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Comparative Advantages of Selected Syrian agro-food chains.

Policy Memo

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1. This memo presents the most significant results of a study on the **comparative advantages of selected Syrian agro-food chains** carried out from **September 2003 to June 2004** by the National Agricultural Policy Centre with the assistance of the Food and Agricultural Organization of the United Nations.

I. Scope of the study.

2. The study included strategic commodities such as wheat, cotton and olive oil, as well as other agricultural products, which have an increasing importance for the Syrian agriculture, such as tomato, orange and livestock.

3. On one hand the study assessed whether the Syrian agro-food system has a comparative advantage to **supply wheat flour, Fresh Orange Juice Concentrate (FOJC), beef meat, packed milk to the domestic market**.

4. On the other hand the study assed whether Syria could have a comparative advantage in **exporting cotton lint, wheat pasta, filtered olive oil, fresh tomato, tomato pasta, fresh orange to AFTA and European markets**.

II. Current performance of the selected agro-food chains

5. The cost-benefit ratios (CBR) computed for all the chains are below 1, meaning that in 2003, taken as a reference year by the study, **all the chain are making profit under the current market and policy environment**.

6. The most profitable chains are in decreasing order:
- filtered olive oil using centrifuge processing techniques (CBR=0.25),
- fresh packed tomatoes, tomato paste and livestock products (CBR around 0.50),
- lint cotton (0.62),
- fresh packed oranges (around 0.70),
- wheat based products: wheat pasta (0.78) and wheat flour (0.78),
- and FOJC (0.82).

7. However, considering the irrigation technology, **well-pump irrigation is not profitable for the production of wheat** and **network gravitational irrigation is not profitable for the production of hard wheat flour** (CBR=1.11).

8. **Well based irrigation technique has a lower profitability compared to gravitational irrigation and rainfed cropping techniques for cotton and wheat production**. This is mainly due to the utilization of fuel to pump water, which represent 20% to 30% of the total costs for lint and wheat flour production.

9. The **dissemination of centrifugation technology to produce olive oil increases the profitability of olive oil milling** compared to the former hydraulic presses system, reducing the cost/benefit ratio by almost half (CBR equal 0.25 for centrifuge against 0.53 for hydraulic press).

10. The **Syrian ginning industry has a lower technical efficiency than the one recorded in other major cotton producing countries.** The latter produce 38 kg of lint per 100 kg of seed cotton against 32 kg of lint cotton per 100 kg of seed cotton in Syria. This lower throughput results in a CBR of 0.62 instead of 0.56 (10% increase) if the ginning ratio was at 38 Kg of lint cotton per 100 kg of raw cotton.

11. For **FOJC the current low profitability of the business is more constrained by the low juice content of the variety of oranges produced by Syrian farmers** than by the low utilization of the processing capacity. The lower quantity of juice produced, i.e. 60 kg of FOJC from 1 ton of fresh orange instead of the 120 kg that can be obtained with suited variety, increase the CBR by 60 % (current CBR =0.82 instead of 0.50 obtainable with suited variety).

III. Policy impact and comparative advantages.

12. The **Domestic Resources Cost ratio** (DRC) is the indicator used to assess the comparative advantage of the selected products. It points out whether the production of the selected products is still profitable when the price of inputs and outputs are not influenced or distorted by public interventions (subsidy, taxes, tariff, official prices) or by market imperfections (monopolies, markets' segmentation, missing markets). **A DRC above one indicates that the chain does not have a comparative advantage or would not generate profit if it was exposed to the international competition without benefiting from any public interventions and market imperfections.**

13. The results indicate that:

- Three agro-food chains have a **strong comparative advantage**:
  - Filtered olive oil (DRC = 0.5),
  - Fresh packed tomato (DRC=0.5),
  - Tomato paste (DRC=0.5).

- Three chains with a DRC ratio around the unit are **still able to compete against foreign source of supply**:
  - Fresh packed oranges (DRC= 0.8),
  - Packed fresh milk (DRC= 0.8),
  - Wheat pasta (DRC= 1.1).

- Four chains with a DRC ratio far above the unit clearly **do not have a comparative advantage**:
  - beef meat (1.3),
  - lint cotton (DRC=2.5),
  - wheat flour (DRC=2) and,
  - FOJC (DRC= 1.7),

14. The study computed the value of the transfer of resources from the Syrian economy to the benefit of each agro-food chain induced by the current economic policy and market failures. The value of the transfer can be expressed as a ratio of the output produced by each agro-food chain: the Equivalent Producer Subsidy (EPS).

15. **All the agro-food chains benefit from a net transfer of resources from the rest of the economy**, confirming that the current policy setting is favorable to the agro-industrial sector.

16. However **large variation of the EPS is noted across the selected agro-food chains**. The agro-food chains with the highest comparative advantages (fresh tomato, tomato paste, olive oil, fresh oranges) logically benefit from the lowest transfer with an EPS ranging from 10% to 20%. This group is followed by wheat flour, FOCJ and beef meat chains benefiting from a net transfer, which represent from 20% to 40% of the total revenue earned by each of them. With an ESP close to 80% the **lint cotton chain clearly benefit from the highest level of net transfer from the rest of the economy** relatively to the value of its production.

17. A comparison of the aggregate transfers to cotton and to wheat shows that, while cotton planted area represents only 14% of the total cropped area in wheat and cotton, **cotton receives 60% of the total value of the net transfer to cotton and wheat based chains** (i.e. 28 billions SP out of 48 billions SP).

