The Impact of China-Burkina Faso Trade on Burkina Faso Economic Growth

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Abstract
The impact of trade expansion of China on Burkina Faso's economy is analyzed in this work through these two channels: trade in goods and services, foreign direct investment. To capture the direct and indirect effects of Chinese trade, a computable general equilibrium model is used. The different simulations that have been used are gathered in groups. The first group includes an increase of the transfers from China to Burkina Faso by 10%, an increase of 5% of the stock of productive capital, an increase of 2% in the total factor productivity. The second group includes an expansion of the exports from Burkina Faso to China by 5%w; a decrease of international export prices of manufactured products plus an increase in international prices of export commodities; and a decrease of the international import prices of products from China. The simulation results show that the simulations of trade expansion have led to an increase of domestic prices, exports and imports from China. In addition, the effect on economic growth, value added and household's welfare is low. Regarding the first group of simulations, the results show a decline of domestic prices, and an increase of exports and a decrease of imports. More FDI inflows induce a raise of economic growth equal to 1.90%, of total labor demand 0.08% and an increase of the average well-being of household by 1.41%. The majority of the population in Burkina Faso is cotton farmers and they are those who welfare raise the more 1.81.
China's trade expansion is now playing a very important role in the global economy. More especially to the increasing investment in developing countries, China has also gained an important place among the main countries providing development assistance. For the past 15 years, and especially since the establishment of the "Forum on China-Africa Cooperation" (FOCAC), China has been one of the main economic partners of Sub-Saharan Africa both in terms of trade, investment and development aid. Some researchers from Burkina Faso are also investigating to measure the impact of this expansion of Chinese presence and trade on economic growth and employment in Burkina Faso.
Keywords: trade expansion, economic growth, impact, computable general equilibrium, simulation, China, Burkina Faso
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INTRODUCTION

For the past two decades, China has become a major player in the global economy. China's strong economic growth has been accompanied by the acceleration of its foreign trade, aid and foreign direct investment. China's transition from developing countries to an emerging country is an example of development for developing countries beyond the technical and financial support it has offered them for more than a decade. China's strong presence in world trade is linked to the need for energy resources to fuel economic growth and an expanded market to export manufactured goods and build investment relationships (Renard, 2011). Thus, China is on both sides of the international market, both on the supply side and the demand side. According to statistics from the 2013 WTO World Trade Report, China is the world's leading merchandise exporter (11.2% of world merchandise exports) and the world's second largest merchandise importer behind the United States (9.8% of world imports) (WTO, 2013). Also, in the year of 2015, China stayed the first. China exported goods worth $2.21 trillion across the world making it the largest exporting country; beside China, US is the largest exporting country nation with $1.50 trillion exported merchandises across the globe. When we have a glance on the year 2017, we also notice that China is still the leading country with $2.263 trillion and the United States comes second with $1.546 trillion of exported goods.

In addition, China is the second largest importer of petroleum products after the United States. To meet the energy demand, China has diversified its suppliers. Thus, Africa has become a sought-after area because the African continent holds 8.9% of the world's oil reserves and accounts for 11% of world production (Lafargue, 2005). Africa is also an enlarged market for Chinese manufactured goods with 18% of the world's population in 2017 (United Nation) which is about 1.230 billion; according to United Nations estimates, the population of Africa may reach 2.5 billion by 2050 (about 26% of the world's total) and nearly 4.5 billion by 2100 (about 40% of the world's total). The presence in Africa is characterized by trade, FDI, official development assistance, technical assistance, governance global, migration and the environment. Thus, studies argue that Chinese growth will affect African economies differently, depending on the complementarity of their trade, the competitiveness of their industries, the degree of diversification of their economy and the supply capacity of their economy

(Doumbouya and Gassama), 2008, P.4). China's expansion on the continent is expected to affect the overall growth of the continent and the growth of each country.

