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## **Agricultural Support Measures of Advanced Countries and Food Insecurity in Developing Countries**

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### **Abstract**

Many developing nations, especially the least developed countries, are subjected to recurrent spells of food insecurity. In order to understand food insecurity in these countries it is necessary to consider not only immediate or trigger-causes of food crises, but also its underlying or systemic causes. This paper argues that the agricultural support measures of advanced countries may act as a systemic cause for food insecurity in developing countries. While the import of subsidized foods by developing countries and/or the provision of food aid by developed countries are frequently necessary options to address food crises in the short run, they can adversely affect the economic development in the long run. Access to cheap foods can undermine agricultural production and contribute to the recurrence of food shortages. This paper examines these developments and makes proposals to address them.

Keywords: food insecurity, agricultural support, rural development, LDCs

JEL classification: Q17, Q18, O13, O18, O19, F13, F42

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## 1 Introduction

‘There were 815 million people hungry in the developing world in 2002—nine million less than in 1990. Yet in the worst-affected regions—Sub-Saharan Africa and Southern Asia—the number of hungry people has increased by tens of millions’ (UN 2005: 8; similar Pingali and Stringer 2003; FAO 2004). Undernourishment and malnutrition continue to cause premature death and to impede the ability of humans to live up to their potentials and make full use of their capabilities (Sen 1999; Nussbaum 1993). The challenge to ensure appropriate nutrition and combat hunger is both a core objective of development and an indispensable prerequisite for it (Benson 2004).

To combat food insecurity and ensure a sufficient food supply is both a moral imperative and an economic necessity. Given the importance of food security, it may be argued that food is a strategic good and that the supply of food should not be left to market forces, but should rather be ensured by the public sector.<sup>1</sup> In countries that do not have the appropriate mix of and/or the appropriate endowments with factors of production, the decision to attain food self-sufficiency would necessitate relatively far-reaching market interventions. While there may be sound political reasons why countries should attempt to ensure food self-sufficiency, there are compelling economic reasons for why countries should specialize according to their comparative advantage. One’s principle position on this issue will influence one’s approach to assess it; the guiding questions, the analysis itself and the conclusions. Without judging whether the political reason or the economic reason is more powerful, this paper assumes an economic rather than a political approach to the challenge of food security. Thus, it treats food like any other product and assumes that food security can potentially be ensured through market mechanisms.

This paper focuses on the world’s poorest countries, namely the least developed countries (LDCs).<sup>2</sup> Almost all of these countries are located in the regions that are most affected by food insecurity, namely Sub-Saharan Africa and South Asia. The LDCs are strongly affected by food insecurity, but the LDCs are also characterized by a generalized level of extreme poverty.<sup>3</sup> According to poverty estimates based on national accounts the LDCs are already the major locus of extreme poverty in the world, but even according to poverty estimates based on household surveys, the LDCs are estimated to suffer from an absolute increase of extreme poverty in the coming years. By 2015, the target year for the reduction of extreme poverty by half, the LDCs will be, according to both types of poverty estimates, the major locus of extreme poverty in the world. At the turn of the millennium about 50 per cent of the population in these countries were already living in extreme poverty (UNCTAD 2002). Extreme poverty

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<sup>1</sup> If food is treated as a strategic product, what about water, clothing, medicine or oil? Could the same argument not be made for all these products?

<sup>2</sup> The LDCs are a group of developing countries that the United Nations has identified as least developed, owing to low income per capita, weak human resources and fragile economies. At present the group of LDCs includes a total of 50 developing economies.

<sup>3</sup> In accordance with international standards, extreme poverty is measured by a poverty line of one dollar per person per day in 1985 PPP.

and food insecurity are closely related, as the very poor are least able to take precautions against food insecurity and are therefore the first to be confronted by it. The FAO, which collects data for about 227 countries,<sup>4</sup> has recorded 61 developing countries that experienced an acute food crisis during the seven-year period of 1998-2004 (see Table 1). The LDCs were affected more often than other developing countries: of the 61 countries facing food crises 29 were LDCs, and 11 of these had suffered from food crises each year over the seven-year period. Of the other 32 countries only four experienced acute food crises each year over the corresponding period.

While acknowledging that food crises in LDCs have many potential causes, this paper argues that food dilemma in the LDCs is closely related to distortions of the global agricultural markets, which can be attributed to agricultural support policies of advanced countries. Agricultural support measures as defined here include both subsidies and border measures; advanced countries include OECD countries but also advanced non-OECD countries. It is important to extend the analysis beyond OECD countries, as several advanced non-OECD countries also provide considerable support to domestic agriculture.

The paper has four sections. The second section examines the patterns of agricultural specialization and food insecurity, and the third section assesses effects of agricultural support measures on food insecurity. In this context, the paper distinguishes between a trade-centric approach and a development-oriented approach to evaluate agricultural support measures. The fourth section concludes the analysis with a series of policy implications.

## **2 Agricultural specialization and food crises**

Table 1 shows the LDCs' specialization in the agricultural sector and their exposure to food crises, giving, where possible, individual values for the LDCs and for different developing-country groups. The developing countries are divided into three subgroups: namely low-income countries (World Bank definition), low-income, food-deficit countries (FAO definition), and the LDCs (UN definition). These three subgroups have overlapping memberships.

### **2.1 Pattern of agricultural specialization**

Data on agriculture value added as share of GDP were collected for 171 countries. In 95 countries the share of agriculture value added in their GDP exceeds the corresponding average of the developing-country group as a whole. Out of these 95 countries the share of agriculture population exceeds the corresponding average for the developing-country group in 45 nations; and out of these 45 countries the share of agricultural land area exceeds the corresponding average for the developing-country group in 24.

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<sup>4</sup> The term 'countries' as used here includes other territories. The use of this term is not intended to question the legal status of any country, territory, city or area, or its authorities, or its frontiers or boundaries.

Table 1  
Agriculture and food security indicators for LDCs and selected developing-country groups, 1998-2002

|                      | Agriculture             |                          |                    | Food                         |                                 |                              | Food aid                 |                             | Frequency of acute food crises* | Reasons for acute food crises             |
|----------------------|-------------------------|--------------------------|--------------------|------------------------------|---------------------------------|------------------------------|--------------------------|-----------------------------|---------------------------------|---|
|                      | Value added as % of GDP | Population as % of total | Land as % of total | Trade balance (US\$ million) | Trade balance per capita (US\$) | Supply per capita (kcal/day) | Per capita, cereals (kg) | Per capita non-cereals (kg) |                                 |   |
| Developing countries | 11.3                    | 52.0                     | 40.7               | -1958.6                      | -0.4                            | 2651.3                       | 1.6                      | 0.2                         |                                 |   |
| LDCs                 | 29.0                    | 70.0                     | 36.2               | -3631.8                      | -5.4                            | 2111.5                       | 5.3                      | 0.5                         |                                 |   |
| LICs                 | 20.3                    | 55.2                     | 41.4               | 1542.0                       | 0.6                             | 2390.0                       | 2.6                      | 0.3                         |                                 |   |
| LICs, food-deficit   | 19.0                    | 57.4                     | 44.3               | 3229.6                       | 0.8                             | 2595.5                       | 1.9                      | 0.2                         |                                 |   |
| Afghanistan          | 54.1                    | 67.0                     | 58.4               | -97.6                        | -4.5                            | —                            | 10.7                     | 1.3                         | 8.0                             | Civil strife, drought, war                |
| Angola               | 8.2                     | 71.9                     | 46.0               | -287.4                       | -23.0                           | 2008.5                       | 14.8                     | 2.6                         | 8.0                             | Civil strife, IDPs, returnees             |
| Bangladesh           | 24.8                    | 55.7                     | 62.7               | -812.6                       | -5.9                            | 2168.1                       | 5.3                      | 0.0                         | 3.0                             | Floods                                    |
| Benin                | 36.8                    | 54.0                     | 28.4               | -98.9                        | -16.0                           | 2507.5                       | —                        | —                           |                                 |   |
| Bhutan               | 35.9                    | 93.7                     | 12.1               | -3.7                         | -1.8                            | —                            | —                        | —                           |                                 |   |
| Burkina Faso         | 33.8                    | 92.3                     | 36.9               | -98.0                        | -8.3                            | 2393.8                       | 2.3                      | 0.5                         |                                 |   |
| Burundi              | 51.3                    | 90.4                     | 80.9               | 23.2                         | 3.8                             | 1638.2                       | 4.1                      | 1.0                         | 8.0                             | Civil strife, insecurity, IDPs, returnees |
| Cambodia             | 41.0                    | 70.1                     | 29.3               | -77.8                        | -5.9                            | 1998.0                       | 2.1                      | 0.3                         | 2.0                             | Floods                                    |
| Cape Verde           | 11.6                    | 23.0                     | 17.4               | -58.6                        | -134.6                          | 3193.8                       | 107.7                    | 2.7                         | 2.0                             | Drought                                   |
| Central African Rep. | 54.9                    | 72.7                     | 8.3                | -9.9                         | -2.7                            | 1967.3                       | 1.1                      | 0.2                         | 3.0                             | Civil strife, IDPs                        |
| Chad                 | 38.6                    | 75.2                     | 37.8               | 15.5                         | 2.0                             | 2121.9                       | 2.0                      | 0.1                         | 1.0                             | Refugees                                  |
| Comoros              | 39.8                    | 73.6                     | 64.8               | -12.3                        | -17.6                           | 1750.4                       | 7.2                      | 0.0                         |                                 |   |
| Congo, D. R. of      | 53.4                    | 63.2                     | 9.7                | -157.3                       | -3.2                            | 1658.4                       | 0.7                      | 0.2                         | 8.0                             | Civil strife, IDPs                        |
| Djibouti             | 3.8                     | 78.5                     | 56.1               | -62.9                        | -94.5                           | 2128.2                       | 17.6                     | 2.0                         |                                 |   |
| Equatorial Guinea    | 11.8                    | 70.5                     | 11.9               | -2.0                         | -4.2                            | —                            | 1.4                      | 0.6                         |                                 |   |
| Eritrea              | 18.7                    | 77.6                     | 63.5               | -45.2                        | -12.2                           | 1538.4                       | 46.2                     | 4.6                         | 8.0                             | Drought, IDPs, returnees                  |
| Ethiopia             | 44.5                    | 82.4                     | 27.9               | 116.3                        | 1.8                             | 1792.5                       | 12.8                     | 0.4                         | 8.0                             | Drought, IDPs                             |
| Gambia               | 31.2                    | 79.0                     | 61.5               | -50.5                        | -38.7                           | 2266.9                       | 4.0                      | 1.1                         |                                 |   |
| Guinea               | 23.8                    | 83.8                     | 49.7               | -95.6                        | -11.8                           | 2342.8                       | 3.0                      | 0.7                         | 4.0                             | IDPs and refugees                         |
| Guinea-Bissau        | 60.1                    | 82.8                     | 44.7               | 31.9                         | 23.0                            | 2075.8                       | 7.0                      | 2.6                         | 3.0                             |   |
| Haiti                | 26.9                    | 62.3                     | 57.3               | -268.2                       | -33.5                           | 2064.5                       | 16.1                     | 2.1                         | 7.0                             | Civil strife, drought, floods             |
| Kiribati             | 17.2                    | 27.4                     | 53.4               | —                            | —                               | 2854.9                       | —                        | —                           |                                 |   |
| Lao PDR              | 42.1                    | 76.5                     | 7.7                | -17.1                        | -3.2                            | 2261.1                       | 2.9                      | 0.2                         | 2.0                             |   |
| Lesotho              | 17.3                    | 39.2                     | 76.8               | -105.2                       | -59.2                           | 2595.0                       | 6.2                      | 1.2                         | 3.0                             | Adverse weather, drought                  |
| Liberia              | —                       | 67.6                     | 23.3               | -58.2                        | -20.0                           | 2030.0                       | 18.2                     | 4.6                         | 8.0                             | Civil strife, IDPs, shortage of inputs    |

