5. IMPACT OF AGRICULTURAL TRADE ON EMPLOYMENT IN BENIN

5.1 INTRODUCTION

Benin, with an estimated gross domestic product (GDP) per capita of US$1,600 in 2010,[1] is among the world's least developed countries. The main features of Benin's trade are:

1. Poor diversification of export goods as three types of commodities dominate:

    a. Cotton and cottonseed

    b. Other agricultural and forestry products (cashew nuts, pineapple, cassava, tobacco, timber, vegetable oil (soya, palm oil, copra))

    c. Fish and shellfish

2. Most imports are for final consumption. There has been a marked increase in imports over the past ten years.

3. There has been an "informalization" of activity, in particular in trade with Nigeria. Re-export is a major component of tertiary activities in general and trade in particular.[2]

The past two decades have been marked by several efforts to liberalize markets. These efforts have been based on three main pillars of economic policy: the adoption of structural adjustment programmes (SAP), accession to the World Trade Organization (WTO), and integration into regional economic groups (the West African Economic and Monetary Union (WAEMU) and the Economic Community of West African States (ECOWAS)).

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[1] http://www.indexmundi.com/fr/benin/produit_interieur_brut_(pib)_par_habitant.html

[2] Re-export occurs when a country imports consumer goods in an amount that far exceeds domestic demand and then exports the surplus to a third country.

The growth in regional and international trade has considerably affected jobs and working conditions. The role of trade as an engine of growth and development has been sufficiently documented in the economics literature. Increased trade in agricultural products is seen as a route to development in poor countries in general and as particularly important for sub-Saharan African countries (Dupaigre et al., 2008). Several studies have shown that a 1 per cent increase in agricultural exports could raise the economic growth rate of some countries by about 0.5–1.8 per cent.

The International Food Policy Research Institute (IFPRI) has found that rural incomes outside the agricultural sector grew by more than US$2 for each additional US$1 in sales of agricultural goods outside the rural areas, including in local, regional, and international markets. In other words, a sustained increase in income generated directly by agricultural cash crops translates into an overall increase in income in the local economy at least twice as great. We need to be aware of and understand these effects in order to have a solid basis for framing and implementing effective promotion and job creation policies and strategies.

Issues concerning the effects of trade and trade reform on jobs have been at the heart of debate on economic policy in recent years. Clearly, trade reforms affect jobs, and yet the literature on trade and jobs demonstrates that it is difficult to establish the effect of trade reform on employment. Analysis must cover numerous interrelated factors.

This chapter seeks to assess the impact of agricultural trade and trade reforms on jobs in Benin. Its findings show that trade can bring both job creation and job losses. The estimates show that some trade liberalization policies contribute (albeit weakly) to job creation. However, accompanying measures should be introduced to strengthen that effect and to mitigate job insecurity over the long term. This chapter first considers Benin's economy, trade flows, and the employment situation in the country. The second part describes the methodology and analyses the results of simulations.

5.2   ECONOMIC IMPORTANCE OF THE AGRICULTURAL SECTOR

Agriculture is an essential part of Benin's economy. Its importance is shown in three areas: its contribution to the national economy, the proportion of the labour force employed in the agricultural sector, and the importance of local farming in the population's food security. What is more, agriculture is one of the main sectors supporting the country's export potential, which is important for debt servicing and for funding imports of consumer and intermediate goods.

Agriculture accounts for about 36 per cent of GDP. It provides over 80 per cent of official export earnings; cotton in particular contributes 13.5 per cent to export earnings.[3] The main challenge facing agriculture is to play its economic role

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[3] http://www.africaneconomicoutlook.org/fileadmin/uploads/aeo/Country_Notes/2011/Full/B%C3%A9nin_long.pdf

more effectively in boosting the productivity of all factors of production, thereby providing the necessary resources to promote industry.

The agricultural sector is the main source of employment. Over 48 per cent of Benin's labour force works in this sector despite the low pay and arduous work. The challenge for agricultural employment is to increase farmers' incomes by raising their productivity.

For food security agriculture plays a significant role in the country's food supply given the importance of subsistence farming and the role of domestic food markets in feeding urban populations. Domestic production meets about 60 per cent of the population's food needs.[4]

5.2.1   General characteristics of the sector

Small-scale farms dominate Benin's agricultural sector. In 2008 the sector contained about 550,000 farms. They are spread across eight agro-ecological areas. Most are small family farms that grow a variety of crops and often raise a small number of livestock (poultry, small ruminants, or pigs). The average size of the small-scale farms is estimated to be 1.7 hectares, and on average each supports seven people. About 34 per cent of the farms are smaller than 1 hectare. Only 5 per cent of the farms in the south and 20 per cent in the north of Benin are larger than 5 hectares. Of the total 11 million hectares of available land, a little less than 60 per cent is suitable for farming.[5]

Despite the prevalence of small-scale family farms, there are now some initiatives from private developers to establish modern farms, bringing greater investment in the land, perennial crops (oil palms, cashew and fruit trees, citrus fruit, and mangoes) and intensive poultry farming. The investment structure means that these farms will be located both in peri-urban and rural areas. However, these initiatives currently are few, mainly because of water management difficulties, the small size of the local market, and the absence of a suitable funding policy tailored to this type of agriculture.

In addition to crop production, Benin also has a coastline of about 125 kilometres and two lake and river systems, comprising the Ouémé, Mono, and Couffo rivers and the Niger basin and its tributaries. The main economic activity in these areas is small-scale fishing (sea and lake fishing) and some fish farming (*acadja*,

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[4] Global vulnerability analysis of food security and nutrition (Analyse Globale de la Vulnerabilite, de la Securite Alimentaire et de la Nutrition – AGVSAN) was carried out to discover the current extent of food insecurity, malnutrition, and households' survival strategies, with a view to better definition and planning of state intervention. AGVSAN is based on an analysis of data collected in November and December 2008 from 4,176 rural and urban household and key respondents in 348 villages and neighbourhoods in 12 departments of the country. An analysis of secondary data was carried out before the survey.

[5] These statistics are taken from a report made under the aegis of the Mécanisme Africain d' Evaluation par les Pairs (MAEP) as part of the work on the National Agricultural Investment Programme (PNIA/ECOWAP/PDDAA).

fish holes, and some modern fish farming techniques that are beginning to be disseminated).

Two methods of livestock production are used: (i) an extensive pastoral system (large cattle and small ruminants) located in the north and to a lesser extent in the centre and on the plateau, and (ii) peri-urban production (poultry, small ruminants, rabbits) and sedentary farming of small herds of three to five animals, usually small ruminants. The agri-pastoral system is more developed in the north of Benin, with the use of draught animals and recovery of dung to fertilize the land.

The main sources of household energy are still wood and charcoal. This has led to a drastic reduction in primary and secondary forest cover. It is estimated that, nationally, about 70,000 hectares of vegetation cover are lost per year (PSRSA, 2010).

In rural areas land ownership usually follows a traditional system, with small-holdings supporting individual families, that does not favour intensive farming. A modern system of land tenure is being tested with the introduction of the rural land plan under new land legislation. This legislation is a prerequisite for promoting and safeguarding investments in agriculture.

In total, agricultural production uses a considerable amount of natural resources:

- Only 17 per cent (i.e. around 1,375,000 hectares) of available agricultural land is cultivated annually, with 60 per cent of that used for the main food crops. Of 60,000 hectares available in lowland areas, only 7,000 hectares (i.e. 11 per cent) is used. There are 1,500 hectares of cleared land under partial cultivation and 20,000 hectares of riverbanks that could be cultivated.

- Benin has a huge hydrographic network, comprising 2,000 hectares of rivers, 1,900 hectares of lakes, and a lake system of over 2,800 hectares.[6]

Despite its natural advantages, Benin's agriculture faces the following constraints:

- Natural: Benin's agriculture remains vulnerable to the vagaries of the weather. Floods at times but low rainfall at others negatively affect agricultural production.

- Structural: There are huge regional differences in the distribution of arable land. Moreover, land management systems drastically reduce its fertility.

- Economic: Agricultural earnings remain low and vary between US$100 and US$300 per rural household. Therefore, farms are under-capitalized because of the lack of general investment, and they suffer particularly from under-investment in improving soil fertility.

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[6] See ReSAKSS/IFPRI (2010).

- Shortcomings in agricultural policies: No strategic agricultural legislation, despite the existence of several documents that are quite clear about the policy actions needed and their assessment; a mismatch between the tax regime for farms and the absence of inducements for agricultural entrepreneurship; a lack of organization of the supply chain for agricultural inputs (outside the cotton sector); unsuitability of the systems of agricultural credit and finance; a system of agricultural cooperation that is out of date; a traditional system of land tenure that does not encourage investment in farming; and the absence of any insurance scheme that covers risks in the agriculture sector.

