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Abstract

This paper analyzes the effects of reforming the Common Agricultural Policy in the European Union on poverty in Tunisia. The analysis is based on a spatial dynamic general equilibrium model that captures the economies of four regions with their corresponding 10 household categories, 21 activities, three types of labor, and three categories of land. The results of the different simulations suggest a relatively small impact at the macroeconomic level. However, important disparities in terms of economic and poverty impact among the regions are also observed. These results reveal the importance of an depth regional-level analysis compared with the country-level analysis, where the heterogeneity of households in terms of structure of expenditures and incomes, as well as the regional structure of GDP, are not taken into account.

ملخص

تحلل هذه الورقة الآثار المترتبة على إصلاح السياسة الزراعية المشتركة في الاتحاد الأوروبي بشأن الفقر في تونس. و يستند هذا التحليل علي نموذج توازن عام ديناميكي مكاني يتم تطبيقه في اقتصاديات أربعة أقاليم والعناصر التي ترتبط بها وهي 10 فئات منزلية, 21 نشاط, ثلاث نماذج من العمالة و ثلاث فئات من الأراضي الزراعية. وتشير نتائج طرق المحاكاة المختلفة إلى وجود أثر ضئيل نسبيا على مستوى الاقتصاد الكلي. إلا انه لوحظ أن هناك تباينات مهمة بين الأقاليم الأربعة من حيث التأثير الاقتصادي وتأثير الفقر. تكشف هذه النتائج عن أهمية وجود تحليل أعمق علي المستوى الإقليمي بالمقارنة بالتحليل على المستوى القطري الذي لا يأخذ في الاعتبار عدم التجانس بين الفئات المنزلية من حيث هيكل الإنفاق والدخول وكذلك الهيكل الإقليمي للناتج المحلي الإجمالي.

1. Introduction

Despite the declining importance of the agriculture sector in the global economy, multilateral negotiations on agricultural trade are still very contentious. In rich countries, the sector accounts for no more than 1.8% of GDP and about the same share of total employment (Anderson & Martin, 2005). In developing countries, the relative importance of agriculture has been falling, even more rapidly than in the rich countries, from an average of 42% of GDP at the beginning of the 1970s to around 11% at present.

From a developing country perspective, the agricultural negotiations are crucial because the sector provides substantial earnings and plays a key role in meeting development objectives such as poverty alleviation and food security. In Tunisia, the agriculture sector participates by around 10% of GDP and 20% of total employment. Agricultural imports represent about 12% of total imports. Wheat is the most important agricultural import followed by maize, barley, soybean oil and sugar. The European Union (EU) is the first trade partner for Tunisia both for agricultural and non-agricultural products. Against this backdrop, trade between Tunisia and the EU is ruled by the partnership agreement signed in 1995 and fully implemented over the period 1996–2008. However, trade in agricultural and food products is still excluded. Both parties agreed that a new agreement on bilateral agricultural trade liberalization will be conditioned by the progress to be made on the multilateral level within the framework of the World Trade Organization (WTO), particularly under the Doha Development Agenda (DDA), which is currently in a situation of deadlock.

All the same, and since the signing of the first co-operation agreement in 1976, Tunisia has benefited from preferential access for its agricultural exports to the European market. Conversely, Tunisian imports of European agricultural products do not benefit from any privileged treatment compared to the rest of the world. It was only in 2001 that Tunisia agreed to offer the EU an important share of the tariff quota rates (TRQs) schema, set for certain products considered as sensitive by the Tunisian government. These quotas were set as part of the Tunisian commitments in the GATT agreement.

Most particularly while European imports of agricultural products are still governed by the rules of the Common Agriculture Policy (CAP), Tunisia has benefited from preferential access, owing to its privileged trade relations with the countries of Southern Europe. To the extent that export subsidies and domestic support are the most distorted pillars of the CAP, their reforms would have an important impact on international market of agricultural products. In fact, the support provided under these two pillars has led to a decrease in the world prices of the main agricultural products imported by Tunisia[1].

The relatively low level of world prices for many agricultural products (before the recent food crises) brought about three important effects for Tunisia. Since it is structurally dependent upon imports of many agricultural products, Tunisia has benefited from import prices, which are much lower than the real cost that prevailed in a free market. This level of world prices allowed Tunisia to reduce its food bill, which had already been exerting a negative effect on the balance of payments. The second effect is related to the cost of its food subsidies. Despite the relatively low level of international prices for most agricultural products, Tunisia continues to subsidize food consumption for its population. While subsidies have generally decreased since the implementation of the program of structural adjustment in 1986, they continue to weigh negatively on public finances[2]. As for the third effect, there are some explicit costs of the pricing policy adopted in Tunisia for subsidized products. The nominal levels of the administered producer prices for some agricultural products are annually revised

[1] See for instance Goldin and Knudsen (1990) and Poonyth and Sharma (2003).

[2] In 2004, food subsidies represented almost 2% of government expenditures and 0.7% of GDP.

on the basis of international price changes. The stability of world prices at low levels has allowed Tunisia to enjoy administrated production prices that were slightly above nominal world prices. Under these conditions, Tunisia has been able to increase the level of domestic production for these products, ensuring an improvement of its food balance; and contributing to keeping inflation down. Given that 35% of household consumption expenditure is dedicated to food products, keeping the inflation rate at a relatively low level is in itself an important tool in the fight against poverty.

Nonetheless, this situation is not sustainable over the medium to long term for various reasons. The exorbitant cost of the support policy for the agricultural sector in rich countries became the major concern. For the EU, the last expansion to include countries of Central and Eastern Europe represented an important challenge with regard to the additional cost of maintaining the current CAP provisions. Second, reforming agricultural policies in rich countries is a pre-requirement for any progress in the multilateral trade negotiations under the DDA.

Consequently, a potential reform of the CAP under the DDA will affect the Tunisian economy both directly and indirectly. The direct effects stem from the expected rise of the world prices for many agricultural products imported by Tunisia, which would negatively affect the country's balance of payments as well as the level of subsidies paid for food consumption. As for the indirect effects, they derive from the effects of changing relative prices between imported and domestic products on the one hand, and between agricultural products themselves on the other. These two effects would certainly be reinforced by the expected erosion of preferences on the European market. Most generally, any reform of the CAP would certainly affect Tunisia's level of economic activity on one hand and the welfare of its population on the other. In this respect, producers of agricultural products would essentially be affected by changes in production prices and the conditions of access to foreign markets. However, consumers would be affected by changes in consumption prices of the same products. These combined changes will affect the poverty level in the country, which will depend on the depth and the nature of the potential CAP reform. Such impacts would be all the more marked for the rural areas characterized by relatively high levels of poverty, and where the agricultural sector continues to play an important role in the regional economy.

The objective of this paper is to provide an in depth analysis of these issues and to estimate the impact on poverty of several plausible scenarios of CAP's reform, taking into account its latest reform in 2003 and the latest proposal for multilateral agricultural trade liberalization under the DDA. This paper evaluates only the effects of changes in external environment on the Tunisian economy. However, the reform in domestic policies is not in the scope of this study as it was already covered in many previous studies (Chemingui and Dessus, 2001 and 2003, and Chemingui and Thabet, 2001 and 2008).