Table 1 (con't)

Agriculture and food security indicators for LDCs and selected developing-country groups, 1998-2002

|                     | Agriculture             |                          |                    | Food                              |                                      |                                   | Food aid                 |                             | Frequency of acute food crises* | Reasons for acute food crises        |
|---------------------|-------------------------|--------------------------|--------------------|-----------------------------------|--------------------------------------|-----------------------------------|--------------------------|-----------------------------|---------------------------------|--------------------------------------|
|                     | Value added as % of GDP | Population as % of total | Land as % of total | Food trade balance (US\$ million) | Food trade balance per capita (US\$) | Food supply per capita (kcal/day) | Per capita, cereals (kg) | Per capita non-cereals (kg) |                                 |                                      |
| Madagascar          | 30.1                    | 74.2                     | 46.9               | 61.5                              | 3.7                                  | 2043.4                            | 1.6                      | 0.8                         | 4.0                             | Drought, cyclones                    |
| Malawi              | 35.7                    | 77.6                     | 34.8               | 34.7                              | 3.1                                  | 2144.9                            | 5.6                      | 0.3                         | 2.0                             | Adverse weather, drought             |
| Maldives            | –                       | 27.1                     | 34.7               | -65.0                             | -223.5                               | 2514.1                            | 11.0                     | –                           |                                 |                                      |
| Mali                | 41.3                    | 81.0                     | 28.0               | -30.8                             | -2.6                                 | 2213.3                            | 0.4                      | 0.1                         |                                 |                                      |
| Mauritania          | 22.6                    | 52.9                     | 38.8               | -139.0                            | -52.7                                | 2757.7                            | 12.4                     | 1.5                         | 3.0                             | Drought                              |
| Mozambique          | 28.0                    | 76.9                     | 60.2               | -148.3                            | -8.3                                 | 1998.9                            | 7.8                      | 0.6                         | 2.0                             | Drought                              |
| Myanmar             | 58.7                    | 70.2                     | 15.9               | 208.9                             | 4.4                                  | 2855.7                            | –                        | 0.0                         |                                 |                                      |
| Nepal               | 40.5                    | 93.0                     | 33.3               | -80.6                             | -3.5                                 | 2406.0                            | 0.4                      | 0.0                         |                                 |                                      |
| Niger               | 40.3                    | 87.7                     | 13.0               | -37.4                             | -3.5                                 | 2135.6                            | 2.1                      | 0.1                         |                                 |                                      |
| Rwanda              | 42.1                    | 90.8                     | 64.9               | -12.2                             | -1.7                                 | 1941.2                            | 13.5                     | 5.7                         | 4.0                             | Drought                              |
| Samoa               | 13.1                    | 34.5                     | 45.1               | -18.4                             | -106.1                               | 2821.5                            | –                        | –                           |                                 |                                      |
| Sao Tome & Principe | 20.5                    | 64.2                     | 53.5               | -2.8                              | -18.4                                | 2328.8                            | 26.0                     | 1.5                         |                                 |                                      |
| Senegal             | 18.1                    | 73.8                     | 41.0               | -361.4                            | -38.5                                | 2270.4                            | 2.1                      | 0.5                         |                                 |                                      |
| Sierra Leone        | 47.6                    | 62.2                     | 38.5               | -110.8                            | -24.9                                | 1940.4                            | 9.5                      | 2.8                         | 8.0                             | Civil strife, IDPs, returnees        |
| Solomon Islands     | –                       | 73.2                     | 4.0                | -13.5                             | -30.6                                | 2238.0                            | –                        | –                           |                                 |                                      |
| Somalia             | –                       | 71.2                     | 69.1               | 12.8                              | 1.4                                  | –                                 | 3.1                      | 0.4                         | 8.0                             | Drought, civil strife                |
| Sudan               | 40.0                    | 61.1                     | 53.4               | -164.3                            | -5.1                                 | 2284.6                            | 4.7                      | 0.8                         | 8.0                             | Civil strife, drought                |
| Tanzania, U.R. of   | 44.8                    | 78.2                     | 42.3               | 70.7                              | 2.0                                  | 3750.6                            | –                        | –                           | 6.0                             | Drought, refugees                    |
| Timor-Leste         | 33.9                    | 81.7                     | 19.3               | -31.7                             | -43.9                                | 2702.4                            | 10.3                     | 1.9                         | 1.0                             | Drought                              |
| Togo                | 39.5                    | 59.7                     | 63.6               | -13.2                             | -2.8                                 | 2307.0                            | 0.8                      | 0.0                         |                                 |                                      |
| Tuvalu              | –                       | 36.0                     | –                  | –                                 | –                                    | –                                 | –                        | –                           |                                 |                                      |
| Uganda              | 37.2                    | 79.0                     | 50.9               | 135.1                             | 5.9                                  | 2333.2                            | 2.5                      | 0.5                         | 8.0                             | Civil strife, IDPs, drought in parts |
| Vanuatu             | 15.8                    | 36.7                     | 13.3               | -9.1                              | -46.2                                | 2559.0                            | 0.1                      | 0.0                         |                                 |                                      |
| Yemen               | 16.3                    | 50.4                     | 33.6               | -600.1                            | -33.3                                | 2047.4                            | 8.0                      | 0.5                         |                                 |                                      |
| Zambia              | 22.4                    | 69.3                     | 46.9               | -39.7                             | -3.9                                 | 1893.1                            | 2.8                      | 0.7                         | 4.0                             | Rain, floods, drought                |

Source: Calculations based on World Bank, World Development Indicators 2003, CD-Rom (for agriculture value added as share of GDP), and Food and Agriculture Organization, online databases (for all other indicators).

Based on the same measures all three sub-groups of the developing-country group also have a strong agricultural specialization. The only notable deviation from this picture is that the group of LDCs has, on average, less agricultural land than the group of developing countries. But the average for the LDC group somewhat distorts the values for individual LDCs. A breakdown shows that while there are LDCs where agricultural land is scarce, there are numerous LDCs where it is not.<sup>5</sup>

In sum, there are 24 countries—including 19 LDCs—with a relatively large share of agriculture value added in GDP, a relatively large share of the agriculture population in the total population, and a relatively large share of agricultural land in total land. Based on these indicators, these countries have a relatively strong specialization in the agriculture and appear to have a comparative advantage in agricultural production. Thus, it would not be an exaggeration to expect these countries to be, at best, net food exporters to the world, or to assume that they are able, at the least, to satisfy the food needs of their own population. Yet 23 out of 24 countries (i.e., 96 per cent) that appear to have a comparative advantage in agricultural production have received food aid during the reference period 1998-2004. By contrast, only 11 out of 36 countries (i.e., 37 per cent) that appear to be comparatively disadvantaged with regard to agricultural production have received food aid over the same period.<sup>6</sup> This paper focuses on countries which have a potential comparative advantage in agriculture and therefore may face competition from other agricultural producers, including those in the advanced countries.

In the group of countries characterized by a relatively strong dependency on food aid only 14 out of 23 countries were net food importers. By contrast, in the group of countries characterized by a relatively low dependence on food aid 29 out of 34 countries (for which food trade data were available) were net food importers. This suggests that the food insecurity situation of a country cannot systematically be linked to its food trade balance. This has important implications as the discussion of food insecurity within the multilateral trading system centers around net food-importing developing countries rather than food insecure countries as such.

It appears somewhat paradoxical that the countries which appear to have a comparative advantage in agricultural production are the very same countries with the greatest exposure to food crises. The situation is particularly pronounced in the least developed countries. On average they have a stronger specialization in agriculture than other developing countries and yet they receive more food aid than other developing countries. In order to understand this situation, it is necessary to examine the causes of food crises.

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<sup>5</sup> It is important to emphasize however that the indicator of agricultural land does not provide any meaningful indication of land quality. The indicator can therefore only be used as a rough proxy for the ability to expand agricultural production.

<sup>6</sup> The countries with an apparent disadvantage in the production of agricultural goods have a relatively low share of agriculture value added in GDP, a relatively small share of the agriculture population in total population and a relatively small share of agriculture land in total land.

## 2.2 Causes of food crises

Table 1 lists reasons-for food crises, wherever provided by FAO. These ‘causes’ of food crises can be broadly grouped into three categories of causes, namely political instability, natural disasters and factors that contribute to high dependency ratios. These causes for food crises are more pronounced in the least developed countries than in other developing countries.

### *Political instability*

Political instability, which may or may not result in armed conflict, is one of the most cited causes for food crises. Political instability and armed conflict can cause displacement of persons, depletion of human capital, destruction of land, decrease of economic activities and/or an unequal distribution of economic output. Many of the least developed countries are affected by conflict. Between 1992 and 2001 the number of LDCs that experienced conflict increased, while the number of other developing countries that experienced conflict decreased. In the 1970s and 1980s about 40 per cent of the LDCs were affected by conflict, but this figure has increased to 50 per cent in 1990-95 and to 58 per cent in 1996-2001 (UNCTAD 2004).