5.2.2 The agricultural sector's impact on society and employment

Most jobs in the agricultural sector are informal. The agriculture census by the Ministry of Rural Development recorded 1,973,895 active farmers in 1992, which was 61.82 per cent of the total agricultural population.[7] According to the General Census on Population and Housing (RGPH3) in 2002 conducted by the *Institut National de Statistique et de l'Analyse Economique du Bénin* (INSAE), the population of Benin was 6,769,914 inhabitants, with a working population of 2,830,876.[8] Of the working population, 47.1 per cent worked in the agricultural sector (farming, livestock, fishing and forestry, including farm labourers). As agriculture currently accounts for more than 48 per cent of the working population, the sector remains the main source of work for the labour force, well ahead of the retail and wholesale sector (27.2 per cent of the working population) and the other non-farm sectors (16.5 per cent of the working population).

The RGPH3 data indicate that the majority of the male population works in the agricultural sector – 60.2 per cent of the male labour force. Agriculture employs 35.9 per cent of women in the labour force. It is necessary, however, to put the relatively small number of women in agriculture into context. The agricultural census of 1992 found that women constituted the majority of workers in the agricultural sector (1,050,783 women and 923,111 men), and casual observation shows that they are present in high numbers in processing and marketing of agricultural produce (particularly food crops) and as the main source of labour in rural family farming. It is possible that the RGPH3 did not count these typically female activities among agricultural activities. This shows the need for conceptual coordination between the Ministry of Agriculture and INSAE to obtain a more accurate picture of women's participation in agricultural activities.

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[7] As defined by the Analysis, Forecasting and Synthesis Direction of the Beninese Ministry of Rural Development (DAPS/MDR), the total agricultural population includes both workers who are in employment and those who are unemployed.

[8] See INSAE (2002, pp. 23-24).

5.2.3 Contribution of the agricultural sector to Benin's economy

Not only is agriculture the country's largest employer, but it is also its main source of wealth creation (figure 5.1).

Crop production (excluding forestry) contributes significantly to GDP. Its annual average contribution to GDP is 23.3 per cent, while the sub-sectors "livestock" and "fishing and forestry" account for 5.9 per cent and 4.1 per cent, respectively.

Figure 5.1: Average percentage contribution of sectors to gross domestic product, Benin, 1990–2010
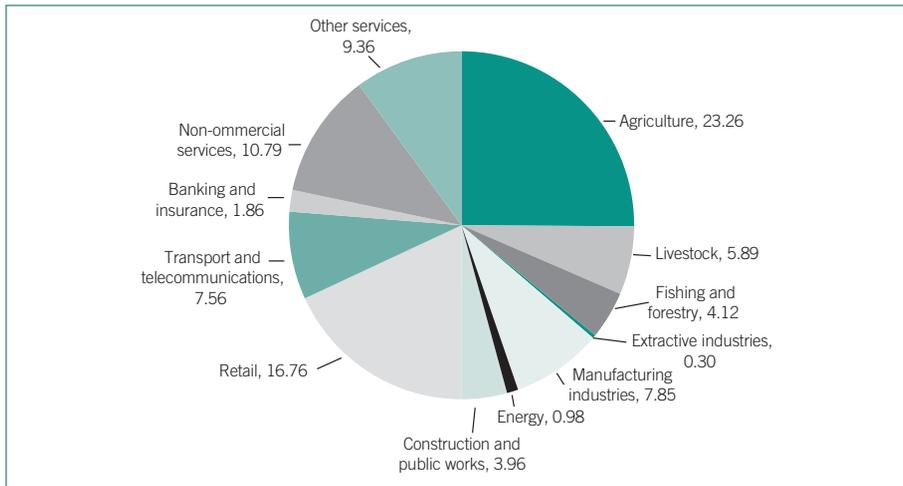
Source: calculated from INSAE data.

Figure 5.2: Primary sector contribution to GDP (percentage), Benin, 1990–2010
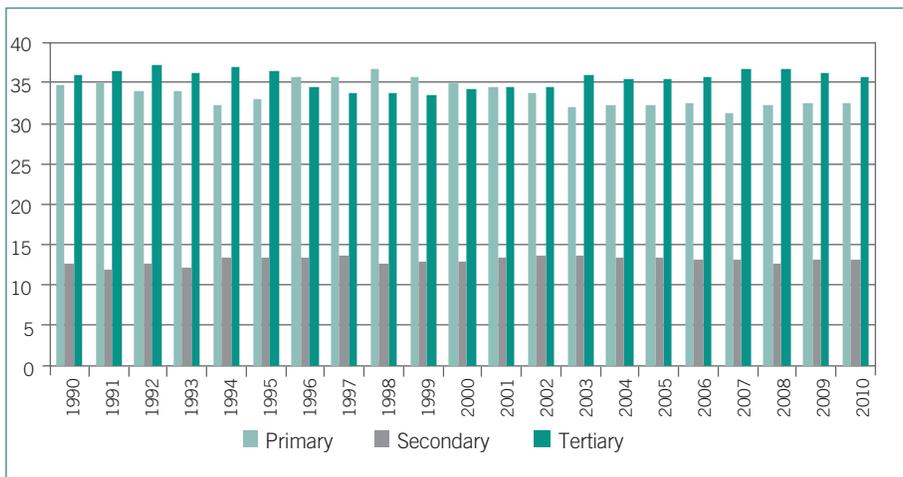
Source: calculated from INSAE data.

As figure 5.2 shows, the tertiary sector makes the largest contribution to GDP, followed by the primary sector and then the secondary sector. The primary sector contributed an average of 34 per cent of GDP between 1990 and 2010. It peaked at 36.6 per cent in 1998. However, since 2000 the primary sector's contribution to GDP has dropped from 34.9 per cent to 32.4 per cent in 2010. Crop production accounts for more than 70 per cent of agricultural GDP.

5.3   AGRICULTURE AND FOREIGN TRADE

The overall structure of Benin's foreign trade has changed little despite the reforms enacted in recent years, particularly the establishment of the Common External Tariff within WAEMU in 2000. Benin has a very small share of regional and international trade in goods and services. Benin's shares in world trade have fallen in recent years despite the increase of 44 per cent in the value of Benin's trade recorded between 1998 and 2010. Benin accounts for less than 1 per cent of world exports. However, imports from the regional and international markets grew by 96 per cent between 1998 and 2010. The main reasons are the re-export trade, on one hand, and changes in population structure and consumer habits, on the other. The statistics used in this section are calculated on the basis of data from INSAE, the Autonomous Port of Cotonou, and the Ministry of Agriculture, Livestock and Fisheries (MAEP).

5.3.1 Imports

Benin remains dependent on imports of food, manufactured goods, and hydrocarbons. Food imports are dominated by about 20 groups of products that account for around 88.5 per cent of Benin's total registered purchases. Some products are high performers – for example, rice, sugar, vegetable oil, wheat flour, meat, milk, alcoholic drinks, and building materials and equipment. In 2010 imports to Benin reached 750 billion CFA francs. Imports increased by 6.1 per cent in 2010 over 2009 compared with an increase of 9.7 per cent in 2009. The growth in imports in 2010 came mainly from purchases of food products, semi-finished goods, energy products, and capital goods. Consumer goods account for more than one-third of imports.

5.3.2 Exports

There is little diversity in Benin's exports, and the value added in exported goods is minimal. Benin's sales on the international and regional markets are mainly of agricultural produce and re-exports. Despite fluctuations in the world price, cotton remains the main export. Other export crops, such as palm oil, cashews, and pineapple, account for no more than 10 per cent of export sales. Exports were worth CFA Fr 588.3 billion in 2010, which was an increase of 4.6 per cent over 2009 (OECD, 2011).

Cotton

Cotton accounts for over 80 per cent of Benin's commodity exports (81 per cent in accumulated value between 2000 and 2008). For several years cotton's share of total exports, excluding re-export, has decreased, falling from 46.3 per cent in 1998 to 34 per cent in 2008. Cotton is vital to the health of Benin's exports because it so dominates the country's export trade. Cotton contributes 4.6 to 8 per cent of GDP and accounts for between 14 and 24 per cent of GDP in the agricultural sector. Gross earnings distributed to farmers reached on average nearly 60 billion CFA francs before subtracting the cost of inputs at 34 billion CFA francs. The cotton industry provides over one million direct agricultural jobs in rural areas and nearly 3,000 jobs in the secondary sector, because most of the fabric manufacturing industry is based on cotton, with 18 ginning plants, 5 textile mills, and 2 mills producing refined cotton oil. Amongst the other activities linked to cotton production, the main one being the import and distribution of inputs, turnover is on average 25 billion CFA francs per year, or 42 per cent of producers' gross income and 74 per cent of income net of the cost of inputs.

Cashew

Cashew is the country's second export after cotton. Export earnings did not exceed CFA Fr 12.4 billion between 2000 and 2008. Income to farmers was CFA Fr 11.4 billion in 2000. This more than doubled by 2008, when it reached CFA Fr 24.4 billion. Income generated by small-scale and industrial value added chains (VAC) is high. The price per kilo of roasted nuts is CFA Fr 3,000 via the small-scale VAC and CFA Fr 6,000 via the industrial VAC. The export of raw and roasted cashew nuts benefits 180,000 to 250,000 agricultural labourers and 15,000 employees. It contributes between 7 and 12 per cent of agricultural GDP. Thus, processing offers an opportunity to boost economic growth if production methods on the farm are improved.

