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**Sustainability thought 175: Contrasting the working of perfect market and of dwarf market solutions to distorted traditional market pricing mechanisms to point out the nature of sustainability black holes created under paradigm shift avoidance processes**

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## Abstract

Perfect markets are expected to tend towards producing at the lowest cost possible, whether they are perfect traditional markets, perfect green markets, perfect red markets or perfect sustainability markets as this provides them a profit incentive to do so. Dwarf markets are expected to produce at a price that reflects the externality management cost assigned to that market as they do not have a profit incentive to produce at the lowest externality cost possible. When contrasting the working of perfect markets and that of dwarf markets we see that they work in the opposite way and when there is perfect market paradigm shift avoidance sustainability black holes are created by each dwarf market when they are set up, including the dwarf green market and its environmental sustainability black hole. And this raises the questions, how to contrast the working of perfect market and of dwarf market solutions to distorted traditional market pricing mechanisms to point out the nature of sustainability black holes created under paradigm shift avoidance processes?. What are the implications of this?

## Key words

Perfect traditional markets, perfect red markets, dwarf red markets, perfect green markets, dwarf green markets, perfect sustainability markets, dwarf sustainability markets, sustainability gaps, social sustainability gap, environmental sustainability gap, socio-environmental sustainability gap, externality margin, paradigm shift, cost externalization, cost

internalization, pollution management, environmental externality management, pollution management cost.

## Introduction

### a) The working of all perfect markets

The idea that all perfect markets tend to produce at the lowest cost possible just as the perfect traditional market does was pointed out recently (Muñoz 2022), a situation summarized in Figure 1 below:

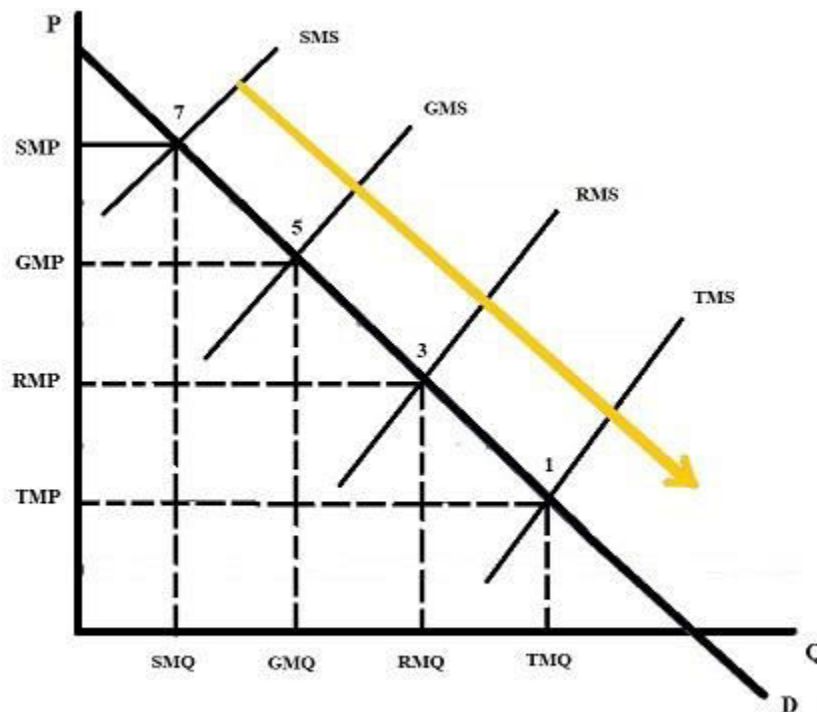


Figure 1 The working of all perfect markets: They are production expansion markets that tend to produce at the lowest market price possible to maximize profit.

We can appreciate in Figure 1 above that there is a perfect traditional market TM at point 1, there is a perfect red market RM at point 3, there is a perfect green market GM at point 5, and there is a perfect sustainability market S at point 7, all of them once in place are expansion production markets that are driven by producing at the lowest price possible to maximize profits, the lowest traditional market price TMP possible in the case of traditional markets, the lowest red market price RMP possible in the case of red markets, the lowest green market price GMP possible in the case of the green market, and the lowest sustainability market price SMP possible in the case of the sustainability market. Notice that in the case of the traditional market social and environmental pollution production is a profitable business opportunity when those cost are externalized, while in the red market, green market, and sustainability market pollution reduction

through externality cost internalization is a good business opportunity, social pollution reduction is profitable in red markets while environmental pollution reduction and socio-environmental pollution reduction are profitable in green markets and sustainability markets respectively. In other words, the perfect traditional market is not consistent with the idea of producing at the lowest pollution cost possible while all other perfect markets are. Hence, the perfect traditional market reach lower traditional market prices through social and environmental cost externalization while the other perfect markets achieve lower market prices through externality cost internalization, social cost internalization in the case of perfect red markets, environmental cost internalization in the case of perfect green markets and socio-environmental cost internalization in the case of perfect sustainability markets.