1. RESEARCH BACKGROUND

China has experienced robust economic growth rates over the last three decades. China's ability to eradicate extreme poverty to become an emerging country and one of the largest exporters of manufactured goods is attracting the attention of many developing countries (Renard, 2011). Since 1980, the Chinese economy has grown at a rate of 9% per year and its foreign trade has grown at a rate of nearly 15% per year. Its share in international trade increased from less than 1% in 1980 to around 5% in 2002, 9% in 2012 and 11.5% in 2017 (WTO-UNCTAD estimates). The emergence of China as a major economic and commercial power brings about a far-reaching change in the economy international economic relations (Gaulier et al., 2005). For developing countries, the performance of the Chinese economy is a model of development. Since the emergence of the Chinese economy, China has made a very important presence among donor countries for development aid and is financing development projects (infrastructure, industry and agriculture) in developing countries. The cooperation relations between Africa and China predate the independence of African countries. The Sino-African contemporary relationship begins with the Forum on China-Africa. Cooperation (FOCAC) in 2000. In September 2018, at the seventh China-Africa conference, China announced that it is doing better than the previous years and tripling its credits granted to the African continent over the next three years (2019-2021), an action plan has already been established. Thus the 'giant' Asian proposed to invest 60 billion US dollars on the African continent. This investment project targets the development of agriculture, industry and infrastructure (FOCAC 2018). The stock of Chinese foreign direct investment (FDI) in Africa reached about 16 billion US dollar in 2011, the country committed 36.1 billion dollars in Africa in 2016. China is thus placed at the top of the providers of capital foreigners in Africa in 2016, while occupying only ninth place in this ranking a year earlier.

Overall, China's growing presence in Africa could have both growth opportunities and risks for the continent's economies. Opinions on the relationship between China and African countries are controversial. Studies such as those by Julien Wagner (2014) and Olivier Mbabia François Wassouni (2012) are critical of China's aid effectiveness, while, authors like, Davis et al. (2008), Wang (2007) and Foster et al. (2008) highlight positive aspects of Chinese aid. Other analyzes argue that in sectors where China and Africa compete, increased Chinese exports lead to a decline in African production (Renard, 2011). Ademola et al. (2009), conclude that countries exporting oil, gold and metals, cotton and importers of vehicles, vehicle engines, textiles, clothing and rice benefit from trade relations with China. For Benin, Burkina Faso and Mali, cotton exporting countries, Zafar (2007) concludes that the effect of trade with China is mixed. He adds that these countries are benefiting from the rise in the prices of primary products but are losing out with soaring oil prices.

We must note that Burkina Faso had maintained a diplomatic relationship with the People's Republic of China between 1973 and 1994. Thus, from 1994, Burkina Faso no longer maintained direct diplomatic relations with China. The authorities of Burkina Faso have chosen economic cooperation with Taiwan. Despite the cessation of cooperation between Burkina Faso and China, economic and trade relations between the two countries are of some importance. In 1995, trade between Burkina Faso and Taiwan amounted to US $ 2.4 million, while trade with China was estimated at US $ 5 million. This means that China already had a considerable impact even without diplomatic partnership. In 2011, trade with China is estimated at 381 million US dollars while trade with Taiwan is valued at 19 million US dollars (UNCTAD, 2013). While in 2017, Burkina Faso imported from China Goods worth 483 million with a partner share of 14.45%.

Burkina Faso's exports to China include agricultural products (cotton, fruits and vegetables, oilseeds, live animals) and mining products (gold, zinc). While Burkina Faso's imports from China include transportation products (cars, tractors and other vehicles), chemicals (nuclear reactors, boilers), telecommunications products, electrical products, pharmaceuticals, cereals, iron and steel. Like trade relations, economic relations between Burkina Faso and China continue to grow in importance. Also, we can notice that Chinese presence has increased in the country due to migration since the late 1990s (Khan Mohammad., 2014).

The expansion of the relationship between China and Burkina Faso is caused by the economic and trade liberalization undertaken by Burkina Faso since 1991 and also the economic partnership agreements of the West African Economic and Monetary Union (WAEMU) and the Economic Community of West African States (ECOWAS) and the agreements in the framework of the World Trade Organization (WTO). In the framework of bilateral and multilateral agreements for the promotion and protection of investments, the government of Burkina Faso signed an investment protection agreement with China in 1998. This agreement is signed for a period of ten years renewable by tacit agreement for an unlimited duration. The agreement was ratified in 2003. These different agreements and reforms have allowed the entry of Chinese multinationals and the expansion of trade between the two countries. Economic and trade relations between China and Burkina Faso are expanding through commercial facilities established under WAEMU and ECOWAS. Among the commercial facilities, there is the common external tariff (CET). Existing literature argues that the trade and economic relationship