Pineapple

The pineapple industry is an emerging sector. Pineapple contributes about 0.06 per cent on average to Benin's GDP. Although official exports are low (they account for 1 per cent of production, estimated at an average of 100,000 tons), considerable amounts are exported via informal cross-border trade (ICT). It is estimated that 30 per cent of the production is exported to neighbouring countries – Nigeria, Niger, and Togo, in particular, via informal flows. This means that about 70 per cent of the production is sold cheaply on the domestic market and consumed locally. As the pineapple sector is poorly organized, it is difficult to estimate the number of jobs it creates. Agricultural earnings are calculated, on the basis of market price, to be CFA Fr 7.56 billion. The pineapple sector employs a high number of women in the fresh fruit trade in the south of the country.

Oil palm

The oil palm was Benin's main source of exports until the mid-1970s. Since then palm oil products have become less competitive on the international market with

the arrival of new producer countries in southern Asia and Brazil and the surge in production in neighbouring countries such as Nigeria and Côte d'Ivoire.

Shea nut

Farmers earned CFA Fr 11.4 in 2000 from the shea nut. The industry is poorly organized. It employs mainly women in rural areas; about half of women in the harvesting areas are involved in gathering and processing the nut. Exports from 2000 to 2008 totalled more than CFA Fr 15.2 billion in value. The industry's contribution to Benin's GDP is around 0.37 per cent. Income to rural populations is estimated to be CFA Fr 7.3 billion per year.

Shrimp

The shrimp export industry is an emerging sub-sector of the fishing industry that is little developed in Benin. The total of shrimp exports was less than CFA Fr 10 billion between 2000 and 2008. One possible barrier to the development of the shrimp export industry is the difficulty of complying with product standards demanded by international markets. Small-scale fishing is the major source of landed catch, supplying the local shrimp market. However, no serious survey has been carried out to assess the income generated and the jobs created in this industry. The industry contributes little to GDP given that the fishing industry as a whole is estimated to add only 0.51 per cent.

5.3.3 Trading partners

Benin's main export markets are Africa and Asia (particularly India), followed by the European Union (EU). Trade with partners in the West African Economic and Monetary Union (WAEMU) and the Economic Community of West African States (ECOWAS) has developed in recent years because of regional trade policies. However, Benin is more of a market outlet for products from several countries than a source of supply. Indeed, only 5.13 per cent of Benin's exports and 13.5 per cent of its imports are with WAEMU countries (Soulé, 2004). Nigeria is an important partner because it is the destination of several goods transiting through the port of Cotonou, even if most bilateral trade is not officially recorded. A great deal of the data on Benin's external trade remains unknown to state institutions because of the size of informal trading circuits.

5.4   TRADE POLICIES

Economic integration is today an important part of development policy in Africa. As part of this process, West African countries have entered into several commitments as part of both their sub-regional and international economic integration. To this end Benin has agreed to the establishment of a trade liberalization programme within ECOWAS and the adoption of a common trade policy within WAEMU, whilst re-

maining supportive of the multilateral trading system. Benin has also embarked on an integration process with the African Union (AU) and the Community of Sahel and Saharan States (CEN-SAD).

Since 1996 WAEMU has progressively liberalized intra-community trade and advocated a common trade policy. Benin is also a member of ECOWAS; its members grant each other preferential treatment for the same products as under the WAEMU arrangements that began on 1 January 2004 and the customs union in place since 2007. As an Africa-Caribbean-Pacific (ACP) country, Benin is actively negotiating an Economic Partnership Agreement (EPA) with the EU.[9] It is also eligible for trade preferences granted by the US under the African Growth and Opportunity Act (AGOA) and the EU initiative "Everything but Arms". Benin is part of the Joint Integrated Technical Assistance Programme (JITAP) and recently joined the integrated framework. However, it has little penetration in the multilateral trade system.

Of all these agreements and arrangements, economic integration under WAEMU is the most advanced. WAEMU has sectoral policies in the name of a customs union based on the removal of all tariff and non-tariff barriers to community trade and the establishment of a Common External Tariff (CET). The CET is now the main instrument of trade policy in Benin.

5.4.1 Common External Tariff

WAEMU's CET was adopted on 28 November 1997, and it came into force on 1 January 2000. It constitutes Benin's external fiscal backbone. The CET comprises five customs levies, some of which are permanent and some, temporary.

The permanent duties include:

- customs duties at four rates, depending on the product category:
  - 0 per cent for category 0, consisting of essential social products on a restrictivelist (medicines, condoms, books, newspapers, etc.);
  - 5 per cent for category 1, which includes goods of primary necessity, basic commodities, capital goods, and specific inputs;
  - 10 per cent for category 2, which includes inputs other than those covered under category 1 and semi-finished goods;
  - 20 per cent for category 3, which covers goods for final consumption and other products not covered elsewhere.

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[9] The African, Caribbean and Pacific Group of States (ACP) is an organisation created by the Georgetown Agreement in 1975. It is composed of 79 African, Caribbean and Pacific states, with all of them, save Cuba, signatories to the Cotonou Agreement, also known as the «ACP-EC Partnership Agreement», which binds them to the European Union. There are 48 countries from sub-Saharan Africa, 16 from the Caribbean and 15 from the Pacific.

- The Community Solidarity Levy (CSL) of 1 per cent, which is used to offset the shortfall in customs income, to boost structural funds, and to cover the operating costs of the Union.

Temporary duties include the following:

- Decreasing Protection Tax (DPT), a supplementary protection mechanism to provide temporary (four-year) compensation for a considerable drop in tariff protection arising from implementation of the CET. It covers industrial and agri-industrial goods in specific economic sectors. The minimum rate is set at 10 per cent and the maximum at 20 per cent based on an agreed trigger threshold.

- The Special Import Tax (SIT), a mechanism to smooth variations in international prices for community production. It applies to agricultural products. Its operation is linked to a trigger price calculated on the basis of a comparison of international prices of the appropriate products and their import prices (cif). A flat rate of 10 per cent applies.

One of the expected consequences of the CET has been an increase in intra-community trade in the WAEMU area. This should lead to an increase in imports into Benin from other WAEMU countries and an increase in trade from Benin to those countries. The estimates in the following sections will provide information on how trade has changed since the introduction of the CET.

5.4.2 ACP–EU Economic Partnership Agreement (EPA)

Benin is one of the ACP countries with which the EU has signed a partnership agreement, which provisionally came into force on 1 March 2000. Trade provisions are among the mechanisms for cooperation between ACP countries and the EU. The agreement allows industrial products and processed agricultural produce from the ACP countries into the EU duty-free on a non-reciprocal basis. WTO members granted a waiver from EU obligations under Article I:1 of GATT 1994 (regarding most-favoured-nation (MFN) treatment) for the period from 1 March 2000 to 31 December 2007, the date on which the new trade arrangement compatible with WTO rules was to be concluded. Under the Cotonou Agreement these arrangements would take the form of an EPA between the EU and various regional groupings. The EU began the negotiating process on 27 September 2002. The first phase took place between all the ACP countries and the EU and covered horizontal issues of interest to all parties. The second phase began with the start of negotiations with the Economic and Monetary Community of Central Africa (CEMAC) on 4 October 2003, and negotiations with the countries of West Africa, represented by ECOWAS in cooperation with WAEMU, began on 6 October 2003. The EU believes that negotiation of an EPA will strengthen regional integration within ECOWAS. The EU supports the participation of West African countries through a capacity-building programme. ECOWAS has also obtained funding from the European Development

Fund (EDF) for surveys on the impact of the EPA on the economies of member states. One of the consequences of the establishment of a free trade area between the EU and West African countries at the end of the transitional period – in 2020 at the latest – and the removal of customs duties on products of EU origin covered by the EPA will be the loss of tariff income. ECOWAS member states have asked the EU to make financial provision for this loss during the transitional period. During the ECOWAS ministerial meeting held in Accra in April 2003, ministers asked the EU to provide additional resources to allow the West African region to meet the cost of economic adjustment.

5.4.3 Other reforms

In addition to these two major reforms, Benin implemented the WTO Agreement on customs valuation as of 1st January 2003 – that is to say, two years after the end of the transitional period that permitted deferral of the application of the agreement on WTO customs valuation. This implementation uses transaction value and does not apply the reference values permitted under WAEMU rules. Despite the use of computer technology for customs clearance and the modernization of customs services since 2001, it appears that some difficulties persist regarding the length and cost of customs formalities. WAEMU adopted a Community Anti-dumping Code that came into force on 1 July 2004.

The government may use tax relief, import subsidy, or export prohibitions to manage crises as part of its economic policy. That is why Benin has banned the export of cottonseed, non-processed teak, and wood charcoal to ensure sufficient supply to local industries. In 2008 Benin used import subsidies and banned export of food crops to deal with increases in food prices.

