

## From Traditional Markets to Sustainability Markets: A Look at Markets Under Perfect Sustainability Market Competition

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IJMSSSR 2019  
VOLUME 1  
ISSUE 1 JANUARY - FEBRUARY

**Abstract** – Perfect market competition is at the heart of traditional market thinking. So when perfect markets shift, our thinking should perfectly shift too in order to be able to operate in the new perfect market, this is true whether we shift towards a green market or a red market or a sustainability market. For example the 2012 Rio + 20 conference chose to correct the traditional market to account for the environmental cost of doing business only; and therefore they chose a shift from perfect traditional market thinking to perfect green market thinking. However, if they would have chosen instead to correct the traditional market to account for both the social cost and the environmental cost of doing business at the same time, then they would have chosen a shift from perfect traditional market thinking to perfect sustainability market thinking. And this would have indicated the need to understand the expected behavior of markets under perfect sustainability market competition, a knowledge that as far as the author knows does not yet exist. The main goal of this paper is to point out how markets should be expected to work under perfect sustainability market competition.

**Keywords:** Traditional markets, sustainability markets, perfect market competition, perfect sustainability market competition, market shifts, red markets, sustainability producers, sustainability consumers, short term costs, short term sustainability market costs, long term costs, long term sustainability market costs.

### Introduction

#### a) Core aspects of perfect market competition

To be able to present the ideas in this paper you will find below a presentation in simple terms of relevant general aspects associated with perfect market thinking and competition such as the nature of its assumptions, the structure of the model, the short term cost structure, and the long term cost structure of the perfect market.

#### i) Some basic traditional perfect market assumptions

Six of the basic assumptions of perfect market competition relate to the type of products, to the type of transaction costs, to the type of entry, to the type of information, to the type market power, and to the type of profit seeking behavior under which the perfect market operates. These assumptions are summarized in Figure 1 below:

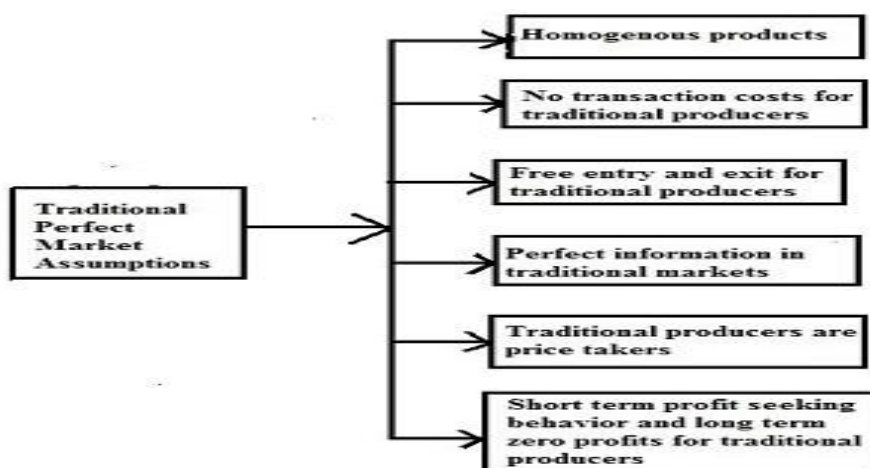
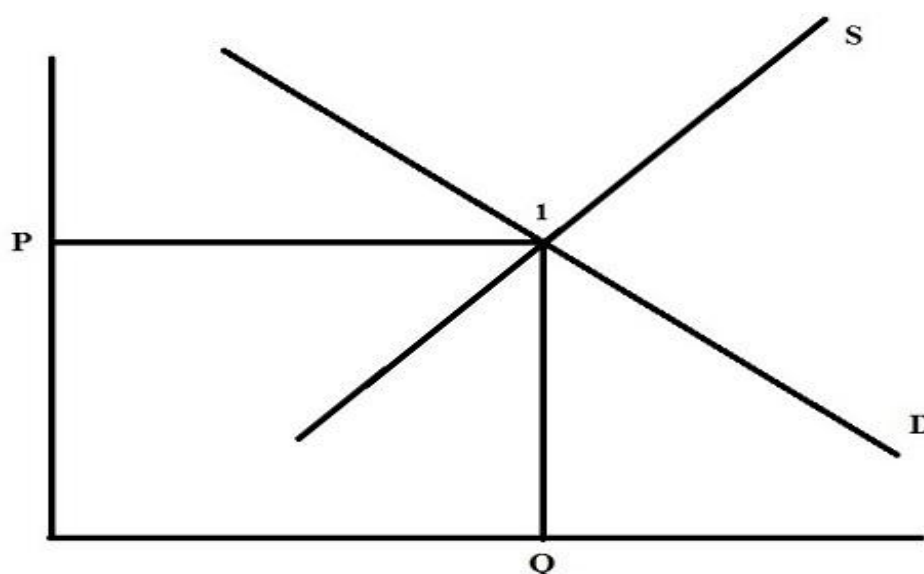


Figure 1 Perfect traditional market assumptions

Figure 1 above shows the core assumptions under which perfect markets and perfect market competition operates, many producers under a perfect market setting, perfect substitutes, and perfectly elastic demand, none of them with production capable of affecting the market. Hence, this is the world of traditional producers and traditional consumers under free markets as no government intervention is needed, the world of the economic man.