A spatial dynamic computable general equilibrium (CGE) model is developed for Tunisia with particular attention given to modeling the agriculture as well as household welfare at regional level by decomposing Tunisia into four major regions (North, Center-East, Center-West, and South)[3]. While, applied country CGE models are now widely used in economic policy analysis, spatial CGE models still very rare[4]. This is explainable by their complexity in terms of data requirements and modeling effort. However, these difficulties are more than offset by the advantages that spatial CGE models can offer. They can provide a unique insight into the effects of changes in economic policies or external environment on the macroeconomic situation of an economy as well as its regional patterns of poverty and

[3] Appendix 1 describes the regional patterns in terms of agricultural production and poverty.

[4] See for instance Diao et al. (2005) for an application to Morocco, and Chemingui et al. (2002) for India.

production. By building a spatial CGE model we attempt to reach a good compromise between a bottom-up and a top-down approach while maintaining tractability and manageable data requirements.

The results of the different simulations suggest a relatively small impact at the macroeconomic level for two main reasons. The first is the relatively small contribution of the agriculture sector in the Tunisian economy compared with other developing countries. The second is the low level of price transmission between aboard and domestic market characterizing the Tunisian agricultural sector. However, the impact is much higher at the regional level across Tunisia with relatively asymmetric trends across regions and households. These results reveal the importance of the spatial analysis in comparison with a country approach, where the heterogeneity of households in terms of the structure of expenditures and incomes as well as the regional structure of GDP are not taken into account.

This paper proceeds as follows: the second section presents the features of poverty and agricultural production at the regional level. The third section presents the model and the data used for the quantitative analysis. The fourth quantifies the impact of different reform scenarios of the CAP on the Tunisian economy and poverty, and the last section concludes.

2. 2. Regional Dimensions of Agricultural Production and Poverty

In Tunisia, the extent of poverty and its regional incidence depend on the definition of the poverty line (Lahouel et al., 2005). Two alternative approaches have been used in measuring poverty lines in Tunisia: the first developed by the National Institute of Statistics (NIS), and the second by the World Bank. However, they both concede that core poverty has dropped dramatically since 1980 in both rural and urban areas. According the NIS approach, the incidence of poverty in the country declined from 12.9% in 1980 to only 4.2% in 2000 while according the World Bank, the drop is much higher (from 20.1% to 4.1%) during the same period. Yet, the NIS's estimations show that poverty became higher in urban areas than rural areas, while the World Bank's estimations indicate that poverty became insignificant in urban areas. According the NIS, poverty incidence dropped in rural areas from over 14% in 1980 to only 2.9% in 2000 and declined in smaller proportions in urban areas to reach only 4.9% during the same period. On the other side, the World Bank's estimations indicate much higher poverty incidence in rural than in urban areas. The rural share of the total poor population varied between 65% and 82% over the period 1980–2000 and accounted for three-fourths of this in the latest survey of 2000. However, the number of the poor declined in both areas. World Bank estimations also decline if poverty incidence is assessed on the basis of an upper poverty line [5] (see Table 1).

Moreover, and using both approaches, the results of household surveys show that poverty is even more heterogeneous across regions in Tunisia. In 2000, poverty is highly concentrated in the Center-West (see Table 2).

The results of farms structure surveys (Ministry of Agriculture, 1996 and 2001) show that poor rural households engaged in agricultural production activities typically have access to land, but their land holdings are small, rarely irrigated, and often exhibit low productivity, especially in rain-fed areas. However, the urban poor are mostly wage earners in low-skill occupations (NIS, 2003). Over the period 1990–1995, the incidence of poverty increased in agriculture, fishing and construction sectors but fell in tourism and commercial activities. In 2000, the poorest households remain concentrated in the construction and agricultural sectors and the lowest level of expenditures concerns households where the heads are unemployed

[5] Upper poverty line includes both the poor as defined by the lower poverty line and the vulnerable defined as those having the same food expenditures as the core poor but somewhat higher expenditures on non-food (Lahouel et al., 2005).

followed by those working in agricultural sector (wage-workers and farmers). Table 3 displays the structure of income by average household across the four regions of the country[6].

Finally and concerning the regional patterns of production and population, Table 4 shows that the North contributes by around 50% to the country's economic activity. However, the two regions Center-East and South contribute less to the Tunisian economy. Population relatively follows the distribution of production of goods and services.

3. The Model

A sub-regional dynamic computable general equilibrium model is used to assess the effects of changes in world price and preferences linked to the CAP reform on the Tunisian economy. This category of models attempts to correct the major shortcomings of partial equilibrium modeling while retaining its strength in dealing with imports at a disaggregated level. It allows for substitution between different sources of a given import (necessary if tariffs and prices on alternative trading partners change differently), between imports and domestic supplies and between different goods in terms of production and demand. Once the latter substitutions are recognized it is also necessary to allow for the fact that domestic non-tradables compete for demand with tradable goods and for the effects of changes in outputs on domestic resources (factors) constraints. Its main advantage lies in the possibility of combining detailed and consistent databases with a theoretically sound framework, able to capture feedback effects and market interdependencies that may either mute or accentuate first-order effects.

The model draws in many ways upon the recent contributions of sub-regional dynamic general equilibrium modeling by Chemingui et al. (2002) and Diao et al. (2005). It includes the four regions composing the Tunisian economy. These regions are linked through commodity markets. Regional savings as well as regional tax revenues, transfers and other government expenditures once aggregated generate the Tunisian-wide macro balances for the investment-savings relation and central government budget. Although goods can freely move across regions, the current version of the model allows inter-regional mobility for some segments of the labor market.

For each region, production is modeled with a nested Constant Elasticity of Substitution (CES). The model assumes perfect competition and a constant returns to scale production function. Output results from two composite goods: intermediate consumption plus value added. The intermediate aggregate is obtained combining all products in fixed proportions (a Leontief structure). The value added is decomposed into two parts: aggregate labor and capital, which includes land. The capital-land bundle is further disaggregated into its basic components: physical capital and different categories of land. As in a vintage capital model, the capital existing at the beginning of each period, or already installed, is distinguished from that resulting from contemporaneous investment (the putty/semi-putty production function). Adjustment possibilities in the demand for factors of production originating from variations in their relative prices are reflected in values of the substitution elasticities, which is usually higher for new than for old capital vintages. Labor and capital incomes are allocated to the different household categories by region. A graphical description of the production function is given in Figure 1.