The value added tax (VAT) is 18 per cent for most goods and services, and excise duty of 1 to 20 per cent is levied on local consumption of some untaxed products. Benin grants tax breaks to producers under the terms of the Investment Code and the establishment of the industrial export processing zone; rules cover the use of domestic products or those from a national source and allow priority to nationals for job vacancies. Moreover, WAEMU permits derogation of the Common External Tariff for importing inputs that are taxed at a higher rate than some finished goods (generally of a social nature). To safeguard consumers, the authorities have controlled the prices of some sensitive products, such as bread, school supplies, cement, and oil products, and of some essential utilities, such as electricity and water.

5.5   EMPLOYMENT SITUATION

Surveying the impact on jobs of the reforms in agricultural trade requires first an analysis of trends in the labour market in the context of multiple free trade agreements. Both supply and demand in the labour market need consideration.

The labour market in Benin remains depressed. In 2007, according to the findings of the Integrated Modular Survey on Household Living Standards carried out by INSAE, although the labour force participation and the unemployment rates were 53 percent and 0.7 percent, respectively, the under-employment rate was 70.5 per cent.

5.5.1 Trends in the labour force

The findings of RGPH3 show that in Benin the labour force in 2002 numbered 2,830,876 people, of whom 1,396,468 were women (49.3 per cent) and 1,434,408 were men (50.7 per cent). The labour force grew from 1,114,053 to 2,085,446 between 1979 and 1992, and then to 2,830,876 in 2002. Some 61 per cent of the labour force is under age 35, and older workers – those over age 60 – now account for only 8.4 per cent of the labour force (table 5.1).

More than one-third (38 per cent) of the working population lives in urban areas, while 62 per cent live in rural areas (table 5.2). The rural areas are home to 65 per cent of those working in the informal sector, while the urban areas have 80 per cent of the formal sector (77.7 per cent of the state formal sector and 82.3 per cent of the private formal sector). Compared to 2002, the Population and Health Survey (PHS) of 2006 found no change in this distribution. There is increasing urbanization, fuelled by the exodus of youth from rural areas to the towns, but it does not appear to affect the structure of labour supply as most of the youth have moved to pursue an education in urban training institutions.

Table 5.1: Distribution (%) of labour force of Benin by gender and age group, 2002

	Total population	**Men**	**Women**
10–14 years	8.7	8.5	9.0
15–19 years	11.5	10.7	12.4
20–24 years	13.5	12.0	15.0
25–29 years	14.8	14.2	15.5
30–34 years	12.1	12.6	11.5
35–39 years	10.0	10.5	9.7
40–44 years	7.8	8.3	7.3
45–49 years	5.8	6.2	5.3
50–54 years	4.8	5.2	4.4
55–59 years	2.5	2.8	2.3
60–64 years	3.0	3.2	2.9
60 years and over	8.4	9.2	7.6

Source: INSAE. RGPH3, 2002.

Table 5.2:   Distribution (%) of labour force by job status and residence, Benin, 2002

Status of occupation	Urban location	Rural location
Total	37.6	62.4
Informal sector	35.1	64.9
State formal sector	77.7	22.3
Private formal sector	82.3	17.7
Total formal sector	80.0	20.0
Seeking first job	73.6	26.4
Other unemployed	75.9	24.1

Source: INSAE. RGPH3, 2002.

5.5.2 Patterns and trends in employment

From the labour force statistics given in the previous section, we know that between 1992 and 2002 there was in increase of 745,430 people in the labour market, which would be an average increase of 74,543 per year. In the same period, the employed population grew from 2,053,130 to 2,811,753, for an average annual increase of 75,862 workers. As shown in table 5.3, new jobs came mostly in retail (51.2 per cent), agriculture (18.4 per cent), and artisanal industries (12.2 per cent). Much of this job expansion has come from own-account employment.

The unemployed in 2002 numbered 19,123. Of these, 56 per cent were seeking their first job and 44 per cent had previously had a job. It is mostly men who are unemployed – 68 per cent men compared with 32 per cent women in 2002.

Table 5.3   Employed population by sector of activity, Benin, 1992 and 2002

Sector	2002 (a)	1992 (b)	Difference (a–b)	Share (%)
Agriculture, hunting and fishing	1 274 379	1 147 746	126 633	18.4
Mining industries	37 017	661	36 356	5.3
Manufacturing industries	244 312	160 406	83 906	12.2
Water, electricity, gas	1 832	1 176	656	0.1
Building, public works	68 881	51 655	17 226	2.5
Retail, catering and hotels	784 930	432 501	352 429	51.2
Transport and communication	92 012	52, 837	39 175	5.7
Banking and insurance	3 632	3 106	526	0.1
Other services	196 394	164 544	31 850	4.6
Unclassified	108 364	38 496	69 868	
All activities (excluding unclassified)	2 703 389	2 014 632	688 757	100

Source: INSAE. RGPH3, 2002.

The population that was not in the labour force at the third population census numbered 1,445,280, of whom 61 per cent were women and 39 per cent, men. Of these, 51 per cent lived in rural areas and 49 per cent, in urban centres. Among the women, slightly over one of every two runs a household. Among men, nearly nine of every ten are pupils or students, compared with only three of every ten women.

5.5.3 The labour force at work

Most of the labour force at work is in the informal sector. This sector employs 95 per cent of the working population. The formal sector accounts for only 5 per cent, divided evenly between the public sector (2.6 per cent) and the private (2.4 per cent) sector. The informal sector comprises 88 per cent of the working population in urban areas and 98 per cent in rural areas.

Nearly half of the working population are in agricultural occupations: 48.5 per cent are farmers, live-stockers, or fishers (table 5.4). In other occupations, retail and sales workers account for 27.3 per cent of the working population, and non-agricultural labourers or artisans, for 16.6 per cent.

There are considerable differences in the distribution of jobs between men and women. Agriculture predominates in men's employment, accounting for 60.5 per cent of men's jobs, while agriculture accounts for just 36.2 per cent of women's jobs. Women are most active in commerce, at 48.9 per cent, compared with 6.4 per cent among men. This pattern did not change much between 2002 and 2006. According to the findings of the Population and Health Survey of 2006, 51 per cent of working women were in the commerce and services sector, while 37 per cent worked in agriculture. By comparison, the agricultural sector employed 52 per cent of working men, while 19 per cent worked in commerce and services.

Table 5.4:   Distribution (%) of working population by profession and gender, Benin, 2002

Profession	Total	Men	Women
Total	100.0	100.0	100.0
Scientific professions	3.0	4.3	1.6
Directors and managers	0.1	0.2	0.0
Administrative personnel	0.4	0.5	0.2
Retail and sales	27.3	6.4	48.9
Specialist service providers	3.7	2.9	4.5
Farmers, livestock farmers, fishers	48.5	60.5	36.2
Non-agricultural manual workers	16.6	24.6	8.3
Sundry workers	0.5	0.7	0.2

Source: INSAE. RGPH3, 2002.

Between 1979 and 2002 the proportion of women working as farmers, live-stockers, and fishers has dropped – from 61 per cent in 1979 to 56 per cent in 1992 and 36.2 per cent in 2002; most have moved into trade, sales, or other services.

The labour market is dominated by the informal sector, where 95 per cent of the population works (table 5.5). 70 per cent of the working population are own-account workers, 17 per cent are family workers, and 5 per cent are in training. Only 5.5 per cent of the working population receives a salary. Over 90 per cent of employers, own-account workers, family workers, and trainees are in the informal sector. In contrast, 80 per cent of those with permanent contracts are in the formal sector, while temporary contracts are divided between the formal and informal sectors at 40 per cent and 60 per cent, respectively.

A comparison of data from the General Censuses on Population and Housing in 2002 and 1992 shows that there was an increase in the proportion of own-account workers (70 per cent in 2002 against 61 per cent in 1992) and decreases in the share of family workers (17% in 2002 against 25% in 1992) and trainees (5% in 2002 against 7% in 1992) while the proportion of employees with contracts has remained stable at around 5.5%. This increase in the proportion of own-account workers and the stability of the proportion of employees with contracts reflects difficulties in creating jobs in the formal private sector and continued reliance on the state as a provider of jobs. Furthermore, the fall in the proportion of family workers and trainees reflects a lower labour force participation rate among youth and a lengthening of schooling.

According to INSAE's most recent surveys, covering 2006 and 2007, the main features of the labour market are:

● stability of the informal sector's employment share (95.6 per cent of the market in 2006 compared with 95.2 per cent in 2007);

Table 5.5: Distribution (%) of working population between informal and formal sectors, by professional status, Benin, 2002

Professional status	Informal sector	Formal sector	Share of working population
Total	95.1	4.9	100
Employer	91.7	8.3	1.6
Own-account	98.8	1.2	70.2
Permanent contract	20.0	80.0	3.6
Temporary contract	60.2	39.8	1.9
Cooperative member	84.7	15.3	0.2
Family workers	99.4	0.6	17.0
Trainee	97.4	2.6	5.2
Other	92.4	7.6	0.3

Source: INSAE. RGPH3, 2002.

- the increase in administrative jobs, from 1.9 per cent of the job market in 2006 to 2.9 per cent in 2007 because of new hires;

- stability of the employment share of state enterprises (1.1 per cent in 2006, 1 per cent in 2007);

- loss of jobs in private companies in the formal sector (1.1 per cent of the market in 2006 compared with 0.2 per cent in 2007);

- increase in jobs in associations (non-governmental organizations and civil society) (0.4 per cent of the market in 2006, 0.7 per cent in 2007).