### Implication 1

*The drive to produce at the lowest price possible to maximize profits is common in all perfect markets, but perfect traditional markets make money by expanding production, and therefore, expanding pollution, and all other perfect markets make money by expanding production while reducing pollution.*

### b) The working of all dwarf markets

The idea that all dwarf markets will produce at the assigned pollution management cost or dwarf margin and that they work in the opposite way as traditional markets do has been recently shared (Muñoz 2023), a situation indicated in Figure 2 below:

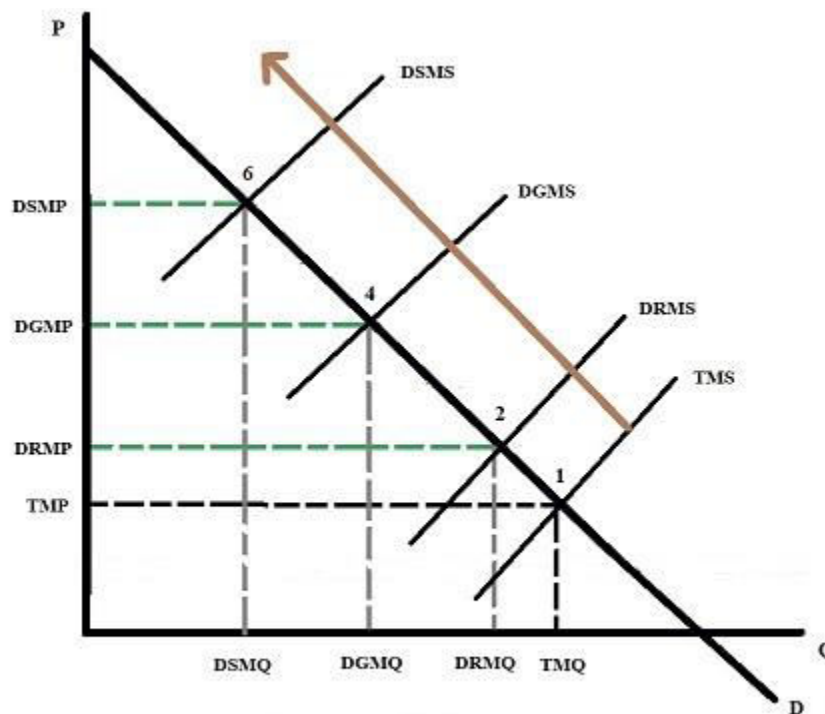


Figure 2 The working of all dwarf green markets: They are pollution management markets that produce exactly at the dwarf margin assigned externally by the pollution manager.

We can say based on in Figure 2 above that there is a perfect traditional market TM at point 1, there is a dwarf red market DRM at point 2, there is a dwarf green market DGM at point 4, and there is a dwarf sustainability market DS at point 6. Perfect traditional markets once in place are expansion production markets that are driven by producing at the lowest traditional market price possible to maximize profits. The more traditional market expansion, the more pollution. Dwarf markets on the other hand, are contraction production markets that produce at the assigned pollution management cost or dwarf margin. The more dwarf market contraction, the less pollution. Hence, profit making in traditional markets and in dwarf markets is not consistent with the idea of making money by producing at the lowest pollution cost possible.

### **Implication 2**

*Perfect traditional markets make money by expanding production and therefore, pollution when producing at the lowest traditional market price possible while and all dwarf markets make money by contracting production, and therefore, pollution, by passing the pollution management cost or dwarf margin assigned by the pollution manager through their dwarf market price.*

### **c) The idea of paradigm fixes and paradigm patches**

We can see the perfect sustainability market at point 7, the perfect green market at point 5 and the perfect red market at point 3 in Figure 1 above as the three perfect market ways that can be set up to correct the socially and environmentally distorted traditional market price at point 1. We can see the dwarf sustainability market at point 6, the dwarf green market at point 4, and the dwarf red market at point 2 in Figure 2 above as the three imperfect market ways to address the socially and environmentally distorted traditional market price at point 1. In other words, distorted traditional markets can either be fully fixed through perfect market thinking or they can be just patched through pollution management thinking.

### **Implication 3**

*Perfect market thinking is about a perfect fix to markets assumed to be perfect in theory, but that are distorted in practice like the perfect traditional market to bring them to a higher level while imperfect market thinking like pollution management thinking is about ways to patch distorted markets to keep them going at the same level.*

### **d) The idea of paradigm shift avoidance and sustainability black holes**

We can see the dwarf markets in Figure 2 above, namely dwarf sustainability market, dwarf green market and dwarf red markets as three ways to avoid the shift from the distorted traditional market at point 1 towards the perfect markets in Figure 1 above, namely respectively, the perfect traditional market, the perfect green market and the perfect red market. When instead of implementing a perfect shift, you implement an imperfect one, you create sustainability gaps

in the process because between the perfect markets and its respective dwarf markets there is a sustainability gap. Hence, when setting up dwarf markets to avoid perfect markets you are creating sustainability black holes within those sustainability gaps. For example, between the perfect sustainability market and the dwarf sustainability market there is a socio-environmental sustainability gap; and therefore, a socio-environmental sustainability black hole as the socio-environmental margin( $SM + EM$ ) is greater than the socio-environmental pollution management cost or dwarf socio-environmental margin( $DSM + DGM$ ) so that  $SM + EM > DSM + DGM$ , a situation pointed out very recently (Muñoz 2023).

