



The impact of city epidemics on rural labor market: The Korean Middle East Respiratory Syndrome case



Ayoung Lee^a, Joonmo Cho^{b,*}

^aHRD Center, Sungkyunkwan University, 25-2, Sungkyunkwan-ro, Jongno-gu, Seoul, 03063, Republic of Korea

^bDepartment of Economics, Sungkyunkwan University, 25-2, Sungkyunkwan-ro, Jongno-gu, Seoul, 03063 Republic of Korea

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ABSTRACT

This study compared the changes in employment in urban areas in Korea, where a large number of people were quarantined by the Middle East Respiratory Syndrome epidemic, to those in rural areas, where only a small number of people were quarantined using the difference-in-difference approach. The results indicate that the urban labor market experienced a direct effect in terms of a reduction in employment of the group vulnerable to the epidemic while the rural labor market experienced an indirect effect on its economy through a reduction in employment resulting from a decline in consumption and leisure activities. If one looks into the employment in the accommodation and leisure industry, which sustained the most severe blow, dropped to its lowest level right after the Middle East Respiratory Syndrome outbreak. The rural leisure and accommodation industries are highly likely to be dependent on consumption and spending from urban areas. The results suggest that the rural labor market was influenced by the spillover/external effects caused by behavioral changes among people in urban areas due to fear of infection. Thus, this empirical analysis can be used to customize policy to support regions that can be negatively impacted by spillovers due to epidemic in order to respond against economic stresses.

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1. Introduction

In June 2015, people in Korea avoided seeing people in public or going to meetings, and schools were temporarily closed. When people had to go outside, they wore masks, and people who sneezed without wearing masks were finger-pointed as lacking common sense. This was due to the Middle East Respiratory Syndrome (MERS) epidemic that was first confirmed on May 20, 2015. In fact, MERS is a contagious disease that has low morbidity and mortality rates, but the MERS epidemic in Korea had a significant impact on the labor market and on the wider economy due to the large number of quarantined people (about one in every 3000 Koreans) and excessive media coverage (Bank of Korea, 2015; Mediaus, 2015).

School notices on 'preventive measures against the MERS' instructed students to "Report to their teachers in case they came in contact with people with MERS symptoms, to avoid using computers and smartphones too much, and to not be disturbed by

misleading information on MERS". The former chairman of the Korean Medical Association said, "Korean society was faced with two daunting challenges. One is the MERS itself, and the other is the overblown fear of MERS" (Noh, 2015). According to Noh (2015), fear spread quickly and was amplified to the extent that it turned Pyeongtaek, one of the cities adjacent to the Korean capital city of Seoul, into a 'ghost city'. He stressed, "If one compares MERS to tuberculosis, the latter is a more prevalent airborne disease and is more lethal than MERS, given that it claimed 2466 lives in 2013 alone. However, few people refrain from going outside and meeting people or wear masks all day out of fear of tuberculosis, and temporary school closure will not be issued either. Such an excessively chaotic situation as now is not desirable." On June 11, 2015, after all, the Bank of Korea took a drastic measure to lower its base interest rate by a 0.25% point. The main reason for the reduction interest was not a delayed economic recovery but the economic losses caused by MERS as well as concerns on the worsening economic situation. Previous studies have said that in addition to a high mortality and confirmation rate, the fear of infection spread through rumors and mass media could have a significant influence on the economy (Eichelberger, 2007; Fenichel, 2013). Therefore, despite its low morbidity and mortality, the MERS

* Corresponding author.

E-mail addresses: ay3646@naver.com (A. Lee), trustcho@skku.edu (J. Cho).

epidemic might have a great impact on the labor market and on the entire economy of South Korea.

There is a close correlation between employment and disaster (specifically, an epidemic disease) (Lee and Warner, 2005; Shama and Krishna, 2007; World Bank, 2014; Lee and Cho, 2016). Infectious diseases can deal a blow to employment of vulnerable groups (Lee and Cho, 2016), and the standard of living, disposable income, savings, education, and health and overall psyche of a society are determined by current levels of employment and unemployment (Shama and Krishna, 2007). Therefore, it is very important to study employment in relation to disaster (infectious diseases). Moreover, given that urban areas are closely connected with rural areas, they inevitably influence each other (Srivastava and Shaw, 2012), and as such, an unexpected externality can occur (O'Sullivan, 2007). Here, the term 'externality' refers to people in a community that can benefit from or suffer loss due to a decision made by another community, i.e., an external decision. Even if an infectious disease takes place in an urban area, decisions made by people in the urban area can have an unintended influence on people in rural areas.

