Mining causes infrastructure bottlenecks that hurt nearby manufacturers

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Shaft #1 at Oyu Tolgoi copper mine in Ömnögovi Province, Mongolia, by Brücke-Osteuropa, own work, Wikimedia Commons, Public Domain

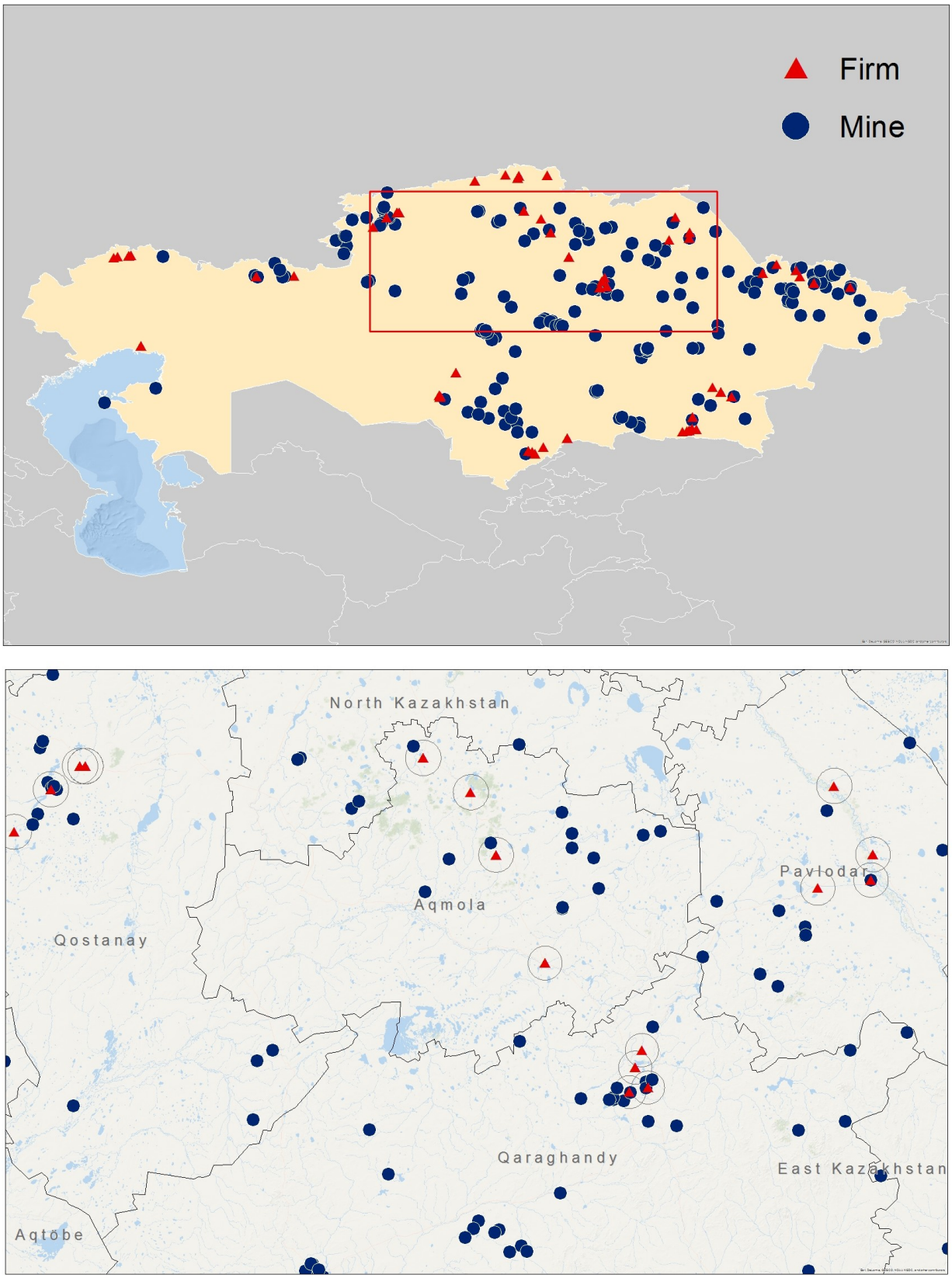
The last two decades have witnessed an extraordinary expansion in global mining activity, an increasing share of which was concentrated in emerging markets. The world's largest mines can nowadays be found in Africa, Asia and Latin America. This mining boom has reinvigorated the debate about the impact of mining on economic activity and welfare in 'host' countries. Our recent research informs this debate by analysing how the presence of nearby active mines influences firms in eight countries with large manufacturing and mining sectors: Brazil, Chile, China, Kazakhstan, Mexico, Mongolia, Russia and Ukraine.