**d) The need to understand the implications of placing the working of perfect markets and the working of dwarf markets in the same plane.**

Hence, when contrasting the working of perfect markets and that of dwarf markets once in place as described above in Figure 1 and in Figure 2 we see the following: i) that they work in the opposite way; ii) that perfect markets can be seen as a perfect fix and dwarf markets as only patches; iii) that dwarf markets can be seen as perfect paradigm shift avoidance moves; and iv) that when there is perfect market paradigm shift avoidance sustainability black holes are created by each dwarf market when they are set up, including the dwarf green market and its environmental sustainability black hole. For example, since the route of dwarf green markets instead of the route of perfect green markets was chosen in 2012 Rio + 20 conference (UNCSD 2012a: UNCSD 2012b) as the way forward to address the environmental issues of the socio-environmental issues advanced by the 1987 Brundtland Commission (WCED 1987) found to be affecting the sustainability of perfect business as usual model of Adam Smith (Smith 1776), then they chose an environmental patch that creates an environmental sustainability black hole. And this raises the questions, how to contrast the working of perfect market and of dwarf market solutions to distorted traditional market pricing mechanisms to point out the nature of sustainability black holes created under paradigm shift avoidance processes? What are the implications of this?

**Goals of this paper**

a) To place perfect markets and dwarf markets in the same plane and compare the way they work; b) To highlight the sustainability black holes that are created when setting up dwarf markets to avoid a perfect paradigm shift; c) To stress that no sustainability black holes are created when implemented perfect market fixes of distorted markets; and; d) To point out the nature of implications of the 2012 green market paradigm shift avoidance move and its environmental sustainability black hole.

**Methodology**

First, the terminology and operational concepts, merging rules, externalization and internalization, and sustainability gap rules and closing rules are shared. Second, perfect markets and dwarf markets are placed in the same plane and compared. Third, the different sustainability black holes created when setting up dwarf markets are highlighted. Fourth, the different perfect market shifts are shared to indicate that perfect fixes of distorted markets lead to no sustainability black holes. Sixth, the nature of the environmental black hole that is created when implementing dwarf green markets is pointed out. And finally, some food for thoughts and relevant conclusions are listed.

## Terminology

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A = Dominant society system	a = Passive society system
B = Dominant economy system	b = Passive economic system
C = Dominant environmental system	c = Passive environmental system
S = Perfect sustainability market	SMP = Sustainability market price
RM = Perfect red market	RMP = Red market price
GM = Perfect green market	GMP = Green market price
TM = Perfect traditional market	TMP = Traditional market price
E[ ] = Externalization venue	I[ ] = Internalization venue
SG = Sustainability gap	SSG = Social sustainability gap
ESG = Environmental sustainability gap	SESG = Socio-environmental sustainability gap
DRM = Dwarf red market	DGM = Dwarf green market
DS = Dwarf sustainability market	DSSG = Dwarf social sustainability gap
DESG = Dwarf environmental sustainability gap	E(Y) = Externality Y
DSESG = Dwarf socio-environmental sustainability gap	F(E[Y]) = Patched externality Y
SM = Social margin	DSM = Dwarf social margin
GM = Green margin	DGM = Dwarf green margin
SEM = Socio-environmental margin	DSEM = Dwarf socio-environmental margin

DGMP = Dwarf green market price

DSEMP = Dwarf socio-environmental market price

DRMP = Dwarf red market price

DSMP = Dwarf sustainability market price

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## **Operational concepts, model structures; and internalization, externalization and sustainability gap opening and closing rules.**

### **A) Operational concepts**

- 1) **Science**, *the world based on the scientific truth, this world falls if invalidated.*
- 2) **Ideology**, *the world based on the non-scientific truth, this world will tend to persist even if invalidated.*
- 3) **The theory-practice general consistency principle**, *the world where the theory of the model must match the practice.*
- 4) **The different model general inconsistency principle**, *the world where the theory and practice of different models are inconsistent with each other.*
- 5) **Academic facts**, *the science based truth.*
- 6) **Alternative academic facts**, *the non-science based truth.*
- 7) **Academic blindness**, *the inability to see academic facts due to the existence of knowledge gaps, paradigm shift based or otherwise.*
- 8) **Willful academic blindness**, *the willingness to ignore academic facts and consensus.*
- 9) **Sustainability**, *the world where the interplay of sustainability theory and sustainability practice is aimed at fixing or correcting embedded externality problems.*
- 10) **Sustainable development**, *the world where the interplay of sustainable development theory and sustainable development practice is aimed at patching or managing embedded externality problems.*
- 11) **Academic integrity**, *the duty to respect and defend academic facts and consensus.*
- 12) **Golden paradigm**, *one that does not creates abnormalities.*
- 13) **Flawed paradigm**, *one that creates abnormalities.*

**14) Kuhn's loop**, the science based mechanism that leads to paradigm shift through abnormality correction.

**15) The perfect traditional market**, the market cleared by the traditional market price( $TMP = P$ ), an economy only market at the heart of raw capitalism.

**16) The perfect red market**, the market cleared by the red market price( $RMP = P + SM$ ), a society and economy market at the heart of red capitalism.

**17) The perfect green market**, the market cleared by the green market price( $GMP = P + EM$ ), an environment and economy market at the heart of green capitalism.

