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**The Past Versus the Present in Development Thinking: Pointing Out the Structure of the Old Agricultural Development Model After Internalizing Environmental Externalities.**

By

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## Abstract

Current global crises such as poverty, global warming, and environmental degradation are convincing proof that the old model of economic/agricultural development that assumed that social and environmental issues did not matter was and is wrong. Present sustainability thinking tells us that development to be truly sustainable should reflect social, environmental, and economic variables at the same time, which points out to the need to make past development models reflect binding social and environmental constraints. However, currently development dynamics is leading to the implementation environmentally friendly fixes only through the greening of development, in general, and of agricultural development, in particular. One of the main goals of this paper is to point out the structure of the green agricultural development model, both when closed and opened, to highlight the local and non-local development implications resulting from the greening of the old agricultural development model.

## Introduction

### i) The old versus the new way of thinking

Until very recently, it was assumed that development, in general, and agricultural development, in particular, took place in the absence of social and environmental externalities. In other words, social and environmental issues were considered external factors to the development model; and therefore, not relevant. However, current global crises (e.g. poverty, global warming, and environmental degradation) have proven those assumptions wrong. It is now widely recognized that no much attention was given to the negative social and environmental externalities associated with our history of success in agricultural productivity (IAASTD 2009), a situation that is no longer acceptable. Recently, it has been pointed out that we may have been living under distorted markets all this time as the assumed socially and environmentally neutral nature of past development models led to operating continuously under the lowest economic price only, which has encouraged ongoing waves of

overproduction and overconsumption behavior(Muñoz 2010), a situation that needs to be corrected fully.

## **ii) The urgent need to correct all ways of thinking**

Even though sustainability theory suggest that old development models need social and environmental corrections at the same time, current development dynamics have moved formally towards the internalization of only environmental concerns. For example, development that is climate change friendly is right now being strongly promoted and encouraged in the 2010 World Development Report(WB 2010), which indicates that greening the economy is now the main development concern.

In other words, today there seems to be a clear agreement among governments, businesses, and development organizations on the need to develop and implement environmentally friendly development models or eco-economic approaches to correct the environmental weaknesses of past general and agricultural development models locally and internationally. For example, the current green growth development strategy being promoted by the OECD has been strongly supported by the business community(BIAC 2009; 2010). This increases the need to understand the internal structure and the working of the green or eco-economic market. The dominant incentive-regulation structure of the current eco-economic development market that can be used to capture what we should expect to happen in terms of policy implications when only economic and environmental issues matter was recently pointed out(Muñoz 2000). Hence, eco-economic models or models linking the economy and the environment or green models are partially corrected old development models as they are assumed to be social externality neutral. One of the main aims of this paper is to point out how the old agricultural development model would look like after the greening process.

## **Goals**

The goals of this paper are the following: First, to introduce the structure of the old general development model, both closed and opened, that works under the assumption of no social and environmental externalities to list past local and non-local development issues. Second, to present the parallel structure of the old agricultural development model, both closed and opened, which operates too under the assumption of no social and environmental externalities to highlight past local and non-local agricultural development issues. And third, to point out the parallel structure of the green agricultural development model resulting from internalizing environmental issues in the old agricultural model, both when closed and opened, to stress current local and non-local green agricultural development implications

## **Methodology**

First, the terminology used in this paper is listed. Second, some relevant operational concepts are indicated. Third, the old closed general development model is presented; and then extended to its opened form to highlight their local and non-local general implications. Fourth, the old closed agricultural development model is discussed as direct simplification of the general model; and then extended to its opened form to point out their local and non-local agricultural implications. Fifth, the closed green agricultural development model is introduced as a direct extraction from the old agricultural model; and then extended to its opened form to stress their

local and non-local green agricultural implications. And finally, some important conclusions are given.