Demand for private consumption for each household type by region is obtained through maximization of a household utility function following the Extended Linear Expenditure System (ELES). Household utility is a function of consumption for different goods and saving. Once their total economy-wide value is determined, government and investment

[6] Structure of the income by decile and region is shown in Appendix 2.

demands are disaggregated into regional aggregates and then sectoral demands according to fixed coefficient functions. The model implements a two-stage procedure for determining import and export flows and domestic regional supplies and demands. At the first stage, demand for a given good is decomposed into a domestic bundle and an import component. At the second stage, aggregate domestic demand is allocated across the various regions of the model and imports will originate from different trade partners. The supply side is treated in a symmetric fashion; producers allocate production between domestic and foreign markets. At the second stage, aggregate domestic sales are distributed to the various trade partners based on the relative price that may be received by the producer on each market and exports are distributed to the various trade partners based on the relative price received from each market. The import structure, jointly with the export structure, is depicted in Figure 2.

International import and export prices are treated as exogenous. The balance of payments equilibrium is determined by the equality of capital flows (which are exogenous) and the current account.

The migration of labor among regions and regional unemployment are always notoriously difficult to model. According Diao et al. (2005), allowing labor to prefer leisure, as in Diao et al. (1998), or allowing labor to engage in household production activities as in Gaitan (2001) are, in light of data requirements, unsatisfactory alternatives to explain unemployment, given the detail and complexity of the model. Consequently, we take the total employed labor force for each segment as given by the data, and then specify the size of the labor force by segment and region. Farm laborers can seek employment anywhere in the agriculture sector in the same region, but not in non-agriculture activities nor in other regions. Thus, we assume that farmers are always employed and a flexible wage maintains equilibrium between supply of and demand for workers. There is no unemployment in this segment of the labor market. This working assumption could be considered realistic given that farmers are very attached to their land, mostly for cultural reasons. For wage workers in agricultural and non-agricultural activities, different assumptions are considered regarding the mobility of workers. We assume that wage workers in the agricultural sector can seek employment anywhere in the four regions, but not in non-agriculture activities. The same applies for wage workers in non-agriculture sectors. They are assumed to be unable to change their sector of activity but they can migrate across regions. These two categories are remunerated at a fixed real wage indexed to the consumer price index, in order to calculate the unemployment rate for each segment in the base year. Labor supply for each segment is fixed exogenously[7]. Finally, households are assumed to follow the migrants, and adopt the consumption behavior of their new location.

The model considers a large set of policy instruments: production subsidies (by region and activity), indirect taxes on production (by region and activity), other indirect taxes (by region and activity), tariff barriers (by imported product and trading partner), and direct taxes (by household type and region). Finally, the model takes into account the tariff quota policies applied by Tunisia and the European Union on their bilateral agricultural trade[8].

Several macroeconomic constraints are introduced in this model. Capital transfers are exogenous as well, and therefore the trade balance is fixed so as to achieve the balance of payment equilibrium. Second, the model imposes fixed public savings to reflect the government choices and the household income tax schedule shifts in order to achieve the

[7] The trends in labor supply are based on official forecasting (Ministry of Economic Development and International Cooperation, 2006). The forecasts take into account changes in demographic growth as well as external migration.

[8] The modeling follows the approach used in Chemingui and Dessus (2001).

predetermined net government position[9]. Third, investment is determined by the availability of savings, the latter originating from households, enterprises, government, and abroad.

The sequential dynamic path of the model results from this last closure rule, with capital stock being accumulated through past investments (using a permanent inventory type specification with a 5% depreciation rate). A change in the savings volume influences capital accumulation in the following period. Exogenously determined growth rates are assumed for various other factors that affect the growth path of the economy, such as: population and labor supply, and labor and capital productivities. Agents are assumed to be myopic and to base their decisions on static expectations about prices and quantities with no explicit role for the future. The model dynamics are therefore recursive, generating a sequence of static equilibrium.

The model is calibrated using the regional SAM for 2001 built especially for the purpose of this study. Appendix 1 describes the main steps followed in building the regional SAM as well as the other data used for the calibration.

4. Simulations

The performance of the macro economy under the baseline scenario is summarized in Tables 6 to 8. GDP at factor cost grows at 5% over the 14-year period translating to an overall real economic growth of about 98% between 2001 and 2015, due both to factor accumulation and increases in total factor productivity. Exports grow somewhat faster than imports and thus total absorption in the economy decreases by 0.5 percentage points less than GDP. While domestic private and foreign savings as percentage of GDP decrease reached the rates of 1.5% and 0.3% respectively, government savings increase by almost 0.4%. This is partly a consequence of the reduced growth in private investment during the last few years.

The increase of exports comes largely from the industrial and service sectors including agro-industry activities. However, agricultural exports tend to fall in volume. Domestic demand for agricultural products increases (due notably to population pressure), and focuses on subsidized and protected domestic products. Limited production capacity in the agricultural sector encourages producers to devote an increasingly large share of their production to the domestic market, to the detriment of foreign markets. The distortions caused by sector-targeted incentives in agriculture ensure that it remains lacking dynamism. The food industry, largely dependent on it, does not experienced the negative effects as it is based more on competitive domestic agricultural products on one side and on imported products on the other side. Consequently, labor force income rises more rapidly in non-agricultural than agricultural sectors. Due to much slower growth in the rural population, and often a decline for farmers, the real income gap ratio between urban and rural households is expected to narrow, however, thanks notably to the rents gleaned by owners of arable land from the protection and subsidization of agriculture. As a result, consumers of agricultural products are penalized in this baseline scenario. In this respect, consumption of agricultural products climbs by 7% between 2001 and 2015, while that of industrial products falls by almost the same amount.

The simulations analyzed here seek to provide insights into possible effects of these reforms in order to identify the most vulnerable regions as well as populations across the country. The potential impacts of CAP reform on world prices and preferences are based on the most relevant and recent literature devoted to this topic. Many assessments are already made on the impact of multilateral agricultural trade liberalization agreement under the DDA. Most of these studies make use of global computable general equilibrium models. The prior studies in

[9] This closure policy can be understood as a net transfer from households to government (or the reverse). With one representative household, it is considered the most neutral way to assess trade reform. Other closures could be tested (e.g. adjusting VAT for instance) but would bear the risk of introducing new distortions, thereby making it more difficult to conceptually isolate the impact of the trade policy (Chemingui and Dessus, 2004).

this category include Anderson et al. (2005a, 2005b, 2006), Fontagne et al. (2005) and Francois et al. (2006). However, the studies carried out by Polaski (2006), Bouet et al. (2006) and Bchir et al. (2006) have the advantages to integrate, in their analysis, the outcomes of the Hong Kong's ministerial declaration in December 2005. A second category of impact analysis of the DDA have used partial equilibrium models. For the case of wheat, the removal of all distortions (full liberalization) leads to increases of wheat price ranging from 4.8% (FAPRI[10], 2002) to 18.1% (USDA[11], 2001). For sugar, the removal of all trade restrictions (including tariffs, TRQs, and State trading) would increase the world price of sugar by 27% at the end of the nine-year simulation period (FAPRI, 2002). However, when the removal of all production support is included, the world price rise by 48% compared to the base scenario. For the case of dairy products, a full trade liberalization in this sector would induce higher world prices ranging from 13% for nonfat dry milk to 66% for butter (FAPRI, 2002). Finally, the proposed reform of the CAP under the DDA will also lead to preference erosion which will be manifested by lower export prices on the European market for countries such as Tunisia (Tangermann, 1996).