**18) The perfect sustainability market**, the market cleared by the sustainability market price( $SMP = P + SM + EM$ ), a society and environment and economy market at the heart of yellow capitalism.

**19) The dwarf red market**, the market cleared by the dwarf red market price( $DRMP = P + DSM$ ), a patched red market at the heart of dwarf socially friendly capitalism.

**20) The dwarf green market**, the market cleared by the dwarf green market price( $DGMP = P + DEM$ ), a patched green market at the heart of dwarf green market based capitalism.

**21) The dwarf sustainability market**, the market cleared by the dwarf sustainability market price( $DSP = P + DSM + DEM$ ), a patched sustainability market at the heart of dwarf yellow capitalism.

**22) The dwarf social margin**, the cost that reflects the assigned social cost of production( $DSM$ ) in the social externality management based market.

**23) The dwarf environmental margin**, the cost that reflects the assigned social cost of production( $DEM$ ) in the environmental externality management based market.

**24) The dwarf sustainability margin**, the cost that reflects the assigned social( $DSM$ ) and environmental( $DEM$ ) cost of production in the socio-environmental externality management based market.

## **B) Paradigm structures**

### ***1) A golden paradigm***

If we have a dominant paradigm R and it is a golden paradigm GOM, then it produces no externalities or no abnormalities A

#### **i) GOM = R**

As it can be seen in expression i) above the golden model GOM does not produce abnormalities.

## **2) A flawed paradigm**

If we have a dominant paradigm R and it is a flawed paradigm FLM, then it produces “n” externalities or abnormalities A so as A1,A2,....

$$\text{ii) FLM} = \mathbf{R(A1, A2, \dots An)}$$

As it can be appreciated in expression ii) above the flawed model FLM produces “n” abnormalities.

## **C) The Thomas Kuhn’s transformation loop(TKTL) under academic integrity**

### **1) Impact on the golden paradigm**

If we subject a golden paradigm GOM = R to the Thomas Kuhn’s transformation loop(TKTL), the process will have no impact on it as it has no abnormalities A to correct, golden paradigm GOM remains a golden paradigm GOM

$$\text{iii) TKTL(GOM)} = \mathbf{TKTL(R) = R = GOM}$$

The expression iii) above tells us that the golden model displays TKTL loop neutrality as it has no abnormalities to remove.

### **2) Impact on the flawed paradigm**

If we subject a flawed paradigm FLM =  $\mathbf{R(A1, A2, \dots An)}$  to the Thomas Kuhn’s transformation loop(TKTL), the loop process will be active until all abnormalities are corrected and a golden paradigm GOM arises

$$\text{iv) TKTL(FLM)} = \mathbf{TKTL[R(A1, A2, \dots An)] \text{ -----} \rightarrow \mathbf{R = GOM}}$$

The expression iv) above tells us that the TKTL loop process transforms flawed dominant paradigms FLM in the end into golden paradigms GOM by correcting the abnormalities A1.....An affecting them and shifting them in the process.

## **D) Relevant market structures**

If we have the following: a = social abnormality, c = environmental abnormality, A = dominant society, C = dominant environment, and B = the dominant economy, then the structure of relevant markets can be stated as indicated below:

### **1) The traditional market as a golden model**

$$\text{i) TM} = \mathbf{B}$$

Under externality neutrality assumptions the traditional market TM in section i) above is a golden paradigm, it produces no abnormalities.

**2) *The traditional market under social abnormalities(a)***

**ii) TM = aB**

Under no social externality neutrality assumptions, the traditional market TM in section ii) above produces social abnormalities “a”. It is a flawed paradigm as it has social abnormalities to correct.

**3) *The traditional market under environmental abnormalities(c)***

**iii) TM = Bc**

Under no environmental externality neutrality assumptions, the traditional market TM in section iii) above produces environmental abnormalities “c”. It is a flawed paradigm as it has environmental externalities to correct.

**4) *The traditional market under socio-environmental abnormalities(ac)***

**iv) TM = aBc**

Under no socio-environmental externality neutrality assumptions, the traditional market TM in section iv) above produces socio-environmental abnormalities “ac”. It is a flawed paradigm as it has social and environmental externalities to correct.

**5) *The red market under environmental abnormalities(c)***

**v) RM = ABc**

Under no environmental externality assumptions, the red market RM in section v) above produces environmental abnormalities. It is a flawed paradigm as it has environmental externalities to correct. Notice that in the red market RM, both society(A) and economy(B) are in dominant form.

**6) *The green market under social abnormalities(a)***

**vi) GM = aBC**

Under no social externality assumptions, the green market GM in section vi) above produces social abnormalities. It is a flawed paradigm as it has social externalities to correct. Notice that in the green market GM, both the economy(B) and the environment(C) are in dominant form.

**7) *The sustainability market has no abnormalities***

## vii) SM = ABC

The sustainability market SM in section vii) above produces no abnormalities as all components are in dominant form since all components are now endogenous to the model. It is a golden paradigm as it has no abnormalities to correct.

