



Spatial Economics Research Centre

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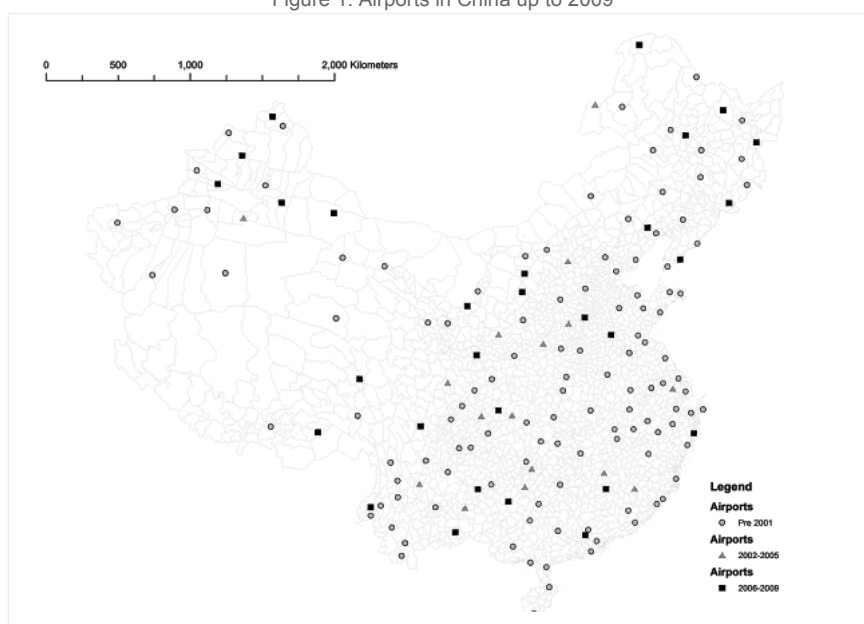
Airports and Economic Performance in China

New evidence on the impact of airport infrastructure on productivity in China

Airport construction or expansion is often proposed as a policy lever to boost cities, regions and national economies worldwide – although this case is clear cut as some well publicized ‘white elephants’ and the recent debate over expansion of London’s airports testify. But it is in large developing countries with poor road and rail infrastructure that air transport might offer the greatest potential benefits, providing a way to bridge large distances at relatively low fixed initial costs. In these settings, airports are often built and expanded with the explicit aim of improving connections to peripheral areas stimulating economic activity in these areas and reducing inter-area disparities (World Bank 2013). However, despite this policy enthusiasm there is relatively little solid evidence that the opening of airports and expansion of airport capacity really stimulates economic development, and none in the context of developing countries.

In our recent study (Gibbons and Wu, 2017), we provide new evidence to answer this question, focusing on the rapid expansion of the airport network in China over the first decade of this century. China provides an ideal setting for this investigation, with around 60 new civil airports opening over the decade accompanied by a massive expansion in air transportation (See Fig 1). Passenger numbers in China increased by around 13% per year after 2006, with 14% per year growth in domestic travel, many times faster than major developed economies. Air freight has also grown rapidly, with an 8-9% per year growth in freight tonne-kilometres. In our analysis, we link information on the opening of airports – mainly small regional airports – to firm level data on manufacturing firms and to county-level administrative data on other economic indicators. Using these data we estimate to what extent improvements in accessibility from these airport openings lead to higher productivity and GDP.