between China and African countries carries risks and opportunities. The objective of this work is to evaluate the direct and indirect effects of Chinese growth on Burkina Faso's economy. More specifically, to evaluate the effects of China's trade expansion on household growth, employment and welfare in Burkina Faso. Studies that have analyzed the impact of China's growth on developing and developed economies are descriptive in nature (Zafar, 2007, Khan Mohammad, 2014) or partially balanced (Renard, 2011, Villoria, 2009, and Villoria and al. , 2009).

2. RESEARCH QUESTIONS

After revising this topic by his background and the literature review I came out with some specific questions that are relevant for the topic and for a better knowledge about the impact of china's expansion on Burkina Faso growth, employment and poverty in Burkina Faso. The study will assess the impact of increased FDI, China's official development assistance, the impact of imported Chinese products and the change in international import and export prices on the income distribution, wellbeing and poverty in Burkina Faso. So now the different questions that appears to us are:

How the imported products of China can affect the economy of Burkina Faso?

How China is affecting Burkina Faso on his economic aspect and his development as well?

What are China's effects on the existing industries? The effect on the willingness to create an industry, effect on the employment rate…

Is there any direct relation between China and Burkina Faso in term of impact?

These are the questions that I will try to answer by this paper.

3. RESEARCH OBJECTIVES

This study aims to assess the impact of China's economic and trade expansion on growth, employment and poverty in Burkina Faso. More specifically, the study will assess the impact of increased FDI, official development assistance from China and the change in international import and export prices on the income distribution, wellbeing and poverty in Burkina Faso. Given the complexity of the issue of aid, FDI and trade in economies, to take into account the direct and indirect effects of these different economic variables, the appropriate analytical tool is the Computable General Equilibrium model. The approach we develop is a static CGE model to analyze short and medium term effects. This study is in the context of major business reforms in Burkina Faso since 2011, through the SCADD. The SCADD contains all of the sectoral development programs, the Rural Development Strategy (RDS), trade liberalization, improving the business climate, promoting exports, developing growth poles, combating poverty.

4. PROPOSED HYPOTHESIS

As far as the hypothesis are concerned, we based on our research questions and came out with the fact that,

Known that China is one of the greatest country in the world, it obviously has impact on others countries. So by this paper we want to find out how far it can impact others, specially Burkina Faso

Also, based on the rate of Chinese exported products all over the world and especially in Burkina Faso, and also based on their prices, we can say that Chinese products are very useful and beneficial for Burkina Faso to import from China. Then it can also make profit by using the comparative advantage.

5. RESEARCH METHODOLOGY

For this work to be well done, a good methodology should be used in order to get the best results closed to the real situation. So, for that we have planned to approach the citizens of Burkina Faso with a questionnaire that we will write. We will also base our research on some data published by international organizations such as World Bank, International Monetary Fund (IMF), World Trade Organization (WTO) …

The study will be conducted in Burkina Faso. And focus more on people who buy and use Chinese products; we will also target the industries which produce some products which are also imported in Burkina Faso, then we may analyze the effect on those industries.

As we know, studies that have analyzed the impact of China's growth on developing and developed countries' economy are descriptive in nature. Partial equilibrium methods can only capture the direct impacts of Chinese growth. In fact, the change in the level of international prices, foreign investment and development aid have important general equilibrium effects. In this context, the computable general equilibrium model is the appropriate tool for capturing the direct and indirect effects of China's growth. In addition, another advantage of the CGE model is its ability to assess the effect of an exogenous shock on household welfare. To do this, the multi-sectoral computable general equilibrium model will be used. This method is a static computable general equilibrium (CGE) model and is based on the standard PEP1.1 EGC model developed by Decaluwé et al. (2010) to which we will incorporate certain specificities.

6. RECHEARCH SIGNIFICANCE

This research paper is aimed to find out the level of impact that China has on Burkina Faso economic growth. By this research we will try to identify exactly how household are impacted when China decide to change to prices of goods. As China own an important share of the market, which means that a little variation of each price may affect considerably the different household in Burkina Faso. And my purpose is to identify the degree of that impact.

