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THE IMPACT OF CROPS ON THE ECONOMY OF PAKISTAN

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Abstracts
The purpose of this research is to look into the impact of agricultural productivity on economic growth. Agriculture is the most important sector of Pakistan's economy and is considered the backbone of any economy. The goal of this study is to look at Pakistan's agriculture and how it affects the economy. The agricultural issues and their solutions are also highlighted in this paper. Some agriculture issues, such as a lack of water, bad management, natural disasters, and others, have a negative impact on Pakistan's economy. According to the findings, there are oscillations in Pakistan's economic growth (GDP) as a result of agriculture challenges, and as a result, Pakistan's economic growth would decelerate. Due to these instabilities, total factor of production will also slow.

Keywords: *Agriculture, Economy, Major Crops, GDP*

Introduction

More than 800 million people around the world are chronically hungry, with another 2 billion suffering from nutritional deficiencies (FAO 2019a). Food insecurity and poor dietary quality wreak havoc on public health. Malnutrition causes physical and mental retardation, as well as a wide range of infectious diseases and an unacceptably high number of premature deaths (Development Initiatives 2018). To address these issues and achieve Sustainable Development Goal 2, "zero hunger and enhanced nutrition," substantial changes in global food systems are required. Isolated fixes are incapable of resolving complicated problems (Meemken and Qaim 2018; Springmann et al. 2018; FAO 2019a). Agricultural technology, among other tactics, has a significant influence. Since humans became sedentary and began agriculture 12,000 years ago, producing adequate food for a rising population has always been a difficulty. As the world's population continues to rise, this problem will not be solved anytime soon. Because fertile land and water are becoming scarce, output expansion must primarily come from increased yield and productivity (Cai, Golub, and Hertel 2017). Plant breeding has contributed to significant production increases, particularly in the last 100 years (Huang, Pray, and Rozelle 2002; Evenson and Gollin 2003). Furthermore, enormous improvements in the use of chemical fertilisers, pesticides, irrigation water, and other yield-enhancing inputs have aided in increasing food production and feeding the world's growing population. Despite the fact that chronic hunger persists in many developing nations, the global proportion of hungry people has decreased from over 50% in the first half of the twentieth century to roughly 11% now (FAO 2019a). Agriculture is a significant part of the Pakistani economy.

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This sector provides direct support to the country's populace and accounts for 26% of GDP (GDP). The agriculture sector is Pakistan's largest and most important economic sector, employing half of the country's workforce and accounting for one-quarter of its GDP (21.4%). This sector's growth rate determines the economy's overall growth rate. Agriculture development is a critical instrument for reducing poverty in rural regions. The empirical evidence suggests that a consistently higher agricultural growth rate had a long-term impact on poverty reduction in Asia in the 1970s and 1980s. According to calculations, Pakistan's population required a 273 percent rise in fruits, a 38 percent increase in sugar, a 20 percent increase in rice, a 62 percent increase in wheat, a 69 percent increase in maize, a 45 percent increase in edible oil, and a 15 percent increase in cotton. Farming and non-farming jobs are also available in the agriculture sector. As a result, another significant contribution of the agriculture sector is the capital accumulation that can be accomplished with surplus agricultural production. The welfare of rural people will improve as agriculture surpluses rise. Agriculture is the backbone of Pakistan's economy, according to Awan (2012). Pakistan is endowed with a diverse range of natural resources. However, having a huge amount of cultivable land is the most significant aspect of our national riches. Pakistan has fertile soil and the world's greatest and largest irrigation infrastructure, allowing it to produce a wide range of agricultural products. As a result, it serves as a foundation for economic growth. According to Awan (2014), agriculture may contribute to economic development in a variety of ways, including as a source of livelihood, an economic activity, and a provider of environmental services, making agriculture a unique sector for a country's economic progress. Cotton, wheat, rice, sugarcane, fruits, and vegetables are among the most important agricultural crops. Pakistan's irrigation system is one of the world's largest for supporting agricultural production. There are two of them. Crops such as cotton, rice, and sugarcane are planted in May and harvested in November, whereas the wheat crop is planted in November and harvested in April in Pakistan. The efficient use of resources, particularly land and water, is a critical requirement for improving agricultural production. However, wealthy landowners, who own 40% of arable land and manage the majority of irrigation infrastructure, are mostly responsible for the transformation, making broad reforms difficult to implement. Pakistan is a net importer of agricultural products, including wheat, edible oils, pulses, and food additives, with total annual imports of around 2 billion USD. Punjab, Pakistan's irrigated province has a long history of focusing on a wheat green revolution. During the 1960s, Pakistan's Green Revolution included state funding for irrigation canals and market development (Renkow, 2000). The rural society and wheat production changed, and the threat of hunger faded (Hazell, 2010). Despite this much-applauded progress, Pakistan's populace has remained focused on the long-term production of wheat. Pakistan's government still required to boost the output of wheat in several types (Smale et al., 2002). Drought stress increases grain yield impairment when it occurs in the reproductive cycle, according to study (Heisey and Edmeades, 1999).