18. The **largest share of the transfer (60%) is due to policy affecting the value of the agro-food chain output (subsidy on cotton, official price for wheat, tariff or ban imposed on importation of agro-food product)**, while the current policy has a limited impact of the value of the intermediate inputs and factors (capital and labor) used in the production process.

19. In the case of cotton the subsidy paid to the producer (40000 SP per ton of lint of cotton) represent 50% of the net transfer received by the chain. In the case of wheat, the official price paid by the GECPT to the farmer induces a transfer that represents 50% of the total transfer received by the chain. For the FOJC industry, the ban imposed on the importation of orange concentrate results in a net transfer of 41000SP per ton of output, which represent 80% of the total value of the transfer to this agro-food chain.

20. A significant source of transfer recorded on the intermediate input side, is the differential of fuel price paid in Syria (7 SP/liter) and the one prevailing on the international market (estimated at 12.2 SP for 2003). This **implicit subsidy of 43% on fuel price increases the transfer of resources to agro-food chains that are highly mechanized at the farm level (wheat) and for the ones that use pump well irrigation**. For systems using well irrigation, this implicit subsidy represents 15% of the total transfer for the production of soft wheat flour and 8% for lint cotton.

21. Under conservative assumptions, the opportunity cost of water utilization has been estimated at 3 SP/m^3 using the production of open field tomato as the most remunerative alternative for farmers in major wheat and cotton producing areas. On this bases, **the lower remuneration of water used for cotton and wheat production correspond to a transfer of resources in favor of cotton and wheat** (i.e. the benefit forgone by not producing tomato). These transfers **represent respectively 30% of the total transfer for network irrigation systems and 50% in the case of pump-well irrigation system.**

22. However it should be noted that **even without accounting for transfers induced by the different level of water use remuneration, cotton lint and wheat flour production** would still benefit from a net transfer from the rest of the economy and **would not have a comparative advantage**.

23. Sensitivity analysis indicates that **yield at farm level and prevailing prices on the world markets are two majors determinant of the DRC levels**. Taking into account yield and word market price patterns of fluctuations for the last decade, it was found that

- **lint cotton production has only a probability of 10% to have a comparative advantage** (i.e. DRC <1 with yield varying from 2.3 to 5.3 ton per ha and cotton lint world price fluctuating from 800 to 2700 USD/ton), while,
- **wheat flour production could not have a comparative advantage for any of the yield levels and world market price configurations recorded during the past ten years** (irrigated wheat yield varying from 3.1 to 4.1 ton ha, rainfed wheat varying from 1.5 to 2 ton ha and wheat world price fluctuating between 100 to 172 USD/ton)

24. Along the same lines FOJC production has only a probability of 30% to have a comparative advantage. On the contrary filtered olive oil, fresh packed tomatoes, tomatoes pasta and fresh packed oranges enjoy a stable comparative advantage with a DRC below the unit in more than 90% of the world prices and yield configuration tested.

IV. Policy implications and issues to be addressed.

25. **For agro-food chain that do not have a comparative advantage the major objective should be to improve the technical efficiency of the resources allocated to the production process**. Priority should be given to improving resources' use efficiency at farm level, since they represent on average 80% of the total costs.

26. **For strategic crop, such as cotton and wheat, research and technology dissemination should aim at improving water use efficiency** either through the improvement of the cultivated varieties (especially for rainfed system) or through the larger adoption of more efficient irrigation technology (drip irrigation).

27. While the benefit induced by technical changes can only be realized in the mid or long term, **in the short run a better allocation of water resources can be triggered by the implementation of new regulatory frameworks** (law, reduction of subsidy, etc.) able to reduce the allocation of well irrigated land for cotton production and to provide incentives for the production of commodity that better remunerate water consumption (such as vegetables and fruits).

28. Even though post-harvest operations generally represent a limited share of total cost, productivity gains should be pursued at this level whenever it is possible. In particular:

- The lower technical efficiency of the ginning throughput should be analyzed and corrected.
- The development of an orange juice concentrate industry should only be considered if the **production of adapted oranges with high juice content** is a viable option for farmers.

29. Syria has a comparative advantage for the production of olive oil, fresh tomato and oranges but **having a comparative advantage does not mean being actually able to export.**

30. Attention should be given **to improve access to foreign market for agro-food chains having a comparative advantage** through the expansion of trade agreements' geographical coverage and preferential concessions to Syrian exports. However, the absorption capacity of increasing agro-food supply from traditional Syrian export outlets might be limited, even if the demand for vegetable and fruit may still increase in the EU with the enlargement to Eastern European countries.

31. Along the same line, it should be underlined that the EU markets are also targeted by other Mediterranean countries competing for the same type of products (tomato, oranges, etc.) and that competition among exporters will be acute. Hence, it is also worth **to assist Syrian exporters to prospect new market, particularly those of the high income and fast growing economies of the Far East**.

32. **Quality and sanitary issues are becoming essential factors for competing on the world market** and securing larger market shares. Efficient grading systems, definition and enforcement of quality and safety standards, mechanisms for certificating origin and ensuring traceability would all be crucial to exploit Syrian agricultural comparative advantages and negotiated trade preferences. In this regard, it is crucial to promote the development of the appropriate regulatory environment and institutional setting as well as of the related human capacities.

33. In the **short term,** the capacity of the agro-food chains having a comparative advantage to better respond to international quality standards can be supported by **reducing the tariff imposed on the importation of packaging devices** (glass jar, plastic boxes, etc.).