7. LITERATURE REVIEW

Burkina Faso's economic growth reached 6.8% in 2018. It was 5.9 in 2016 and 3.9% in 2015 (IMF, 2018). Compared to previous years (2010, 2012) economic growth has been shrinking. This decline is dictated by the decline in the price of gold and cotton and the rise in oil prices on the world market. However, the importance of China's demand for primary products in the global market would affect the growth of developing economies such as Burkina Faso. According to the Foreign Trade Report of the 2017 National Institute of Statistics and Demography (INSD), gold and cotton account for 86.95% of Burkina Faso's total value exports. The change in the price of these products on the world market would cause a variation in the level of economic growth through a change in the trade balance. According to Khan Mohammad (2014), there are about 600 Chinese entrepreneurs in Burkina Faso. Chinese entrepreneurs invest in hotels, restaurants, commerce, infrastructure and telecommunications. It is important to note that Chinese multinationals have been successful in penetrating lucrative business sectors in Burkina Faso especially in the import of motorcycles (notably Lifan Motors), the telecommunication sector (with Huawei and ZTE) and the works (with Geo-Engineering Corporation International Ltd. (CCG int'l).

Relations between African countries and China are fueled by trade, investment and development assistance (Renard 2011, Drummond and Lui 2013). The impacts of China's growth on African economies are diverse and depend on the composition of each country's production structure (Renard, 2011). According to the World Bank's 2010 World Development Indicators, Burkina Faso's open trade rate is 38.7% in 2007. Trade is thus the main channel of transmission of the various changes in the world economy, world market on the economy of Burkina Faso. Significant changes in foreign trade variables, that are, prices and volumes of imports and exports, affect the trade balance and, of course, the real exchange rate of the national economy. The impact of Chinese growth on the trade balance and the balance of the current account balance depends on the price and volume shocks of Burkina Faso's main imports and exports, but also on the rate of coverage of imports by exports. According to the report on foreign trade of the National Institute of Statistics and Demography (INSD) of 20156 the rate of coverage of imports by exports is 42.13% in 2015, reflecting a deficit in the trade balance (-565.26 billion CFA francs in 2015).

Trade between Burkina Faso and China concerns extractive products, cash crops (cotton, sesame, cereals, others oilseed products), manufactured goods (textiles, telephones and accessories, electrical products), transport products (vehicles, motorcycles, spare parts) and pharmaceuticals. As a result, the cash crop, extractive and manufacturing industries would experience the effect of expanding Chinese demand for primary product and the supply of manufactured goods. According to the African Development Bank's 2016 statistical yearbook, Burkina Faso's exports (as a percentage of total exports in the country's value) are dominated by gold (43.66%), cotton (28.23%), seeds and seeds. oleaginous fruits (5.64%), (ADB, 2016). According to the statistical yearbook of the African Development Bank (ADB) of 2011, Burkina Faso's main import products (as a percentage of the country's total imports) are petroleum products (21.54%), rice (4.68%), medicines (4.59%), hydraulic cement (3.54%) and cars (3.27%). According to Roache (2012) the intensification of economic activity in China has had an impact on the prices of oil and base metals. For Villoria (2009), Chinese growth led to higher prices for agricultural products and lower prices for manufactured goods. Drummond and Liu (2013), increased production activity in China is associated with increased export growth of sub-Saharan African countries. However, the magnitude of the effects of China's growth on developing economies depends on the importance of the relationship between China and each country. According to the 2011 ADB statistical yearbook, China is Burkina Faso's third largest supplier since 2006 (9.82% of Burkina Faso's imports in 2009, (ADB, 2011)) and the second largest importer of Burkina Faso products (14.11% of Burkina Faso's total value exports in 2012 (INSD, 2014)). The trade balance between Burkina Faso and China is in deficit. The trade balance increased from $ - 107.06 billion FCFA in 2007 to $- 114.29 billion FCFA in 2009 and in 2012 to $- 265.28 billion. There is a clear increase in imports of Chinese products in Burkina Faso. According to Burkina Faso's foreign trade statistics of the National Institute of Statistics and Demography (INSD), Burkina Faso's exports to China increased by 31.98% between 2011 and 2012 and at the same time imports of Chinese products grew by 33.81% (INSD, 2014). China's interest in Burkina products has grown since 2009 and is one of Burkina Faso's top five customers. Cotton, gold and oilseed products are the main products demanded in Burkina Faso. However, the literature shows that China's economic growth affects international import and export prices and the volume of exports.