## E) Abnormality externalization and internalization rules

If  $y, x, z$  are three abnormalities and  $Y, X, Z$  are the corrected variables and if  $E[\ ] =$  externalization and  $I[\ ] =$  internalization, then the following holds true:

- |                  |                  |                 |
|------------------|------------------|-----------------|
| a) $E[Y] = y$    | b) $E[X] = x$    | c) $E[Z] = z$   |
| d) $I[y] = Y$    | e) $I[x] = X$    | f) $I[z] = Z$   |
| g) $I[E[Y]] = Y$ | h) $E[I[y]] = y$ | i) $E[YX] = yx$ |

## F) Sustainability gap creation and closing rules

If  $y, x, z$  are three abnormalities that create sustainability gaps(SG) and  $Y, X, Z$  are the corrected variables and if  $E[\ ] =$  externalization and  $I[\ ] =$  internalization, then the following holds true:

- |                      |                      |                    |
|----------------------|----------------------|--------------------|
| a) $E[Y] = SG_Y$     | b) $E[X] = SG_X$     | c) $E[Z] = SG_Z$   |
| d) $I[SG_Y] = Y$     | e) $I[SG_X] = X$     | f) $I[SG_Z] = Z$   |
| g) $I[E[Y]] = Y$     | h) $I[E[X]] = X$     | i) $I[E[Z]] = Z$   |
| j) $E[YX] = SG_{YX}$ | k) $I[SG_{YX}] = YX$ | l) $I[E[YX]] = YX$ |

## G) Remaining sustainability gaps

If we have two dominant components  $Y$  and  $X$  and we have a cost margin  $CM_Y = E[Y] = SG_Y$  and  $CM_X = E[X] = SG_X$  plus we have a dwarf cost margin  $DCM_Y = T_Y$  and  $DCM_X = T_X$ , where  $CM_Y > DCM_Y$ ,  $CM_X > DCM_X$  and hence,  $E[Y] > T_Y$  and  $E[X] > T_X$ , then the remaining sustainability gap RSG for each variable comes as follows:

- a)  $RSG_Y = CM_Y - DCM_Y = E[Y] - T_Y = SG_Y - T_Y$   
b)  $RSG_X = CM_X - DCM_X = E[X] - T_X = SG_X - T_X$

## H) Patching of sustainability gaps

If we have two dominant components  $Y$  and  $X$  and we have a cost margin  $CM_Y = E[Y] = SG_Y$ ,  $CM_X = E[X] = SG_X$ , and  $CM_{YX} = E[YX] = SG_{YX}$ ; and we have dwarf market patches  $T_Y$ ,

$T_X$ , and  $T_{YX}$ , then the patching(F) of sustainability gaps SG leading to dwarf sustainability gaps DSG works as follows:

a)  $F(CM_Y) = F(E[Y]) = F(SG_Y) = DSG_Y = T_Y$

b)  $F(CM_X) = F(E[X]) = F(SG_X) = DSG_X = T_X$

c)  $F(CM_{YX}) = F(E[YX]) = F(SG_{YX}) = DSG_{YX} = T_{YX}$

d)  $F(E[YX]) = F(E[Y] + E[X]) = DSG_{YX} = T_{YX}$

**E) Internalizing patched sustainability gap to close them**

If we have a two dominant components Y and X and we have patched cost margins such that  $F(CM_Y) = F(E[Y]) = F(SG_Y) = DSG_Y = T_Y$  or  $F(CM_{YX}) = F(E[YX]) = F(SG_{YX}) = DSG_{YX} = T_{YX}$ , then the dwarf cost internalization process to shift markets to dwarf markets works as follows:

a)  $I[F(CM_Y)] = I[F(E[Y])] = I[F(SG_Y)] = I[DSG_Y] = I[T_Y] = T_Y$

b)  $I[F(CM_{YX})] = I[F(E[YX])] = I[F(SG_{YX})] = I[DSG_{YX}] = I[T_{YX}] = T_{YX}$

**Contrasting the working of all perfect markets and of dwarf markets**

When the perfect markets in Figure 1 and the dwarf markets in Figure 2 in the introduction are placed in the same plane, we arrived to Figure 3 below:

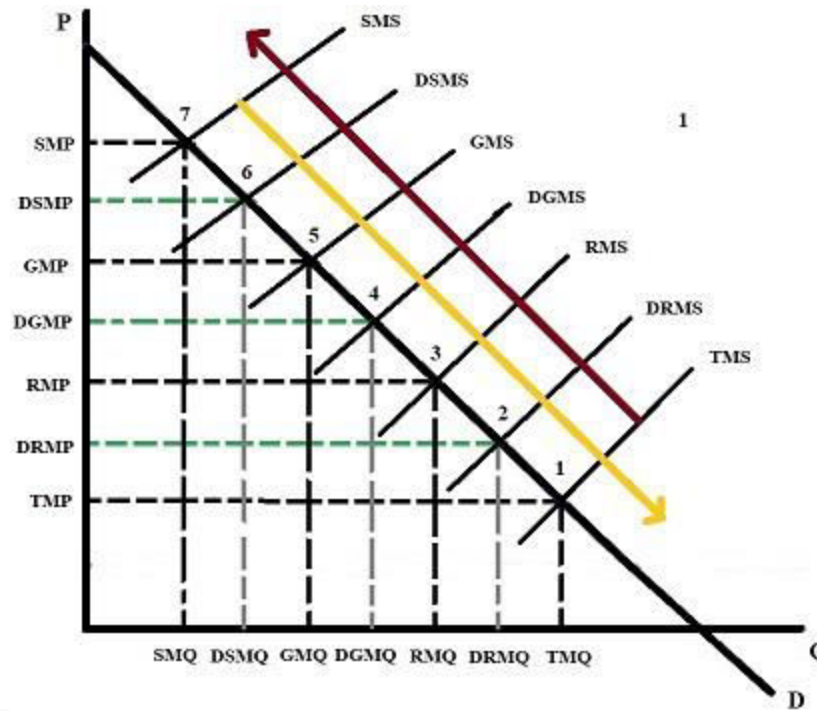


Figure 3 Comparing the working of all perfect markets with the working of all dwarf markets: They work in the opposite direction, perfect markets expand to the right and dwarf markets contract to the left.