Based on the previous assessments of a trade agreement under the DDA, which involves a profound reform of the CAP, four alternative scenarios are tested in the present study:

1. S1: Reform of the CAP under the DDA: Changes in world import prices as Bchir et al. (2006).
2. S2: Reform of the CAP under the DDA: Changes in world import prices as FAPRI (2002).
3. S3: Reform of the CAP under the DDA: Erosion of preferences on the European Market.
4. S4: Reform of the CAP under the DDA: Changes of world import prices (FAPRI, 2002) combined with erosion of preferences on the European Market.

It is believed that the new domestic prices resulting from changes in world prices would affect terms of trade, which are the primary determinants of real output and incomes in all regions across the country. The resulting changes in relative prices of goods will also exert a powerful influence on wages, labor occupations, and thus on poverty levels. The final outcome for the poor depends on how households spend additional income, whether the items desired can be imported to the local areas in response to increased demand, and, if not, whether increased demand will lead to new local production or simply to price rises. Most of the studies on the impact of multilateral agricultural trade liberalization (e.g. Goldin and Knudsen, 1990; Goldin and Winters, 1992) provide evidence that poor households in developing countries may lose because of their status as net buyers of food and the induced upward effect on world food prices (Chaherli, 2002). The question whether higher world prices for farm and food products will even reach rural households is another important determinant of poverty impact of CAP reform. Hertel and Winters (2005) give the example of households in the South of Mexico, which saw much smaller gains due to the incomplete transmission of world prices to that region of the country. The most important question here is to what extent the international food price rise is transmitted domestically. Tyers and Anderson (1992) found that the elasticity of price transmission is usually less than one for importing countries, especially in the short run where governments intervene at the border in an attempt to cushion the domestic market from international price fluctuations. The poor, landless farm laborers, who are net buyers of food, would only indirectly benefit from agricultural trade liberalization via a rise in the demand for their unskilled farm labor, if the increase in their wage offsets the rise in food prices in rural areas.

[10] The Food and Agricultural Policy Research Institute.

[11] The United States Department of Agriculture.

Understanding the degree to which price signals will be transmitted into domestic prices in Tunisia is a central element of the present analysis. In fact, it has been typical for the government of Tunisia to isolate domestic markets of some agricultural products from world price movements through subsidy mechanisms and quantitative restrictions. Given data limitation, the estimation of the degree of price transmission for the list of agricultural products included in the Tunisian SAM was not possible. However, given the similarity in sectoral policies for some agricultural products between Tunisia and Egypt, we opted for the uses of the elasticities of price transmission estimated for Egypt for the "strategic" agricultural imports and the estimations for Ghana for the rest of agricultural imports (Baffes and Gardner, 2003). Accordingly, for imported agricultural products subject to high tariff and non-tariff restrictions in Tunisia (cereals, vegetables oils, and sugar), an adjustment coefficient of 0.24 implying a three-year adjustment of 60% is assumed[12]. For the remaining agricultural imports, a 0.53 adjustment coefficient and three years for full adjustment process are considered, which reflects more integration in the world economy.

The detailed impacts of the four suggested scenarios are presented in Tables 5 to 8. The macroeconomic effects of the rise in import prices of agricultural products as a result of multilateral agricultural trade liberalization are relatively negligible, as shown in Table 5. Aggregate exports do not change in all simulations. However, imports decreased by 0.2 percentage points for the second and the fourth scenarios. Furthermore, the second and the fourth scenarios lead to very small declines in total absorption. This is to be expected given the relatively low contribution of agricultural sector to the Tunisian economy, which represented only 16% in 2002.

Not surprisingly, almost all agricultural and food products are affected by the changes in international environment even though the extent of change differs from one product to another. The most affected sectors are wheat, other cereals, forages, other agricultures, forestry, fishing, milk, flour milling, canned food products, and sugar. Accordingly, our results show that international price changes positively affect the sectors of wheat, other cereals, forages, other agriculture, forestry, milk, and sugar. However, the remaining sectors are negatively affected. Given that CAP reform will increase import prices for some products, the domestic production of the same commodities will grow as a result of this improvement in producer prices. However, losses in preferences margins will negatively affect exporters sectors, which will be affronted by an increase of sales on domestic market inducing a decline in producer prices (Tables 6 to 8).

The changes in relative producer prices among activities are expected to induce some substitution toward competitive activities. Because of the relatively inelastic supply of most agricultural activities coupled with limited productive resources even though higher production prices cause only a relatively small increase in domestic production compared to the baseline scenario. The case of exported agricultural products can be illustrated by the sector of canned food products, which shows a decline in production level as result of the decrease in export prices.

The growth of imports prices for products imported by Tunisia will encourage farmers to increase their production level coupled with higher consumer prices. Both effects will reduce imports for this category of agricultural commodities. This is the case of wheat and other cereals and most importantly sugar (see Table 6). Turning to exported products, the partial losses of trade preferences on the European market will reduce export prices for these products, which in turn are reflected in producer prices. This category of products will

[12] This means that only 24% of the variability of domestic prices is explained by world prices and 60% of the adjustment process for prices takes place in three years.

experience a decline in their volume of exports. This is the case for olives, vegetables, other fruits, and canned food products.

As far as poverty impact is concerned, the theory is more or less clear but the reality is much more complicated. In this respect it is widely admitted that higher agricultural prices benefit farmers who can produce a marketed surplus, but they hurt the urban poor and rural net buyers. However, in the case of Tunisia, CAP reform will induce higher producer prices for products traditionally imported by Tunisia with high levels of support from the European Union. At the same time, it will reduce producer prices for products traditionally exported by Tunisia to the European market under preferential market access. Thus, the net effect on poverty is ambiguous and will be more uncertain still when the analysis is carried out at sub-regional level where patterns of poverty, sources of income, and agricultural production are much more heterogeneous.

The results of the simulations on regional economies and poverty are described in Tables 9 to 11. They show a significant effect on household welfare across regions and household categories. This is explained by the fact that all households across regions of the country are affected either by changes in consumer or producer prices of agricultural and food products and mostly by both effects at the same time given that regional categories of household are differentiated by income level and not by professional status or occupation of the head. In general, the changes in world food prices impact differently the welfare of household groups according to the share of their respective expenditure on food in their total expenditures but also by the importance of factor incomes received from agricultural activities. So far as the household is generating its income from agriculture, it will be affected by the changes in world prices and preferences corresponding to its income level. At the same time, the household is negatively affected when spending on products with higher domestic prices and it is positively affected when spending on products experiencing a decline in domestic prices. The net effect on every category depends on all these determinants and appropriate indicators should be used to evaluate these different changes on the welfare level by household type across the four region of the country.

