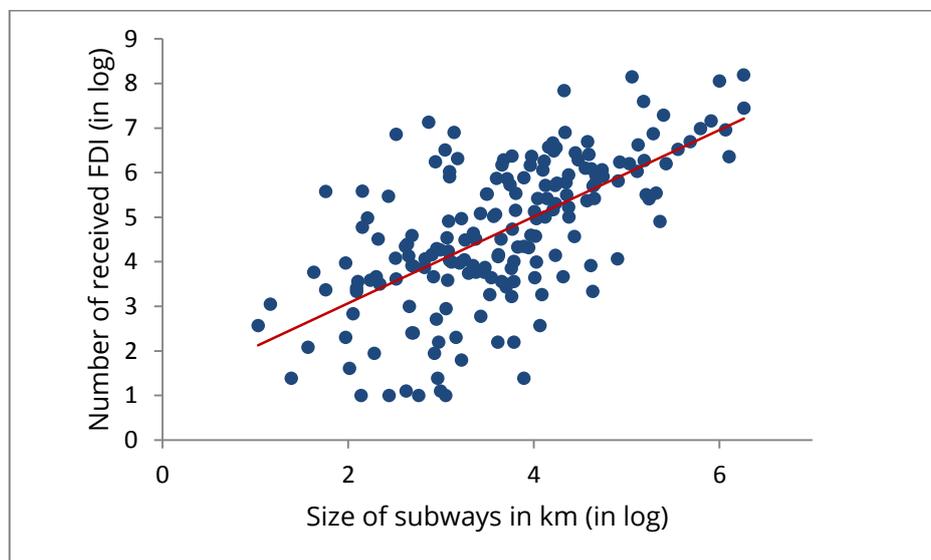


Are subways a factor of international attractiveness for cities?

By Pierre-Henri Bono, Quentin David, Rodolphe Desbordes, and [Loriane Py](#)

Attracting international capital flows and understanding their determinants are major challenges for public policy. The analysis of 140,000 foreign direct investment (FDI) projects carried out between 2003 and 2014 in 3,500 cities worldwide suggests that investing in subway transport infrastructures may be a means to attract more FDI. In this respect, the Grand Paris Express could therefore contribute to bolstering the international attractiveness of the French capital.

Chart 1: The number of FDI projects received and size of subways: a positive relationship



Source: Bono, David, Desbordes, and [Py \(2017\)](#)

Note: the scatter plot describes a relationship between the size of the subway and the number of FDI projects received at the city level. The Y-axis shows the logarithm of the size of the subway expressed in kilometres; the X-axis shows the logarithm of the number of projects (in units).

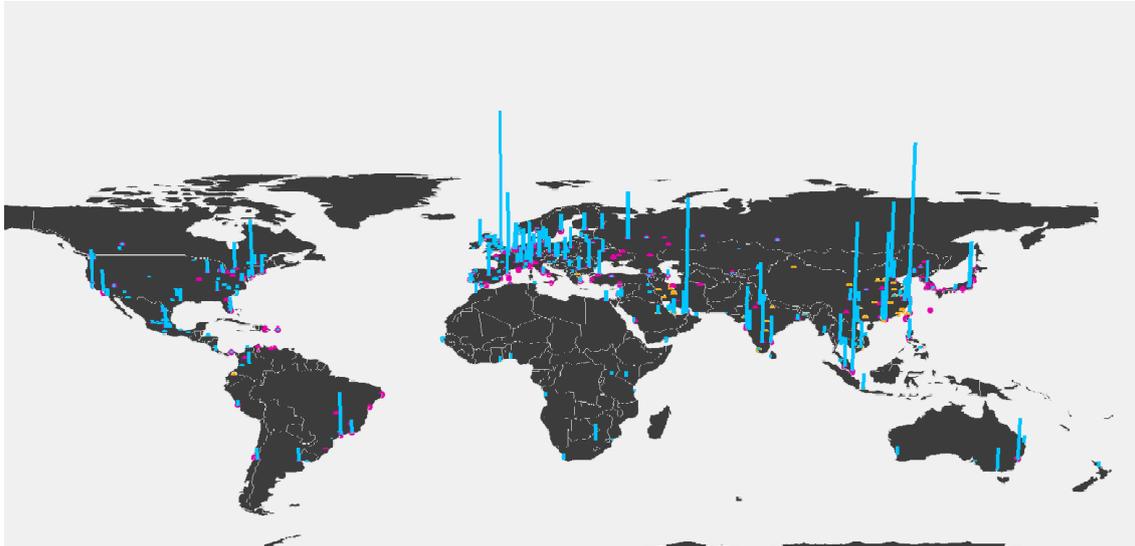
Over the past decades, policymakers have invested heavily in transport infrastructures, and in particular in the creation and/or extension of subways. Many cities already have a subway and are continuing to expand their network (Paris, New York, etc.), while 50 others (notably Dubai and Mumbai) have recently inaugurated theirs.