## Terminology

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R = Resources

A = Public use

B = Private use

C = Consumers

I = Imports

E = Exports

P = Local price

P1 = Import price

P2 = Export price

AP = Agricultural price

AP1 = Agricultural import price

AP2 = Agricultural export price

AR = Agricultural resources

AC = Agricultural consumers

AI = Agricultural imports

AE = Agricultural exports

G(AR) = Green agricultural resources

G(A) = Green public users

G(B) = Green private users

G(AC) = Green agricultural consumers

G(AI) = Green agricultural imports

G(AE) = Green agricultural exports

AGM = Local agricultural green margin

FT = Fair trade

AGM1 = Imports agricultural green margin

FFTP = Full fair trade price

AGM2 = Exports agricultural green margin

PFTP = Partial fair trade price

GAP = Local green agricultural price

GGP = General green price

GAP1 = Import green agricultural price

GGP1 = General import green price

GAP2 = Exports green agricultural price

GGP2 = General export green price

ASM = Local agricultural social margin

GSM = General social margin

ASM1 = Import agricultural social margin

ASM2 = Export agricultural social margin

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### **Operational concepts**

Below there is a short list of operational concepts needed to help in the presentations of the ideas in this paper:

i) General price(P), general market economic only price

ii) Agricultural price(AP), agricultural market economic only price

iii) General green margin(GGM), what is needed to cover the extra cost of green production

iv) Agricultural green margin(AGM), what is needed to cover the extra cost of green agricultural production

v) General green price(GGP), the general price that reflects both the economic and the environmental cost of production.

$$GGP = P + GGM$$

The formula above says that the general green market price(GGP) is equal to the traditional market price(P) plus the general green margin(GGM).

vi) Green Agricultural price(GAP), the agricultural market price that reflects both the economic and environmental costs of production.

$$GAP = AP + AGM$$

The formula above says that the green agricultural price(GAP) is equal to the traditional agricultural market price(AP) plus the agricultural green margin(AGM).

vii) General social margin(GSM), what is needed to cover the extra cost of socially friendly production.

viii) Agricultural social margin(ASM), what is needed to cover the extra cost of socially friendly agricultural production.

ix) Fair trade(FT), the process of altering the traditional production process by means of adding the corresponding green margin and/or social margin to the traditional general market price(P) or the agricultural market price(AP).

x) Full fair trade price(FFTP), the traditional market price, general(P) or agricultural(AP) reflecting its corresponding green margin and social margin at the same time.

xi) Partial fair trade price(PFTP), the traditional market price, general(P) or agricultural(AP) reflecting only the corresponding green margin or social margin.

### **The general closed development model**

If we assume that local resources(R) can be under public use(A) and private use(B) at the same time to produce goods to meet the needs of only local consumers(C), then we have a general closed development model, which can be represented as follows:

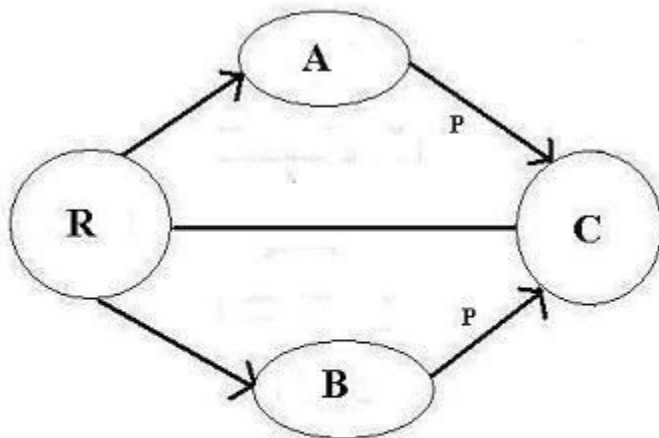


Figure 1 The closed general development model

#### **i) Production implications**

Figure 1 above shows that facing the same traditional market price P, both public use(A) and private use(B) producers would willingly meet the needs of consumers(C). If facing different prices, then the producer who can supply the market at a lower price will have a higher share of the market.

#### **ii) Consumption implications**

Figure 1 above indicates that at the same traditional market price P, consumers(C) would be indifferent to buying from public use(A) or private use(B) producers. However, if facing different prices, then consumers(C) should be expected to buy from the supplier with the lowest price.