For the methodology, there are also some authors who have written papers about similar topic for others

countries and the results are very good and interesting. Computable general equilibrium models have often been used to analyze the effects of economic and social policy reforms and exogenous shocks in developing economies. Many studies assess the impact of FDI inflows, official development assistance and trade on household welfare. It is the case of Agenor et al. (2008), who use a dynamic CGE model to a sector, a household with a highly developed government sector. Most aspects of Dutch Disease are excluded from the design of their model as the highly aggregated configuration does not account for sector reallocation. Nevertheless, they conclude that the negative effects of aid could be avoided if the supply response is sufficiently large and the recipient country's absorptive capacity is sufficiently high. However, the underlying model with one sector and one representative household is clearly restrictive. Clausen and Schürenberg-Frosch (2009), develop a static CGE model for the Zambian economy with eleven production sectors and five households. They distinguish several effects of international aid, that is, the aggregate effect of production, the effect in terms of international trade, the effect of welfare and distribution, the effect on demand-side expenditures and the supply-side effect on productivity. They see the aid as a transfer from the rest of the world to the government. They assume that aid is a financial flow that the government can use for its own spending or make transfers to the private sectors. They propose different mechanism of the use of aid by the government. They introduce a factor productivity function from public investment. They find that growth and trade policies do not improve the well-being of the poor in the short term, but transfer policies contribute immediately to the well-being of the poor.

Estache et al. (2009), show from a CGE model where foreign aid is modeled from transfers from the rest of the world to the government and is used to finance public infrastructure, that financing public infrastructure through foreign aid produces Dutch disease. They show that the size of the effect depends on the type of financing, but the effects on growth mitigate the negative effects. Dissou and Didic (2011) show, from a CGE model, the impact of different financing mechanisms for public infrastructure. They use the stock approach to model public capital in firm technology and consider two ways of financing increased public investment in infrastructure: domestic financing through taxes and foreign aid financing. . They conclude that public investment in infrastructure leads to a problem, but increasing the production capacity of firms reduces the severity of the phenomenon.

Applications of the EGC model have been made for the analysis of Chinese growth in developed or developing economies. Ianchovichina et al. (1999) analyze the effects of China's accession to the World Trade Organization (WTO) by focusing on the movement of capital using the multi-country general equilibrium model, GTAP. They view FDI as new firms that increase the existing capital stock. They find that net creditor countries lose while net debtor countries benefit from their relationship with China because of lower cost of capital. Subsequently, authors like, Martin et al. (1999), Walmsley et al. (2000), Ianchovichina and Martin (2001), Hertel and Walmsley (2000), and Walmsley, Hertel, and Ianchovichina (2002), based on the GTAP model analyzed the effect of China's integration into the WTO on its neighbors. They conclude that China's integration into the WTO allows for greater development of trade with its neighbors and world trade.

Finally, the study on the effects of China's economic and trade expansion on African economies in EGC is that of Sandrey and Edinger (2009) applied in South Africa and focusing only on trade in agricultural products between South Africa and China using the GTAP model. Their model is static and they give no specification of the model in terms of trade. However, they deal with the liberalization of trade between South Africa and China through a reduction of tariffs. Finally, the results of the simulations show an improvement in the well-being of the population of South Africa. In this paper we develop a computable general equilibrium approach that allows analysis of the effect of foreign direct investment (FDI), official development assistance and trade.

8. THE COMPUTABLE GENERAL EQUILIBRIUM MODEL
8.1. SETTING THE MODEL
To analyze the impact of China's economic and trade expansion on the economy of Burkina Faso we develop a static CGE model. Balance is reached on each market through the variation of relative prices and the quantities offered and demanded. The exchange rate is fixed and is the model currency. We assume that Burkina Faso is a small country and has no influence on international prices, these are fixed. We consider that the skilled and unskilled labor market is in full employment of the factors of production but, we consider that the nominal wage of the two categories of work is fixed in the model. In addition, we consider the sectoral capital stock, the current account balance, the transfer from China to the government, government spending and the change in fixed stock in the model. Finally, transfers from the rest of the world are modeled according to the areas of origin. The analysis of household well-being is done through the equivalent variation.

