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# Moving to the right place at the right time: Economic effects on migrants of the Manchuria Plague of $1910-11^{*}$

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#### ARTICLE INFO

Keywords: Migrant Initial conditions Pneumonic plague Manchuria China

#### ABSTRACT

How do initial arrival conditions in a host locality affect migrants' subsequent economic welfare? Manchuria (Northeast China), which attracted millions of migrants from North China during the first half of the twentieth century, experienced a devastating pneumonic plague outbreak in 1910–11. Using data from a rural household survey in the mid-1930s, we explore how the postplague conditions in various villages affected migrant cohorts' long-term wealth accumulation. We find that the migrant households that moved to plague-hit villages soon after the plague ended prospered the most: they owned at least 112% more land than migrant households that either moved elsewhere or migrated to the same village before or long after the plague outbreak. Our results are robust after controlling for factors that influence the long-term wealth accumulation of migrants and are not caused by selection.

#### 1. Introduction

The effects of conditions at a particular stage of a person's life on her subsequent economic welfare have been examined in various ways. For example, scholars have examined how a person's environment during fetal development or in early childhood may affect her physical and economic conditions as an adult. <sup>2,3</sup> More recent research examines how macroeconomic conditions at the time of a college student's graduation may affect her later earnings.<sup>4</sup> All of these works show both that the initial conditions at the studied life stage affect a person's subsequent development and that this effect is highly persistent. Our study addresses a similar question of how the initial conditions in a destination when a wave of migrants arrives affect their long-term economic outcomes.

We study the mass migration to Manchuria (Northeast China) during the period of the late Qing dynasty and the Republic of China. This migration represents one of the "three main circuits of long-distance migration from 1846 to 1940" (Mckeown, 2004, pp.

http://dx.doi.org/10.1016/j.eeh.2016.11.001

Received 7 January 2016; Received in revised form 12 November 2016; Accepted 26 November 2016 Available online 13 December 2016

<sup>\*</sup> We are grateful to Ann Carlos, Debin Ma, Peter Temin, and the participants at the "Frontiers in Chinese Economic History" conference in Berkeley, 2015, the Quantitative Economic History Research Conference in Beijing, 2014, the Economic History Conference, 2013, of Shanghai University of Finance and Economics, and the 10th BETA-Workshop in Historical Economics held by the University of Strasbourg for their suggestions. Thanks are also due for the financial support from the National Natural Science Foundation of China (NSFC Project no. 71403058), and the MOE (Ministry of Education in China) project of Humanities and Social Sciences (Project no. 14YJC790066). We are thankful to two anonymous referees and the editors for their great comments and suggestions for improving our paper.

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<sup>&</sup>lt;sup>2</sup> For how fetal development can affect adulthood, please see Almond and Currie (2011), Almond (2006), St. Clair et al. (2005), Hoek et al. (1998), Barker (1992) and Ravelli et al. (1976).

<sup>&</sup>lt;sup>3</sup> For how early childhood environment can affect adulthood, please see Gould et al. (2011), Kling et al. (2007), Chen and Zhou (2007), Kling et al. (2005), Oreopulous (2003) and Katz et al. (2001).

<sup>&</sup>lt;sup>4</sup> See Oreopoulos et al. (2012) and Kahn (2010).

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155–6). With the arrival of railways in the early 1900s, millions of migrants moved to Manchuria, the majority of whom were from the Northern Chinese provinces of Shandong and Hebei. In the winter of 1910–11, a devastating outbreak of pneumonic plague hit the region, killing more than sixty thousand people. Despite this high mortality, experiences across localities were highly varied: some counties suffered huge losses, whereas others were untouched.

Based on data from a rural household survey for Manchuria in the mid-1930s, we use a difference-in-differences (DID) methodology to first compare the landholdings of migrants who arrived in plague-hit villages with those of migrants who were in the same cohort but came to plague-free villages; next, we compare this within-cohort difference across cohorts. We find that the migrant households that moved to plague-hit villages soon after the plague (namely, the 1912–13 cohort) prospered the most: they owned at least 112% more land than those who arrived elsewhere. This within-cohort difference persisted for the following two cohorts (1914–15 and 1916–17 cohorts) but at a much smaller magnitude, disappearing thereafter. This result holds even after controlling for all possible factors that influenced migrants' wealth accumulation.