#### **iii) The full externality neutral assumption**

In the old general closed development model in Figure 1 above there were no externality concerns as social margins and green margins were assumed not to exist; and therefore, the general traditional market price P was assumed to be full externality neutral.

#### iv) Missed points of market intervention

Figure 1 above shows that it has been possible to use general green margins(GGM) and/or general social margins(GSM) to induce directly or indirectly public use(A) and/or private use(B) producers to be more environmentally and/or socially friendly when supplying the local market, but they were not used as traditional market theory considers those actions market distortions, not market corrections.

Without those general green margin(GGM) and/or general social margin(GSM) incentives we should not expect producers to change behaviour as any increase in their cost of production would lead to a loss in their market share. In other words, the full externality neutral assumption renders local fair trade interventions inconsistent with the closed general model.

#### The general opened development model

We can extend the old closed general development model in Figure 1 above to its opened form as follows: If we assume that local resources(R) can be under public use(A) and private use(B) at the same time to produce goods to meet the needs of local and non-local consumers, then we have a general opened development model, which can be expressed as shown below:

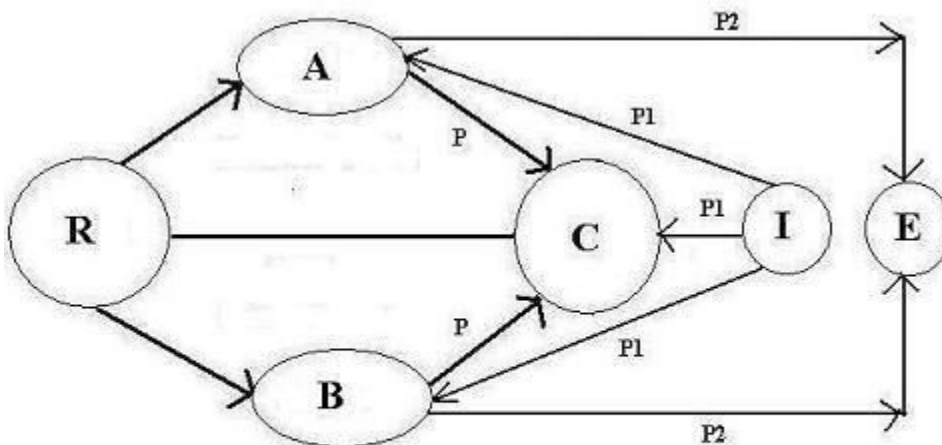


Figure 2 The opened general development model

#### i) Export implications

Figure 2 above allows us to see that if the local price  $P >$  export price  $P2$ , producers should be expected to supply the local market. If the local price  $P =$  export price  $P2$ , producers would be indifferent between supplying the local market or exporting. If the local price  $P <$  export price  $P2$ , producers should be expected to export.

#### ii) Import implications

Figure 2 above shows that if the local price  $P >$  import price  $P1$ , producers should be expected to import goods for resale and consumers, especially under globalisation, should be expected to import goods directly. If the local price  $P =$  import price  $P1$ , producers would be indifferent between producing or importing goods; and consumers would be indifferent between consuming local goods or importing directly. If the local price  $P <$  import price  $P1$ , producers

should be expected not to import, and produce for the local market; and consumers should be expected to consume local goods and not import directly.

### iii) The full externality neutral assumption

In the old general opened development model Figure 2 above there were too no externality concerns as social margins and green margins were assumed not to exist; and therefore, the general traditional market price  $P$  as well as imports price  $P_1$  and export price  $P_2$  were assumed to be full externality neutral.