Our empirical analysis is motivated by the so-called 'Dutch disease' model which sets out how a resource boom drives up costs for manufacturing firms as they compete for labour with firms in the resource and services sectors. We test this model by combining two datasets.

First, we use data on 22,150 firms from the EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) and the World Bank Enterprise Survey. These data contain the responses of firm managers to questions on the severity of various obstacles to the day-to-day operation of their business, including access to transport infrastructure and electricity, the availability of educated workers, the cost of land, and access to finance.

Second, we use comprehensive information on the geographical location and operating status of 3,793 mines producing 31 different metals and minerals in our country sample. Figure 1 shows the location of the mines and firms we analyze in one of these countries, Kazakhstan. It becomes clear that even in a mining-rich country like Kazakhstan, some firms are close to active mines whereas others are not. This is the type of variation we exploit in our analysis.

Figure 1. Mines and firms across Kazakhstan



Notes: This chart shows the geographical distribution of firms and mines across Kazakhstan. Red triangles indicate individual firms and the blue dots indicate mines. The lower map zooms in to the red rectangle in the upper map. The circles around firms have a 20 km radius. The variation allows us to compare firms with and without mines in their vicinity.

Source: EBRD-World Bank BEEPS Surveys and SNL Metals and Mining.

Two core results emerge from our research. First, we find that manufacturing firms that are located close to active mines report tighter business constraints (as compared with similar firms that are not close to mines). These firms compete with neighbouring mines for access to inputs, labour and infrastructure and experience congestion and infrastructure bottlenecks. We also show that this stunts the growth of these firms: they generate less employment, sell less goods and own fewer assets. The effects are economically quite large: moving a manufacturing firm from a region without mines to a region with average mining intensity would reduce its sales by 10 per cent on average. In contrast, and perhaps not surprisingly, up- or downstream firms in the natural resource sector itself – which sell goods and services to mines directly or use their raw materials as input – actually *benefit* from local mining activity. This also holds for firms in the construction and services sectors. Yet, because most local firms around mines in developing countries are small-scale manufacturers, we find that the net average effect of mining activity on businesses in the immediate vicinity is negative.

There is also good news. Our second main finding is that, because mining generates revenue that is eventually spent on goods, services and public goods in the region, current mining activity improves the business environment in a distance band of between 20 and 150 kilometres around firms. This indicates that while mines can cause infrastructure bottlenecks in their immediate vicinity and crowd out local manufacturers, they may improve the business environment on a wider geographical scale.

Our findings contribute to a better understanding of how mining activity affects local businesses in developing countries. To minimise negative spillover from mining, policy makers could think about ways to let local producers share extraction-related infrastructure. This may reduce the infrastructure bottlenecks and congestion effects that we observe in the data. Sufficient transport, electricity, water and other enabling infrastructure may not only help local goods producers but also further stimulate local services sectors and clusters of down and upstream industries that are related to mines. Policy makers can also help firms to become 'fit to supply' local mining-related supply chains. These measures can help meet the preconditions for a resource boom to trigger positive long-term impacts.

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- *This post is based on the authors' paper "Mining matters: Natural resource extraction and local business constraints", EBRD Working Paper No 190, European Bank for Reconstruction and Development, London, (2016), presented at the 2016 congress of the European Economic Association in Geneva.*
- *The post gives the views of its authors, not the position of LSE Business Review or the London School of Economics.*
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