The (official) unemployment rate as defined by the International Labour Office (ILO) fluctuates between 1 and 3 per cent, with an appreciable drop in 2006–07 mainly because of the opening of large public works, a major recruitment drive for teachers, and the enrolment of unemployed graduates into military service. However, the most recent available under-employment rates were 53.2 in 2006 and 29 per cent in 2007.

Despite longer schooling, the working population in Benin remains poorly educated: 68.5 per cent of the working population have no schooling (47 per cent in urban areas and 80 per cent in rural areas), 18.8 per cent have received only primary schooling; 10.3 per cent secondary schooling; and 1.3 per cent higher education (table 5.6). More men than women have some education – 41 per cent of men compared with 22 per cent of women. Those working in the informal sector are more likely to have no education than those in the formal sector; 85 per cent of farmers and 74 per cent of those in trade have no education. Among non-agricultural labourers and artisans, 34.2 per cent have received no schooling, 44 per cent have attended only primary school, and 20.5 per cent have secondary-level schooling. High per-

Table 5.6: Distribution (%) of working population by education levels and professional status, Benin, 2002

Professional status	Primary schooling	Secondary schooling	Tertiary schooling	No schooling	Undeclared
Total	18.8	10.3	1.3	68.5	1.1
Employer	18.4	14.2	3.4	62.5	1.6
Own-account	18.4	8.9	0.3	71.4	1
Permanent contract	13.3	56.2	21.3	6.6	2.6
Temporary contract	24	41.1	9.8	23.6	1.5
Cooperative member	20	16.2	2.7	59.8	1.4
Family workers	11.3	1.5	0	86	1.1
Trainee	51.4	13.7	0.1	33.9	1
Other	20.3	12.7	2.3	63.3	1.5

Source: INSAE. RGPH3, 2002.

centages of employers (62.5 per cent), own-account workers (71.4 per cent), and family workers (86 per cent) have received no formal education. Most people working in scientific professions and administration have a secondary education (58 per cent). There is, therefore, high potential demand for capacity-building in education at all levels to increase productivity.

5.6   GENERAL EQUILIBRIUM ANALYSIS OF THE IMPACT OF AGRICULTURAL TRADE ON JOBS

A general equilibrium model is used in this section to assess the effects of agricultural trade on jobs. This method of analysis has been chosen because computable general equilibrium (CGE) models have several structural advantages. The first is their ability to capture and integrate – data permitting – a sufficiently broad cross-section of economic activity. The second is that they are better suited to performing *ex ante* analysis. The third is that micro-economic behaviour of underlying agents can be specified, taking into account heterogeneity among agents and equilibrium constraints. The usefulness and relevance of CGE modelling to this subject have been demonstrated by many recent assessments on the effect of trade liberalization on diverse economies.

5.6.1 Methodology

The methodology involves conducting and analysing simulations based on a CGE model applied to data from the 2007 Integrated Modular Survey on Household Living Standards (EMICOV),[10] in order to calculate poverty indicators. The CGE model used in this survey draws mainly on the model developed by the Partnership for Economic Policy (PEP-1-1).[11]

5.6.1.1 The model

A detailed description of the model and its main blocs of equations can be found in the annex (A5.8). The model divides the Benin economy into:

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[10] This survey was conducted by the Institut National de l'Analyse Economique et de la Statistique (INSAE). The Integrated Modular Survey is a national survey that includes several modules pertaining to the living standards of households, including employment and unemployment. In theory, the «employment» module is annual. In practice, however, its frequency can vary from every two to three years. The survey uses standard ILO concepts. It is based on a random sample of 18,000 households identified by stratified sampling in 77 communes in Benin. The most recent survey was carried out in 2010, but the findings are not yet available.

[11] The PEP Standard Computable General Equilibrium Model Single Country, Static Version PEP. Available at: http://www.pep-net.org/programs/mpia/pep-standard-cge-models/pep-1-1-single-country-static-version/.

- 17 production sectors: food agriculture, industrial and export agriculture, other agriculture, agri-food industry, artisanal agri-food, cotton ginning, modern textile industry, artisanal textile industry, water and electricity, other modern industries, other artisanal industries, other services, transport and communications, banking and commerce, education, health, and other public administration;

- four categories of households: urban male-headed household, rural male-headed household, urban female-headed household, and rural female-headed household.

The choice made in categorizing households reflects the data available. More detailed information would have allowed us to take more adequate account of gender. However, given the disaggregation of income sources and types of expenditure, the approach chosen provides fairly accurate details on gender. Sectors with many women were identified using the General Company Survey (Recensement Général des Entreprises). They are artisanal agri-food, artisanal textile industry, and other artisanal industries.

The model also identifies six types of taxation (i.e., tax on production, VAT, indirect taxes, direct taxes, import duties, and export duties) that are part of public income paid into the government's accounts.

The model distinguishes between skilled workers (with at least the school-leaving certificate, Brevet d'Etude du Premier Cycle) and unskilled workers (level below the school-leaving certificate).

The model goes beyond the standard labour-market assumption in CGE modelling of full employment. It incorporates an unemployment rate for each type of worker (skilled and unskilled) based on Savard and Adjovi (1998).

5.6.1.2 Data

Benin has a fairly long tradition in using CGE models and creating social accounting matrices. The data used for this study are essentially drawn from national sources. The social accounting matrix (SAM) used in this study was developed by INSAE for 2003.

CGE models also use other parameters, in particular: income elasticity of product demand, Frisch parameters, marginal propensity to save, substitution elasticity between capital and labour, elasticity of substitution between imported and local goods, transformation elasticity between external sales (exports) and domestic sales, and elasticity of external demand. These parameters are taken from previous models designed for Benin, from literature on CGE models, and from empirical studies of other developing economies.[12]

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[12] Annabi et al. (2006) provide details on CGE parameters.

Table 5.7:   Distribution (%) of factor income by type of household, Benin, 2003

	Unskilled labour	**Skilled labour**	**Capital**
Urban	31.74	62.65	38.55
Rural	68.26	37.35	61.45
Total	100.00	100.00	100.00

Source: Benin social accounting matrix 2003

Finally, poverty indicators require knowledge of income and expenditure flows in households covered by the survey. This study uses data from the EMICOV study.[13]

5.6.2 Characteristics of households and sectors

Before the simulations are analysed, the employment and income characteristics of households and the sectoral use of factors are studied using the social accounting matrix for Benin in 2003. This sheds light on how these variables will behave under the test conditions of the simulation.

5.6.2.1 Household income source

Sources of income differ widely between rural and urban locations (table 5.7). While urban households provide more skilled labour, those in rural areas provide more un-skilled labour.

Using these findings, we expect impacts on skilled workers to occur mostly in the urban areas. Conversely, it is the rural areas that bear the brunt of impacts on unskilled work. Regarding capital, it is generally rural populations that are the main owners of this factor of production. However, this needs to be put into context because the social accounting matrix does not isolate land as a factor; instead, land is considered as capital.

5.6.2.2 Use of factors by sector

The productive sectors use factors of production (mainly capital and labour). The sectors can be described in terms of the proportions of these different factors of production that are used (table 5.8). A general analysis of all productive sectors shows the following:

- There is little wage employment in the agricultural sector because the return to capital dominates this sector (98.83 per cent on average).

- The service sectors (transport and communication, banking) and industrial sectors (other modern industries, modern textiles, agri-food) rely most on capital.

- The non-tradable service sectors such as education, public health, and adminis-tration are the largest users of unskilled labour (85 per cent of production).

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[13] Enquête Modulaire Intégré sur les Conditions de Vie des Ménages (Integrated Modular Survey on Household Living Standards).

Table 5.8:   Distribution (%) of factor income by sector, Benin, 2003

	Unskilled work	**Skilled work**	**Capital**
Food agriculture	0.95	0.05	99.00
Industrial agriculture	2.01	0.10	97.88
Other agriculture	0.37	0.02	99.61
Agri-food industry	29.63	5.43	64.95
Artisanal agri-food	4.95	0.91	94.14
Cotton ginning	10.18	1.86	87.95
Modern textile industry	36.56	6.67	56.77
Craft textile industry	4.34	0.79	94.87
Water and electricity	9.59	6.52	83.90
Other modern industries	36.78	6.74	56.48
Other artisanal industries	20.31	3.72	75.97
Other services	8.53	8.34	83.13
Transport and communication	26.39	10.71	62.90
Banking	9.64	25.07	65.29
Education	85.00	15.00	0.00
Health	85.00	15.00	0.00
Public administration	85.00	15.00	0.00
Total	**13.56**	**5.77**	**80.68**

Source: Benin social accounting matrix 2003.

5.6.3 Analysis of simulations

Current negotiations and the government's trade policy adjustments and reforms could have considerable effects on the agricultural sector, foreign trade, and the distribution of income and jobs. Simulations were undertaken to study these different effects. They consider the following measures:

1.   the signing of EPAs with the EU: complete removal of customs duties on imports from the EU;

2.   prohibition on the export of cottonseed: discontinuation of cottonseed exports;

3.   establishment of the ECOWAS Common External Tariff;

4.   import subsidies via tax relief during economic crises: removal of customs duties on agricultural products.