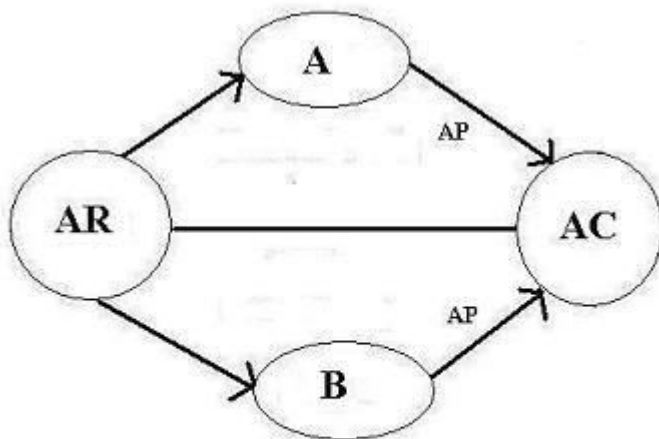
### iv) Missed points of market intervention

Figure 2 above shows that it has been possible to use general green margins(GGM) and/or general social margins(GSM) to motivate directly or indirectly public use(A) and/or private use(B) producers to be more environmentally and/or socially friendly when supplying the local and non-local market, but they were not used as traditional market theory considers those actions market distortions, not market corrections.

Without those general green margin(GGM) and/or general social margin(GSM) incentives we should not expect producers to change behaviour to supply the local and non-local market as any increase in their cost of production would lead to a loss in their market share. In other words, the full externality neutral assumption renders local and non-local fair trade interventions inconsistent with the opened general model.

### The closed agricultural development model

If we assume that local agricultural resources(AR) can be under public use(A) and private use(B) at the same time to produce goods to meet the needs of only local agricultural consumers(AC), then we have a closed agricultural development model, which can be stated as shown below:



**Figure 3** The closed agricultural development model

Notice that the structure of old agricultural model shown in Figure 3 above comes from directly simplifying the structure of the old closed general development model shown in Figure 1 by restricting it to the use of agricultural resources(AR) only.

### **i) Production implications**

According to Figure 3 above, facing the same traditional agricultural market price AP, both public use(A) and private use(B) producers would willingly meet the needs of agricultural consumers(AC). If facing different prices, then the producer who can supply the market at a lower price will have a higher share of the agricultural market.

### **ii) Consumption implications**

Figure 3 above help us to see that that at the same traditional agricultural market price AP, agricultural consumers(AC) would be indifferent to buying from public use(A) or private use(B) producers. However, if facing different prices, agricultural consumers(AC) should be expected to buy from the supplier with the lowest agricultural price.

### **iii) The full externality neutral assumption**

In the old closed agricultural development model in Figure 3 above there were no externality concerns as social margins and green margins were assumed not to exist; and therefore, the traditional agricultural market price AP was assumed to be full externality neutral.

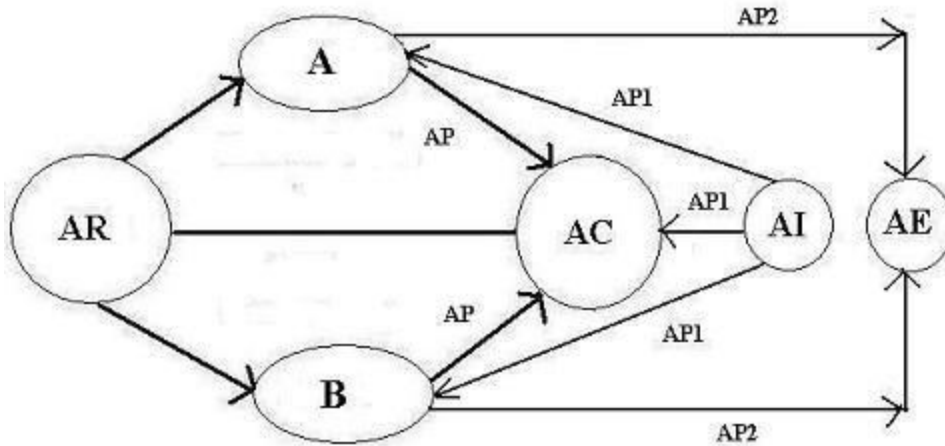
### **iv) Missed points of market intervention**

Figure 3 above shows that it has been possible to use agricultural green margins(AGM) and/or agricultural social margins(ASM) to motivate directly or indirectly public use(A) and/or private use(B) producers to be more environmentally and/or socially friendly when supplying the local agricultural market, but they were not used as traditional agricultural market theory considers those actions market distortions, not market corrections.