In order to justify such investments, at least three potential benefits are generally highlighted: reducing transport congestion and the associated inconveniences, promoting economic growth and increasing the international attractiveness of the cities in question. With the Grand Paris Express, Paris is hoping to shore up its position as a leading city among international investors.

Chart 1 suggests that there is a positive correlation between the size of the subway network and the number of FDI projects received. But many other factors can also contribute to the international attractiveness of a city. It is therefore necessary to empirically test whether subways are a determinant in FDI location.

An analysis at the global level

Map 1: Number of FDI projects (blue), subway already in place (pink) or under construction (orange)



Source: Bono, David, Desbordes, and [Py \(2017\)](#)

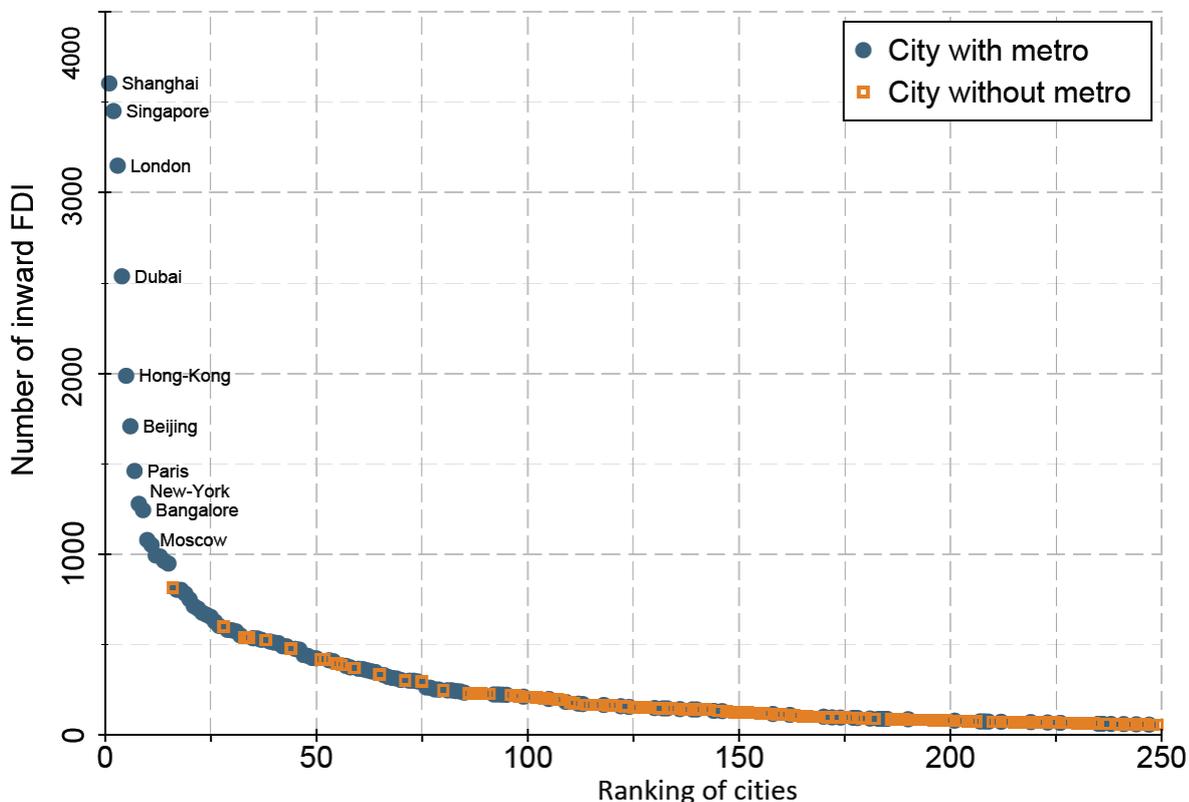
In this study, a city's degree of international attractiveness is measured by the number of FDI projects it receives. These data are taken from the Financial Times fDi Markets database which provides city-level data on the global location of 140,000 FDI projects by multinational companies for the 2003-2014 period. Since the amounts or uses of the investments were not available for certain projects, only the number is considered here.