5.6.3.1 EPA trade provisions

The total or partial removal of customs duties on products originating in Europe should in principle increase imports from EU countries to the detriment of other countries and domestic supply. Therefore, signing an EPA without accompanying measures could jeopardize some Beninese companies exposed to competition from EU products. Under these circumstances, the risks of company closures could reduce the number of jobs and wage levels.

Effects on production

- Removal of customs duties on products of EU origin is not beneficial to Benin's producers; it causes GDP to drop by 3.01 per cent. This trend is more marked in the sectors most vulnerable to competition from European products, particularly the industrial sectors. In fact, the "other modern industries" sector, modern textile industries, and the agri-food industry are the most affected, with reductions of 11.30, 2.63 and 1.73 per cent, respectively. The impact on other agricultural-related sectors is relatively weak, well below 1 per cent (see annex table A5.1).

- The administrative sectors, export sectors (export agriculture and cotton ginning), and artisanal sectors are far less vulnerable to European competition, and they generally experience growth. This is the case with the three administrative sectors, with rates above 4 per cent; ginning, at 1.74 per cent; and water and electricity, at 1.53 per cent. We can therefore conclude at this juncture that the EPA will not adversely affect export-oriented industries (see annex table A5.1).

Effects on foreign trade

- The developments observed within productive sectors are due to import substitution, particularly by imports from the EU. Value of total imports rises by 1.39 per cent (see annex table A5.2). The removal of customs duties only covers imports from the EU, which benefits from increased volumes (+20.62 per cent). Imports from other countries drop by more than 21 per cent.

- In this model the current account balance is assumed to be fixed. The net increase in imports leads to a rise in exports (+1.57 per cent) (see annex table A5.3).

Effects on income and household consumption expenditure

- Nominal income of all agents (i.e., government, firms, and households) decreases under this scenario (see annex table A5.4). The largest drop (minus 32.12 per cent) is seen in public income. For the other agents the figures are around minus 3 per cent. For the government this decrease arises from the loss of customs earnings following the removal of customs duties on EU products. For households the drops in income come from the shrinking of wages and earnings on capital. The trends observed in these two categories of earnings arise essentially because of the variation in wage rates and capital yields. However, because of the drop in the consumer price index (CPI), household consumption improves by more than 3 per cent and slightly favours rural homes over urban (see annex table A5.5).

Effects on employment

- As production contracts, wage levels and capital returns adjust downwards. Changes in labour demand differ considerably among sectors. Export-oriented sectors (i.e., industrial agriculture and ginning) and artisanal agri-food (low levels of export) see a considerable rise in demand for labour compared with other sectors (see table 5.9). Demand for labour drops more markedly in other modern industries and other agricultural activities.

Table 5.9:   Simulation results: Impact on employment

Sectors	Variation in employment %			
	EPA	**BanCottonExp**	**CET**	**AgTariffDrop**
Food agriculture	−1.90	−3.83	0.68	−7.30
Industrial agriculture	24.71	−48.38	−10.81	3.73
Other agriculture	−16.40	−0.05	10.02	−24.82
Agri-food industry	-4.94	8.79	2.41	1.77
Artisanal agri-food	12.44	−4.41	-6.40	9.62
Cotton ginning	14.76	−65.65	−6.83	4.62
Modern textile industry	−6.07	6.65	3.14	1.33
Craft textile industry	5.19	−6.15	−2.68	−2.94
Water and electricity	9.57	2.61	-4.42	2.32
Other modern industries	−25.18	2.19	12.68	−0.29
Other artisanal industries	2.15	−2.34	−0.97	−1.86
Other services	−8.42	−0.25	3.81	−1.86
Transport and communication	7.64	−0.83	−3.55	0.04
Banking	−3.29	−0.27	1.47	-0.76
Education	4.09	1.83	−1.89	1.36
Health	5.21	1.66	−2.38	1.28
Public administration	4.15	1.82	−1.92	1.35
Total	**−0.02**	**−0.02**	**−1.92**	**1.35**

Notes:
EPA   EPA trade provisions
BanCottonExp   Ban on cottonseed exports
CET   Common External Tariff
AgTariffDrop   Reduction of customs tariffs on agricultural products

- The increase in unemployment and the reduction in wages (see annex tables A5.6 and A5.7) leads to an overall reduction in the wage bill, which to some extent explains the drop in household expenditure.

Overall, signing EPAs without appropriate accompanying measures will have an adverse effect on production and on public income. It would nevertheless boost household final consumption if price reductions are passed onto consumers. The decrease in production would cause a contraction in employment and a reduction in total earnings from wage drops.

5.6.3.2 Ban on cottonseed exports

The purpose of the ban on cottonseed exports is to assure the mills that process the product (mainly oil mills) secure access to the raw materials they need to operate at full capacity. One can therefore conclude that the purpose of this measure is to: 1) boost production in these factories, and 2) thereby improve the job situation in this sector.

Effects on production

- The simulation results suggest that the objective of increasing production in the vegetable oil sector is met to some extent. The ban results in a rise in output, amounting to 3.76 per cent, for the agri-industry sector that produces edible oils. However, this positive effect is not enough to trigger positive growth in the economy as a whole. In fact, the simulation results show a contraction in GDP. The contraction of overall GDP is essentially caused by the poor performance in the cotton-ginning sector, which produces cottonseed among other products. This sector's value added drops by 11.43 per cent, and industrial agriculture's drops 1.35 per cent (see annex table A5.1) as a result of the export embargo, which discourages the production of cottonseed.

Effects on foreign trade

- The export embargo on cottonseed causes a nearly 10 per cent drop in the value of export sales of ginning products (cotton fibre and cottonseed), contrary to the intention of the policy (see annex table A5.3). One observes a slight reduction in the total value of exports (minus 0.27 per cent), although the exports of some products increase.

- In all, imports drop by 2.57 per cent. This downward trend is observed in all tradeable sectors (see annex table A5.2).

Effects on income and household consumption expenditure

- Following reductions in wages and capital returns, we observe a reduction in the wage bills of both unskilled and skilled labour (see annex tables A5.6 and A5.7). This is followed by a contraction of household and company income. The reduction in the CPI (minus 3.91 per cent) is not enough to induce higher household consumption levels. In fact, consumption drops by 1.31 per cent for urban households and 1.32 per cent for rural households (see annex table A5.5). Given the reductions in household and firm income, government income also drops (see annex table A5.4).

Effects on employment

- Sectors such as agri-industry, modern textiles, and to some extent water and electricity and other modern industries take on more workers to cover their labour needs. The number of additional workers recruited is not enough to offset the job losses seen in other sectors, however. Thus, this simulation shows an increase in unemployment too (see table 5.9).

In sum, the agri-food industry (including edible oils) benefits from the simulated measure. Overall, however, we observe a drop in the rate of economic growth. The dynamism of some sectors of activity is insufficient to maintain employment at its initial level.

5.6.3.3 Common External Tariff

The ECOWAS Common External Tariff is slightly different from the WAEMU tariff that currently applies in Benin. One of its innovations is a rate category called the 5th band, which is taxed at 35 per cent. Generally speaking, the ECOWAS CET should in principle bring greater tariff protection. In fact, the simple and weighted nominal tariff protection rates (NPR) will rise by 35 per cent. This change should affect activity in the productive sectors, foreign trade, and the distribution of income and jobs.

Effects on production
- Overall, implementing the ECOWAS CET boosts production because of the additional protection this measure brings. There is a decrease in imports (-0.50 per cent) (see annex table A5.2) and a very slight improvement in production (0.06 per cent) (see annex table A5.1). The sectors that benefit the most are other modern industries, the modern textile industry, and the agri-food industry.

Effects on foreign trade
- The increase in customs duties that the ECOWAS CET will introduce is generally unfavourable to imports. Although the effect appears to be very slight. Because of the model closure selected for external accounts, exports evolve in the same direction as imports: total export sales drop by 2.19 per cent (see annex table A5.3). This reduction affects all exporting sectors except for industrial agriculture.

Effects on income and household consumption expenditure
- Upward pressure on production leads to a general rise in wage rates (see annex tables A5.6 and A5.7). Together, with an increased demand for labour, this brings a marked improvement in households' nominal income (see annex table A5.4).
- Urban households are the main beneficiaries of the measure (1.54 per cent increase in consumption expenditure for urban households and 1.49 per cent for rural households) (see annex table A5.5). However, these increases are mitigated by inflationary pressure.

Effects on employment
- Each sector reacts differently to the increase in wages. Despite the change, modern industrial sectors, other agriculture, and other service sectors react with increased demand for labour (see table 5.9). This additional demand absorbs or even exceeds the number of workers released in other productive sectors. This measure therefore absorbs some of the unemployed and increased overall wages to workers.