Without those agricultural green margin(AGM) and/or agricultural social margin(ASM) incentives we should not expect producers to change behaviour as any increase in their cost of production would lead to a loss in their agricultural market share. In other words, the full externality neutral assumption renders local agricultural fair trade interventions inconsistent with the closed agricultural model.

## **The opened agricultural development model**

We can extend the old closed agricultural development model in Figure 3 above to its opened form as follows: If we assume that local agricultural resources(AR) can be under public use(A) and private use(B) at the same time to produce goods to meet the needs of local and non-local agricultural consumers, then we have an opened agricultural development model, which can be indicated as shown below:



**Figure 4 The opened agricultural development model**

Notice that the structure of old opened agricultural model shown in Figure 4 above comes from directly simplifying the structure of the old opened development model shown in Figure 2 by restricting it to only the use of agricultural resources(AR).

**i) Export implications**

Based on Figure 4 above we can say that if the local agricultural price  $AP >$  export agricultural price  $AP2$ , agricultural producers should be expected to supply the local market. If the local agricultural price  $AP =$  export agricultural price  $AP2$ , agricultural producers would be indifferent between supplying the local market or exporting. If the local agricultural price  $AP <$  export agricultural price  $AP2$ , producers should be expected to export.

**ii) Import implications**

Consistent with Figure 4 above, if the local agricultural price  $AP >$  import agricultural price  $AP1$ , agricultural producers should be expected to import goods for resale and agricultural consumers(AC), especially under globalisation, should be expected to import agricultural goods directly. If the local agricultural price  $AP =$  import agricultural price  $AP1$ , agricultural producers would be indifferent between producing or importing agricultural goods; and agricultural consumers(AC) would be indifferent between consuming local agricultural goods or importing directly. If the local agricultural price  $AP <$  import agricultural price  $AP1$ , agricultural producers should be expected not to import, and produce for the local market; and agricultural consumers(AC) should be expected to consume local agricultural goods and not import directly.

**iii) The full externality neutral assumption**

In the old opened agricultural development model above there were too no externality concerns as social margins and green margins were assumed not to exist; and therefore, the traditional agricultural market price  $AP$  as well as agricultural imports price  $AP1$  and agricultural exports price  $AP2$  were assumed to be full externality neutral.

**iv) Missed points of market intervention**

Figure 4 above shows that it has been possible to use agricultural green margins(AGM) and/or agricultural social margins(ASM) to encourage directly or indirectly public use(A) and/or

private use(B) producers to be more environmentally and/or socially friendly when supplying the local and non-local agricultural market, but they were not used as traditional agricultural market theory considers those actions market distortions, not market corrections.

Without those agricultural green margin(AGM) and/or agricultural social margin(ASM) incentives we should not expect producers to change behaviour to supply the local and non-local agricultural market as any increase in their cost of production would lead to a loss in their agricultural market share. In other words, the full externality neutral assumption renders local and non-local fair trade interventions inconsistent with the opened agricultural model.

### The closed green agricultural development model

The greening of the old agricultural development model can be stated as follows: If we assume that local green agricultural resources[G(AR)] can be under green public use[G(A)] and green private use[G(B)] at the same time to produce goods to meet the needs of only local green agricultural consumers[G(AC)], then we have a closed green agricultural development model, which can be pointed out as shown below:

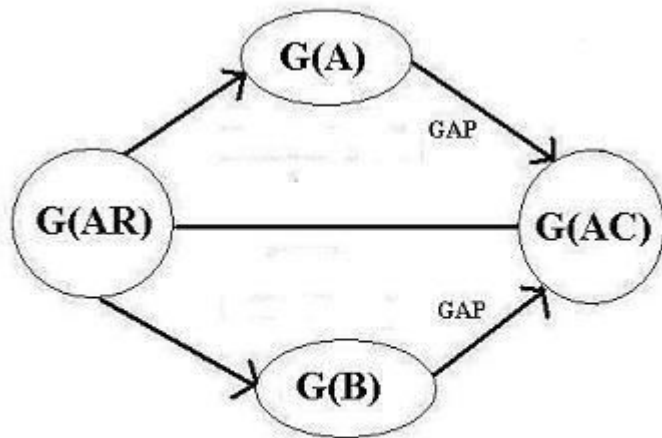


Figure 5 The closed green agricultural development model

Notice that the structure of the closed green agricultural model shown in Figure 5 above comes from directly greening the structure of the old closed agricultural development model shown in Figure 3.