This finding suggests that a location's initial conditions when migrants arrive might have a permanent effect on wealth. However, we must explore the possibility that the positive effect is biased by selection; in other words, the unobserved quality of migrants who moved to the right place at the right time enabled them to accumulate more wealth in the post-migration period. We pursue two strategies to address this issue. First, we look at whether migrants who moved to plague-hit villages soon after the plague ended were significantly different from either those who arrived elsewhere or those who came earlier or later to the same village. Second, we look at why some migrants moved to plague-hit villages relative to why other migrants moved to plague-free villages. All evidence suggests that migrants who moved to plague-hit villages, especially for the 1912–13 cohort, were not significantly different from the rest and moved to a plague-hit village simply due to its convenient location. No evidence shows that they internationally settled in a plague-hit village because they foresaw the opportunity left by the dead. Therefore, our result is not driven by selection.

We further address plausible mechanisms for how the conditions resulting from the plague might have affected wealth accumulation differently across cohorts. The plague resulted in a wage gap between plague-hit and plague-free villages after the plague, primarily because seasonal agricultural migrants (who had better knowledge of whether a village had been hit) avoided plague-hit villages, resulting in a decrease in the labor supply. People who arrived soon after the plague could take greater advantage of high wages than earlier cohorts, which were constrained by labor-market issues such as fixed labor contracts and frictions related to moving from their homes. Alternatively, the benefit of the high wage in the post-plague era simply could not compensate for the losses incurred by the survivors during the plague era. As more people realized the economic opportunity in plague-hit villages and concerns about the plague gradually diminished, the wage gap finally disappeared.

Our paper makes three contributions. First, our paper is one of very few<sup>5</sup> to study how initial arrival conditions in the host locality can affect migrants' long-term welfare. Our results show that initial conditions have a significant effect on migrants' long-term wealth accumulation and that this effect is not driven by selection. Second, although many papers study the Manchuria Plague from historical, sociological and political perspectives,<sup>6</sup> ours is the first to examine its economic consequences. Our paper adds to the literature on how disease can affect people's economic welfare (Almond, 2006; Almond and Mazumder, 2005; Bleakley, 2007, 2003; Young, 2005).

Finally, our paper contributes to the discussion of how initial labor market conditions affect a person's long-term economic performance. A growing body of literature examines the long-term labor market consequences of graduating from college (Oreopoulos et al., 2012; Kahn, 2010) or graduate school (Oyer, 2006a, 2007b) in a recession, finding persistent negative effects. Our paper adds to that literature by showing that initial labor market conditions also have an effect on the low-skilled labor force. In the case of college graduates, the initial conditions have a persistent effect on earnings by affecting their early-career accumulation of human capital. However, for the low-skilled labor force, it is the wage difference resulting from various initial conditions that is significant: through saving and investment, the extra gain from initially favorable labor market conditions can be used to accumulate physical capital or assets—in our case, land—leading to a permanent effect.<sup>7</sup>

The paper proceeds as follows. Section 2 provides a historical overview of migration to Manchuria in the first half of the twentieth century and of the 1910–1911 pneumonic plague. Section 3 presents the data. Section 4 describes the methodology and empirical results. Section 5 addresses the issue of selection. In Section 6, we discuss plausible mechanisms of how post-plague conditions affected the wealth accumulation across cohorts differently. The final section concludes the paper.

#### 2. Historical background

#### 2.1. Migration to Manchuria

Northeast China was once home to nomadic tribes that were historically rarely controlled by China's governments. When the Han Chinese state was weak, these tribes formed coalitions and invaded China. The group of tribes that called itself the Manchus emerged

<sup>&</sup>lt;sup>5</sup> Stewart and Hyclak (1984) is the most relevant work; it explicitly poses the question of how initial conditions in the U.S. at the point of entry could have affected migrants' earning ability at the time their survey was conducted. They find that people who entered the U.S. in good times were better off than those who entered the U.S. in bad times, ceteris paribus. Borjas (1991) finds that people who entered the U.S. when the unemployment rate was low were usually higher quality, with quality measured by the wage difference between migrants and native white men as a reference at the time of the Census.

<sup>&</sup>lt;sup>6</sup> For example, Summers (2012), Cao and Li (2006), Jiao (2006), Gamsa (2006), Nathan (1967) and Gorosaku (1957).

 $<sup>^{7}</sup>$  This mechanism is close to how micro-credit affects the poor's economic performance. Once subsistence has been maintained, extra money can be used as initial capital for business that permanently changes a household's welfare.

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