**ii) The perfect traditional market structure**

It is known that the perfect traditional market(TM) is the one where the traditional supply((S) and the traditional demand(D) interact to determine the perfect market price(TMP = P) and the perfect market quantity(TMQ = Q) to be consumed and produced, which is indicated graphically below:



**Figure 2 The structure of the perfect traditional market**

We can see in Figure 2 above that at point 1 the traditional supply(S) and traditional demand(D) determine the traditional market price(TMP = P) and the traditional quantity(TMQ = Q). We can also see in Figure 2 above that the choice structure here relates to independent economic only choices, as only the economy matters. This is because the traditional market(TM) assumes social(a) and environmental(c) externality neutrality so its structure is  $TM = aBc$ . The environment issue(c) here is an exogenous issue and Pareto optimality holds as no one can be better off or worse off.

And therefore, the price structure of the perfect traditional market(TMP) at Q can be stated as follows:

**1)  $TMP = P$**

**iii) The perfect market short term cost structure under perfect competition**

The following can be said about traditional perfect market competition in the short term: a) production(Q) is kept at the point where the marginal revenue(MR) equals the marginal cost(MC),  $MR = MC$ ; b) where the traditional market price(TMP = P) equals the average revenue(AR),  $TMP = P = AR$ ; and c) depending on the price(P) position related to the average total cost(ATC), profit can be negative, positive or zero, a situation simplified graphically in Figure 3 below:

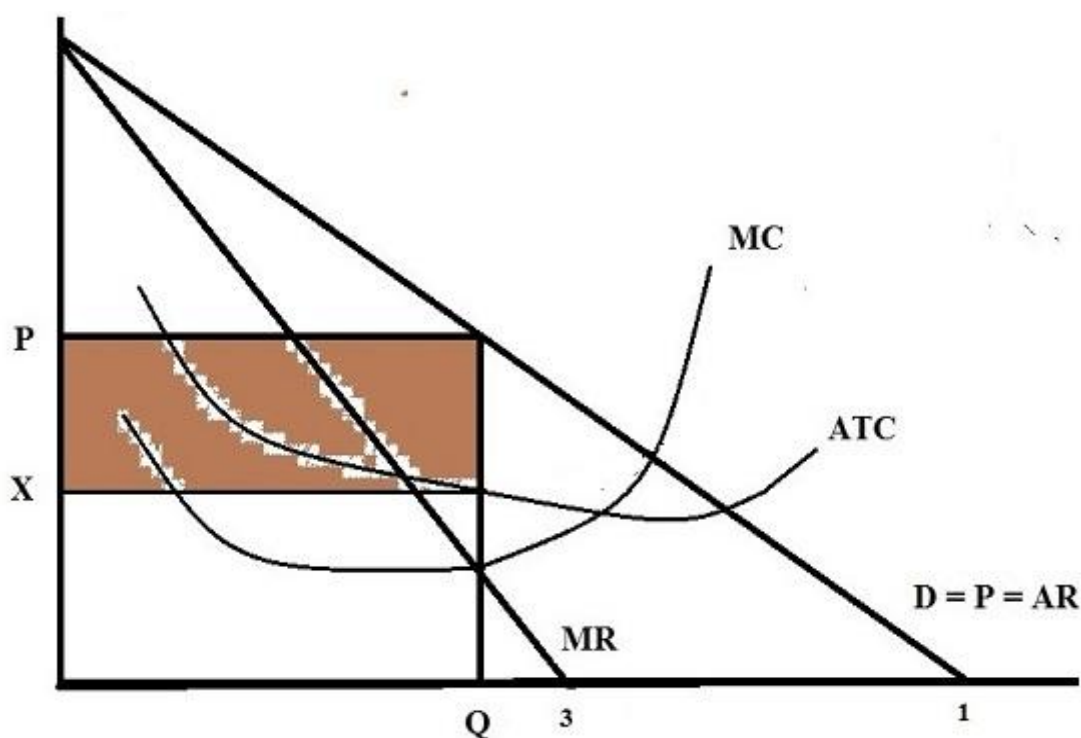


Figure 3 The short run traditional market cost structure under perfect market competition

Figure 3 above summarizes the short term cost environment under which perfect traditional market competition takes place.