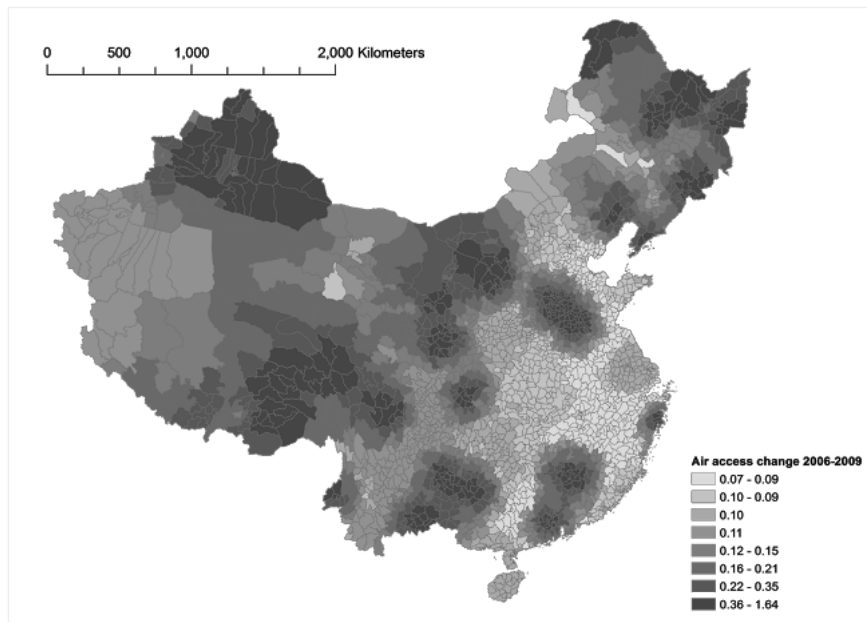
Figure 1: Airports in China up to 2009



Our key finding is that implied travel time reductions and consequent improvements in access to domestic markets boosted industrial productivity and GDP in areas affected by the opening of new airports. The effects are substantial, with a 10% increase in access stimulating industrial output by around 2.5%. Most of this impact comes from the fact that a new airport reduces land-side journey times for places nearby, highlighting the obvious but overlooked fact that the accessibility of airports on the land side is the key factor that should guide airport location decisions. These gains in the industry are presumably attributable to cost reductions in business travel and air freight transport and associated ‘agglomeration’ economies, but we lack data to confirm the exact channels.

The productivity impacts are more pronounced in privately owned firms in high population, lower educated counties. We find no effects on employment wages, but some effects on fixed asset investment, hinting that these productivity changes have largely benefited capital owners. We do not find any clear effects in the service sector, which runs counter to common assumptions and evidence about the role of air transport in business dealings in finance and other services in developed countries (Sheard 2014, Airports Commission 2015).

An important feature of our research design is that we focus on the implied travel time reductions and the way these change population accessibility – using an index defined by the population that can be reached per unit of time. This index provides a proxy for access to markets of various types (labor markets, product markets, intermediate inputs, other businesses). The very large changes in accessibility by air generated by new airports in China are illustrated in Fig 2, for the 2006-2009 period (the scale of the changes is such that 0.10 means a 10% change).



When it comes to estimation, we drill down specifically to the impacts on firms in counties which are some way from a new airport, but ‘incidentally’ experience travel time reductions because the new airport is closer than their previous nearest. This aspect of the design brings various advantages. It means that we are comparing places experiencing large access improvements with similar neighbouring places experiencing smaller or zero access changes. It reduces the risks of us finding correlations between airports and economic performance that come about because new airports have been targeted at growing or declining places. It also means we can infer the productivity benefits of the travel time reductions, rather than changes in local economic activity directly generated by airport operations. All previous research on airports has looked at the combined effects of the local economic activity created by operating an airport and any impacts coming about through travel time and trade cost reductions. Doing so can be misleading, because much of the employment associated with airport operations should properly be considered in terms of the opportunity cost, not as an economic benefit – despite the common policy rhetoric of ‘job creation’ from this type of infrastructure investment.

Based on this evidence, airport construction policy in China has been successful in boosting local growth in the manufacturing sector. Extrapolating our estimates to the national level, the 35% increase in market access generated by airport network expansion over our study period implies an 8% increase in industrial output. The overall gain in industrial output in this period was 210%, so airports could explain a small but non-trivial proportion of aggregate growth. Some of the increases we observe may represent displacement and sorting of activity between high and low access places, although our estimates are based on within-industry changes, are conditional on employment and capital inputs, and we see no corresponding changes in employment. These facts suggest that our findings are more likely attributable to firm-level productivity improvements.

Generalising these findings to other contexts is always risky and it would be very bold to claim similar gains from expanding Heathrow! We have also said nothing about the environmental costs. But air transport infrastructure clearly has an important part to play in large rapidly developing economies, such as China, where distances are vast and manufacturing plays a dominant role.

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