5.6.3.4 Reduction of customs tariffs on agricultural products

The Beninese authorities took the decision to reduce tariffs on agricultural products with a view to reducing the strong inflationary pressure at the time. They expected a slight decrease in customs income because the increased volume of imports was not expected to compensate for the reduction in tariff income. The simulation results

show that, if the measure is implemented effectively, it should meet its target, i.e. bringing down the level of inflation. Indeed, both the CPI and the GDP deflator go down — 3.48 and 3.14 per cent, respectively. Similarly, public income is reduced significantly, by about 5 per cent, because of the drop in income from all taxes.

Effects on production

- The measure involves removing a customs duty on agricultural products only, so the effects on production are mixed. Overall, production levels remain nearly constant. However, production contracts in two of the three agricultural sectors and in several other sectors (see annex table A5.1).

Effects on foreign trade

Reducing customs duties on agricultural products has a positive impact on imports in the food agriculture sector. Imports in the food agriculture, industrial agriculture, and other agriculture sectors grow by 71.50, 15.82, and 32.89 per cent, respectively (see annex table A5.2). However, imports in other sectors drop. In general, there is a slight increase, of 0.39 per cent, in imports. Exports see a greater increase of 1.66 per cent. This increase comes largely from the «other agriculture» sector (see annex table A5.3).

Effects on income and household consumption expenditure

- Reducing customs duties on agricultural products has an adverse overall effect on and workers' wages (see annex tables A5.6 and A5.7). The incomes of government, firms, and households fall (see annex table A5.4). Table A5.5 in the annex shows that the effect on both rural and urban household consumption is negative under this scenario, although the falling CPI mitigates this trend.

Effects on employment

- The effect on employment of reducing customs duties on agricultural products varies across sectors. The biggest drops in demand for labour are in the sector "other agriculture"(minus 24.82 per cent) and food agriculture (minus 7.30 per cent). Demand for labour increases the most in the artisanal agri-food sector (9.62 per cent) but also rises in the sector "industrial agriculture" and the agri-food industry (see table 5.9).

- At the same time, production in the artisanal industries and the "other services" sector respond by reducing demand for labour, which frees workers for employment in other productive sectors. The net effect of this measure is an overall increase in employment.

5.7   CONCLUSIONS

Analysis of the simulation results under four scenarios shows the following regarding agricultural trade and employment:

1. Scenario 1 (EPA with the EU): Output changes across different sectors are mainly due to their replacement by imports, particularly those from the EU. Export-oriented sectors (i.e., industrial agriculture and ginning) but also the artisanal agri-food sector see a considerable rise in demand for labour compared with other sectors.

2. Scenario 2 (Ban on cottonseed exports): Export sales of output from the cotton ginning industry (cotton fibre and cottonseed) fall by about 10 per cent. Sectors such as agri-industry, modern textiles, and to some extent the utilities and also the "other modern industries" sectors take on more workers to meet their increased labour needs.

3. Scenario 3 (Common External Tariff): The increase in customs duties that the ECOWAS CET will introduce is generally unfavourable to imports. The "other modern industries", "other agriculture", and "other services" sectors respond with greater demand for labour;

4. Scenario 4 (Agricultural tariff reduction): Overall, production levels remain nearly constant. However, production contracts in two of the three agricultural sectors and several other sectors. The "other agriculture" sector sees the greatest reduction in demand for labour (about 24 per cent). Demand for labour increases most in the artisanal agri-food sector (9.62 per cent).

Finally, the scenario «Ban on cottonseed exports» creates the greatest increase in labour demand in the agri-food industry sector. Regarding the scenario «EPA with the EU», its positive impact is felt most in the artisanal agri-food and industrial agriculture sectors. The food agriculture and "other agriculture" sectors are the agricultural sectors that benefit most under the scenario «Establishment of the ECOWAS common external tariff». The scenario "Agricultural tariff reduction" increases labour demand more in the artisanal agri-food sector than in other agricultural sectors.

ANNEXES

Table A5.1: Production performance under various trade policy scenarios, Benin

Sectors	Variation in output %			
	EPA	BanCottonExp	CET	AgTariffDrop
Food agriculture	−0.02	−0.05	0.01	−0.07
Industrial agriculture	0.50	−1.35	−0.23	0.08
Other agriculture	−0.07	0.00	0.04	−0.10
Agri-food industry	−1.73	3.76	0.84	0.62
Artisanal agri-food	0.72	−0.34	−0.38	0.55
Cotton ginning	1.74	−11.43	−0.83	0.55
Modern textile industry	−2.63	3.59	1.35	0.58
Craft textile industry	0.27	−0.39	−0.14	−0.15
Water and electricity	1.53	0.57	−0.72	0.37
Other modern industries	−11.30	1.12	5.44	−0.13
Other artisanal industries	0.53	−0.72	−0.23	−0.45
Other services	−1.43	−0.08	0.64	−0.32
Transport and communication	2.82	−0.34	−1.32	0.01
Banking	−1.14	−0.14	0.51	−0.27
Education	4.10	2.39	−1.89	1.36
Health	5.23	2.17	−2.38	1.28
Public administration	4.17	2.38	−1.92	1.36
Total	**−0.014**	**−0.02**	**0.06**	**0.02**

Table A5.2: Import performance under various trade policy scenarios, Benin

Sectors	Variation in imports %			
	EPA	BanCottonExp	CET	AgTariffDrop
Food agriculture	40.06	−8.94	−17.26	71.50
Industrial agriculture	15.25	−43.48	−7.67	15.82
Other agriculture	16.44	−5.35	−8.51	32.89
Agri-food industry	8.02	−3.92	−3.57	−2.01
Modern textile industry	16.53	−3.35	−6.04	−1.62
Water and electricity	−3.27	−1.78	1.57	−1.21
Other modern industries	−3.17	−0.97	1.02	−2.01
Other services	−19.85	−5.70	10.37	−6.07
Transport and communication	−9.54	−5.63	4.77	−3.97
Total	**1.39**	**−2.57**	**−0.50**	**0.39**

Notes:
EPA   EPA trade provisions
BanCottonExp   Ban on cottonseed exports
CET   Common External Tariff
AgTariffDrop   Reduction of customs tariffs on agricultural products

Table A5.3: Exports

Sectors	Variation in exports %			
	EPA	**BanCottonExp**	**CET**	**AgTariffDrop**
Food agriculture	2.87	3.86	−1.27	4.82
Industrial agriculture	−1.34	22.57	0.68	0.11
Other agriculture	9.64	2.28	−4.71	14.09
Agri-food industry	5.26	4.06	−2.41	1.25
Artisanal agri–food	3.07	4.22	−1.44	3.81
Cotton ginning	1.86	−9.92	−0.89	0.57
Modern textile industry	9.20	3.48	−4.01	0.95
Other modern industries	7.27	1.20	−3.15	0.70
Other artisanal industries	10.10	1.28	−4.41	1.06
Other services	6.66	2.04	−2.90	1.94
Transport and Communication	6.12	1.81	−2.77	1.47
Total	**1.57**	**−0.27**	**−2.19**	**1.66**

Table A5.4: Income

Sectors	Variation in income %			
	EPA	**BanCottonExp**	**CET**	**AgTariffDrop**
Government	−32.12	−0.81	15.67	−5.49
Firms	−3.84	−3.95	1.86	−3.49
Households	−3.13	−2.00	10.45	−3.13

Table A5.5: Consumption

Sectors	Variation in consumption %			
	EPA	**BanCottonExp**	**CET**	**AgTariffDrop**
Urban	3.49	−1.31	1.54	−3.14
Rural	3.55	−1.32	1.49	−3.13
Total	**3.53**	**−1.31**	**1.54**	**−3.13**

Notes:
EPA   EPA trade provisions
BanCottonExp   Ban on cottonseed exports
CET   Common External Tariff
AgTariffDrop   Reduction of customs tariffs on agricultural products

Table A5.6: Wages of unskilled labour

Sectors	Variation in wages %			
	EPA	BanCottonExp	CET	AgTariffDrop
Food agriculture	–2.08	–3.83	–0.96	1.61
Industrial agriculture	24.48	–48.38	–12.27	–7.34
Other agriculture	–16.56	–0.05	8.23	–2.01
Agri-food industry	–5.52	8.78	0.92	–24.86
Artisanal agri–food	11.75	–4.42	–7.76	3.68
Cotton ginning	14.06	–65.65	–8.18	–3.09
Modern textile industry	–6.64	6.64	1.64	1.13
Craft textile industry	4.55	–6.15	–4.09	1.18
Water and electricity	7.84	2.59	–5.40	1.21
Other modern industries	–25.64	2.18	11.05	–2.35
Other artisanal industries	1.53	–2.35	–2.41	–0.45
Other services	–10.19	–0.28	2.90	–1.48
Transport and communication	6.42	–0.84	–4.73	1.21
Banking	–5.99	–0.31	0.98	1.91
Education	3.47	1.82	–3.32	4.46
Health	4.59	1.65	–3.80	–0.25
Public administration	3.54	1.81	–3.35	9.45
Total	**–1.52**	**–2.13**	**0.76**	**–1.41**