### *Natural disasters*

The second most cited causes for food insecurity are natural disasters, including droughts, floods and storms. Today the LDCs are not only the world’s major centre of humanitarian crises; they are also a major locus of natural disasters. While many natural disasters can neither exclusively nor directly be attributed to policies of LDCs, natural disasters can be exaggerate by practices in LDCs, including a rapid rate of deforestation, which is reflected in low levels of genuine domestic savings. Over the past two decades the LDCs have seen rapid rate of deforestation. By the late 1990s they had a rate of net forest depletion which was equivalent to 2 percent of their GDP; about three times as high as in other developing countries (UNCTAD 2002: 91). There are important differences between the LDCs however. Those that have been characterized by a decrease of poverty have typically seen a lower rate of deforestation and an increase of genuine domestic savings, while those that have been characterised by an increase of poverty have seen a higher rate of deforestation and a decrease of genuine domestic savings.

### *High dependency ratios*

Other causes of food insecurity have to do with factors that contribute to high and increasing dependency ratios. An increasing number of dependants per income earner results from at least four developments, namely higher birth rates, which increase the number of children per household; longer life expectancies, which increase the number of elders per household; the spread of disease, which worsens the ratio of capable income earners to ill persons per household; and political conflict, which has similar effects. A net increase of immigration may also contribute to an increase of the dependency ratio, especially if immigrants are not allowed to work or are not able to find work. Consequently dependency ratios in LDCs are higher than in other developing countries; in 2002 they were 0.862 in the LDCs and 0.582 in other developing countries. The relatively high dependency ratio implies that a relatively large share of



the population in the LDCs do not engage in economically productive activities which may, in turn, explain why a rather small share of total land in the LDCs is used for agriculture.

The previous section has highlighted two facts: Food crises are particularly frequent in the LDCs, and the reasons for food crises are particularly pronounced in the LDCs. There thus appears to be a straightforward explanation for food insecurity, which suggests similarly straightforward, although not necessarily simple, solutions to food insecurity: Countries need to identify the exact cause of food crises and they need to take measures to tackle this cause. But frequently it is even more complicated than that. Factors which appear to be under the control of food-insecure countries frequently are beyond the control of these countries; what may appear to be a cause of a food crisis may sometimes be a consequence of a food crisis; and what may appear to be the sole cause of food crises may be compounded by other, less obvious causes of food crises.<sup>7</sup>

While it is apparent how the outlined factors may contribute to the outbreak of a food crisis, they cannot provide a full understanding of the problem. Why, for example, do countries continue to specialize in certain agricultural goods even though adverse environmental conditions regularly destroy these agricultural goods? Why do these countries not diversify into other types of products that would be less vulnerable to adverse environmental changes? Why do they not at least change production methods to decrease environment-related risks? To answer such questions, the paper proposes a methodological distinction between the causes for food crises, which goes beyond the distinction that has been made so far.

The paper proposes a distinction between relatively obvious trigger causes of food crises, on the one side, and less obvious systemic causes of food crises, on the other. Trigger causes create the short-term changes necessary to actually bring about an outbreak of a food crisis. Systemic causes, by contrast, create the long-term conditions that are conducive to the outbreak of a food crisis. Unlike the trigger causes, which are often of a non-economic nature, systemic causes tend to be of an economic nature. The systemic causes have to do with the economic environment that makes it relatively easy for countries to slip into food crises, while making it relatively difficult for countries to get out of food crises. The paper argues that agricultural support measures of advanced countries can act as a systemic cause of food insecurity in the developing countries.

In order to understand how agricultural support measures of advanced countries can negatively affect food security in developing countries, it is important to distinguish between a trade-centric perspective and a development-oriented perspective. Unlike the development-oriented perspective, the trade-centric perspective suggest that agricultural

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<sup>7</sup> Poverty and hunger may not only be consequences of conflict, high dependency ratios and natural resource depletion; poverty and hunger may also be factors that contribute to conflicts, higher dependency ratios and excessive natural resource use. UNCTAD (2002) has highlighted a complex, over-determined relationship between poverty, environmental degradation and population growth. Furthermore, UNCTAD (2004) has argued that there is not simple, linear relationship between conflict and poverty. Most low-income countries have experienced an economic crisis, which deepens poverty, before they have experienced the outbreak of conflict, which may further exacerbate poverty (see also David 2004). In economic terms: Poor populations tend to have relatively low opportunity costs and they may therefore be more prone to get involved in conflict.

support measures of advanced countries may actually counteract rather than cause food insecurity in developing countries.

The trade-centric perspective, which is based on trade theory, highlights that the import of subsidized foods, like the import of all subsidized products, essentially is a transfer of income from the country which subsidizes the good to the country which imports the subsidized good. Imports of subsidized food, which ensure low levels of consumer prices, can help to discourage an increase of wage rates and thus support the international competitiveness of an economy. Furthermore, imports of subsidized food, which lead to a contraction of the agricultural sector, may allow for scarce resources to be employed in non-agricultural sectors and thus support a more rapid structural transformation of an economy.

The development-oriented perspective, by contrast, is less optimistic about the effects of subsidized food imports on developing economies and more worried about a premature de-agrarianization in these economies. In developing countries, but especially in the least developed countries, the development of the agricultural sector is an important mean to reduce poverty, as the majority of the poor live in rural areas and as their livelihoods directly or indirectly depend on agricultural production. Furthermore, the development of the agricultural sector is an essential mean to stimulate other economic activities. Dual economy theories highlight many vital linkages between the development of the agricultural sector, on the one side, and the development of non-agricultural sectors on the other (Lewis 1954, 1968; Ranis and Fei 1961; Jorgenson 1961). Higher agricultural output, for example, will allow countries to save foreign exchange by reducing food imports but it may even enable countries to increase foreign exchange by rising food exports. Foreign exchange is essential for the poorest countries as it enables them to import capital goods which they could not otherwise afford and make investments which they could not otherwise conceive as possible.

Another way in which agricultural support measures of advanced countries can undermine the development of developing countries is through their effects on wages in the developing countries. Agricultural support measures of advanced countries, similar to an unlimited supply of unskilled workers in developing countries, can help to depress wages in developing countries. While low wages in developing countries can help to increase the competitiveness of these countries in labour-intensive and low-tech sectors, it can discourage a specialization of these countries in more capital-intensive and high-tech sectors. The specialization in labour-intensive rather than capital-intensive, in low-tech rather than high-tech products has far-reaching implications. It influences current production structures, but it also influences future development prospects. This is because this pattern of specialization constrains the propensity of economies to increase productivity levels and ultimately constrains their ability to enlarge production possibilities.

While the development literature has paid some attention to the ways in which an unlimited supply of unskilled labour in developing countries affects the development prospects of developing countries (Lewis 1954; Sachs 2000), recent trade studies have not paid attention to the way in which agricultural support measures of advanced countries affect development prospects of developing countries. These studies have largely focused on short-term implications. They have highlighted likely short-term effects of an elimination of agricultural support measures, but they have not

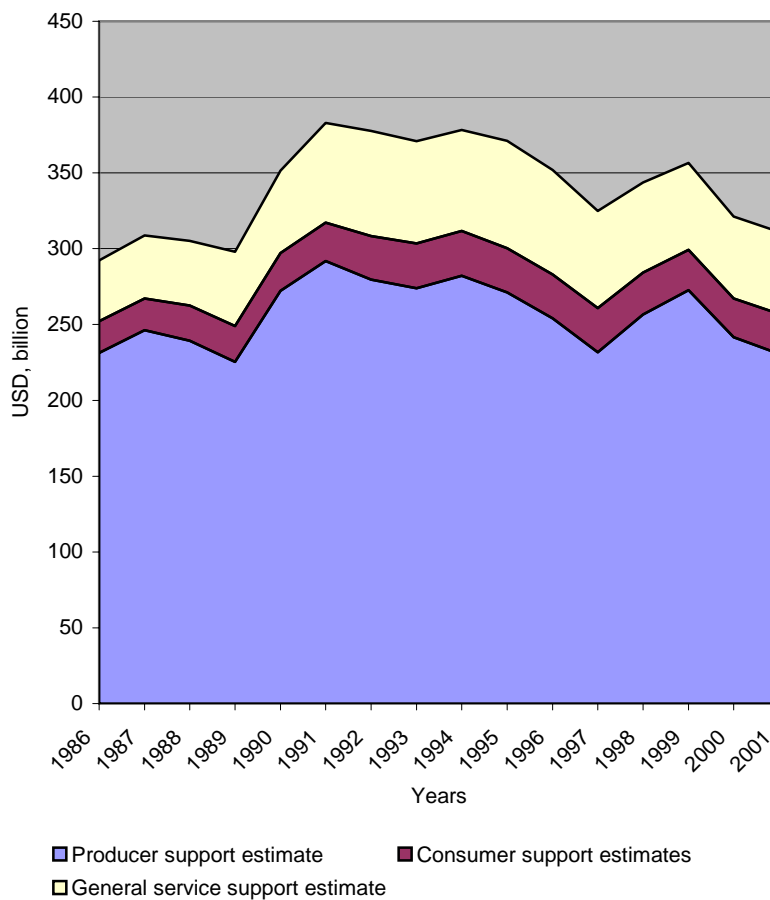
systematically discussed probable long-term effects of an elimination of these support measures. While long-term effects are difficult to quantify, they should not be omitted.

### 3 Agricultural support measures and food insecurity

Agricultural support takes two principle forms: it can be provided in the form of payments, including producer and consumer subsidies, or in form of border measures, including tariff and non-tariff barriers. Tariff barriers are associated with relatively high average tariff rates, relatively high tariff peaks, and tariff escalations. By contrast, non-tariff barriers include import quotas, but also overly complex rules of origin and overly stringent sanitary, phytosanitary and technical product standards. As many non-tariff barriers are difficult to quantify they are not captured in measures of total aggregate support.

Figure 1 provides an overview of the development of agricultural support in the OECD countries. In 2001 OECD countries provided support to their own agricultural sector of about US\$311 billion. At the same time, the OECD countries provided development

Figure 1  
OECD agricultural support and its components, 1986-2001



Source: Calculations based on OECD PSE/CSE online database.

