in amenities and analyze the wages at which workers are incentivized to relocate. To that end, we have been granted access by the Peruvian tax agency to administrative data on the universe of formal sector workers, which provide rich information on monthly workplace locations and earnings from 2013 to 2018. Policy makers in developing countries are willing to increase the size of the formal sector in their economies, since formality is strongly associated with higher levels of productivity, access to credit, on-the-job training and job security. Understanding preferences, earnings profiles and location decisions of skilled, formal sector workers is thus of utmost importance.

## II. Description of activities undertaken toward larger research agenda

My interest in studying agglomeration effects in Peru lies within a broader research agenda. I aim to establish myself as one of the leaders in the study of agglomeration economies in the urban economics field. I am paying special attention to developing countries and, more specifically, Latin American countries. Aside from a genuine interest, I believe I have a comparative advantage over other researchers—being a native from Peru, fluent in Spanish and having developed a network with researchers based or working in the region. For instance, I recently started a project with colleagues at the World Bank that examines pre-labor market sorting across cities of different sizes in Colombia, using the universe of university students, with rich data on cognitive ability tests and childhood location histories, and following them as they enter the formal sector.

At the same time, I am starting another collaboration with Diego Puga and we are in the process of securing access to rich administrative worker-level data in the United Kingdom. The main asset of these data is that workplace location is provided at a fine geographic level, which will allow us to distinguish whether similar local agglomeration effects vary by city size. Recently, I was contacted by researchers at Norwegian University of Science and Technology (NTNU) to collaborate in a grant application to access Norwegian register data and study earnings dynamics of refugees, as they are exposed to government settlement programs and, to some degree, assigned to different urban environments. Finally, I gave twelve presentations in the past two years and have been invited twice as a Visiting Scholar to the Philadelphia Federal Reserve Bank.

## III. Description of outcomes of related activities including funding or scores on grants, academic and non-academic publications, and impact on policy discourse or decisions.

I have three papers that study workers' migration, sorting and learning across cities of different sizes. My article *Learning by working in big cities*, coauthored with Diego Puga and published in the *Review of Economic Studies* in January 2017, has become highly influential in the field (244 citations in Google Scholar as of March, 31st 2019). Another single-authored article—*Selection in initial and return*

*migration: Evidence from moves across Spanish Cities*, published in the *Journal of Urban Economics* in July 2017—explores the sorting of workers on ability across cities. A third paper, *City of Dreams*, is under third-round review in the *Economic Journal*.

Two facts illustrate how influential my article *Learning by working in big cities* has become in recent years. First, the handbook chapter “The empirics of agglomeration economies” (Combes and Gobillon, 2015) in the most recent *Handbook of Urban and Regional Economics* emphasises the need to distinguish static from dynamic effects in earnings specifications that estimate the city-size earning premium. This distinction between both effects is a clear contribution of our work. Second, an array of recent papers using administrative data for many countries have followed our approach and obtained consistent findings, as well as developed relevant extensions to our framework. The full list of studies is available upon request; here I just point out that similar findings have been obtained for Denmark, France, Germany, Italy, Norway, Sweden, The Netherlands, the United Kingdom and the United States. Furthermore, several of these papers have been published in top-field journals such as *Journal of Urban Economics*, *Journal of Regional Science*, *Journal of Economic Geography* and *Regional Science and Urban Economics*.

Recently, I was awarded the August Lösch Prize 2018 for my PhD Dissertation, a prestigious biennial award that rewards “outstanding academic research by young scholars in the field of Regional Science” (see this link for more information on the prize and the list of previous recipients: <https://www.re2.uni-kiel.de/en/alp>).

## References

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