#### i) Production implications

From Figure 5 above we can say that when facing the same green agricultural market price GAP, both green public use[G(A)] and green private use[G(B)] producers would willingly meet the needs of green agricultural consumers[G(AC)]. If facing different prices, green producer who can supply the market at a lower price will have a higher share of the green agricultural market.

#### ii) Consumption implications

According to Figure 5, at the same green agricultural market price GAP, green agricultural consumers[G(AC)] would be indifferent to buying from public use(A) or private

use(B) producers. However, if facing different prices, green agricultural consumers[G(AC)] should be expected to buy from the supplier with the lowest green agricultural price.

### **iii) The partial externality neutral assumption**

In the closed green agricultural development model in Figure 5 above there are only partial externality concerns as only agricultural social margins are assumed not to exist; and therefore, the green agricultural market price GAP is assumed currently to be social externality neutral.

Noticed that the green agricultural market price(GAP) is higher than the traditional agricultural market price(AP) by the agricultural green margin(AGM); and therefore, green agricultural consumption is expected to be lower than the previous levels of traditional agricultural consumption. Also notice that the green agricultural price GAP is a partial fair trade price(PFTP).

### **iv) Available points of market intervention**

Figure 5 above shows that it is possible to use agricultural social margins(ASM) to motivate directly or indirectly green public use[G(A)] and/or green private use[G(B)] producers to be more socially friendly when supplying the local agricultural green market as current development thinking considers those actions market corrections, just as the internalization of agricultural green margins(AGM) are, not market distortions. Without those agricultural social margin(ASM) incentives we should not expect green producers to change behaviour towards social friendliness as any increase in their cost of production would lead to a loss in their market share.

In other words, the partial externality neutral assumption makes local socially friendly fair trade interventions consistent with the closed green agricultural model. Again, notice that adding agricultural social margins(ASM) to the green agricultural price(GAP) would lead to higher prices; and therefore, less consumption should be expected under a socially friendly green agricultural model. Moreover, see that adding social green margins(ASM) to green prices leads to full fair trade pricing(FFTP).

### **The opened green agricultural development model**

The closed green agricultural development model in Figure 5 above can be extended to its opened form as follows: If we assume that local green agricultural resources[G(AR)] can be under green public use[G(A)] and green private use[G(B)] at the same time to produce goods to meet the needs of local and non-local green agricultural consumers, then we have an opened green agricultural development model, which can be highlighted as shown below:

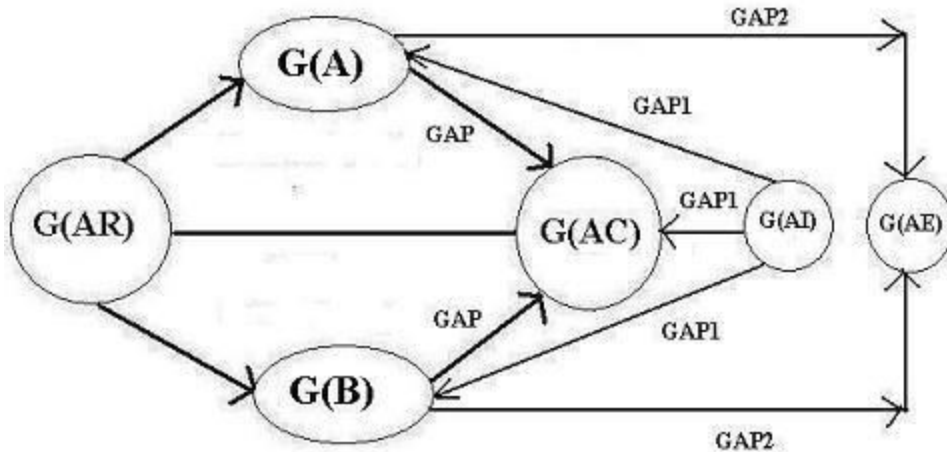


Figure 6 The opened green agricultural development model

Notice that the structure of opened green agricultural model shown in Figure 6 above comes from directly greening the structure of the old opened agricultural development model shown in Figure 4.