The most used indicator of welfare change is the indirect compensation, which measures the required income at base prices to generate the same level of welfare as the base year. Results show that the first simulation generates very small changes in this indicator compared to the situation that prevails with the baseline scenario. Given the low level of increase of import prices of agricultural and food products, which is manifested by an improvement in the income of farmers producing these products on one hand and an increase of consumption prices on the other, the overall effect on households is slightly negative, except for the first decile in region 1 and the four poorest households in region 2. These categories of households do not experience any change in their welfare level. Accordingly, the magnitude of the negative effect as well as the categories of households impacted by this reform varies among the regions. Thus, all households of region 1 are affected by this reform with a higher effect on the richest deciles (5 to 10). However, only the richest households are negatively affected in region 2 but all household categories in region 3 and 4 suffer the same negative impact given that commodities experiencing higher producer and consumer prices are not important activities in these regions compared to region 1 and 2. This negative effect means that affected households need more income than in the baseline to generate the same level of welfare as in the base year. This is the result of higher consumer prices and low elasticity of substitution for these commodities. The second scenario, which reflects a higher increase in import prices for the same products compared to the first scenario, affects the welfare level more markedly in almost all categories given the higher changes in domestic prices. Thus, for the first two regions, more specialized in the production of these products (cereals, wheat, sugar,), the overall effect is positive for the poorest households (decile 1 for region 1 and deciles 1 to 4 for

region 2) as a result of high agricultural income and higher wages for agricultural workers. However, the richest households experience a decline in their welfare level as a result of much higher consumer prices for this category of products. Given that farmers in region 2 and 3 are not specialized in the production of these commodities, the negative effect of this change in import prices is higher than the previous scenario.

In the third scenario, the effect is much more differentiated than the two previous scenarios. Accordingly, the first region experiences a decline in welfare level for the four poorest households (deciles 1 to 4) and a slight improvement for the richest. For the second region, the effect is negative on almost all categories of households but much more pronounced for the poorest. The two last regions' poorest household are specifically negatively affected, while the richest are almost unaffected. The last scenario, which combines both the effect of higher prices for imported commodities and lower prices for exported products, affects negatively all household categories across the various regions.

Overall, the variation in the sign and the level of the effects of the different reforms simulated in this paper are explained by the asymmetric repartition of agricultural income, mainly capital and land income, among all categories of households in the country. Accordingly, the results of the simulations show that the poorest households are relatively less negatively affected than the richest. This can be explained by the fact that the poor households benefit from an increase of real wages and a reduction of unemployment among workers in agricultural sectors while the richest households do not profit from wage increases as most of them do not work in the agricultural sector. However, the effects on the richest households (positive or negative) are in all cases countered by the variations in their incomes generated from agricultural activities. Thus, if domestic prices go up for some products, they will lose in the form of the cost of consumption, but at the same time they will generate additional income from land and capital. The differentiation of households according to their income level and not according to their main occupation explains, in part, the relatively small level of variations in welfare.

Finally, it is important to note that the impact of liberalization on farmers and agricultural wages workers is positive only when the reforms are accompanied with enhanced price transmission, through improved transport and market infrastructure. In Tunisia, a perfect price transmission supposes also a reform in the production pricing policy.

5. Conclusion

The large financial support provided by the European Union to its agricultural sector through domestic support and export subsidies allowed Tunisia to reduce the level of its food bill on one hand and to maintain domestic prices for imported food products at a relatively low level on the other. Over the long run, the CAP proved to be unsustainable and its reform has become both a domestic imperative and an international obligation. A potential reform of the CAP will affect the Tunisian economy, but mainly its agricultural sector and the welfare of its households through higher world prices and erosion of preferences. While the overall effect on the Tunisian economy will be relatively limited due to the low contribution of the agricultural sector, the effects will be asymmetric across Tunisian regions due to the importance of the agricultural sector in regional GDP and as a source of household's incomes.

Simulation results confirm that while Tunisia will face declining terms of trade because it is a net food importer, there will be efficiency gains. The combined effect is likely to be positive for Tunisia as a whole because most estimates show that efficiency gains are larger than terms of trade effects. Moreover, and while it is evident that world price changes can have a significant effect on poverty among producers of specific crops, our results show a relatively moderate effect on welfare levels for the different categories of households. This is the direct

effect of the relatively small number of producers of each crop within the national population in general and within each decile in particular. This result is also explained by the relatively small shares of income spent on each crop by households among the different deciles. However, losses in preferences impacted more negatively on producers and more positively on consumers in Tunisia as a result of declining export prices.

The results at the regional level show an asymmetric impact. The changes in world prices positively impact poor households, specifically small farmers and wage-workers in the agricultural sector based in the North. The higher producer prices increases production in some activities, which in turn improves the level of wages for wage workers, primarily in the North of Tunisia and secondary in the Center-West. However, the richest households across Tunisia are negatively affected by changes in world prices given the higher increase of consumer prices. The reduction of preferences on the European market will negatively affect the welfare of the poorest households and positively affect the welfare of the richest households. The explanation is that poor households mostly work in the agriculture sector in the North while the richest households across regions benefit from the decline of domestic agricultural prices.

Combining the impacts of higher world prices for products imported by Tunisia and a reduction of preferences on the European market will generate a reduction in welfare of all households and across all regions. In fact, the increase of import prices for some products will improve the reallocation of resources across activities and will push the prices to increase. Farmers as well as non-farmers will lose as a result of higher consumer prices given that in Tunisia farmers only produce a small share of their food needs. The trend of the effects in price changes is almost the same for the North and the Center-East regions but the magnitude differs. For the Center-West region, the increase of world prices negatively affects all categories of households given that commodities experiencing higher prices are marginally produced in this region. However, only the richest households benefit from the reduction in trade preferences. The effect on the South region follows the Center-West region for the same reasons given that these two regions are mostly involved in olives and dates production.

While the results at the regional level confirm the overall impact at national level, the regional analysis has the advantage of identifying losers and winners more precisely, which is very relevant in targeting accompanying policies for reducing negative effects among households.

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Figure 1: Nested Production Function