Note: Consumer support refers to transfers from taxpayers to consumers; all figures are estimates.

assistance to all LDCs of only US\$12 billion—an amount equivalent to about two-weeks' worth of domestic agricultural support.<sup>8</sup> The most important form of support is producer support which can be broken down into two types, namely market price support, which includes import restrictions, and payments, which include actual subsidies paid to producers. Over the years trade liberalization has led to a decrease in market price support, resulting in a shift towards direct payments. But despite this shift border measures remain the most important mean of agricultural protection in advanced countries, and the elimination of these border measures therefore remains the most important mean to promote agricultural development in developing countries (Hoekman, Ng and Olareaga 2002; Tokarick 2003).

Whether agricultural support measures of advanced countries affect agricultural production in developing countries is theoretically dependent on two conditions, namely the size of the economies of advanced countries, and the openness of the economies of developing countries. In accordance with real-world conditions it can safely be assumed that the advanced countries constitute large economies, which have the potential to affect world prices, and that the developing countries are relatively open economies, which can be affected by world prices. In accordance with the Trade Restrictiveness Index of the International Monetary Fund LDCs have particularly open trade regimes (UNCTAD 2004; 2006).

Agricultural support measures result in major market distortions. Market price support delinks product prices, on the one side, and supply and demand, on the other, while direct payments to producers decouple produce prices, on the one side, and the income of producers, on the other. First-round effects of such distortions can be an excessive production of agricultural goods, adding-up problems in agricultural markets and a decline of agricultural prices. Reactions to these distortions can bring about second-round effects, including further downward pressure on product prices, as will be highlighted below.

The Doha Round has given impetus to numerous studies in international trade on agricultural support measures. These studies have helped to highlight the ways in which and the extent to which agricultural support measures of advanced countries affect developing countries. The following section will discuss aspects of these trade-centric evaluations of agricultural support measures, while the section after that will describe aspects of a more development-oriented evaluation of agricultural support measures.

### **3.1 Trade-centric evaluation of agricultural support measures**

How agricultural support measures of advanced countries affect the economies of developing countries depends on the comparative advantage of these countries. Countries that have neither an actual nor a potential comparative advantage in agricultural production are set to benefit. This is because subsidized food imports from abroad allow them to reallocate scarce resources from agricultural production, which is deemed relatively uncompetitive, to non-agricultural sectors, which are deemed more

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<sup>8</sup> In 2001 the group of LDCs included 49 countries. Calculations are based on OECD Producer Support Estimates/ Consumer Support Estimates and OECD aid data. Development assistance is net disbursement of official development assistance, which includes imputed multilateral flows.

competitive. By contrast, countries enjoying actual or potential comparative advantage in agricultural production would suffer from a premature contraction of their agricultural sector.

When analyzing the effects of agricultural support measures on developing countries, it is important to distinguish not only between countries with different comparative advantage but to distinguish also between the effects on producers and consumers and the effects in the short run and the long run. While producers of agricultural goods may suffer from the import of inexpensive foods, the consumers of agricultural goods may benefit from the import of inexpensive food. Furthermore, while it is acknowledged that the contraction of the agricultural sector may lead to unemployment in the short-term, when economies display relatively little flexibility, it is typically assumed that the contraction of the agricultural sector does not imply unemployment in the long-term, when economies tend move towards equilibrium. Indeed, as was pointed out above, the contraction of the agricultural sector may actually support a more rapid expansion of non-agricultural sector, as it releases scarce resources that are required for other economic activities.

A realistic evaluation of the effects of agricultural support measures of advanced countries would add up the benefits and costs that developing countries have incurred over the past years because of these support measures. Yet, instead evaluations of the effects of agricultural support measures of advanced countries focus on the benefits and cost that developing countries are expected to incur in the next years if these support measures were to be eliminated today. It is important to emphasize that past benefits and costs are very different from future potential benefits and costs. It would therefore be misguided to use the latter as a proxy for the former. In other words, even if the benefits of eliminating agricultural support today may appear very small, it would be a hasty to conclude that the costs of maintaining agricultural support over the past years were very small as well.

Hypothetically there are three effects that agricultural support measures of advanced countries may have on agricultural production in developing countries:

- No effects. This is because advanced countries produce and support temperate agricultural products, whereas most developing countries specialize in tropical agricultural products.
- Negative net effects. This is because the elimination of agricultural support in advanced countries will lead to an increase of the food import bill of developing countries. The negative effect associated with an increased food import bill of developing countries is expected to exceed the positive effect associated with increased agricultural production in developing countries.
- Positive effect. This is because the elimination of agricultural support in advanced countries will lead to an increase of agricultural production in developing countries. The positive effect associated with an increased production of agricultural goods in developing countries is expected to exceed the negative effect associated with an increased food import bill of developing countries.

While the first hypothetical effects assumes that there are no links between agricultural support in advanced countries and agricultural production in developing countries, the

second and third hypothetical effect suggest links between these two factors, although with inverse signs.

Table 2 shows that the first hypothetical effect is inconsistent with empirical data. The table provides an overview of the products which receive support in OECD countries and the five most important producers of these products and their substitutes in the LDCs. From this it becomes apparent that LDCs produce virtually all the goods supported by OECD countries. Furthermore, the LDCs produce many goods that are substitutes for the goods supported by OECD countries.<sup>9</sup>

It can therefore be concluded that agricultural support measures of advanced countries affect agricultural production in developing countries. The case of cotton provides a particularly dramatic illustration of how agricultural subsidies of advanced countries can impede agricultural development in the developing countries (Badiane *et al.* 2002; Oxfam 2003). But can the case of cotton be generalized?

Estimates of the benefits that developing countries may derive from the elimination of support measures in advanced countries are dependent on the level of support. As past efforts to liberalize multilateral trade have made more progress as regards industrial goods than agricultural goods it can be expected that future efforts to liberalize multilateral trade will bring about more benefits when they now focus on the agricultural sector rather than the industrial sector. Furthermore, as agricultural support measures are largely border measures, it can be expected that the reduction of trade barriers will bring about higher benefits than the elimination of subsidies. Studies confirm these projections (e.g., Hoekman, Ng and Olareaga 2002).

Similarities between simulation exercises can be attributed to the fact that almost all use the same general equilibrium model, albeit different versions (UNCTAD 2003b); the differences between the simulation exercises can be attributed to varying assumptions about elasticities (Anderson *et al.* 2000; Diao, Roe and Somwaru. 2001; World Bank 2003). Different studies assume different supply responses to multilateral trade liberalization and different poverty reduction responses to economic growth.

The simulation exercises show that gains from trade liberalization are not evenly distributed amongst countries. While there is broad consensus that the largest and most advanced agricultural producers amongst the developing countries, namely the Cairns Group, would benefit from the elimination of agricultural support, there is no agreement whether the smaller and less-developed agricultural producers, namely the LDCs, would benefit from the elimination of agricultural support measures (Hoekman, Ng and Olareaga 2002; Peters 2006). The uncertain benefits of the LDCs are related to the assumption that the LDCs have a weak supply response to trade liberalization. This certainly is an appropriate assumption for the short run, but it does not need to hold true in the long run.

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<sup>9</sup> While this distinction between temperate and tropical goods has always been difficult, it becomes increasingly blurred, as progress in technology, including biotechnology, allows for an increasing number of goods to be produced in diverse climatic zones.

**Table 2 Products supported by OECD countries, and the top-five producers of these products<sup>a</sup>, based on average annual production in metric tons, 1991-2000**

|   | Animal products |      |         |        |           | Primary crops |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
|---|-----------------|------|---------|--------|-----------|---------------|--------|-------|------|------|-----------|-------|----------|----------|-----------|--------|--------|----------|------------|--------------|-------|---------|-----------|--------|--------|-------------|----------|---------|---------|----------|--------------------------|-------|--------|------|---|---|
|   | Meats           |      |         |        | Non-meats | Cereals       |        |       |      |      | Oil crops |       |          | Fruits   |           |        |        |          | Vegetables |              |       |         |           |        | Others |             | Textiles |         | Tobacco |          |                          |       |        |      |   |   |
|   | Beef & veal     | Pork | Poultry | Mutton | Eggs      | Milk (cow)    | Barley | Maize | Oats | Rice | Sorghum   | Wheat | Rapeseed | Soybeans | Sunflower | Apples | Grapes | Mandarin | Pears      | Strawberries | Beans | Cabbage | Cucumbers | Garlic | Onions | Pepper, Red | Potatoes | Spinach |         | Tomatoes | Coffeebeans <sup>c</sup> | Sugar | Cotton | Wool |   |   |
| <b>LDC producers of equivalents<sup>b</sup></b> |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Afghanistan                                     |                 |      | 1       |        | 2         | 2             |        |       |      |      | 1         |       |          | 4        | 1         | 1      | 1      |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       | 2      |      |   |   |
| Angola  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          | 5         |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Bangladesh                                      | 4               |      | 2       |        | 1         | 3             |        |       | 1    |      | 2         | 1     |          |          |           |        |        |          |            |              |       | 1       | 1         | 2      | 3      |             | 1        | 1       |         | 5        | 4                        | 1     | 2      | 3    |   |   |
| Benin   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Bhutan  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          | 3         |        |        |          |            |              |       |         |           |        |        |             | 1        | 3       | 4       |          |                          |       |        | 3    |   |   |
| Burkina Faso                                    |                 |      |         |        |           |               |        |       |      | 2    |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Burundi   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       | 4       |           |        |        |             |          |         |         |          |                          |       |        |      | 5 |   |
| Cambodia  |                 | 1    |         |        |           |               |        |       | 4    |      |           |       |          | 3        |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Chad  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Congo, Dem. Rep.                                |                 |      | 5       |        |           |               | 5      |       |      |      |           |       |          |          |           |        |        |          |            |              |       | 4       | 5         |        |        |             |          |         |         |          |                          | 3     |        |      | 5 |   |
| Eritrea   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Ethiopia  | 3               |      | 3       | 3      | 3         | 4             | 5      | 1     | 2    | 1    |           | 3     | 4        | 2        | 5         |        | 5      | 4        |            |              |       | 3       | 2         |        |        |             |          |         |         |          | 2                        |       |        | 3    |   |   |
| Haiti   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Lao People's Dem. Rep.                          |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          | 2       |         |          |                          |       |        |      | 5 |   |
| Lesotho   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Madagascar                                      | 5               | 3    |         |        |           |               |        |       |      | 2    |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      | 4 |   |
| Malawi  |                 |      |         |        |           |               |        |       | 3    |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Mali  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Mozambique                                      |                 |      | 2       | 1      | 2         |               |        |       |      |      |           |       |          |          | 5         | 1      |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Myanmar   |                 | 2    | 1       |        | 2         |               |        |       |      |      |           |       |          | 2        |           |        |        |          |            |              |       | 1       |           |        |        | 1           | 1        |         |         |          |                          |       | 3      |      |   |   |
| Nepal   |                 |      |         |        |           |               | 4      | 4     |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Niger   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Senegal   |                 |      | 4       |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Somalia   |                 |      |         | 4      |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Sudan   | 1               |      |         | 2      | 5         | 1             |        |       |      |      |           |       |          |          | 3         |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      | 4 |   |
| Tanzania  | 2               |      |         |        | 4         | 5             |        |       | 1    |      |           |       |          |          | 2         |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      | 5 |   |
| Uganda  |                 | 4    |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Yemen   |                 |      | 5       | 5      |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Zambia  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 4 |
| <b>LDC producers of substitutes<sup>b</sup></b> |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Afghanistan                                     |                 |      |         |        |           | 5             |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      | 2 |   |
| Angola  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Bangladesh                                      | 5               | 5    | 5       | 5      |           | 3             |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Burkina Faso                                    |                 |      |         |        |           |               | 3      | 3     | 3    | 3    | 3         | 3     | 3        |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 1 |
| Burundi   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 1 |
| Central African Republic                        |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 4 |
| Congo, Dem. Rep.                                | 3               | 3    | 3       | 3      |           |               |        |       |      |      |           |       |          | 4        | 4         | 4      |        |          |            |              |       | 1       | 1         | 1      | 1      | 1           | 1        | 1       | 1       | 1        | 1                        | 1     | 1      |      | 3 |   |
| Ethiopia  | 2               | 2    | 2       | 2      |           |               | 2      | 2     | 2    | 2    | 2         | 2     |          |          |           |        |        |          |            |              |       | 5       | 5         | 5      | 5      | 5           | 5        | 5       | 5       | 5        | 5                        | 5     | 5      | 5    | 3 |   |
| Madagascar                                      |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 5 |
| Mali  |                 |      |         |        |           |               | 4      | 4     | 4    | 4    | 4         | 4     |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 4 |
| Mozambique                                      |                 |      |         |        |           |               |        |       |      |      |           |       |          | 5        | 5         | 5      |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 4 |
| Myanmar   |                 |      |         |        |           |               |        |       |      |      |           |       |          | 2        | 2         | 2      |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 4 |
| Nepal   | 4               | 4    | 4       | 4      |           | 4             |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 3 |
| Niger   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Rwanda  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Senegal   |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Somalia   |                 |      |         |        |           | 1             |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Sudan   | 1               | 1    | 1       | 1      |           | 2             |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 1 |
| Tanzania  |                 |      |         |        |           |               |        |       |      |      |           |       |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   |   |
| Uganda  |                 |      |         |        |           |               | 5      | 5     | 5    | 5    | 5         | 5     |          |          |           |        |        |          |            |              |       |         |           |        |        |             |          |         |         |          |                          |       |        |      |   | 2 |