When an infectious disease like MERS breaks out, its possible impact on a country's labor market and on the wider economy can appear in the form of direct or indirect effects (Lee and McKibbin, 2004a,b; World Bank, 2014). The direct effects caused by an infectious disease include a decrease in the labor supply of vulnerable groups due to their relative high morbidity and mortality rate or fear of contagion. On the other hand, the indirect effects are those caused by people's behavioral changes. These behavioral changes include avoiding consumption and leisure activities for fear of contagion, which in turn results in a decline in the consumption of goods and services, ultimately leading to a drop in domestic employment. Therefore, the groups of people vulnerable to the MERS epidemic (with a high confirmation and mortality rate) in an urban area where a large number of people are quarantined may have their employment activities directly affected. In contrast, a rural area may suffer from a decrease in the consumption of goods and services due to urban dwellers' behavioral changes, such as a decrease in leisure activities and consumption, which is then expected to negatively impact rural employment. In particular, accommodation and leisure industry can play an important role in stimulation the rural economy (Kadiyali and Kosová, 2013). Unlike local employment, which is defined as that in workplaces that operate to fulfill local consumption, those employed in the rural accommodation and leisure industry are highly dependent on non-local(urban area) consumption and spending (O'Sullivan, 2007). Moreover, there is general belief that leisure industry (tourism) generates spillovers/externalities to other industries, thus boosting local economies (Kadiyali and Kosová, 2013). Eventually, due to such spillovers, there is a possibility that a negative externality occurs in the urban-rural labor market.

This study compared the damage aspects of a labor market which is directly hit by an epidemic with those which is not directly hit. To this end, this study analyzed the changes in employment in urban areas in Korea, where a large number of people were quarantined, to those in rural areas, where only a small number of people were quarantined. In particular, since the urban and rural areas are closely linked, they inevitably influence each other. However, the scenarios that unfold in urban and in rural areas may be distinct. An epidemic can occur at any time in an unexpected way, and so this study investigates the effects that disasters, such as epidemics, can have on employment, which directly influence peoples' livelihoods in both urban and rural areas. In summary, the results of this study provide basic data to improve the response against economic stresses caused by urban-rural disasters.

2. Related literature

Eichelberger (2007) stated that when SARS occurred in 2003, the American public, particularly those near New York City's Chinatown, had become infected with an epidemic of fear, not of disease. The news media speculated the possibility of a domestic epidemic as a rumor that a restaurant employee had been infected with SARS spread through e-mail. 14% of survey respondents said they avoided Asian businesses, and New York City's Chinatown experienced a heightened anxiety and fear of stigmatization. Eventually, the rumor and its news coverage caused a tremendous drop in business and tourism in Chinatown. Even without a single confirmed case of SARS in New York City's China town, the community was quickly identified as a contagion and risk site (Eichelberger, 2007). As shown in this study, it is not only the high mortality and confirmation rate of an infectious disease that can have a significant impact on the economy, but also the fear of 'contagion' spread through rumors and the mass media. Fenichel (2013) analyzed the effect that contagious disease can have on social distancing and social welfare. The author maintained that social distancing and quarantine policies tend to show an 'overdone' phenomenon, which leads to a decrease in welfare. This can cause economically undesirable outcomes, and can also potentially exacerbate the health outcomes.

Studies on the post-disaster employment are very important. Shama and Krishna (2007) indicated that since the urban and rural poor are dependent on their daily wages, they are the groups that are vulnerable to disasters due to the strong correlation between disaster and employment. They added that the standard of living, disposable income, savings, education, health and overall psyche of a society are determined by current levels of employment and unemployment. The World Bank (2014) reported that an infectious disease can exert an impact on the economy through two channels. First, a direct effect of sickness and mortality can reduce the labor supply temporarily or even permanently. Second, people's fear of contagion can result in behavioral changes where fear of contagion through contact with other people reduces the labor force participation and leads to the closure of workplaces. The SARS epidemic outbreaks between 2002 and 2004 and H1N1 flu epidemic outbreak in 2009 resulted in behavioral effects that were responsible for 80–90% of the actual total impact of the contagious diseases on the economy (Lee and McKibbin, 2004a,b; World Bank, 2014). In Liberia, for example, many hotel and restaurant employees in the service industry were laid off, and the number of available jobs were reduced to half (World Bank, 2014). Lee and Warner (2005) analyzed the effects of SARS on Hong Kong's economy. After investigating employment and unemployment conditions in the labor market, the study concluded that the SARS epidemic caused a drastic drop in room occupancy rates in hotels, which in turn led to an increase in unemployment or underemployment and also to a surge of no-pay leaves.

Moreover, Kadiyali and Kosová (2013) analyzed the effect of inter-industry spillovers generated by tourism/outside visitors of rural industry on employment across other (non-accommodation and food) industries. Hotel industry provided by generating jobs in various rural industry spillovers/externalities to other industries, thus boosting rural economies. Also, unlike local employment, which is defined as that in workplaces that operate to fulfill local consumption, those employed in the rural accommodation and leisure industry are highly dependent on non-local(urban area) consumption and spending (O'Sullivan, 2007). Therefore, accommodation and leisure industry play an important role in stimulation the rural economy (Kadiyali and Kosová, 2013).

Few studies have investigated the effect that infectious diseases have on both urban and rural labor markets. Lee et al. (2003) analyzed the impact that the IMF crisis had on the urban and rural

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