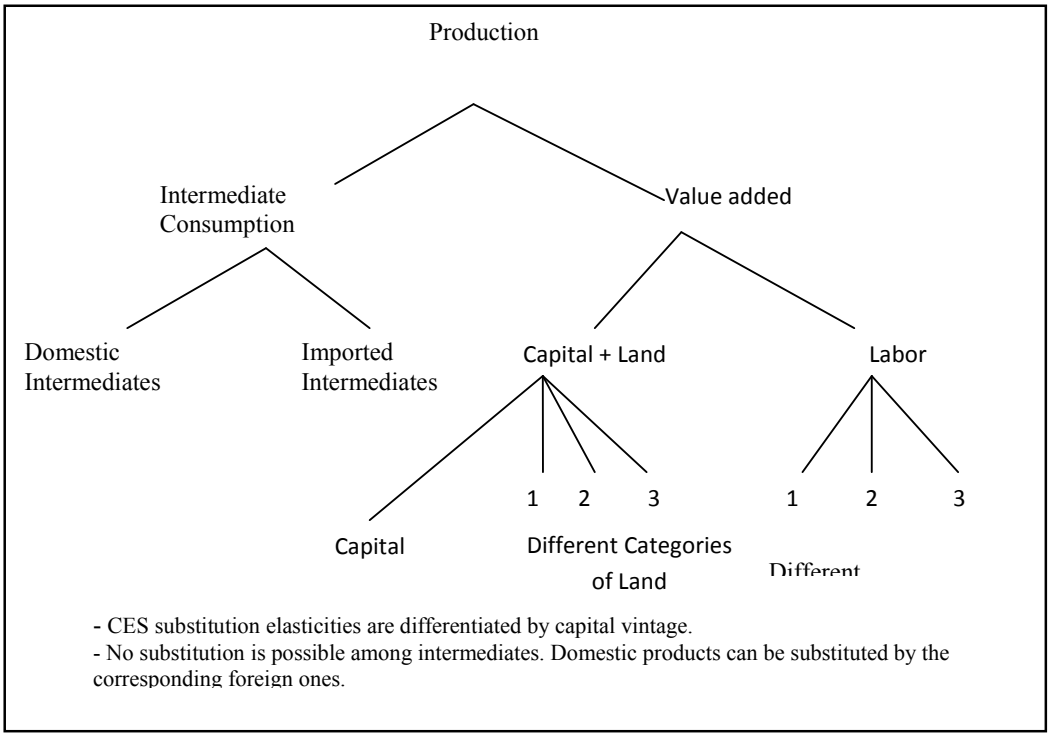

Figure 2: International Trade Structure

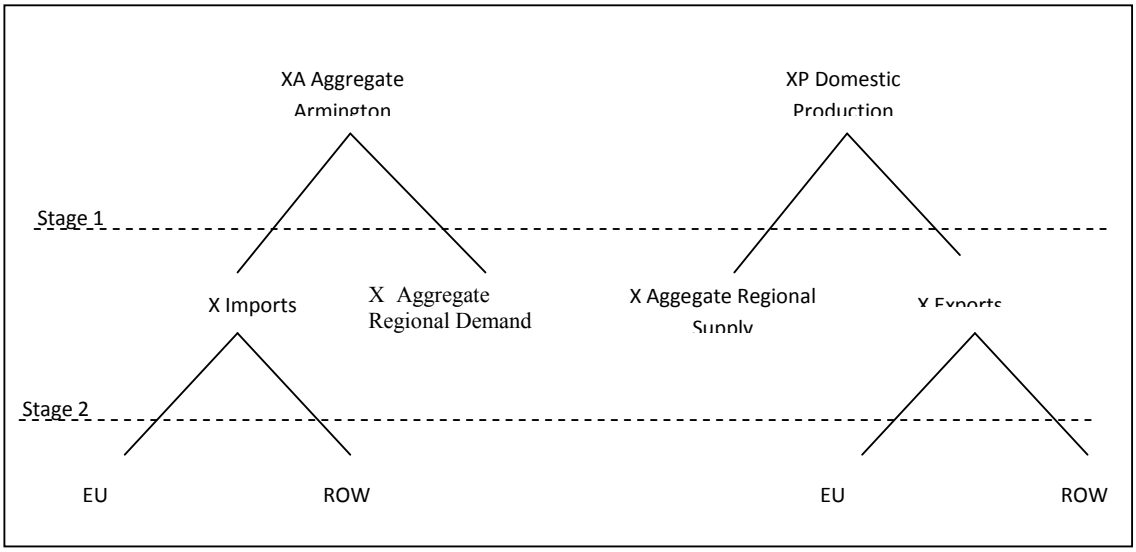

Table 1: Trends in Poverty Incidence in Tunisia

	Lower					Upper				
World Bank Approach	**1980**	**1985**	**1990**	**1995**	**2000**	**1980**	**1985**	**1990**	**1995**	**2000**
Total	20.1	9.6	6.7	8.1	4.1	29.9	19.9	14.1	17.1	9.9
Urban	7.7	4	3	3.2	1.7	18.7	12	8.9	10.1	6.2
Rural	30.1	17.2	12.7	15.8	8.3	38.9	29.2	21.6	28.1	16.1
NIS Approach										
Total	12.9	7.7	6.7	6.2	4.2					
Urban	11.8	8.4	7.3	7.1	4.9					
Rural	14.1	7	5.7	4.9	2.9					

Source: Lahouel et al. (2005)

Table 2: Poor Population and Poverty Incidence by Region in the Year 2000

Region	NIS Approach		World Bank Approach	
	Poor Population (in 1,000 persons)	**Poverty Incidence (in percentage)**	**Poor Population (in 1,000 persons)**	**Poverty Incidence (in percentage)**
North (region 1)	140 (35.2%)	3	115 (29.2%)	2.4
Center West (region 2)	98 (24.6%)	7.1	149 (37.8%)	10.8
Center East (region 3)	50 (12.6%)	2.4	40 (10.2%)	1.9
South (region 4)	110 (27.6%)	7.5	90 (22.8)	6.2
All Tunisia	399	4.2	394	4.1

Note: Figures between parentheses represent the shares in the total number of poor.
Source: Author's calculations using data from NIS (2003) and World Bank (2003).

Table 3: Structure of Income by Representative Household across the Four Regions (%)

Region/Source of Income	Paid Wages from Agriculture	Paid Wages from Non-Agriculture	Equivalent Wages for Family Members (agriculture)	Land Remuneration	Capital Remuneration	Domestic Transfers	Remittances	TOT
North	2.4	43	3.9	1.7	32.9	0.1	15.9	100
Center-East	2.7	42.2	4.2	3	30.8	0.6	16.4	100
Center-West	1.2	42.5	3.9	2.5	32.6	0.5	16.7	100
South	1.4	41.1	4.3	2	32.6	1	17.7	100

Source: Author's calculations.

Table 4: Social and Economic Patterns by Region (%)

	North	Center-East	Center-West	South	Country Total
Population	48.5	14.4	21.8	15.4	100
Number of household	50.9	13.1	22.2	13.8	100
Employed population	50.5	12.9	23.7	12.9	100
Unemployed population	53.1	14.1	18.7	14.1	100
Agricultural production	46.8	16.3	18.6	18.2	100
Non-Agricultural production	49	17.4	10	23.6	100

Source: The Regional Social Accounting Matrix for Tunisia (2001).

Table 5: Macroeconomic Impacts

	INITIAL	BASE	CAP-BO	CAP-PE	CAP-PR	CAP-PP
Macroeconomic Variables						
Absorption	31.8	5.6	5.6	5.5	5.6	5.5
Private consumption	19.7	8.0	8.0	7.9	8.0	7.9
Export	11.2	7.3	7.3	7.3	7.3	7.3
Imports	16.4	5.9	5.9	5.7	5.9	5.7
Real exchange rate	100.0	-0.4	-0.4	-0.4	-0.4	-0.4
Nominal exchange rate	100.0	-0.6	-0.6	-0.8	-0.6	-0.8
As % of GDP						
Investment	27.4	-1.4	-1.4	-1.4	-1.4	-1.4
Private savings	20.7	-1.8	-1.8	-1.8	-1.8	-1.8
Foreign savings	5.4	-0.3	-0.3	-0.3	-0.3	-0.3
Trade deficit	18.9	-0.7	-0.7	-0.7	-0.7	-0.7
Government savings	-0.6	0.8	0.8	0.8	0.8	0.8

Notes: Values of the initial macroeconomic variables are expressed in billion TND.
Source: Author's calculations.

