



Post-disaster aid and development of the manufacturing sector: Lessons from a natural experiment in China



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ABSTRACT

We adopt a disaggregate approach to study the link between aid and Dutch Disease dynamics, using a natural experiment in China. Specifically, we examine whether post-disaster aid provided to a subsample of Chinese counties, devastated by an earthquake in 2008, affects the sectoral composition of local economies. Using different methods we consistently find that counties receiving (more) aid – even “nearby counties” not directly damaged by the earthquake – tend to suffer from a contraction of the manufacturing sector. Innovative features of the paper include its regional perspective; its identification strategy (resting on a special provision in Chinese policy—pairwise aid); and its focus on Dutch disease effects in the context of post-disaster aid.

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1. Introduction

A large literature has probed the economic impacts of aid, especially the impact on economic growth. Such studies are complicated by two types of ‘heterogeneity.’ First, the economic effects of aid may vary across countries, depending on local conditions – institutions, policies, geophysical factors. Second, most models explaining growth are based on aggregate aid data, but not all forms of aid are expected to have an economic impact in the short term (Clemens et al., 2012). On top of these two reasons, there are persistent concerns about the potential endogeneity of aid variables in growth models. As a result, it may be unclear what is captured by the ‘average treatment effect of aid’ as estimated in (cross-country) regression models. Results in this literature remain contested, and it appears as if there are many different mechanisms linking aid receipts to economic outcomes.¹

In an effort to further advance our understanding of the economic effects of aid, we adopt a “disaggregate” perspective. We narrowly focus on a specific form of aid in a specific country, and consider a very specific output measure. Specifically,

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¹ For discussions of different aid channels, refer to Clemens et al. (2012), and Easterly and Pfutze (2008). Nunn and Qian (2014) provide another recent example of focusing on a specific form of aid (food aid in their case, and in particular the link between exogenous variation in food aid and the dynamics of civil war).

we consider post-disaster reconstruction aid, following a devastating earthquake in Sichuan Province, China, in 2008, and analyze whether such aid flows can lead to Dutch disease dynamics. Our perspective allows for relatively clean assessment of the economic consequences of post-disaster aid because the magnitude of aid flows to affected counties was predominantly exogenous. We interpret the post-disaster aid allocation as a ‘natural experiment’ because of a Chinese policy provision matching 18 affected regions to the richest 18 provinces for financial support (see below for details).

In addition to speaking to the literature on the economic effects of aid inflows (or windfall gains more broadly), we hope this paper contributes to the literature on the economics of disasters and post-disaster recovery. Three small strands of literature explore the consequences of disasters. Various papers adopt a micro perspective, and explore adaptation, mitigation, and coping strategies of individual households in response to shocks (Townsend 1994; Udry 1994). Another strand consists of case studies of specific disasters and the economic responses that eventuated (Halliday 2006; van den Berg 2010). Finally, following pioneering work of Albala-Bertrand (1993), a handful of papers probes the economic consequences of disasters in a cross-country framework (e.g. Skidmore and Toya 2002). Noy (2009) explores short-term macro-economic consequences of disasters, and seeks to explain variation in the associated damages. He finds a significant average effect on various macroeconomic variables, but also documents that consequences are country-specific as countries differ in their (institutional) ability to cope, calling for more disaggregated analyzes. Loayza et al., (2012) conclude “different disasters affect growth in different economic sectors differently.”

The literatures on aid and disasters are naturally linked as disaster-struck countries or regions are more likely to qualify for additional aid inflows. These linkages may be multi-faceted and potentially complex. For example, Raschky and Schwindt (2016) propose that the Samaritan’s dilemma may be relevant in the domain of disasters and aid—aid may crowd out protective measures, inviting larger damages.² We know surprisingly little about the impact of such aid flows. Noy (2009, p.229) argues “the impact of aid surges that oftentimes follow disasters are also worth exploring. Aid surges are a topic of an active research agenda, but no paper that we are aware of places these within the context of post-disaster recovery. Yet, in a cross-country framework, even the direction of aid flows following disasters appears to be difficult to pin down...”

The main objective of this paper is to analyze whether post-earthquake aid flows in rural China may inadvertently contribute to a shrinking manufacturing sector. We analyze whether aid flows are associated with a declining share of manufacturing in the size of the economy (as a reduced form model) and, if so, also tentatively explore whether changes in the relative price of non-traded goods are the linking pin—the Dutch disease transmission channel.

The effect of post-disaster aid on manufacturing is theoretically ambiguous. It may be used to re-build destroyed infrastructure and resettle displaced workers, allowing post-shock productivity to recover and providing an impetus to economic activity (e.g. Adam and Bevan 2006). Conversely, aid inflows may translate into windfall income for some agents, inviting additional demand and bidding up prices for non-tradables. This is especially likely if aid inflows disproportionately target the non-tradable sector, increasing wages in that sector and causing a re-allocation of (skilled) labor – the resource movement effect (Corden and Neary 1982).³ This process will bid up wages more generally and reduce profitability in manufacturing (as the prices of their output – traded goods – are fixed). Second, higher wages imply a boost to local income, which will (further) shift up demand for non-traded goods – the spending effect.⁴ To restore equilibrium on the labor market, labor flows from the manufacturing sector to non-traded sectors, and the increase in consumption of traded goods is due to extra imports financed by the inflow of aid.

In light of the theoretical ambiguity it remains an empirical question whether post-disaster aid invites an expansion or contraction of the manufacturing sector. Our analysis does not allow us to distinguish between the opposing channels, but we can analyze the aggregate, or net, effect. Our main findings are consistent with various studies providing empirical support for the existence of a shrinking manufacturing sector in the presence of windfall gains. In the context of natural resource windfalls, for example, refer to Ismail (2010) and Brahmabhatt et al., (2010). In the context of aid flows, Rajan and Subramanian (2011) develop a convincing story based on a within-country, cross-industry model.

Economists should care about whether the manufacturing sector shrinks or expands, because manufacturing is often seen as the long-term engine of growth for economies. Jones and Olken (2005) argue that the traded goods sector is the main channel via which local economies absorb best technologies or management practices from abroad. Others have argued that manufacturing exhibits increasing returns to scale at the sector level (i.e., beyond individual firms), for example via human capital spill-overs or “learning-by-doing” processes (Matsuyama 1992; Van Wijnbergen 1984; Krugman 1987; Sachs and Warner, 1999).

Our paper is innovative because it contributes a regional perspective to the literature on the disaster-aid nexus. Rather than adopting a household or cross-country perspective, we are the first to analyze the economic consequences of post-

² This is an additional reason why models based on the intensity of disaster (measured in terms of damages or casualties) instead of the occurrence of disasters need to worry about the potential endogeneity of disasters in their regression models.

³ A variant hereof explains why disasters can have Dutch disease effects even in the absence of aid inflows. Hallegatte and Ghil (2008) observe that the timing of disasters, relative to the phase of the business cycle matters a great deal for the eventual economic impact. When the economy is depressed, damages are lower (because recovery efforts will activate unused resources, and there are unsold inventories to tap into). Disasters during high-growth phases bid up wages and cause wage inflation.

⁴ This might happen even if post-disaster aid is, by definition, a temporary phenomenon, so rational agents recognise that their permanent income may not change much.

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