Source: Calculations based on OECD PSE/ CSE on-line data on agricultural subsidies and FAO on-line data on agricultural production.

Notes:

- a The table includes all goods that receive support from OECD countries, regardless of the type and the level. The largest LDC producer for each product is identified by the number '1', ... the fifth largest LDC producer for each product is identified by the number '5'. In the case of strawberries no significant LDCs producers has been identified; in the case of oats and rapeseeds there are only two LDC producers; in the case of spinach there are only three LDC producers; and in the case of pears there are only four LDC producers. For all other products there are at least five LDC producers. No substitutes have been identified for eggs, coffee and tobacco.
- b 'Equivalents' are products included in the FAO database on agricultural production that can be directly compared with the products that are subsidized by OECD countries, whereas 'substitutes' are products included in FAO database on agricultural production that have similar properties to those products that are supported by OECD countries. While the category of 'equivalents' includes only goods in their unprocessed form, the category of 'substitutes' includes goods in both their unprocessed and processed forms. For a detailed description of the methodology, see Herrmann (2003a).
- c Amongst the OECD countries only Mexico provides support for coffee; support is provided in form of consumer support.

The models can provide important insights into the ways in which trade liberalization affects economies and people, but they cannot provide very accurate estimates of the effects of trade liberalization on economies or people. This is because the models neglect many important variables. These variables include, for example, non-tariff barriers to trade. Overly complex rules of origin or overly stringent sanitary, phytosanitary and technical product standards can result in an actual supply response that is significantly lower than the projected supply response. Indeed non-tariff barriers to trade are a particularly great impediment to trade for many of the poorest countries. In 1999-2001 environment-related trade barriers affected 42 per cent of the LDC exports. For comparison, in the same period tariff barriers affected only 24 per cent of LDC exports. Other developing countries have the inverse problem. In the same period about 38 per cent of their exports were negatively affected by tariff barriers but only 20 per cent of their exports were negatively affected by environment-related barriers to trade.<sup>10</sup>

There are important reasons why the benefits of agricultural trade liberalization for developing countries, especially the LDCs, may be overestimated. But there are also important reasons why the benefits of agricultural trade liberalization for developing countries, including the LDCs, are underestimated:

- Simulation exercises focus on benefits that developing countries may have if advanced countries were to face out agricultural support; they do not take account of the foregone benefits that developing countries would have had if advanced countries had not provided agricultural support in the first place. If advanced countries would not have provided agricultural support, developing countries would have benefited from higher agricultural prices which could have encouraged an expansion of agricultural production and significantly higher returns to agricultural production.

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<sup>10</sup> Environment-related trade barriers include sanitary, phytosanitary and technical product standards (Fontagné, von Kirchbach and Mimouni 2001; Herrmann 2003b).



- The starting position of any simulation is the current pattern of agricultural production and trade (which is itself the result of distorting agricultural policies) rather than past or potential patterns (which would be a better reflection of the country's underlying comparative advantage). While past performance is not a reliable indicator of future potential, it is nonetheless important to recall the fact that the LDC group was actually a net food exporter until 1988.<sup>11</sup> According to Cline (2004) many LDCs still have a latent comparative advantage in production of food even though many of them are currently net importers of food.
- Simulation exercises also underestimate the benefits of agricultural support measures by concentrating only on products that receive agricultural support. This makes the simulations too limited, as support measures not only distort the markets of subsidized products, but also markets of substitute goods (Herrmann 2003a).
- Simulation exercises disregard the strategic importance of agricultural development for overall economic development, as suggested by structuralist dual-economy models of development (Lewis 1954, 1968; Ranis and Fei 1961; Jorgenson 1961).
- Simulation exercises disregard the importance of agricultural development for poverty reduction, which stems from the fact that the majority of the poor directly or indirectly derive their incomes from agricultural production (Cline 2004).

In sum, there are good reasons to assume that the economic effects of multilateral trade liberalization are overestimated, but there are equally good reasons to assume that they are underestimated. Whatever the projection, considerable deviations of actual from estimated effects are likely, and these deviations are prone to be largest in the least developed countries. On the one side there are many factors that negatively affect exports of LDCs (e.g., non-tariff barriers to trade affect), but on the other side there are reasons to believe that many LDCs can significantly increase their agricultural production (e.g., favourable natural resource endowments). Overall it would appear that the LDCs can derive considerable gains from multilateral trade liberalization, especially in the area of agriculture, provided that:

- Countries eliminate all unnecessary non-tariff barriers to trade (overly complex rules of origin, overly stringent sanitary, phytosanitary and technical product standards, etc.);
- The international donor community effectively helps the LDCs to comply with the remaining trade barriers (reasonable product standards, various trade rules, etc.); and
- The international community effectively helps the LDCs to strengthen their productive capacities (infrastructure, finance, technology, skills, etc.). The Aid-for-Trade initiative is an important step in this direction, but the current focus of this initiative is too limited. While it is important to help countries comply with trade rules and product standards, it is equally important to help them establish and maintain physical infrastructure, functioning financial institutions and appropriate business-support institutions.

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<sup>11</sup> Calculations based on UN Comtrade data.

This combination of measures can be expected to assist the LDCs to endeavour to achieve high and sustainable economic growth rates; a condition indispensable for sustainable poverty alleviation and, *inter alia*, and the elimination of hunger.

### 3.2. Development-oriented evaluation of agricultural support measures

Figure 2 presents a stylized picture of the ways in which agricultural support by advanced countries affects agricultural production in developing countries. In correspondence with actual patterns of agricultural production the figure assumes that developing countries produce tropical agricultural goods, which are not produced by advanced countries, and that they also produce temperate agricultural goods, which are also produced by advanced countries. For simplicity the flow diagram focuses does not include additional products, given that the inclusion of additional products would not change the basic message. The flow diagram examines possible responses of advanced developing countries, on the one side, and the least developed countries, on the other, to agricultural support measures of advanced countries.

Agricultural support measures of advanced countries lead to lower prices of agricultural goods at both the international level and farm gates. The lower prices of the shared agricultural good leave developing countries with two principle alternatives: They may decide to continue the production of the shared agricultural good, in which case they need to decrease the price of their produce, or they can decide to stop the production of the shared agricultural good, in which case they need to diversify into other goods.

If the developing countries continue with the production of the shared agricultural good, they need to lower the relative prices of these goods. This can be achieved through an increased level of productivity and/or a decreased level of production costs.<sup>12</sup> While any country can hardly increase productivity levels in the short run, more advanced countries may be able to increase productivity levels in the medium to long run. This is also true for the more advanced countries *amongst* the developing countries. Thus while advanced developing countries may have the possibility to increase productivity levels and pursue the 'high road' to competitiveness, least developed countries are most likely forced to cut costs and take the 'low road' to competitiveness. Given that labour is the most intensively used factor of production in the majority of lesser developed countries, this means downward pressure on wage rates and/or payroll fringe costs. The question is how realistic this would be in countries where the wages are already at subsistence levels.