And based on Figure 3 above we can express the short term price structure of the perfect market at Q as follows:

## 2) $TMP = P = AR$

Notice that in the short term under perfect market competition as reflected in Figure 3 above: a) firms can make positive profits if  $P > ATC$ , then new entries will keep coming in and bring the profit down towards zero; b) firms can make zero profit if  $P = X = ATC$  and as long as that is true they will remain in the market; and c) firms can make negative profits if  $P < ATC$ , then those firms will exit the market leading to an increase in P and then profit will rise until it becomes zero.

### iv) *The perfect market long term cost structure under perfect competition*

The following aspects can be highlighted about the traditional perfect market competition in the long term: a) production(Q) is kept at the point where the marginal revenue(MR) equals the marginal cost(MC) equals the average total cost(ATC),  $MR = MC = ATC$ ; b) where the traditional market price( $TMP = P$ ) equals the average revenue(AR) equals the marginal cost(MC),  $TMP = P = AR = MC$ ; and c) therefore, here profit is always zero since the traditional price( $TMP = P$ ) is equal to the average total cost(ATC),  $TMP = P = ATC$ , a situation highlighted graphically in Figure 4 below:

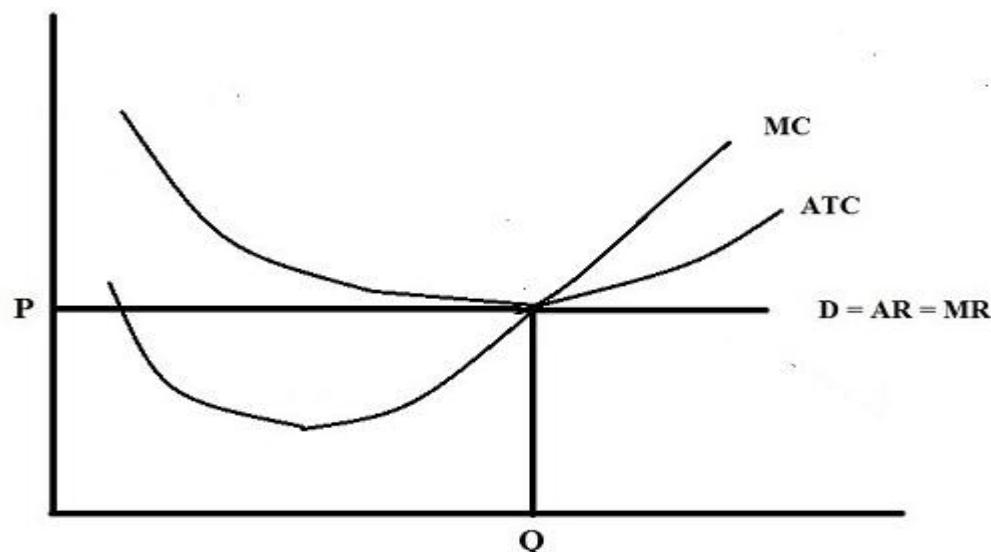


Figure 4 The perfect traditional market long run cost structure under perfect market competition

Figure 4 above highlights the long term cost environment under which perfect market competition operates, where the demand(D) touches the minimum point of the average total cost(ATC).

And based in Figure 4 above we can express the long term price structure of the perfect market at Q as follows:

### 3) $TMP = P = AR = ATC$

Notice in Figure 4 above that firms selling at P are operating at zero profits as  $P = ATC$ . And we expect that under perfect market competition all firms will operate at zero profits in the long term.

#### b) The core implications of paradigm shift

Perfect market competition is at the heart of traditional market thinking. So when perfect markets shift, our thinking should perfectly shift too in order to be able to operate in the new perfect market, this is true whether we shift towards a green market(Muñoz 2016a) or a red market(Muñoz 2016b) or a sustainability market(Muñoz 2016c). When there is a paradigm shift, the model structure, the choice structure, the nature of trickle downs, and the price structure shift at the same time, including its cost structure and revenue structure. This is because perfect paradigm shifts, such as the shift from a perfect market to another perfect market maintain optimal higher level conditions and expectations when the cost of being environmentally and socially friendly at the same time is internalized in the pricing mechanism of the traditional market(Muñoz 2016d).