Table A5.7: Wages of skilled labour

Sectors	Variation in wages %			
	EPA	BanCottonExp	CET	AgTariffDrop
Food agriculture	1.80	–3.78	0.68	2.63
Industrial agriculture	29.41	–48.35	–10.81	–6.42
Other agriculture	–13.25	0.01	10.02	–1.03
Agri-food industry	–1.77	8.85	2.41	–24.11
Artisanal agri-food	16.19	–4.37	–6.40	4.72
Cotton ginning	18.59	–65.63	–6.83	–2.12
Modern textile industry	–2.93	6.70	3.14	2.14
Craft textile industry	8.70	–6.10	–2.68	2.19
Water and electricity	12.12	2.65	–4.42	2.22
Other modern industries	–22.68	2.24	12.68	–1.37
Other artisanal industries	5.56	–2.29	–0.97	0.55
Other services	–6.62	–0.22	3.81	–0.49
Transport and communication	10.64	–0.79	–3.55	2.22
Banking	–2.26	–0.26	1.47	2.93

Table A5.7: Wages of skilled labour *(continued)*

	Variation in wages %			
Sectors	**EPA**	**BanCottonExp**	**CET**	**AgTariffDrop**
Education	7.58	1.88	−1.89	5.50
Health	8.74	1.71	−2.38	0.75
Public administration	7.64	1.87	−1.92	10.54
Total	**−3.75**	**−2.16**	**1.79**	**−1.99**

Notes:
EPA	EPA trade provisions
BanCottonExp	Ban on cottonseed exports
CET	Common External Tariff
AgTariffDrop	Reduction of customs tariffs on agricultural products

A5.8:   The Benin CGE model

The CGE model used for the simulations in this study is an adaptation of the PEP–1-1 model, which has been developed and fully documented by the Partnership for Economic Policy (http://www.pep-net.org/). This section contains a description of the Benin CGE model's main equations. This description considers the main blocs of CGE models: production–employment, income–demand, foreign trade, and price and closure. The indices used are *i* for goods, *j* for sectors, *h* for household types and *tr* for tradeable goods.

Production

A distinction is drawn between production in the administrative sector and in non-administrative sectors. For these two categories, production is represented by a Leontief-type function relating value added and intermediate consumption:

$$VA_j = v_j XST_j$$

and

$$CI_j = io_j XST_j$$

where:

CI_j = total intermediate consumption j
VA_j = value added of j
XST_j = aggregated sectoral production
io_j = Leontief coefficient for CI
v_j = Leontief coefficient for VA

The value added of the non-administrative sectors is given as a nested Constant Elasticity of Substitution (CES) function, with a CES function at the first level including the factors "skilled labour" and "unskilled labour" and another CES function at the second level including the factor "composite labour" and capital.

$$VA_j = B_j^{VA} \left[\beta_j^{VA} LDC_j^{-\rho_j^{VA}} + \left(1 - \beta_j^{VA}\right) KD_j^{-\rho_j^{VA}} \right]^{\frac{-1}{\rho_j^{VA}}}$$

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where:

KD_j = sectoral demand for capital by j
LDC_j = sectoral demand for composite labour
β_j^{VA} = distributive parameter
B_j^{VA} = scale parameter of scale
ρ_j^{VA} = CES elasticity parameter

The maximization of profit under the constraint of the value-added function produces optimal demand for labour and capital. Capital is assumed to be specific to each sector.

$$LDC_j = \left[\frac{\beta_j^{VA}}{1 - \beta_j^{VA}} \; \frac{R_j}{WC_j} \right]^{\sigma_j^{VA}}$$

where:

R_j = sectoral return to capital by j
WC_j = sectoral wage rate of composite labour
σ_j^{VA} = CES elasticity parameter

Every production sector uses intermediate inputs. Total intermediate consumption (C_i) of the sector is given by a Leontief function over intermediates C_{ij} consumed by i from each sector j.

Demand and income

Demand is broken down into household demand, government demand, investment demand, and intermediate demand. The household demand functions are derived from utility functions of the LES (Linear Expenditure System) type. Minimal consumption is estimated using estimates of income elasticity and the Frisch parameter.

$$C_{i,h} PC_i = C_{i,h}^{MIN} PC_i + \gamma_{i,h}^{LES} \left(CTH_h - \sum_{i,j} C_{ij,h}^{MIN} PC_{ij} \right)$$

where:

$C_{i,h}$ = consumption of commodity i by the household h
$C_{i,h}^{MIN}$ = minimum consumption of commodity i by the household h
PC_i = price of consumption of composite good i
$\gamma_{i,h}^{LES}$ = share of good i in consumption of household h
CTH_h = total consumption by household h

The government consumes the totality of all categories of administrative goods. Demand for capital investment is fixed in value. Household income comprises the remuneration of the factors, dividends, and transfers received from other agents. Firm earnings comprise a proportion of the earnings on capital and transfers from agents. Finally, government income comes from tax receipts and transfers from other agents.

Prices

International export and import prices considered in the model are exogenous and determined in the world market such that:

$$PM_{tr} = (1 + ttic_{tr} + ttva_{tr})(1 + ttim_{tr})e.PWM_{tr}$$

where:

$ttic_{tr}$ = indirect taxes on consumption

$ttva_{tr}$ = value added taxes

$ttim_{tr}$ = taxes on imports

e = nominal exchange rate

PWM_{tr} = international price of imported goods

$$PE_{tr} = \frac{ePWE_{tr}}{(1 + te_{tr})}$$

where:

te_{tr} = taxes on exports

e = taxes on imports

PWE_{tr} = international price of exported goods

The production price of goods sold locally or for export is the weighted average of local market and export prices:

$$P_{tr} = \frac{(PL_{tr}D_{tr} + PE_{tr}EX_{tr})}{XS_{tr}}$$

where:

PL_{tr} = price of local production

D_{tr} = demand for local goods

PE_{tr} = price of local production

EX_{tr} = demand for local goods

XS_{tr} = total production

The price of composite goods (local and imported) is the weighted average of the prices of the two components:

$$PC_{tr} = \frac{(PD_{tr}D_{tr} + PM_{tr}M_{tr})}{Q_{tr}}$$

where:

PD_{tr} = price of products for local market

D_{tr} = demand for local goods

PM_{tr} = price of imports

M_{tr} = demand for imported goods

Q_{tr} = total demand on the domestic market ($D + M$)

The price index is an index of the cost of value added:

$$PINDEX = \sum_j \delta_j PV_j$$

$$PV_j = \frac{P_j XS_j - \sum_{tr} PC_{tr} DI_{tr,j}}{VA_j}$$

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External trade

External trade is modelled using the Armington (1969) hypothesis for a small open economy. World prices are, therefore, exogenous. To recall, the Armington hypothesis postulates that local products only imperfectly substitute for imported goods. This means that internal demand is for a composite good that is broken down into domestic and imported goods. Demands for imports and domestic goods are derived as a CES function:

$$Q_m = B_m^M \left[\beta_m^M IM_m^{-\rho_m^M} + (1 + \beta_m^M) DD_m^{-\rho_m^M} \right]^{\frac{-1}{\rho_m^M}}$$

where:

Q_m = *demand quantity of composite good m*
IM_m = *import of good m*
DD_m = *domestic demand for local good i*
β_m^M = *distributive parameter*
B_m^M = *parameter of scale*
ρ_m^M = *CES elasticity parameter*

Determining the demand for domestic goods and imports thus depends on the relative prices of the goods and consumer preferences:

$$IM_m = \left[\frac{\beta_m^M}{1 - \beta_m^M} \frac{PD_m}{PM_m} \right]^{\sigma_m^M} DD_m$$

For exports the domestic producer maximizes earnings from domestic and external sales under the constraint of the constant elasticity of transformation (CET) function.

$$XS_{j,x} = B_{j,x}^X \left[\beta_{j,x}^X EX_{j,x}^{\rho_{j,x}^X} + \left(1 - \beta_{j,x}^X\right) DS_{j,x}^{\rho_{j,x}^X} \right]^{\frac{1}{\rho_{j,x}^X}}$$

The trade off between supply one's production on the domestic or export market is a function of the elasticity of transformation, relative prices, and distribution parameters.

$$EX_{j,x} = \left[\frac{1 - \beta_{j,x}^X}{\beta_{j,x}^X} \frac{PE_x}{PL_x} \right]^{\sigma_{j,x}^X} DS_{j,x}$$

Modelling of the labour market

The model does not assume that there is full employment. Following Savard and Adjovi (1998), it incorporates an unemployment rate specific to each type of worker (skilled and unskilled).

$$LS(l) = \sum_j LD_j(l) + Un(l) * LS(l)$$

Unemployment for each type (indexed by *l*) of worker depends on the comparison that the workers make between the current wage rate and the base wage rate.

$$Un(l) = \left({w(l)} \big/ {w_o(l)} \right)^\varepsilon * Uno(l)$$

where:

    l = an index for the type of worker (skilled or unskilled)

    $Un(l)$ = the unemployment rate for worker type l

    $Un(l)$ = the base-period unemployment rate for worker type l

    $w(l)$ = the wage rate for worker type l

    $w(l)$ = the base-period wage rate for worker type l

    ε = the elasticity that measures the sensitivity of unemployment to a change in the wage rate

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