Rice

Pakistan accounts for around a quarter of all Basmati rice exports. Rice exports are Pakistan's second-largest source of revenue. Rice grains provide sustenance for nearly 60% of Pakistan's population, and rice is a possible source of food for animals worldwide during the winter (Drake et al., 2002; Nguyen et al., 2008). Rice is a staple of Pakistani cuisine. Pesticides were used more frequently after the 1950s, when 250 metric tonnes of pesticides were imported to improve productivity. From 1952 to 2004, its use climbed by 2158.6 percent (Khan et al., 2010). It is also noted that rice is a major crop in many nations, with cultivation ranging from the humid tropics to northeast China and southeast Australia, and from sea

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level to more than 2500 metres in Nepal and Bhutan's temperate areas. Although the majority of rice is grown in Asia, rice is also grown in Oceania and Europe. Rice is grown in a variety of temperatures and soils, with vast variances in soil qualities, due to its extensive geographical distribution. Because of the characterisation of rice soils, early studies focused on flooded rice farming in Asia (IRRI, 1978, 1985; Kawaguchi and Kyuma, 1977; Moormann and Breemen, 1978). Most research; however, have concentrated on the unique characteristics of waterlogged soil remediation (Banta and Mandoza, 1984; Kirk, 2004) (K€ogel-Knabner et al., 2010; Bohlool et al., 1992; Ponnamperuma, 1972; Wassmann et al., 2000). The governments need to focus to improve rice production in Pakistan.

Wheat

Wheat is a major grain crop in many nations, and it is a staple diet in many of them. Nothing is more vital than human needs, it is universally acknowledged. For sustainable crop production, reliability and sustainability in food production are critical. Water supply and energy are vital in wheat production and will continue to be important in ensuring agriculture's sustainability and food production reliability. Water and energy conservation, on the other hand, are two significant concerns for academics to address in order to reduce the costs of these two commodities without compromising productivity. Pakistan had a golden era of water management in the 1980s, with the development of the canal irrigation system, which was constructed at the same time; nevertheless, the system's effectiveness was hampered by the effects of various droughts. From 1999 to 2002, the country was barely able to recover from the eye-opening shock of water scarcity, which lasted over three years. Due to a lack of water, the country began to overuse ground water by pumping it out, consuming a large quantity of available energy at a time when the country was already experiencing a shortage of this commodity (Pakistan, 2008-09). Previous research on the wheat crop in Pakistan has revealed a slow rate of crop variety replacement by farmers in the promotion of new wheat varieties (Heisey,1990; Iqbal et al., 2002). Wheat was grown on an estimated one million hectares (ha) in 1997, accounting for 51% of Pakistan's total wheat acreage (Smale et al., 2002). Pakistan is a major rice exporter in the world, exporting around 2 million tonnes per year, accounting for 10% of global trade (Drake et al., 2002; Nguyen et al., 2008). Pakistan's climate is favorable for the development of a variety of crops, including wheat, cotton, maize, rice, and sugarcane (Dharmasiri, 2012), however wheat is the most significant crop in this region due to its high consumption, demand, and, most importantly, the climatic conditions (Curtis and Halford, 2014). The majority of research on food availability places a premium on agricultural output growth (Swaminathan and Bhavani, 2013). Agricultura productivity is influenced by climate (long-term) and weather (short-term) influences. In 1987, for example, a weak monsoon system resulted in significant crop output losses in Pakistan, India, and Bangladesh, necessitating wheat imports by India and Pakistan (Gonzalez-Garcia and Gaytan, 2006).

Cotton

Pakistan's cotton is another cash crop, and the country is the world's largest producer of raw cotton. Pakistan was the fourth largest cotton producer in 2011-2012, accounting for 9.81 percent of global cotton production (FAO, 2012; GOP, 2012). Cotton is a major cash crop in Pakistan, contributing significantly to the country's economy and providing a source of income for rural residents (Pakistan, 2012-13). Pakistan's yarn exports contributed 26.1 percent and 14.3 percent to the world market over the same time period. Cotton exports accounted for 46% of Pakistan's overall exports and employed 35% of the country's workforce (FAO, 2012; GOP, 2012). The Pakistan Central Cotton Committee has set a goal to