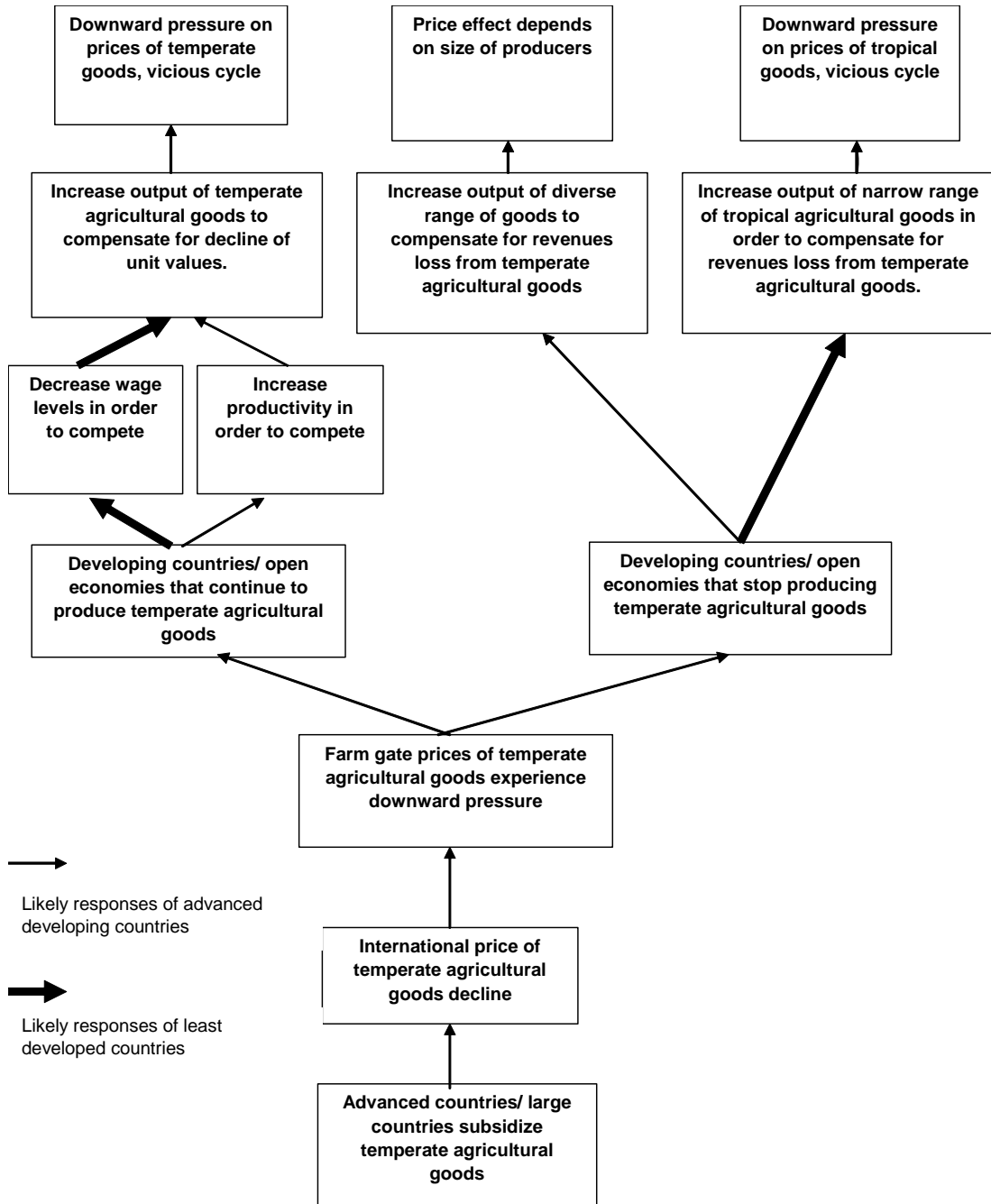
Whether developing countries achieve their competitiveness from higher productivity or lower wage levels, the unit value of agricultural products will fall and, all else equal, the return to agricultural producers will fall as well. In order to make up for a lower unit value of goods, producers are likely to increase the sales volume of the goods. While this is a perfectly rational reaction at the level of the individual, it can have undesired effects at the level of the community. This is because a simultaneous increase of

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<sup>12</sup> Assuming a Ricardian-type formula, where the comparative advantage of countries, expressed by the prices of its products ( $P$ ), is determined by the relationship between wages ( $w$ ) and labour productivity ( $Y$ ) (i.e.,  $P=w/Y$ ). In a model with multiple factors of production wage costs would be replaced by aggregate production costs.

agricultural production is likely to lead to a fallacy of composition which puts further downward pressure on agricultural prices (second-round effects on prices).

**Figure 2**  
**Links between agricultural support measures of advanced countries**  
**and production decisions in developing countries**



Source: Author.

But will the developing countries fare better if they decide to stop rather than continue the production of temperate agricultural goods? The answer to this question depends on a country's productive capacities which determine its production possibilities. Relatively advanced developing countries which have relatively strong productive capacities and extended production possibilities may be able to diversify in a broad range of other products. Indeed countries that have this option should probably make use of it. This way they can enjoy the benefit of importing goods at prices below normal price levels, and they can increase their aggregate output by focusing on products for which they can get normal returns.

The situation is different for the LDCs as the LDCs typically have very weak productive capacities. The weak productive capacities prevent them from diversifying into new types of agricultural and non-agricultural products. As a consequence they are encouraged to specialize in a narrow range of products in which they are almost exclusive producers. Goods which are produced almost exclusively by the poorest countries, and are therefore rarely supported by advanced countries, are tropical goods. A notable exception is cotton. But while an increasing specialization in tropical goods may seem to make economic sense, it is associated with considerable economic difficulties. Many of the tropical produce are characterized by unstable prices, and many economies that have a strong specialization in these produce are therefore prone to suffer from unstable export revenues and economic shocks. These problems are exaggerated by the fact that an increased production of tropical goods, like an increased production of any common good, is likely to lead to a further deterioration of prices. Confronted by falling revenues producers of tropical agricultural goods may decide to further increase the production of tropical agricultural goods and subsequently contribute to further price deteriorations.

The fallacy of composition and falling prices of commodities continue to be important problems for many of the poorest countries, as many these countries heavily depend on primary commodity exports. Table 3 shows that commodity price changes over the period 1980-2001 have serious effects on the LDCs' export revenues. The decline of many commodity prices has led to large forgone export revenues of developing countries.<sup>13</sup>

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<sup>13</sup> It is important to emphasize that this is an analysis of long-term trends in commodity prices and that it does not take account of recent changes in commodity prices, especially where metals, minerals, ores and oil are concerned. The increase of these prices, which will benefit many African countries that are rich in natural resources, has been encouraged by an increase of demand, which is due mainly to China and India's expansion of manufactured production (see also UNCTAD 2003a, 2005; Mayer and Fajarnes 2005).

Table 3 Estimated effect of international commodity price changes since 1980 on the export revenues of the LDCs, 2001

|   | Product code<br>(SITC 3 Rev. 2) | International commodity<br>prices, 1980-2001 |      |           | LDCs export values, 2001 |           |           |
|---|---------------------------------|--|------|-----------|--------------------------|-----------|-----------|
|   |                                 | 1991   | 2001 | 1980-2001 | Actual                   | Potential | Loss/gain |
|   |                                 | Index, 1980=100                              |      | Change, % | US\$ million             |           |           |
| <b>All foods</b>                          | 0,1,22,4                        | 59   | 51   | -49       | 4166                     | 6191      | -2025     |
| Beverages                                 |                                 |  |      |           |                          |           |           |
| Cocoa & products                          | 072-073                         | 47   | 45   | -55       | 28                       | 43        | -15       |
| Coffee & substitutes                      | 071                             | 44   | 30   | -70       | 444                      | 755       | -312      |
| Tea & mate                                | 074                             | 92   | 120  | 20        | 142                      | 114       | 28        |
| Foods                                     |                                 |  |      |           |                          |           |           |
| Bananas & other fruits                    | 057                             | 151  | 156  | 56        | 186                      | 82        | 104       |
| Beef & other meats                        | 011-012,014                     | 96   | 77   | -23       | 37                       | 46        | -9        |
| Fish                                      | 034-037                         | 95   | 96   | -4        | 1562                     | 1617      | -55       |
| Maize                                     | 044                             | 86   | 79   | -21       | 32                       | 39        | -7        |
| Pepper & other vegetables                 | 054                             | 69   | 119  | 19        | 239                      | 192       | 47        |
| Rice                                      | 042                             | 72   | 40   | -60       | 37                       | 59        | -22       |
| Sugar & products                          | 061-062                         | 31   | 30   | -70       | 229                      | 388       | -160      |
| Wheat                                     | 041,046                         | 59   | 64   | -36       | 23                       | 32        | -8        |
| Vegetable oil seeds & oils                |                                 |  |      |           |                          |           |           |
| Oilseeds, incl. soybeans                  | 222-223                         | 77   | 66   | -34       | 236                      | 315       | -80       |
| Oils, incl. linseed oil                   | 423-424                         | 68   | 57   | -43       | 96                       | 138       | -42       |
| <b>Agricultural raw materials</b>         | 21,23-26,29                     | 97   | 76   | -24       | 2177                     | 2702      | -525      |
| Textiles                                  |                                 |  |      |           |                          |           |           |
| Cotton, raw                               | 263                             | 85   | 54   | -46       | 831                      | 1217      | -386      |
| Cotton, manufd                            | 652                             | 85   | 54   | -46       | 97                       | 142       | -45       |
| Jute                                      | 264                             | 110  | 105  | 5         | 59                       | 56        | 3         |
| Sisal & other textiles                    | 651,659                         | 88   | 99   | -1        | 301                      | 305       | -4        |
| Wool                                      | 268                             | 118  | 75   | -25       | 3                        | 3         | -1        |
| Wood                                      |                                 |  |      |           |                          |           |           |
| Wood, rough                               | 245-248                         | 123  | 128  | 28        | 863                      | 620       | 243       |
| Plywood & other manufd woods              | 634-635                         | 136  | 150  | 50        | 75                       | 38        | 37        |
| Others                                    |                                 |  |      |           |                          |           |           |
| Cattle hides & other hides, manufd        | 211                             | 111  | 127  | 27        | 378                      | 276       | 102       |
| Cattle hides & other hides, raw           | 611-612                         | 111  | 127  | 27        | 126                      | 92        | 34        |
| Rubber, raw                               | 232-233                         | 75   | 42   | -58       | 36                       | 57        | -21       |
| Rubber, manufd                            | 621,625,628                     | 75   | 42   | -58       | 10                       | 16        | -6        |
| Tobacco                                   | 121-122                         | 154  | 131  | 31        | 377                      | 259       | 118       |
| <b>Minerals, ores &amp; metals</b>        | 27-28,68                        | 95   | 78   | -22       | 2085                     | 2546      | -461      |
| Minerals                                  |                                 |  |      |           |                          |           |           |
| Phosphate rock & other minerals           | 271                             | 99   | 97   | -3        | 61                       | 62        | -2        |
| Ore                                       |                                 |  |      |           |                          |           |           |
| Ores raw (incl. iron, mang., tungst.)     | 28-282, 287                     | 135  | 91   | -9        | 697                      | 760       | -63       |
| Ores, manufd (incl. iron, mang., tungst.) | 671-679, 689, 699               | 135  | 91   | -9        | 274                      | 299       | -25       |
| Metals                                    |                                 |  |      |           |                          |           |           |
| Aluminium                                 | 684                             | 75   | 84   | -16       | 388                      | 452       | -64       |
| Copper                                    | 682                             | 114  | 83   | -17       | 602                      | 705       | -103      |
| Lead                                      | 685                             | 72   | 79   | -21       | 0                        | 0         | 0         |
| Nickel                                    | 683                             | 124  | 90   | -10       | 0                        | 0         | 0         |
| Tin                                       | 687                             | 36   | 33   | -67       | 0                        | 0         | 0         |
| Zinc                                      | 686                             | 144  | 117  | 17        | 0                        | 0         | 0         |
| Precious metals                           |                                 |  |      |           |                          |           |           |
| Gold                                      | 971                             | 59   | 44   | -56       | 811                      | 1263      | -452      |
| Silver                                    | 681                             | 20   | 21   | -79       | 2                        | 4         | -2        |
| Gold, silver ware, etc.                   | 897                             | 39   | 33   | -67       | 7                        | 12        | -5        |

Source: Calculations based on UN Comtrade database and UNCTAD Commodity Price Bulletin.