8.2. DATA
The data used to calibrate the static EGC model starts from the 2009 SAM constructed by Cockburn et al. (2012) . The 2009 SAM includes two types of workers (skilled and unskilled), one household, 24 products and 17 industries. The products are grouped into two main categories, named food products (corn, rice, millet

sorghum and other cereals, fruit vegetables and tubers, fatty oils and sugar, condiments and salt, meat chicken fish eggs and dairy products, and drinks and coffee) and non-food products (forestry, mining, cotton, electricity gas and water, petroleum, other manufactured goods, construction work, trade, transport services, post and telecommunications services, financial services, other market services, services of cycle 1 education, cycle 2 education services, health and social work services, and other public administration services). Based on the 2009 SAM, changes have been made to the 2009 SAM to reflect the purpose of our work. The 2009 modified SAM has 6 categories of households, 3 groups from the rest of the world (WAEMU, China and the Rest of the world). For the structure of the household account, we selected the groups of households contained in the work of Balma et al. (2010) but the data on consumption expenditure is calculated from the 2012 employment resource table. To take into account the changes that have occurred in recent years, the 2009 SAM extended to six households and three rest of the world, is updated for 2012, so that it reflects the economic situation of 2012. To do this, the 2012 employment resource table (ERT) is used. Complete lists of accounts as well as the details of the various accounts are attached. The other data used to calibrate the model are the elasticities. The elasticities for import demand and export supply functions are borrowed from Decaluwé et al. (2000).

8.3. APPLICATION AND RESULTS
8.3.1.   DESCRIPTION OF THE SIMULATION SCENARIOS

The scenarios simulated in this study are based on hypotheses for the evolution of the transmission variables of China's trade expansion in Burkina Faso and on the results of previous empirical studies. According to Villoria (2010), Chinese exports of manufactured products have significantly reduced world prices for manufactured products on the main markets. In addition, Villoria, Hertel and Nin-Pratt (2010) find that in an aggregate sense, demand for primary agricultural products from China has resulted in a moderate increase in the prices of agricultural products on the international market. In light of previous work, we postulate a set of scenarios of simulations of China's growth on Chinese international import and export prices. And so, we assume that the effect of the expansion of exports of Chinese manufactured goods is accompanied by a fall in international import prices of Chinese manufactured goods of around 2%. This also allows us to hypothesize a drop in international export prices to China of manufactured products by 2%. The empirical literature on Chinese growth shows that China's economic growth has an impact on the prices of goods and services. According to Villoria (2009), China's growth has led, on the one hand, to higher international food prices and, on the other, to increased exports of agricultural products from developing countries. Roache (2012) finds that overall economic activity in China has a significant short-term impact on the price of oil and base metals. He concludes that the impact on China's rising commodity prices of growth is less than the effect of economic activity in the United States. For Villoria (2009), the increase in prices of agricultural products in economies such as Asia and European countries is between 1.5 and 2.5 percentage points. In addition, the work of Borensztein and Reinhart (1994) shows that an increase of one percentage point in world industrial production leads to an increase in prices of around 1.5 to 2%. Based on empirical evidence, we hypothesize an increase in international export prices of agricultural products by 2% driven by the increase in Chinese demand for agricultural products. According to the study by Paulo et Lui (2013), an increase (or decrease) of 1 percentage point in the growth of Chinese domestic investment is associated with an average increase (or decrease) of 0.6 percentage point in the growth in exports from Sub-Saharan Africa. According to Villoria et al. (2009) the impact of a reduction in Chinese import spending on agricultural products reduced agricultural exports from Malawi and Mozambique by 3.58%. Similar figures are observed for Tanzania (-5.15%), Zambia (-4.01%) and SACU (-4.01%). According to Roache (2012), China is increasingly present in the market for base metals and agricultural raw materials. Under these conditions, China's import spending on agricultural products and base metals will increase. Assuming an increase in import spending by China; we simulate in the context of Burkina Faso an increase in exports from Burkina Faso to China by 5%.