In order to carry out this analysis, we also identified all the cities worldwide that have a subway (187 in 2014) with data on annual changes in their size. Over the FDI project data collection period (2003-2014), the cumulative size of the subway networks almost doubled. This trend is set to continue, 36 cities having subways under construction in 2015.

For all major cities worldwide, Map 1 shows the number of FDI projects received over the period, the existence of subways (in blue for cities already possessing a working subway) and the existence of subways under construction (in orange). Overall, investors appear to concentrate investment projects in cities that already have a subway or with subways under construction. This is particularly the case for Asia. An empirical analysis is therefore carried out to test whether subways are a determinant in FDI location at the city level.

Are subways a factor of international attractiveness for cities?

Chart 2: Ranking of the top 250 cities in terms of FDI projects received and the existence of a subway



Source: Bono, David, Desbordes, and [Py \(2017\)](#)

Chart 2 shows the ranking of the 250 most attractive cities in terms of the number of FDI projects received during the 2003-2014 period, taking into account the existence of a subway. Shanghai and Singapore come first and second. Paris is ranked 7th with almost 1,500 projects received, just ahead of New York. Overall, cities with a subway (blue) seem to be at the top of the rankings in terms of FDI projects received, whereas cities without subways are nearer to the bottom, suggesting the existence of a positive link between subways and the international attractiveness of cities.

The econometric analysis, for its part, seeks to isolate the effect of subways from all the other factors that could influence FDI. Indeed, country-level or regional studies show that other determinants, in particular economic ones, affect the location choices of multinational companies ([Py and Hatem, 2009](#)). Furthermore, other public transport infrastructures (airports and roads especially) may have an impact on the location and the strength of economic activity ([Strauss-Kahn and Vives, 2009](#); [Duranton and Turner, 2012](#)).

In this context, we collected for each city data on: i) their economic size (value added, population, capital), ii) other transport infrastructures (trams, roads, ports and airports), iii) the organisation of major events (Olympic Games, football world cup, Universal Exhibition, etc.). The empirical analysis, based on the location choices of multinationals in almost 3,500 cities worldwide, was carried out controlling for all these factors.

The results show that having a large subway network significantly increases the attractiveness of a city. They are consistent with those of [Mayer and Trévien \(2017\)](#) according to whom the number of multinational companies is higher in the cities connected to the Regional Express Rail (RER) in Île de France.

What effects are to be expected from the Grand Paris Express?

With a total cost that could exceed EUR 35 billion according to the latest estimates by the Société du Grand Paris, the Grand Paris Express project is provoking debate. Given the magnitude of the allocated means, it is important to question its potential effects.

The Grand Paris Express plans to construct 68 new stations and 205 km of new lines, i.e. doubling the size of the Parisian network. According to our results, all things being equal, doubling the size of a metro in a city should attract around 15% of additional FDI projects.

Paris attracted 1,310 projects between 2003 and 2014, i.e. around 110 projects per year, generating, according to fDi Markets data, on average 52 jobs each. Assuming that the projects are carried out (these are announced projects so that actual size may vary) and that these trends continue, the completion of the Grand Paris Express project would make a relatively modest contribution to direct job creations by multinationals, i.e. around one thousand jobs.

However, this calculation must be put into perspective. First, some of the assumptions used for this exercise may be called into question, which would result in significant changes in terms of job creations. Second, in the longer term, the establishment of these multinationals may have significant spillover effects on local economic activity and thus contribute to stimulating employment.

Third, in addition to these effects on the attractiveness of a city for FDI, the development of a subway network may have significant effects on the labour market via its impact, notably, on the housing market ([Bono et al. 2017](#)). They may also contribute to reducing pollution ([Gendron-CARRIER et al. 2018](#)). All these factors must be taken into account in the cost-benefit analysis of such infrastructure investments.