Notes:

- a) The estimates focus on the year 2001, the latest year for which export data were available at the time of calculation.
- b) International prices for individual products are provided by the UNCTAD Commodity Price Bulletin; export values for individual products are provided by the UN Comtrade database.

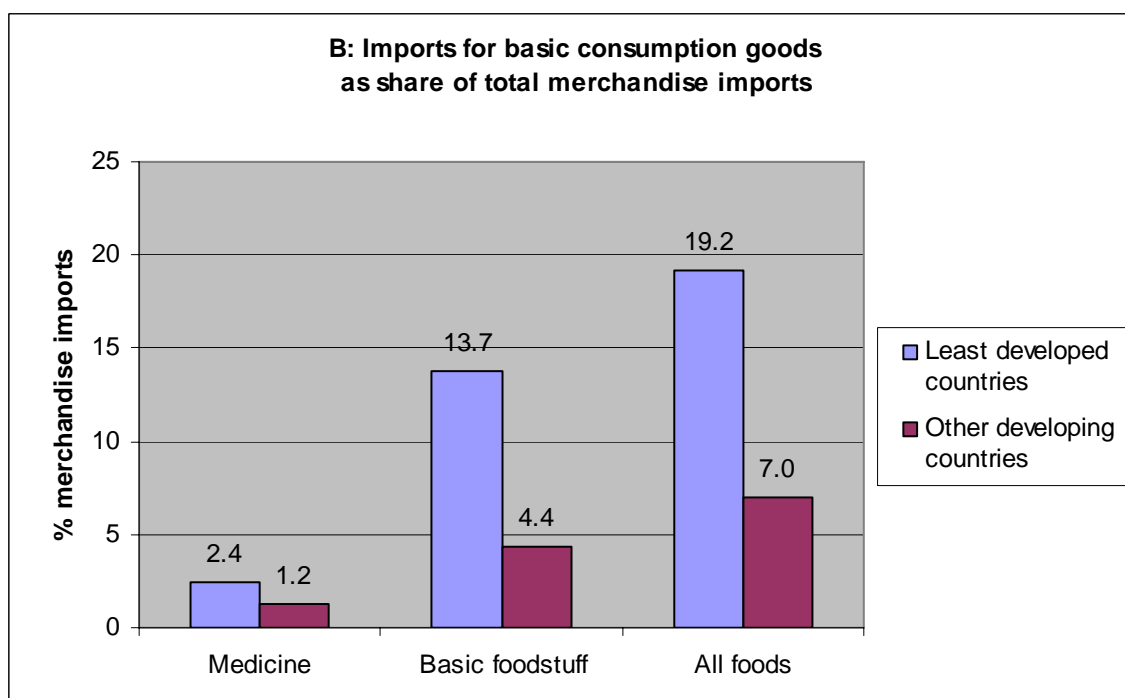
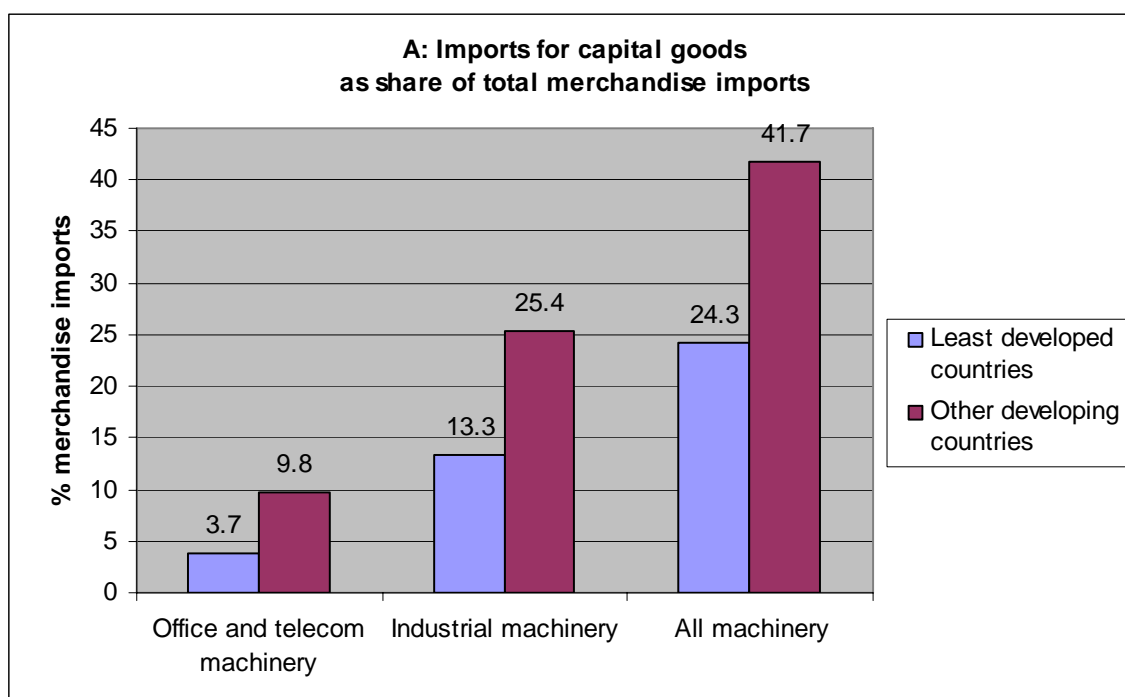
The decline of agricultural product prices—which is partially attributable to agricultural support measures of advanced countries—depress agricultural development in developing countries. This is because low prices of agricultural goods encourage developing countries to stop the production of agricultural goods and to import these goods, even though the very same countries would normally have a comparative advantage in agricultural goods and would normally be exporting these goods. Case study evidence shows that subsidized food exports of advanced countries have led to surges of food imports by many poor countries (FAO 2003). Furthermore, case study evidence shows that subsidized food exports of advanced countries caused the demise of food industries in poor countries (UNCTAD 2002: 108). While this is not the only reasons why LDCs have become net food importers, it is certainly a factor that can help explain why LDCs have become less successful food exporters.

The poorest developing countries, which have few economic activities outside the agricultural sector, are particularly affected by these developments. As their agricultural production contracts, these countries are encouraged to spend scarce foreign exchange on the import of basic consumer goods that they should be able to produce at home. As a consequence they have insufficient financial resources to spend on the import of capital goods, which they cannot produce domestically.

Figure 3 shows that in comparison with other, more advanced developing countries, the LDCs spend now a large proportion of their foreign exchange on the import of basic consumption goods (i.e., good which ensure human survival) rather than the import of capital goods (i.e., goods which enable investment).

While it is typically acknowledged that agricultural support measures of advanced countries have negative effects on producers in developing countries it is frequently argued that agricultural subsidies of advanced countries have positive effects on consumers in developing countries, as they effectively decrease consumer prices and thereby increase real incomes. This logic is correct, but it does not support the conclusion that imports of subsidized foods by developing countries help to combat poverty and hunger in developing countries, or the inverse conclusion that the elimination of agricultural subsidies in advanced countries will worsen poverty and hunger in developing countries. Whether agricultural subsidies of advanced countries help or hurt the poor in developing countries depends on whether the costs associated with the contraction of agricultural production outweigh the benefits associated with lower prices of imported foods. Overall it seems that the net effects on the poor are likely to be negative. This is because the majority of the poor directly or indirectly derive their livelihood from agricultural production. A contraction of agricultural production is therefore likely to negatively affect their income (cash or in kind). At the same time the majority of the poor have a very low consumption of imported goods. An expansion of subsidized food imports is therefore unlikely to significantly raise their real income (see also Paarlberg 1999).

Figure 3  
The structure of merchandise imports of the LDCs and other developing countries, 1999-2001



Source: Calculations based on UN Comtrade database.

Note:

- a) Commodity definitions in accordance with SITC Rev. 2: Office and telecommunications machinery: code 75 and 76; industrial machinery: code 71+72+73+74+77-775; all machinery: 7-775-781+87+881+884 (includes all previous). Medicine: code 541; basic foodstuffs: code: 00+01+02+04+054+056+09+22+4; all foods: 0+1+22+4 (includes all previous).
- b) Basic foodstuffs are defined in accordance with the FAO definition of basic foods.

In conclusion, agricultural support measures of advanced countries cause major market distortions which discourage agricultural production in developing countries. A weak development of agricultural sector can also slow the development of non-agricultural sectors. As a result many people will be confronted by unemployment or underemployment, and they will suffer from poverty and hunger. The elimination of agricultural support measures by advanced countries is thus an important precondition for the economic development of developing countries and ultimately an important mean to combat poverty and promote food security.