Another important channel for China's trade expansion in Africa is development aid and foreign direct investment. The government of Burkina Faso has adopted an attractive foreign direct investment policy through tax facilities. In this context, Burkina Faso and the Chinese government signed an investment promotion and protection agreement in 1998, which was ratified in 2003. A study on the presence of China in Burkina Faso by Khan Mohammad (2014) shows the presence of Chinese multinationals in Burkina Faso in fields such as public works, commerce and in the telecommunications sectors. We postulate the hypothesis of an increase in Chinese foreign direct investments in Burkina Faso. In the model we considered that the entry of FDI would increase the existing capital stock. In addition, the arrival of new efficient, competitive foreign firms would force local businesses to improve productive performance and the quality of production by adopting new technologies and new ideas. In addition, development aid is also one of the important aspects of China's presence in the countries of Sub-Saharan Africa. With the aim of helping African countries, China has signed with four African cotton-producing countries (Benin, Burkina Faso, Mali and Chad) an aid agreement for cotton production and processing. Referring to the evolution of aid received by Burkina Faso representing 3.6% of GDP in 2012

according to the IMF report of 2013 and according to estimates made, Chinese aid to Burkina Faso represents 0.23% of GDP in 2012. We assume a 10% increase in transfers from China to the government of Burkina Faso in accordance with China's commitments to Burkina Faso. However, the establishment of Chinese multinationals as well as public investments in the agriculture (cotton) sectors would contribute to the increase in the stock of productive capital in the agriculture, construction, telecommunications, trade, transportation and manufacturing. These sectors are the main sectors benefiting from Chinese intervention in Burkina Faso. We assume that transfers from China will be used for public investments (irrigation, transport…). The empirical study by Benin et al. (2009) shows that a 1% increase in public spending on agriculture in Ghana is associated with a 0.15% increase in the productivity of agricultural labor. In addition Diao et al. (2010) find that a 1% increase in agricultural spending is associated with a 0.24% annual increase in total factor productivity in the agricultural sector in Nigeria. Based on empirical evidence we hypothesize that the increase in transfers and the capital stock would allow an average increase in total factor productivity of 2% in Burkina Faso. According to the IMF (2013) FDI entering Burkina Faso in 2011 and 2012 represented 0.4% of GDP. According to UNCTAD statistics for 2008 and 2012, inward FDI flows are estimated at $ 714.25 million26. In addition, the stock of FDI in 2012 is estimated at 430.7 million dollars. Indeed, the destination of Chinese FDI is in the telecommunications sector (ZTE and Huawei), transportation, manufacturing, hotels and retail. To capture the effect of Chinese FDI, we assume an increase in the productive capital stock by 5% in the agriculture, construction, telecommunications, trade, transport and manufacturing industries. The description of the simulation scenarios is presented in Table 3.

Table 1: Simulation group

First simulation group	
Simulation 1a	Increase in transfers from China to Burkina Faso by 10%.
Simulation 1b	A 5% increase in the productive capital stock in the sectors: agriculture, transport, telecommunications, extraction, manufacturing industries and trade.
Simulation 1c	Total factor productivity increase of 2% (sectors: agriculture, transport, extraction, trade, manufacturing industry and telecommunications).
Second simulation group	
Simulation 2a	Product exports (cotton, extraction, fruit and vegetable, livestock products, oil) increased by 5% from Burkina Faso to China.
Simulation 2b	A 2% drop in the international export price (of products: livestock products, oil) + an increase of products (extraction, cotton and Fruit and vegetables).
Simulation 2c	A 2% drop in China's international import price of products: transportation, construction, other services, condiments and salt and other manufactured goods.

Source: Organized by the current thesis

9. DISCUSSION AND RESULTS OF THE STUDY

9.1. DISCUSSION OF THE SIMULATION SCENARIOS

This section presents a comparative analysis of the different simulation scenarios. The results show that China's trade expansion analyzed by the increase in exports, the fall in international import prices of manufactured goods and an increase in international export prices of primary products has a significantly weak effect on the selected variables. The effect of changes in international import prices from China is appreciably small but negative for the various economic variables. The effect of the variation in international export prices to China (simulation 2b) is generally positive but the sensitivity is negative for public consumption. The total results found at the end of each simulation represent the level of impact of the simulation on the economy of Burkina Faso. That is to say that when the total is negative, there is a negation impact on the economy and when it is positive, there is a positive impact on the economy.