Table 6: Impacts on Sectoral Production at National Level

	INITIAL	BASE	CAP-BO	CAP-PE	CAP-PR	CAP-PP
Wheat	0.4	-0.4	-0.3	0.2	-0.4	0.2
Other cereals	0.1	-5.9	-5.7	-0.1	-5.9	-5.0
Legumes	0.1	10.8	10.8	10.7	10.7	10.6
Forage crops	0.1	-3.6	-3.4	-3.1	-3.4	-2.9
Olives	0.2	3.5	3.5	3.7	3.2	3.4
Other fruits	0.9	4.0	4.0	3.9	4.0	3.9
Vegetables	0.9	4.3	4.3	4.3	4.3	4.3
Other agriculture	0.1	-14.7	-14.7	-13.9	-14.7	-13.5
Livestock	1.6	6.9	6.9	6.9	7.0	6.9
Forestry	0.1	1.2	1.6	2.6	1.6	2.8
Fishing	0.4	11.2	11.2	11.0	10.9	10.7
Meat	1.3	7.0	6.9	6.6	7.0	6.7
Milk and its products	0.5	9.7	10.1	10.1	9.7	10.1
Flour milling & its products	1.3	6.5	6.4	6.0	6.4	5.9
Oils	0.5	3.1	3.2	3.4	2.7	3.0
Canned food products	0.5	1.9	1.9	1.7	1.1	0.9
Sugar and its products	0.3	8.4	8.7	9.3	8.3	9.2
Other food products	1.4	6.9	6.8	6.6	6.8	6.5
Beverages	0.6	8.3	8.3	8.2	8.1	8.0
Other manufacturing and non-manufacturing industries	25.1	6.9	6.9	6.9	6.9	6.9
Services	16.2	6.9	6.9	6.9	6.9	6.9

Notes: Values of the initial sectoral productions are expressed in billion TND.
Source: Author's calculations.

Table7: Impacts on Sectoral Imports at National Level

	INITIAL	BASE	CAP-BO	CAP-PE	CAP-PR	CAP-PP
Wheat	0.311	9. 9	9.6	8.7	9.6	8.5
Other cereals	0.343	5.7	5.7	5.4	5.7	5.3
Legumes	0.01	11.2	11.1	10.8	11.1	10.7
Forage crops	0.141	7.0	6.9	6.5	6.9	6.4
Olives	0.013					
Other fruits	0.022	19.4	19.0	16.4	18.9	16.1
Vegetables	0.014	20.7	20.3	17.7	20.2	17.2
Other agriculture	0.025	14.4	14.1	13.3	14.2	13.2
Livestock	0.007	15.3	15.2	4.5	14.8	4.0
Forestry	0.024	26.2	25.1	21.8	25.4	21.1
Fishing	0.001	7.1	6.9	6.0	7.0	5.9
Meat	0.057	12.6	4.4	3.5	10.7	3.2
Milk and its products	0.034	6.5	-0.2	-1.9	5.1	-2.0
Flour milling & its products	0.188	9.7	9.5	7.7	9.6	7.6
Oils	0.028	10.5	10.3	9.2	10.4	9.2
Canned food products	0.12	7.5	7.1	5.6	7.6	5.8
Sugar and its products	0.176	8.6	7.7	4.7	8.4	4.6
Other food products	0.058	9.0	8.7	7.5	8.9	7.4
Beverages	13.962	7.3	7.2	6.6	7.3	6.5
Other manufacturing and non-manufacturing industries	0.85	5.4	5.4	5.4	5.4	5.4
Services	0.311	6.3	6.3	6.2	6.2	6.2

Note: Values of the initial sectoral imports are expressed in billion TND.
Source: Author's calculations.

Table 8: Impacts on Sectoral Exports at National Level

	INITIAL	BASE	CAP-BO	CAP-PE	CAP-PR	CAP-PP
Wheat	0.013	-10.1	-10.3	-11.0	-11.9	-12.7
Other cereals	0.0008					
Legumes	0.002	-2.6	-2.9	-4.1	-4.5	-5.9
Forage crops	0.0001	-12.0	-12.1	-12.9	-13.6	-14.6
Olives	0.125	-14.2	-14.3	-15.0	-16.1	-16.9
Other fruits	0.006	-8.6	-8.7	-9.3	-10.3	-11.0
Vegetables	0.006	-6.6	-6.7	-7.5	-8.4	-9.3
Other agriculture	0.019	-17.7	-17.4	-18.0	-19.3	-19.6
Livestock	0.0001	2.5	2.3	1.4	0.6	-0.4
Forestry	0.021	-4.8	-4.7	-4.8	-6.3	-6.3
Fishing	0.001	16.5	16.4	16.2	14.4	14.1
Meat	0.007	3.4	3.2	1.9	1.5	0.1
Milk and its products	0.049	9.3	9.6	9.3	7.3	7.2
Flour milling & its products	0.192	2.5	2.1	0.6	0.4	-1.5
Oils	0.118	-3.7	-3.8	-4.1	-5.9	-6.2
Canned food products	0.007	4.9	4.8	4.1	2.1	1.4
Sugar and its products	0.08	10.8	10.7	10.5	8.7	8.4
Other food products	0.029	4.5	4.3	3.1	2.4	1.0
Beverages	8.873	9.4	9.2	8.8	7.2	6.6
Other manufacturing and non-manufacturing industries	1.606	7.7	7.7	7.8	7.8	7.8
Services	0.013	6.6	6.6	6.6	6.6	6.6

Note: Values of the initial sectoral exports are expressed in billion TND.
Source: Author's calculations.

Table 9: Changes in "Indirect Compensation" by Simulation, Decile and Region

	Baseline	S1	S2	S3	S4
			North		
Decile1	0.479	0	0.6	-1.5	-0.8
Decile2	0.673	-0.1	0	-1.2	-1.2
Decile3	0.838	-0.1	-0.2	-1	-1.2
Decile4	1.042	-0.2	-0.4	-0.9	-1.3
Decile5	1.077	-0.4	-1.7	0	-1.8
Decile6	1.399	-0.4	-1.8	0	-1.8
Decile7	1.657	-0.4	-2	0.1	-1.9
Decile8	2.033	-0.4	-2	0.1	-1.9
Decile9	2.853	-0.4	-1.7	0.1	-1.6
Decile10	5.413	-0.3	-1.5	0	-1.4
			Center-West		
Decile1	0.274	-0.4	-0.4	-1.1	-1.1
Decile2	0.351	-0.3	-0.6	-0.9	-1.4
Decile3	0.389	-0.3	-0.8	-0.8	-1.5
Decile4	0.478	-0.2	-0.8	-0.4	-1.5
Decile5	0.508	-0.4	-1.6	0	-1.8
Decile6	0.732	-0.4	-1.9	0	-1.9
Decile7	0.75	-0.5	-2	0	-2
Decile8	0.919	-0.4	-2	0	-2
Decile9	1.271	-0.4	-1.7	-0.1	-1.7
Decile10	2.309	-0.3	-1.6	0	-1.5