boost cotton production in accordance with existing agriculture strategy. Cotton production increased from 40% to 60%. (PCCC, 2008). However, data suggests that a lack of irrigation water is one of Pakistan's primary agricultural output issues. Farmers typically use flood irrigation to irrigate furrowed fields, resulting in low agriculture water production (Kahlown et al., 2007). Cotton is extensively farmed in hot, humid climates with high pest risks, as some insects are particularly harmful to cotton productivity and quality. There are several prerequisites for high cotton yields, including high input, fertilisers, pesticides, well-drained soil, and water, and their use degrades the environment in various ways (Shafiq and Rehman, 2000). High input has substantial consequences in terms of greenhouse gas emissions and water contamination owing to leaching (IPCC, 2006). Freshwater bodies in Pakistan are being degraded by runoff and nitrate seeping from agricultural land (Azizullah et al., 2011), similarly, excess and misuse of chemical pesticides has negative consequences for crops and animals (Tariq et al., 2007). Mechanization has increased the consumption of non-renewable energy in order to achieve high yields. Farm management strategies, as well as the chemical and physical features of the agroecosystem and soil, have a significant impact on the scale of environmental hazards, as well as resource consumption in various forms and their repercussions (Choudhury and Kennedy, 2005). Furthermore, significant production expenses are incurred as a result of intense input utilisation as a sort of assurance for cotton output and quality. In Pakistan, both environmental dangers and high cotton production costs pose a threat to the industry's long-term viability and farmers' earnings; as a result, analyzing and quantifying cotton's combined environmental and economic implications are critical. Production is required. The topic of how to lessen environmental damage while maintaining farmer revenue remains unanswered. The trade-off between input consumption, environmental effect, and economic success in Pakistan's cotton-growing regions is the topic of this study.

Maize

Maize is another cash and food crop in Pakistan, and it is a high-yielding cereal crop worldwide, serving as feed and silage. Maize is Pakistan's fourth most important cereal crop, after wheat, rice, and cotton. It is mostly cultivated in two seasons: spring and fall. Maize is sown in the spring from February to March, and in the autumn from July to August. The maize life cycle is dependent on water availability; water discrepancy at any phonological stage, i.e., reproductive and maturity stages, has several ramifications and can harm grain yield, and previous research (Heisey and Edmeades, 1999) has shown that drought stress can harm grain yield when it occurs in the reproductive stage of the crop's life cycle.

Sugarcane

Sugarcane is a highly profitable crop that is commonly farmed in tropical and subtropical climates around the world. Sugarcane was cultivated on 27 million hectares in more than 100 nations globally in 2014, according to estimates (FAOSTAT, 2015). Sugarcane is a high-value cash crop in Pakistan, and it plays a significant role in sugar production. It accounts for 3.4 percent of the added agricultural value and 0.7 percent of the GDP (GDP). Sugarcane is the most important biofuel crop in the world because it is a sugar crop (Robinson et al., 2011). Sugarcane's moderate growth rate in the early stages of development allows room and resources for intercropping in the field. Sugarcane intercropping with other crops, such as peas, melons, and onions, has been demonstrated in numerous studies to reduce sugarcane production while dramatically increasing economic income (Al-Azad and Alam, 2004; Nazir et al., 2002).

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Brazil led the globe in sugarcane production, accounting for 39 percent of total global production, while India came in second with 19 percent, followed by China, Thailand, and Pakistan, with production rates of 7, 5, and 4%, respectively (FAOSTAT, 2015). Traditionally, sugar has been used in the sugar industry for its sucrose content, which is then used as a sweetener and the residual biomass residue (bagasse after sucrose extraction has been used as a fuel to create steam and energy to run sugar mills. However, there is a growing awareness of its co-products, such as cane waste, molasses, bagasse, and filter cake, which are now employed in a range of sectors, as well as numerous refined products, such as bioethanol and energy, and chemicals, such as a variety of polymers (Dias et al., 2013). India has established itself as the world's largest sugarcane grower, consumer, and trader. Because of its abundance, society and government have paid close attention to its production. Due to its strategic and commercial importance, sugarcane (Saccharum officinarum L.) is thought to be the most important traditional and commercial crop of industrial relevance worldwide. Sugarcane production remains an essential element of socioeconomic development in rural areas since it generates higher revenues and employs more than half a million people around the world. Sugarcane production and forecasting have both direct and indirect effects on national and international economies, and sugarcane is critical in food management (Hayes and Decker, 1996). Assessment of reduced production due to natural calamities such as insect pest infestation or droughts could be crucial for countries whose economies are entirely reliant on sugarcane production. Early detection and control of problems linked with agricultural harvest can also help to increase productivity and revenues. Almost every industry has a use for it. The sugarcane sector has grown in prominence in recent years as a result of its economic impact on sustainable energy production. After textiles, the sugarcane industry provides raw material for the country's second largest agro-based business, and it is the source of all major sweeteners. In addition, raw sugarcane is consumed as a human meal and animal feed in Brazil, India, and Cuba, which are the world's largest sugarcane growers, accounting for more than half of global sugarcane production (Girei and Giroh, 2012).

Conclusion and recommendation

This study looked at the relationship between agricultural GDP and the outputs of main crops such as wheat, rice, maize, sugarcane, and cotton in Pakistan. Data for time series were gathered from the Economic Survey of Pakistan (various publications). The co-integration results revealed that there is a long-term association between the outputs of major crops and Pakistan's agricultural GDP. The findings of the regression study also revealed that the outputs of cotton, maize, wheat, and rice have positive correlations with Pakistan's agricultural GDP; however the output of sugarcane has a negative and non-significant link with Pakistan's agricultural GDP. As a result, this study suggests that Pakistan's government implement new funding plans for the agricultural sector's development. Here the researcher concluded that the government needs to focus to improve the production of cereal as well as cash produced crops, which have direct impact on the economy of the country.

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