9.2. RESULTS OF THE STUDY

This study develops a multi sectoral static CGE model to analyze the effects of China's trade expansion on the economy of Burkina Faso. The model is used to assess the effect of variation in exports volume, variations in China's international prices in import and export, variation of transfers from China to the government of Burkina Faso and variation of Chinese foreign direct investment in Burkina Faso, also capture by the change of the productive capital stock and the productivity of the factors of production.

An increase in transfers from China to the Burkinabè government has had a positive impact on the demand for capital goods as well as on real household consumption. The results show that the sectors producing capital goods demand for labor has increased. This alternative allows an increase in economic growth and well-being of households but, this results in an increase in domestic consumption prices. The effect of the increase in the stock of productive capital is greater. Economic growth increases by 1.90% and household well-being increases by 1.41% on average. The impact on well-being is influenced by the fall in consumer prices. The increase in total factor productivity has had a positive impact on growth, employment and well-being, but the effect is relatively

small. However, the reestablishment of diplomatic ties between Burkina Faso and China could bring an interesting prospect in terms of investment in the agricultural and non-agricultural private sectors. Improved cooperation may have greater results in terms of well-being and growth.

Increased product exports to China as well as lower international export and import prices from China are improving government revenue and economic growth. For all simulation alternatives, household well-being improves. This improvement is driven by the improvement in household income. The effect is greater if China's growth does not lower international export prices. These results support the idea that, in the sectors for which China and African countries compete, the increase in the volume of cheaper Chinese products leads to a drop in the output of African economies. Note that this simulated policy causes an increase in the price level of goods and services. The improvement in the level of household income could not counter the rise in the price level. The consequence of the higher prices is the higher cost of living.

The impact of all of the Chinese growth simulation options on household well-being in Burkina Faso is positive. The welfare gain is higher for cotton farming households and food crop farming households. We note that the effect of trade expansion on Burkina Faso is small. These effects are explained by the low volume of exports from Burkina Faso to China. The effects could be greater if trade relations became more important.

It can be noted that an intervention that improves the production and real consumption of households would improve well-being and reduce the incidence of household poverty. Trade relations between Burkina Faso and China will only have a significant positive effect if Chinese growth boosts exports. Local products must be processed which could allow development in order to export finished products. As it stands, the benefits of trade relations between Burkina Faso and China are low. However, it should be noted that China's trade expansion on the world market is having an impact on the Burkinabè national market through the increase in domestic supply prices and therefore an increase in the consumer price index. It is therefore necessary to manage the resources of exports of primary products to support investments in production support sectors (road, communication and agricultural production infrastructure). This recommendation is supported by the fact that China's trade expansion in Burkina Faso analyzed by an increase in the stock of productive capital and in the productivity of the factors of production leads to greater production, to dictated job creation by the positive effect on growth. In order to obtain growth results from China, it is therefore important to attract Chinese FDI into the production and production support sectors (agriculture, industry and infrastructure). To do this, it will be necessary to strengthen the investment protection agreements that exist in Burkina Faso and China since 2003 by also granting investment facilities. This requires a profound improvement in the business climate. All this necessarily involves the re-establishment of the ties of cooperation between China and Burkina Faso.

CONCLUSION

China is today a country whose economy and importance cannot be ignored. China's rapid development has created an unprecedented situation in the world and challenges almost all existing models and theories of development. The rise of "made in China" products has for a long time been very beneficial for the development of China and extends economically as well as politically. However, the changes underway in China's foreign trade are dictated by the new international environment, where global demand is shifting towards developing countries, but also by China's internal transformations and the evolution of its development model.

From a poor and rural country in the 1970s, China has become the world's second largest economic power, if not the first according to some considerations. Weighing 15% of global GDP and accounting for more than 30% of world growth, China is now a giant that can not be ignored. With the isolationist shift in the United States and sluggish growth in Europe, China will play a major role as a leading economic player in the coming years.

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