We can highlight the following information based on Figure 3 above: i) The market that produces and consumes the most is the perfect traditional market at point 1 while the market that produces and consumes the less is the perfect sustainability market at point 7; ii) There are three imperfect ways to patch socially and environmentally distorted traditional markets, namely, the dwarf red market at point 2, the dwarf green market at point 4, and the dwarf sustainability market at point 6; iii) There are three perfect market ways to fix socially and environmentally distorted traditional markets, namely, the perfect red market at point 3, the perfect green market at point 5, and the perfect sustainability market at point 7; iv) If distorted traditional markets are patched through dwarf markets or some pollution management markets, once those markets are in place they reduce pollution only by contracting production in response to higher dwarf margins set by the pollution manager, these markets are inconsistent with the idea of profitable pollution reduction strategies aimed at producing at the lowest pollution cost possible. In other words, once in place, dwarf markets contract from right to left as their prices increase due to dwarf margin increases as indicated by the black arrow; and v) If distorted traditional markets are fixed through perfect markets or pollution reduction markets, once those markets are in place they will tend to produce at the lowest perfect market price possible to maximize profits. Hence, perfect sustainability markets, perfect green markets, and perfect red markets are consistent with the idea of maximizing profits by producing at the lowest market price possible driven by the lowest pollution cost possible: the lowest sustainability market price possible due to the lowest socio-environmental cost possible; the lowest green market price possible due to the lowest environmental cost possible; and the lowest red market price possible due to the lowest social

cost possible. In other words, once in place, perfect markets expand from left to right as their prices decrease following the producing at the lowest pollution cost possible behavior as indicated by the yellow arrow. Finally, we can indicate based on Figure 3 above that the market that produces more pollution as it expands is the traditional market at point 1 and the market that produces less pollution as it expands is the perfect sustainability market at point 7.

**Implication 4**

*Dwarf markets are not free markets and perfect markets are free markets as perfect market prices are determined by the interaction of each market specific supply and demand while in dwarf markets prices are determined outside the market.*

**The sustainability black holes created by perfect market paradigm shift avoidance**

The idea that placing dwarf markets below perfect markets to avoid perfect market shifts or perfect corrections, creating sustainability black holes is summarized in Figure 4 below:

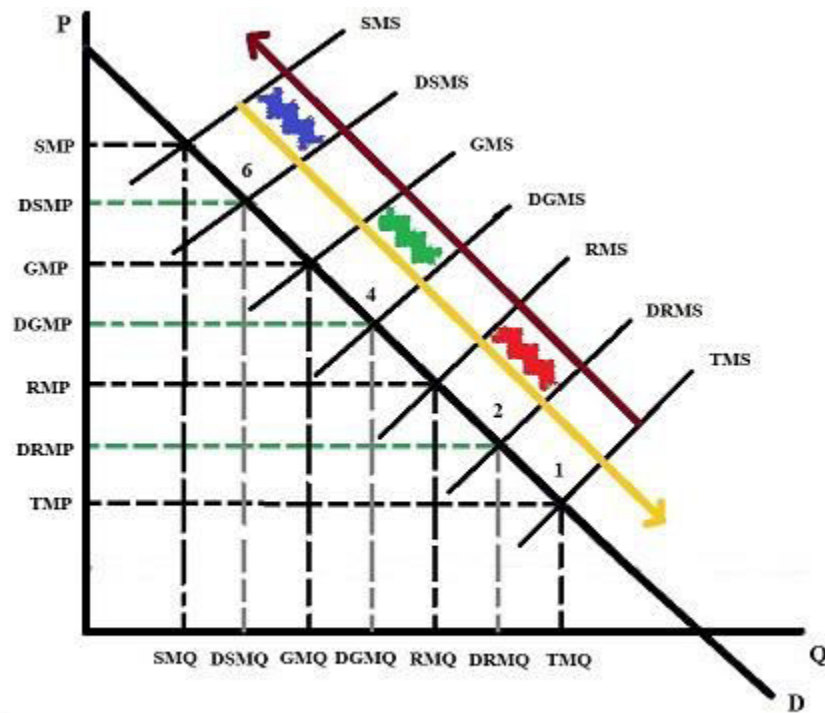


Figure 4 When dwarf markets are set up, we create sustainability black holes: a social sustainability black hole, an environmental sustainability black hole, and a socio-environmental sustainability black hole.

