



Original article

Optimizing coffee cultivation and its impact on economic growth and export earnings of the producing countries: The case of Saudi Arabia

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ABSTRACT

Coffee is one of the historical socioeconomic crops. It has received an increasing attention at the global level, due to its positive interlinkage with the economic growth and on the gross domestic product for most of the producing countries, particularly, developing and least developed countries. Saudi Arabia is one of the coffee producing countries that has a relative comparative advantage of coffee cultivation. Yet, coffee cultivation has not received as much attention in Saudi Arabia as that of producing countries around the world. This study aims to assess the current state of coffee cultivation in Saudi Arabia and to investigate the potential to optimize coffee cultivation in Saudi Arabia that maximizes the net national economic return and export earnings, given limitation of cultivated areas, local market activities, and international trade activities. The study statistically analyzed primary data collected from around (65) coffee farms and traders in the study regions at the south and southwest Saudi Arabia, and optimized coffee cultivation in Saudi Arabia using LINGO optimization software. Empirical results of the study revealed the great potential of Saudi Arabia to expand coffee cultivation at south and southwest regions to meet the escalating local demand and to increase its share at the world market up to 2%. Optimization of coffee cultivation in Saudi Arabia showed a high potential to meet the local demand for coffee by producing 80.07 thousand tons grown over 2861.78 hectares and to generate a net return equivalent to \$395.72 million a year, which is equivalent to \$138.28 thousand per hectare and \$4.94 thousand per ton of coffee. Optimizing coffee cultivation will play a substantial role to increase market share of Saudi Arabia to about 1–2% of the world market by increasing its export volume, respectively, to about 69.66 and 112.56 thousand tons, the national net economic return by about \$395.86 and \$395.95 million a year, and the export earnings of coffee by about \$219.43–354.57 million a year, which in turns, will serve the national strategic trend to diversify the economic base and lower the dependency of incomes generated from oil exportation.

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1. Introduction

Coffee is one of the historical socioeconomic crops that has received an increasing attention at the global level. The share of coffee in total export earnings has a positive and significant reflection on economic growth (Yifru, 2015), and on the Gross Domestic Product (GDP) for most of the producing countries, particularly,

developing and least developed countries (Seudieu, 2015). Fig. 1 shows the estimated share of coffee in GDP and total export earnings in some selected producing countries in year 2013.

The sustainable development of coffee sector requires a considerable attention to full spectrum value chain of coffee from production to consumption at local and international markets. Private and public targeted investments are necessary to trigger a quantum increase of quantities produced of coffee and improve quality premiums in international markets (Minten et al., 2014).

According to a number of 2013 estimates, the total produced coffee reached about 8.89 million tons, grown on an area of about 10.60 million hectares (FAO, 2016). South America reserves about 43% of the total world coffee production, followed by Asia and Oceania with 33% (ICO, 2015). Brazil and Vietnam are the two largest producers and exporter of coffee worldwide, reserving about 33.34% and 14.92% in the worldwide production of coffee,

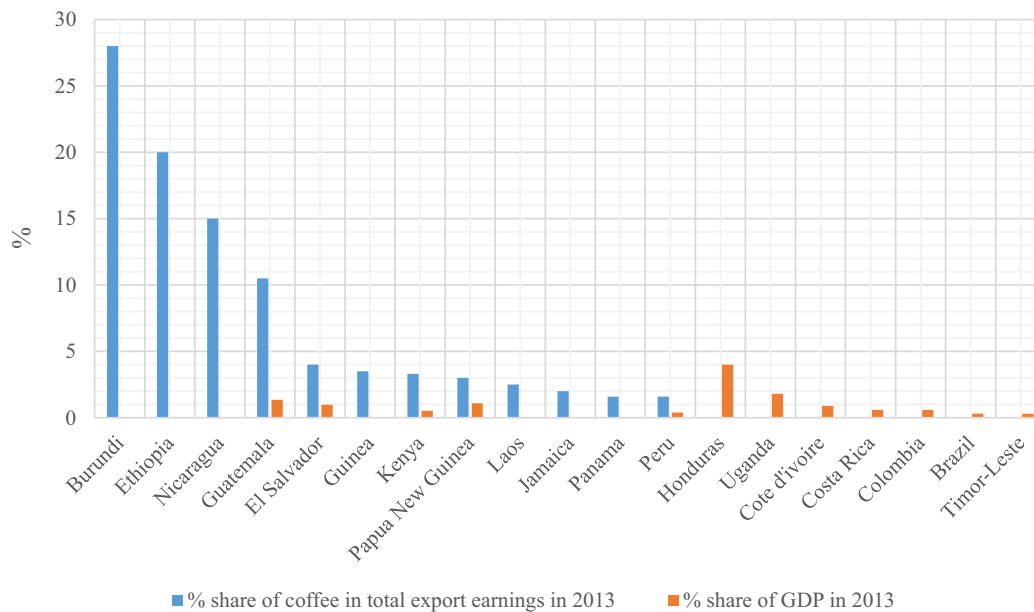
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Fig. 1. The estimated share of coffee in GDP and total export earning in some selected producing countries in year 2013.

and about 24.39% and 18.76% from the total worldwide exported coffee that reaches about 6.97 million tons in year 2013, respectively (FAO, 2016). Fig. 2 shows the world coffee production map.

Previous economic analysis of coffee showed that positive and negative shocks had different impacts on price return volatility of Arabic coffee. Such impacts were persistence and asymmetrical, and had a reflection on coffee markets. Accordingly, producing countries of coffee should introduce proper strategic instruments of hedging to minimize the persistency and asymmetrical impacts on price return volatility of Arabic coffee, which in turns, would trigger additional investments at Arabic coffee markets (da Silva and Ferreira, 2015).

Many factors, including, application of traditional farming practices, missing of specialized extension institutions, and the existence of competing crops to coffee have impacted production and marketing value chain of coffee from production to final consumption at local and international markets. Thus, improving the value chain of coffee required robust interlinkages between its actors, improvement of standard quality level, and setting a clear coffee value chain governance (Amamo, 2014).

On the other hands, the performance of coffee cooperatives and their economic contributions in developing countries were assessed, showing that their contributions are limit and inefficient. That is, mainly, due to the limited financial resources, untimely



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Fig. 2. World coffee production map, reproduced from Gardfoods, 2016.

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