



FULL LENGTH ARTICLE

Economic impacts of changes in wheat's import tariff on the Sudanese economy



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Abstract This study quantifies the impacts of change in wheat's import tariffs on gross domestic product (GDP) and its components, wheat imports, sorghum exports, and domestic production of wheat and sorghum in the Sudan. The study objective is to provide a deep insight of the issue in concern to stakeholders affiliated with food security. As a method of analysis, the study uses a standard computable general equilibrium model, designed for developing countries by the International Food Policy Research Institute. Sudan's Social Accounting Matrix for the year 2004, disaggregated for agriculture, has been used as core database. Different scenarios have been postulated and simulated.

Changes in import tariff of wheat had broad inter-linkages among all sectors of the economy. Reduction of wheat tariff has increased wheat imports; associated with a decrease of imports of other agricultural, industrial and services sectors. Increasing wheat imports could lower the domestic price and, hence, reduce the resources directed to its production. The overall effect is an improvement of GDP, balance of trade, and investment, and decreased private consumption. Increasing import tariff on wheat would reduce its imports and encourage its production for self-sufficiency, with less efficiency and negative impact on GDP.

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Domestic production of wheat is highly variable over time, and falls short of satisfying the demand, whereas wheat consumption is increasing over time. Encouraging innovation of convenient and fast food industry using domestic traditional grains is recommended to curb wheat consumption. Furthermore, wheat imports should be conditioned on availability of hard currency, domestic production capacity, and food gap, while maintaining stable exchange rate that strikes a balance between encouraging sorghum exports and wheat imports. This should be associated with increased investment in stabilizing and increasing wheat production, and remedy the predicaments facing agriculture.

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1. Introduction

Wheat is the second cereal, after sorghum, in terms of food grain consumption, and the main food staple in the northern region and urban areas of the Sudan. In addition, cultivation of wheat is an important economic activity, whereas wheat and wheat flour represent considerable figures in the Sudanese international trade. The grain is produced in two distinct areas, which are the public irrigated schemes in the central region, and the pump irrigated schemes in the northern region. In 2010, the quantity of wheat produced was 403,000 tons (FAO, 2012).

Wheat consumption in the Sudan is increasing over time, whereas domestic production of the grain falls short of satisfying the demand. Thus, the country relies heavily on the international market for securing enough wheat supply. Wheat import is dramatically increasing over time. Average quantities of wheat and wheat flour imports for the 1970th, 1980th, 1990th, and 2000th decades were 140,682, 291,779, 282,592, and 1,170,605 tons, respectively, whereas the corresponding nominal values were 21,047, 52,929, 53,873, and 265,931 thousand US\$. In 2010, the quantity of wheat imports was 1,843,941 tons, which is about 4.6 times the quantity produced domestically (FAO, 2012).

Thus, policy changes regarding wheat generate complicated impacts on various macro and microeconomic variables. This study quantifies the impacts of change in wheat's import tariffs on some macro and microeconomic indicators. These indicators are the gross domestic product (GDP) and its private consumption, investment, and balance of trade components, as well as (the microeconomic indicators of) wheat imports, sorghum exports, and domestic production of sorghum and wheat. The objective of the study is to provide a deep insight of the interrelated effects of changes in wheat's import tariff to stakeholders affiliated with food security in the Sudan. Wheat is selected for this study because it is directly related to people's diet and food security, as well as farmers' welfare in the study area.

2. Wheat production in the Sudan

Average quantities of wheat production in the Sudan in the 1970th, 1980th, 1990th, and 2000th decades were 208,730, 178,700, 523,500, and 464,770 tons, respectively. This shows an upward trend. The grain is produced in two distinct sectors of agriculture. Firstly, the large-scale public irrigated schemes, for which the government provides irrigation services via huge irrigation facilities (dams, irrigation network, pumps...etc.). The biggest of these schemes is the Gezira and Managil Scheme, which covers slightly more than 0.84 million ha. Each scheme is composed of small farms, approximately 2.1–9.2 ha. The sector uses advanced technology, fertilizers, pesticides,

and improved seeds. In addition, farmers apply the recommendations of the scheme's administration and the scientific methods recommended by the Agricultural Research Corporation, which exerts considerable effort in generating improved seeds and better culture activities.

Secondly, the small-scale schemes are scattered around the Nile and its tributaries. These schemes cover an area of about 588,000 ha adjacent to the banks of the Nile. Contrary to the first type, there is no common network for irrigation. Farmers use small diesel and electric pumps to lift irrigation water from the Nile. Fertilizers are used in a limited scale because of the fertile silt deposit of the Nile. The government does not provide services such as those enjoyed by the large-scale schemes. Nevertheless, productivity of this sector is higher than that of the large scale schemes mainly, due, to the colder weather in winter.

However, wheat production is highly variable. The coefficient of variation (CV) of quantities produced in the period from 1961 to 2010 was 0.73. This is due to a variability in both the harvested area and yield of the grain. However, variability in area is much higher than that of average yield. The CV of harvested area and average yield for the aforementioned period were 0.59 and 0.37, respectively. In fact, wheat yield is very low compared with the internationally attained level. For instance, in 2010 the average yield of the grain was 1794 kg/ha, whereas the world average yield was 3007 kg/ha (FAO, 2012).

In addition, wheat production faces the common impediments hindering agricultural development. For instance, the government imposes many direct and indirect taxes on production inputs and agricultural products in all stages of production and marketing processes. The sector also suffers weakness or lack of infrastructure, heavy dependence on rain (which is highly variable in terms of quantity and distribution), low productivity, poor services available in the input and output markets, drought, desertification and environmental degradation, external debt, as well as social and political instability (El-sheikh, 2001; Ministry of Finance and National Economy, 2009). All these factors have created a negative attitude toward the sector. Thus, one of the most important requirements is to restore the motive for working in agricultural production.

3. Method of analysis

One of the main tools of tracing the anticipated impacts of policy changes is the use of econometric modeling. The study uses a standard computable general equilibrium (CGE) model, designed by the International Food Policy Research Institute (Löfgren et al., 2002). The model is a set of simultaneous nonlinear equations defining the behavior of different actors, and includes a set of constraints. The CGE covers markets (for factors and commodities), balances for saving-investment,

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