### i) Export implications

According to Figure 6 above, if the local green agricultural price  $GAP >$  export green agricultural price  $GAP2$ , green agricultural producers should be expected to supply the local green market. If the local green agricultural price  $GAP =$  export green agricultural price  $GAP2$ , green agricultural producers would be indifferent between supplying the local green market or exporting. If the local green agricultural price  $GAP <$  export green agricultural price  $GAP2$ , green producers should be expected to export.

### ii) Import implications

From Figure 6 above we can say that if the local green agricultural price  $GAP >$  import green agricultural price  $GAP1$ , green agricultural producers should be expected to import green agricultural goods for resale and green agricultural consumers[G(AC)], especially under globalisation, should be expected to import green agricultural goods directly. If the local green agricultural price  $GAP =$  import green agricultural price  $GAP1$ , green agricultural producers would be indifferent between producing or importing green agricultural goods; and green agricultural consumers[G(AC)] would be indifferent between consuming local green agricultural goods or importing directly. If the local green agricultural price  $GAP <$  import green agricultural price  $GAP1$ , green agricultural producers should be expected not to import, and produce for the local green market; and green agricultural consumers[G(AC)] should be expected to consume local green agricultural goods and not import directly.

### iii) The partial externality neutral assumption

In the opened green agricultural development model in Figure 6 above too there are only partial external concerns as only agricultural social margins are assumed not to exist; and therefore, the green agricultural market price  $GAP$  as well as green agricultural imports price  $GAP1$  and green agricultural export price  $GAP2$  are currently assumed to be social externality neutral.

Notice that the green agricultural market price GAP as well as the green agricultural import price GAP1 and the green agricultural export price GAP2 are higher than their corresponding traditional agricultural prices by their respective green margin; and therefore, related green consumption is expected to be lower than corresponding levels of traditional agricultural consumption. Notice too that all these green prices are partial fair trade prices(PFTP).

#### **iv) Available points of market intervention**

Figure 6 above shows that it is possible to use agricultural social margins(ASM) to encourage directly or indirectly green public use[G(A)] and/or green private use[G(B)] producers to be more socially friendly when supplying the local and non-local green agricultural market as current development thinking considers these actions market corrections, just as the internalization of agricultural green margins(AGM) are, not market distortions. Without those agricultural social margin(ASM) incentives we should not expect green producers to change behaviour towards social friendliness to supply the local and non-local green agricultural market as any increase in their cost of production would lead to a loss in their market share.

In other words, the partial externality neutral assumption makes local and non-local socially friendly fair trade interventions consistent with the opened green agricultural model. Again, notice that adding corresponding social margins to the green agricultural price GAP, to the green import agricultural price GAP1, and to the green export agricultural price GAP2 would lead to higher prices; and therefore, less corresponding consumption is expected under a socially friendly green agricultural development model. Moreover, notice that adding the corresponding social agricultural margin to all those green prices transforms them into full fair trade prices(FFTP).

#### **Conclusions**

First, it was pointed out that traditional development modeling, general and agricultural, was assumed to be social and environmental externality neutral. Any attempt to use social margins and/or green margins to induce socially friendly and/or environmentally friendly economic development was discouraged as those actions were considered market distortions, not market corrections. Second, it was mentioned that under sustainability thinking, the use of green margins and/or social margins are market correction tools, not distortions. Third, it was discussed how the old agricultural development model can be greened through the process of adding agricultural green margins leading to expected lower consumption levels since green agricultural prices are higher than traditional agricultural prices. And finally, it was stressed that since the green agricultural model is assumed to be social externality neutral, then agricultural social margins could be used to make green agricultural development socially friendly and lead to the expectation of even lower levels of agricultural consumption.

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