We can stress the following based on Figure 4 above: i) When we decide to patch the socially and environmentally distorted traditional market at point 1 through some social pollution costs and we set up dwarf red markets at point 2 we are creating social sustainability black holes as indicated by the red gap between the perfect red market supply RMS and the dwarf red market

supply DRMS; ii) When we decide to patch the socially and environmentally distorted traditional market at point 1 through some environmental pollution costs and we set up dwarf green markets at point 4 we are creating environmental sustainability black holes as indicated by the green gap between the perfect green market supply GMS and the dwarf green market supply DGMS; iii) When we decide to patch the socially and environmentally distorted traditional market at point 1 through socio-environmental pollution costs and we set up dwarf sustainability markets at point 6 we are creating socio-environmental black holes as indicated by the blue gap between the perfect sustainability market supply SMS and the dwarf sustainability market supply DSMS; and iv) If we decide to leave the perfect traditional market alone, it will tend to produce at the lowest traditional market price possible expanding production and consumption as well as expanding pollution generation.

### **Implication 5**

*Dwarf markets in Figure 4 above can be seen as three ways of keeping the business as usual model of Adam Smith running while showing some social or environmental or socio-environmental pollution cost responsibility in the process while still polluting.*

### **There are no sustainability black holes created when there is no perfect market paradigm shift avoidance**

The idea that perfect market fixes creates no sustainability black holes as they lead distorted markets to perfectly shift to perfect markets when internalizing specific sustainability gaps is described in Figure 5 below:

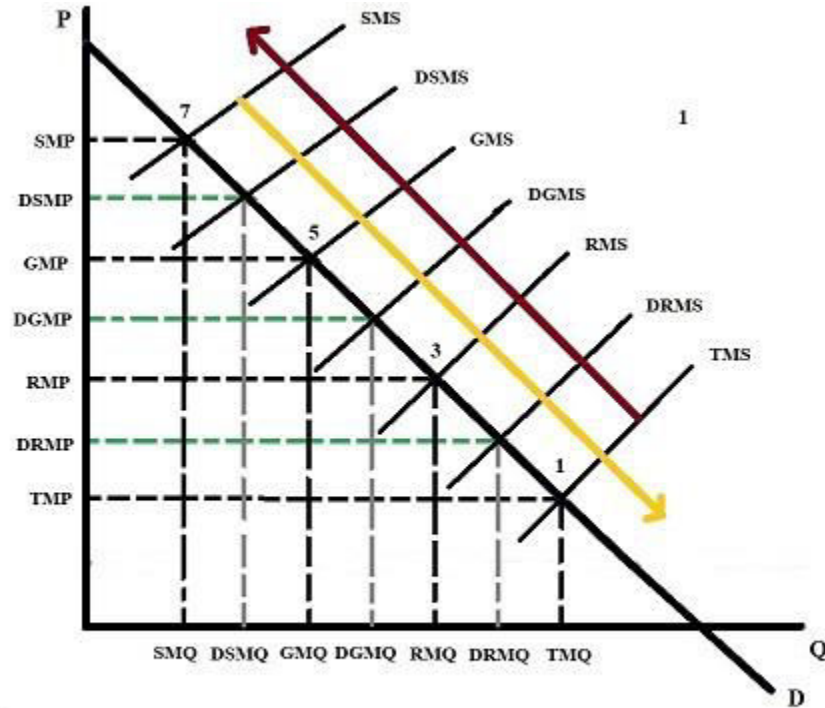


Figure 5 When perfect markets are set up as full corrections to remove specific externality problems affecting the perfect traditional market no sustainability black holes are created as sustainability gaps are fully closed.

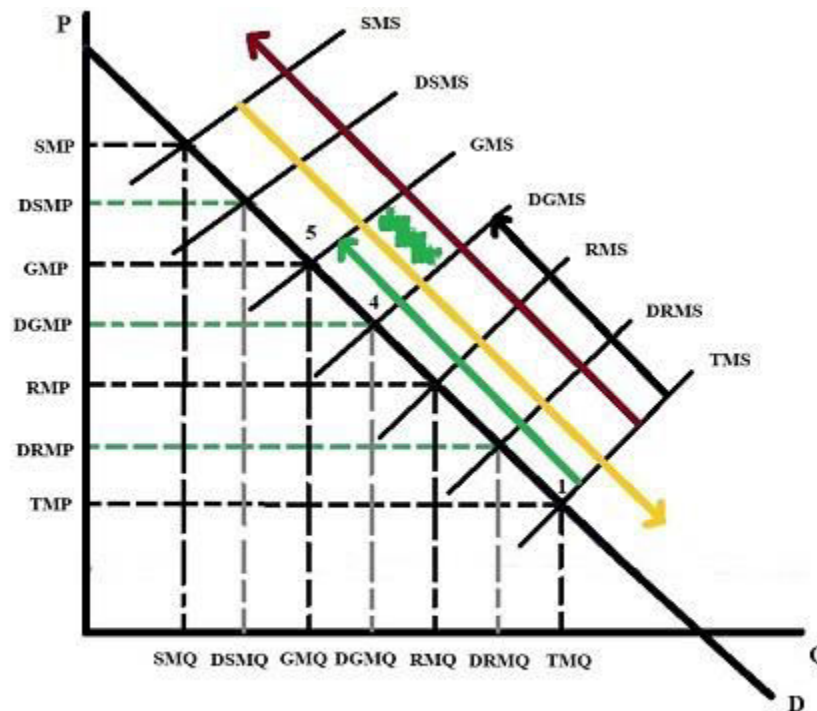
We can highlight the following based on Figure 5 above: i) When we decide to fix the socially and environmentally distorted traditional market at point 1 through social costs internalization, then we shift it perfectly to red markets at point 3 as the social sustainability gap is closed in that process, and hence no social sustainability black holes are created as indicated by absent of the red gap between the perfect red market supply RMS and the traditional market supply TMS; ii) When we decide to fix the socially and environmentally distorted traditional market at point 1 through environmental costs internalization, then we shift it perfectly to green markets at point 5 as the environmental sustainability gap is closed in that process, and hence no environmental sustainability black holes are created as indicated by absent of the green gap between the perfect green market supply GMS and the traditional market supply TMS; iii) When we decide to fix the socially and environmentally distorted traditional market at point 1 through socio-environmental costs internalization, then we shift it perfectly to sustainability markets at point 7 as the socio-environmental sustainability gap is closed in that process, and hence no socio-environmental sustainability black holes are created as indicated by absent of the blue gap between the perfect sustainability market supply SMS and the traditional market supply TMS; and iv) If we decide to leave the perfect traditional market alone, it will tend to produce at the lowest traditional market price possible expanding production and consumption as well as expanding socio-environmental pollution generation.