	Baseline	S1	S2	S3	S4
			Center-East		
Decile1	0.141	0	0.7	-1.4	-0.7
Decile2	0.192	0	0	-1.6	-1
Decile3	0.236	0	0	-1.3	-1.3
Decile4	0.291	0	0	-1	-1
Decile5	0.294	-0.3	-1.7	-0.3	-1.7
Decile6	0.38	-0.5	-1.6	-0.3	-1.8
Decile7	0.447	-0.2	-1.8	0	-1.8
Decile8	0.548	-0.4	-1.8	0	-1.8
Decile9	0.778	-0.4	-1.5	-0.1	-1.5
Decile10	1.492	-0.3	-1.3	-0.1	-1.5
			South		
Decile1	0.193	-0.5	-0.5	-1	-1
Decile2	0.239	0	-0.4	-0.8	-1.3
Decile3	0.26	-0.4	-0.8	-0.8	-1.2
Decile4	0.316	-0.3	-0.9	-0.6	-1.6
Decile5	0.327	-0.3	-1.5	0	-1.5
Decile6	0.466	-0.4	-1.7	0	-1.9
Decile7	0.471	-0.4	-2.1	0	-2.1
Decile8	0.575	-0.3	-1.9	0	-1.9
Decile9	0.799	-0.4	-1.8	-0.1	-1.8
Decile10	1.458	-0.3	-1.5	0	-1.5

Notes: Ind-Com: Indirect compensation by household and simulation. BASELINE values are measured at first year values. Simulations' values are expressed in annual changes from BASELINE.
Source: Author's calculations.

Table 10: Changes in Sectoral Production in the North and the Center-East

	North					Center-East				
	Baseline	**S1**	**S2**	**S3**	**S4**	**Baseline**	**S1**	**S2**	**S3**	**S4**
Wheat	0.8	0.9	1.4	0.8	1.4					
Other cereals	3.2	3.3	3.9	3.2	4					
Legumes	6.8	6.7	6.4	6.7	6.3	8.9	8.9	9.2	8.9	9.2
Forage crops	0.7	0.8	1.3	0.8	1.4					
Olives	3.2	3.2	3.3	2.8	2.9	2.3	2.4	2.6	2	2.3
Other fruits	2.6	2.5	2.4	2.6	2.4	3.7	3.6	3.5	3.7	3.5
Vegetables	4.4	4.4	4.3	4.4	4.2	4.2	4.2	4.2	4.2	4.2
Other agriculture	-3.9	-3.6	-3.9	-3.7	-2.8	-7.4	-7.1	-6.3	-7.1	-6
Livestock	7.4	7.3	7.3	7.4	7.3	6.7	6.7	6.7	6.8	6.8
Forestry	3.2	3.6	4.5	3.5	4.7	-1.4	-1	0.1	-0.9	0.5
Fishing	10	10	9.9	9.7	9.6	10.4	10.3	10.2	10.1	9.9
Meat	6.7	6.6	6.3	6.7	6.4	6.8	6.7	6.4	6.8	6.5
Milk and its products	8.4	8.8	8.9	8.3	8.8	7.9	8.4	8.4	7.9	8.3
Flour milling & its products	6.5	6.4	6	6.4	6	6.6	6.5	6.3	6.4	6.2
Oils	2.3	2.4	2.6	1.9	2.2	0.1	0.2	0.3	-0.2	0.1
Canned food products	6	6	5.8	5.1	5	5.9	5.8	5.6	5	4.8
Sugar and its products	9.6	9.8	10.4	9.4	10.3	10	10.2	10.9	9.9	10.8
Other food products	6.9	6.8	6.7	6.8	6.6	6.9	6.8	6.6	6.7	6.6
Beverages	6.9	6.9	6.7	6.8	6.6	9.5	9.6	9.6	9.3	9.4
Other manufacturing and non-manufacturing industries	6.7	6.7	6.7	6.7	6.7	6.6	6.6	6.6	6.7	6.7
Services	9	9	8.9	9	8.9	-9.9	-9.9	-9.8	-9.9	-9.9

Note: Figures are expressed in annual percentage changes from initial value.
Source: Author's calculations.

Table 11: Changes in Sectoral Production in the Center-West and the South

	Center-West					South				
	Baseline	**S1**	**S2**	**S3**	**S4**	**Baseline**	**S1**	**S2**	**S3**	**S4**
Wheat	1.2	1.4	2	1.2	2.1					
Other cereals	-6.9	-6.8	-6.3	-6.7	-6.2					
Legumes	14	14	14.2	13.9	14.1	-2.9	-2.8	-2.5	-2.8	-2.4
Forage crops	0.5	0.8	2	0.7	2.2	-7.3	-7.1	-6.3	-7.1	-6
Olives	1.7	1.7	1.9	1.3	1.6	3	3.1	3.4	2.8	3.1
Other fruits	3.5	3.5	3.4	3.5	3.4	4.2	4.2	4.2	4.2	4.2
Vegetables	4.3	4.3	4.3	4.3	4.3	7.8	7.8	7.9	7.8	7.8
Other agriculture	-7.7	-7.4	-6.7	-7.5	-6.5	4.8	5	5.6	4.8	5.6
Livestock	5.9	5.8	5.8	5.9	5.8	5.2	5.2	5.2	5.2	5.2
Forestry	2.8	3.2	4.2	3.1	4.5					
Fishing						9.5	9.5	9.3	9.2	9
Meat	6.6	6.6	6.3	6.6	6.3	6.5	6.5	6.3	6.6	6.3
Milk and its products	8.3	8.7	8.7	8.2	8.7	8	8.4	8.3	7.9	8.3
Flour milling & its products	6.6	6.5	6.2	6.5	6.1	6.3	6.2	5.9	6.2	5.9
Oils	2.2	2.3	2.5	1.8	2.2	5.7	5.8	6.1	5.3	5.7
Canned food products	5.6	5.5	5.3	4.7	4.5	5.8	5.8	5.4	5	4.6
Sugar and its products	9.7	9.9	10.5	9.5	10.4	9.4	9.6	10.2	9.3	10.1
Other food products	6.9	6.8	6.6	6.8	6.6	7.2	7.2	7	7.1	6.9
Beverages	9.3	9.3	9.5	9.1	9.3	7.7	7.6	7.2	7.4	7
Other manufacturing and non-manufacturing industries	6.5	6.5	6.5	6.5	6.6	6.5	6.5	6.6	6.6	6.6
Services	1.3	1.3	1.3	1.3	1.3	8.3	8.3	8.3	8.3	8.3

Note: Figures are expressed in annual percentage changes from initial value.
Source: Author's calculations.