In principle advanced countries should change their agricultural policies in order to eliminate dangerous market distortions. But in practice advanced countries have very little incentives to undertake such adjustments. This is because advanced countries do get benefits from providing agricultural support and they do not bear the full costs of these policies. The costs that they bear are mainly associated with higher food prices for consumers in the advanced countries; the costs that they effectively externalize are associated with a lower production in the developing countries. If advanced countries were to internalize the full cost of their policies, they may be more likely to consider a change of these policies. A way to encourage such an internalization of costs by advanced countries may be the introduction of targeted trade barriers in other countries which essentially prevent subsidized food exports. Safeguard measures of developing countries appear justifiable and in line with multilateral trade rules, given that it should not prove too difficult to explain why and how agricultural support measures of advanced countries threaten agricultural industries in developing countries.

#### **4 Policy implications**

At its core food insecurity has to do with economic underdevelopment of countries. In other words, countries are food insecure either because they do not have the capacity to produce sufficient food at home or because they do not have the foreign exchange to import necessary food from abroad.

While this paper acknowledges that trigger causes can lead to food insecurity, the paper focuses on systemic causes of food insecurity, which are often neglected in the discussion of food insecurity but are no less important for a comprehensive understanding of food insecurity. While there are many potential systemic causes for food insecurity the paper focuses on only one systemic cause of food insecurity, namely agricultural support measures of advanced countries. Agricultural support measures of advanced countries are a systemic cause for food insecurity as they have a negative effect on the development of the agricultural sector. As a consequence, they also have negative effects on the development of other, non-agricultural sectors. Agricultural support measures of advanced countries may thus be said to contribute to economic underdevelopment of developing countries, which is at the core of food insecurity.

One key implication of this is that food security in developing countries is best achieved through their economic development; another key implication is that agricultural support measures of advanced countries need to be eliminated as they impede this economic development.



The WTO Agreement on Agriculture has the ambitious aim of applying the same rules to agricultural trade as for non-agricultural trade, and the Doha Agenda used to have the ambitious aim to encourage significant liberalization of the agricultural sector. These objectives are well taken, but actual reforms fall far short of required reforms. What is needed is a comprehensive approach to phase-out support measures in advanced countries, which is based on economic rather than political rational. In accordance all support measures that alter the relative price of production factors should be considered trade-distorting, as they change the comparative advantage of a country and ultimately trade flows. But a comprehensive approach in the area of trade needs to be complemented by a comprehensive approach in the area of aid.

In short, the objective to combat hunger in developing countries raises a series of important implications for policy makers:

- ‘Solving hunger isn’t about providing food, except for acute cases. It’s about solving poverty. The Doha Round, and making trade a more viable option for developing countries and poor people, can help reduce poverty’ (Kripke quoted in Reuters 2005). In order for poor developing countries to sustainably combat food insecurity it is necessary that the developing countries promote economic development. While economic development is about more than high and sustained rates of economic growth, economic development must be accompanied by high and sustained rates of economic growth, especially in the poorest developing countries. In such countries, high and sustained rates of economic growth are essential for the creation of productive employment opportunities, an increase of household incomes and ultimately a reduction of poverty (UNCTAD 2002, 2004, 2006).
- For poor countries to promote economic growth, they have to have strong productive capacities. Given the importance of productive capacities the development of productive capacities should be a core objective of developing countries and a core objective of their development partners. In accordance, development partners should significantly increase aid for productive sectors, which implies a reversal of current trends in aid flows.
- In order to support the economic development of developing countries donors should adjust aid policies but they also need to change trade policies in order to ensure coherence between the two. It is not only important that more aid is spent on the development of productive sectors in developing countries, but it is also necessary that trade policies do not undermine the development of the productive sector in the developing countries. Advanced countries should therefore eliminate agricultural support policies.
- It is important that countries do not refrain from phasing out agricultural support because of possible adjustment costs. It is better to address adjustment costs, such as an increase of the food import bill, than to maintain market-distorting policies. Aid to help countries cope with adjustment costs should be provided to countries that are most in need (i.e., the low-income countries) and it should be provided in a non-debt creating form (i.e., grants). Developing countries have made only little use of existing instruments to finance food imports during balance-of-payments crisis. This is not necessarily an indication that developing countries are not willing to use such funds, it is rather an indication that the funds are not provided at

attractive conditions (i.e., loans rather than grants and in conjunction with conditionalities).

- Aid should be provided in ways that prevent the accumulation of unsustainable external debt. While aid which is used to finance commercial activities that are expected to generate a future stream of income may be provided in form of loans, aid that is used for activities that cannot be expected to generate a future stream of income should always be provided in form of grants. This means, for example, that aid which is used to finance consumption goods (e.g., food imports) or aid that is used to finance public goods (e.g., health, education, research, certain types of infrastructure) should be provided in form of grants. Otherwise recipient countries may soon confront another debt crisis.
- Short-term measures to deal with food crises in developing economies should not impinge on long-term strategies for developing productive sectors in these countries. This means, for example, that food aid should be provided in a manner that minimizes market distortions.

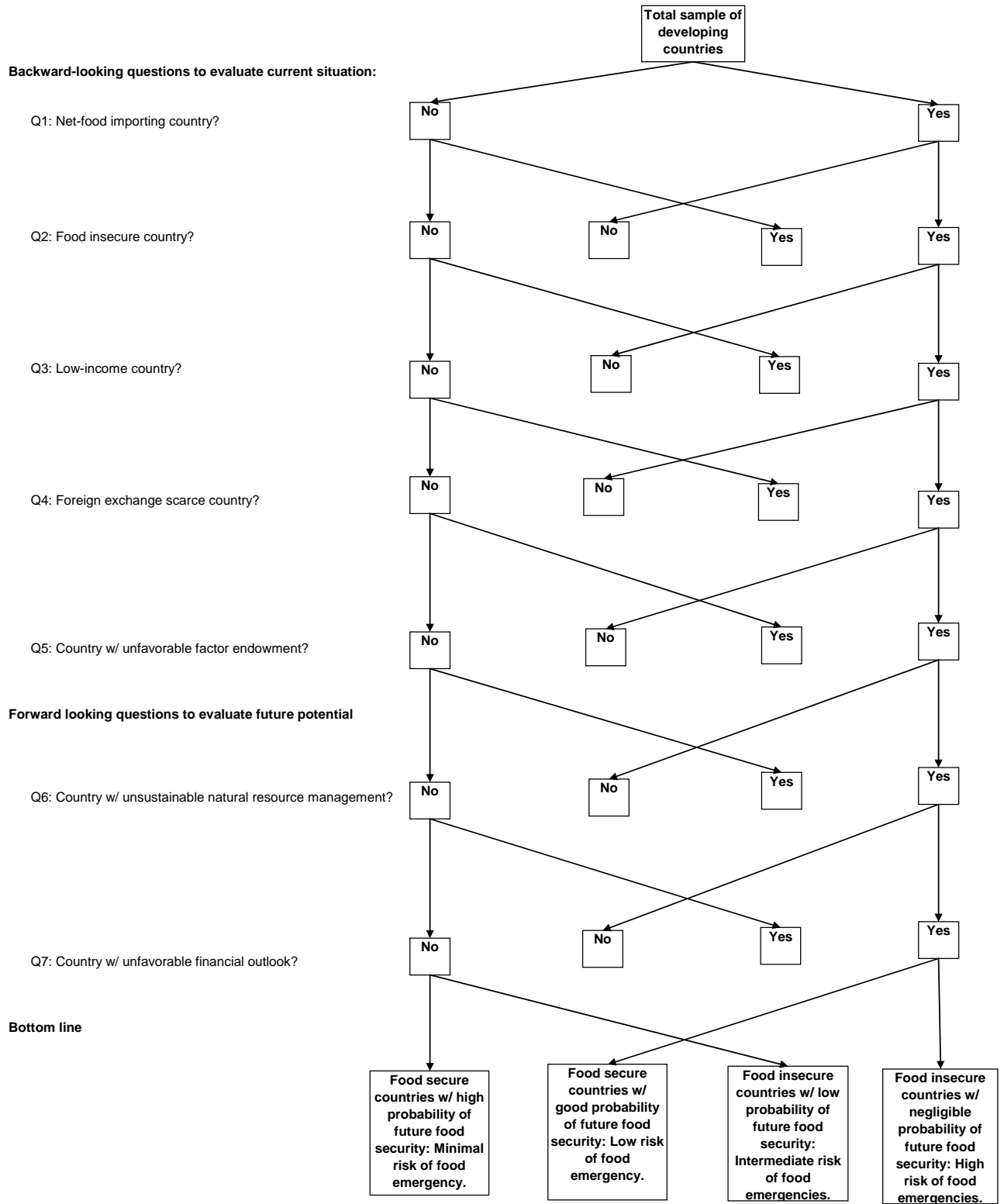
Similar to agricultural support measures of advanced countries, food aid of advanced countries, may negatively affect the long-term development of developing countries. On the one side, recipient countries, which have an actual or potential comparative advantage in agricultural production, may be discouraged from developing their agricultural production as long as subsidized food imports or food aid offer access to inexpensive foods. On the other side, donor countries, providing support to their agricultural production, may wish to continue this support as long as increased food exports and food aid provide them with the opportunity to dispose of surplus food (von Braun 2003). Marianne Fischer Boel, EU Farm Commissioner, said that ‘genuine food aid is both desirable and legal [...] [but] we have focused on the problem of using food aid as a way to get rid of surplus production’ (quoted in Reuters 2005).

In order to improve the delivery of food aid in a way that it does not discourage the development of agricultural sectors, it is important that donors have a better understanding of why developing countries require food aid and why they fail to produce sufficient food domestically. So far much emphasis has been given to the food trade balance of countries but the food trade balance provides no information about the probability of food crises or about the potential of food production. It therefore appears desirable to evaluate not only whether countries are net importers of food, but to also whether determine whether countries can import or produce food on a sustainable basis. A series of backward and forward looking questions may help to better evaluate current and future prospects of food security. Figure 4 lists such questions. It is important to emphasize that these questions are merely indicative and that the list is not exhaustive.<sup>14</sup> On the basis of these or similar questions it may be possible to gain a more refined understanding of which countries are prone to suffer from food crises and which are less likely to be affected. In addition, the questions indicate whether countries have a capacity to produce food domestically or whether they do not. Such information is useful for the design of food aid policies, but it can also provide clues about the potential of agricultural development.

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<sup>14</sup> A final country classification would, of course, also depend on the specific thresholds that are set for the different indicators. For possible criteria and thresholds, see note to Figure 4. FAO (2002) has also examined possibilities to refine the classification of countries that are in need of food aid.

Figure 4  
 Scheme for identification of countries that face risk of food insecurity and countries that require particular assistance with agricultural development



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