**Implication 6**

*Perfects markets in Figure 5 above can be seen as three ways of bringing the business as usual model of Adam Smith away from past practice and to a higher level of externality cost responsibility, from partial externality cost responsibility in the case of perfect red markets and perfect green markets to full externality cost responsibility in the case of perfect traditional markets while in all cases polluting less while making money.*

### **The case of the green market paradigm shift avoidance and the environmental sustainability black hole**

When the decision was made in 2012 Rio + 20 to go the dwarf green market way instead of the perfect green market way to address the environmental issue, we created a sustainability black hole that has been affecting the working of processes in support of global warming/climate change, as described in Figure 6 below:



**Figure 6** The case of the environmental sustainability black hole: When there is green market paradigm shift avoidance and we set up dwarf green markets instead we create an environmental sustainability black hole

Figure 6 above can be used to highlight the consequences of green market paradigm shift avoidance in terms of creating environmental sustainability black holes like the one between point 5/perfect green market and point 4/dwarf green market. The green market paradigm shift avoidance process goes as follows based on Figure 6 above: i) We have decided to address the environmental sustainability problem affecting the sustainability of the traditional market at point 1; ii) the full environmental corrections requires a perfect shift from the traditional market

at point 1 to the perfect green market at point 5 as indicated by the green arrow from TMS to GMS, which requires the closing of the environmental sustainability gap by environmental cost internalization; iii) However, to avoid going perfect green market we set up dwarf green markets at point 4 as indicated by the black arrow from TMS to DGMS, which requires the establishment of environmental pollution management costs or dwarf green margins to induce dwarf green market pricing; iv) when dwarf green markets are set up we create an environmental sustainability black hole as the pollution management cost given still leads an active remaining environmental sustainability gap as the one found between GMS and the DGMS; and v) the dwarf green market approach can be seen as a way to continue the business as usual model as before, but with some environmental externality cost responsibility in a way that is disconnected from perfect green market pricing.

### **Implication 7**

*The existence of dwarf green markets since 2012 means that the environmental sustainability issue affecting the business as usual model of Adam Smith is not yet fully corrected, only patched to keep it going while still environmental pollution goes on delinked from the dwarf green market pricing mechanism.*

### **Food for thoughts**

1) Can traditional markets be seen as classic pollution expansion markets? I think Yes, what do you think?; 2) Can dwarf green markets be seen as pollution expansion markets? I think No, what do you think?; 3) Can perfect red markets be seen as profitable social pollution reduction markets? I think Yes, what do you think?; and 4) Can perfect sustainability markets be seen as profitable socio-environmental pollution reduction markets? I think Yes, what do you think?

### **Conclusions**

First, it was pointed out that all perfect markets will tend to produce at the lowest market price possible to maximize profit, but only the perfect markets make money by expanding pollution. Second, it was highlighted that all dwarf markets produce at the point where they pass the dwarf cost margin assigned by the pollution management agent to consumers, and they only contract production, and therefore, contract pollution generation when the dwarf margins are increased. Third, it was stressed that the perfect sustainability market, the perfect green market and the perfect red market reduce pollution by producing at the lowest pollution cost possible and that dwarf sustainability markets, dwarf green markets, and dwarf red markets reduce pollution only when they contract production in response to the pollution manager increasing

dwarf cost margins to be passed to consumers to contract consumption. Fourth, it was indicated that when dwarf markets are set up as a way of perfect market paradigm shift avoidance you create sustainability black holes. Fifth, it was said that that when perfect markets are set up as a way to fix distorted traditional markets you do not create sustainability black holes as the respective sustainability gap separating it from the traditional market is closed by externality cost internalization. And sixth, it was indicated that when we set up dwarf green markets to avoid a shift from perfect traditional markets to perfect green markets we create environmental sustainability black holes, which are undermining current efforts to deal with climate change/global warming issues.

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