Susceptibility of South Korea to Extremes Affecting the Global Food System

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1. INTRODUCTION

Food security in South Korea is tightly linked to the global food system. The country's production of major grains declined from 5.8 million metric tons (mmt) in 1998 to 4.8 mmt in 2014, which caused the country's grain self sufficiency to decline from 31.4% to 24%. This decline is a consequence of several factors including reductions in domestic agricultural land, governmental policies supporting industry over agriculture, and a push towards trade liberalization. South Korea's self sufficiency is now one of the lowest among Organisation for Economic Co-operation and Development (OECD) countries, leaving it vulnerable to disruptions in the global food system.

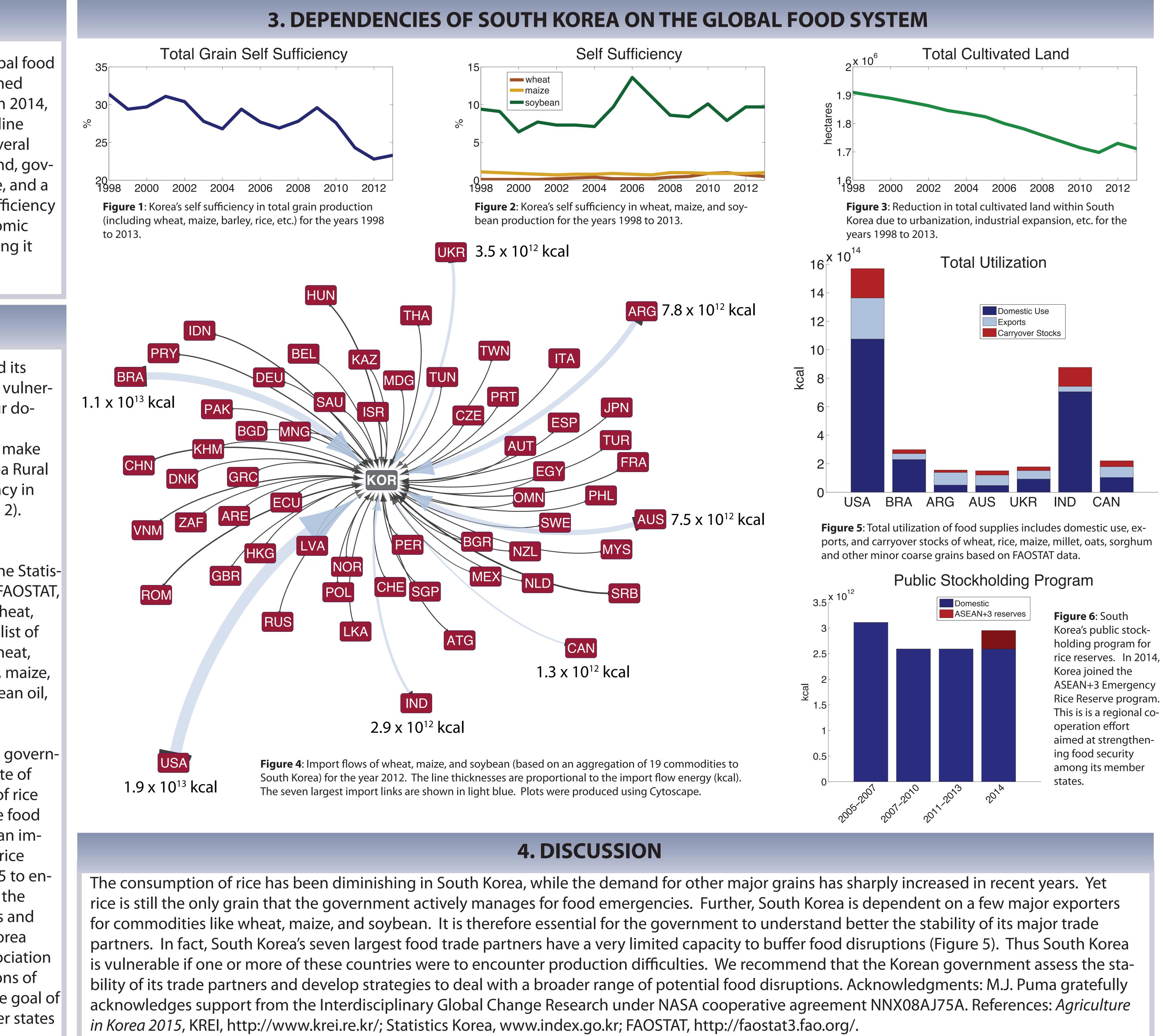
2. METHODS & BACKGROUND

We analyze South Korea's domestic food production and its links to the global food trade network to understand its vulnerability to systemic risk in the global food system. For our domestic analyses, we use data from Statistics Korea (www.index.go.kr) for the period 1998 to 2013. We also make use of the report Agriculture in Korea 2015 from the Korea Rural Economic Institute. We focus on assessing self sufficiency in South Korea's grain production over time (Figures 1 and 2). Also, we assess changes in cultivated area (Figure 3).

For the trade data, we obtain bilateral trade data from the Statistics Division of the Food and Agriculture Organization (FAOSTAT, http://faostat3.fao.org/). We aggregate by converting wheat, maize, and soybean commodities into kilocalories. Our list of commodities includes: wheat, flour of wheat, bran of wheat, macaroni, bread, bulgur, pastry, breakfast cereals, wafer, maize, germ of maize, flour of maize, maize oil, soybeans, soybean oil, cake of soybeans, soya sauce, and soya paste.

Rice is the primary staple grain in South Korea. As such, governmental policies have kept self sufficiency high, with a rate of 95.7% in 2014. Importantly though, the consumption of rice has been rapidly declining due to diet change. Until the food policy reforms of 2004, the Korean government played an important role in increasing and stabilizing the income of rice farmers. A rice reserves policy was then initiated in 2005 to enhance food security (see Figure 6). Under this program, the Korean government specifices the amount of rice stocks and re-evaluates this amount every three years. In 2014, Korea joined the Emergency Rice Reserve program of the Association of Southeast Asian Nations and the three East Asia nations of China, Japan, and South Korea (known as ASEAN+3). The goal of this group is to strengthen food security among member states while minimizing market disruptions.

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Figure 5: Total utilization of food supplies includes domestic use, exports, and carryover stocks of wheat, rice, maize, millet, oats, sorghum