#### c) The 2012 shift to perfect green markets

In 1987 the Brundtland Commission called for correcting the traditional business model to account for both social and environmental concerns so we can go beyond traditional business practices(WCED 1987). This led to a sustainable development process that culminated in 2012 at the Rio +20 conference on sustainable development, where a green development path was endorsed(UNCSD 2012a; 2012b) even though it was not the only option that existed(Muñoz 2016e). Hence, the 2012 Rio + 20 conference chose to correct the traditional market to account for the environmental cost of doing business only in order to go green; and therefore it chose a shift from perfect traditional market thinking to perfect green market thinking. Interest in green economic thinking to correct the traditional market model grew since then(WB 2012; UNDESA 2012; WB 2013; UNECA 2016), giving meaning to a view shared in 2012 that we indeed were approaching sustainability backwards in terms of economic thinking(Muñoz 2012) as Adam Smith left relevant externality costs out of the pricing mechanism of the traditional market (Muñoz 2015). And this indicated the need to understand the expected behavior of markets under perfect green market competition, a need that appears more pressing now that global plans are being considered in terms of implementing global green markets(WGEO 2018) and in terms of linking the global

economy and climate change(GCEC 2018). How markets should be expected to work under perfect green market competition has now been pointed out in detail in order to help with the closing of the current green market paradigm shift knowledge gap(Muñoz 2019).

However, just imagine if the 2012 the Rio + 20 conference on sustainable development would have chosen instead to correct the traditional market to account for both the social cost and the environmental cost of doing business at the same time, then they would have chosen a shift from perfect traditional market thinking to perfect sustainability market thinking. And this would have indicated the need to understand the expected behavior of markets under perfect sustainability market competition, a knowledge that as far as the author knows does not yet exist. The main goal of this paper is to point out how markets should be expected to work under perfect sustainability market competition.

### Objectives

a) To highlight the structure of the shift from traditional perfect markets to perfect sustainability markets in terms of assumptions, general market structure, short term cost structure and long term cost structure; and b) to stress the implications of that shift in terms of perfect sustainability market competition.

### Methodology

First, the terminology used in this paper is shared. Second, the operational concepts are given. Third, the structure of the perfect shift from traditional market assumptions to the perfect sustainability market assumptions is stressed. Fourth, the basic assumptions of the perfect sustainability market are highlighted. Fifth, the shift of the model structure from perfect traditional market to the perfect sustainability market is pointed out. Sixth, the structure of the perfect sustainability market is shown. Seventh, the shift from the perfect traditional market short term cost structure to the perfect sustainability market short term cost structure is indicated.

Eighth, the structure of the perfect sustainability market short term cost structure under perfect sustainability market competition is described. Ninth, the shift from the perfect traditional market long term cost structure to the perfect sustainability market long term cost structure is presented. Tenth, the structure of the perfect sustainability market long term cost structure under perfect sustainability market competition is discussed. Eleventh, a summary, implications and food for thoughts are listed. And finally, some specific and general conclusions are provided.

### Terminology

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A = Dominant/active society	a = Dominated/passive society
B = Dominant/active economy	b = Dominated/passive economy
C = Dominant/active environment	c = Dominated/passive environment
S = Traditional supply	D = Traditional demand
SS = Sustainability supply	SD = Sustainability demand
P = Traditional market price	SP = Sustainability price
Q = Traditional market quantity	SQ = Sustainability market quantity
EM = Green margin	SM = Social margin
TMP = Traditional market price	SMP = Sustainability market price
AR = Average revenue	SAR = Sustainability average revenue
ATC = Average total cost	SATC = Sustainability average total cost

MC = Marginal cost

SMC = Sustainability marginal cost

MR = Marginal revenue

SMR = Sustainability marginal revenue

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### Operational concepts

i) **Traditional market**, *the economy only market.*

ii) **Green market**, *the environmentally friendly market.*

iii) **Sustainability market**, *the socially and environmentally friendly market.*

iv) **Traditional market price**, *general market economic only price or the price that covers the cost of production.*

v) **Green market price**, *the price that reflects both the economic and the environmental cost of production or the price that covers the cost of environmentally friendly production.*

vi) **Sustainability market price**, *the price that reflects the economic, social, and the environmental cost of production or the price that covers the cost of socially and environmentally friendly production.*

vii) **Green market knowledge gap**, *the knowledge gap created by the paradigm shift from traditional markets to green markets.*

viii) **Green micro-economics**, *the theory of the environmentally responsible firm and consumer.*

ix) **Green macroeconomics**, *the theory of the environmentally responsible economy.*

x) **Trickledown effect**, *the expectation that traditional markets and growth will sooner or later benefit the poor.*

xi) **Green trickledown effect**, *the expectation that green markets and green growth will sooner or later benefit the poor.*

xii) **Deep paradigm**, *a fully exclusive model(e.g. the traditional market).*

xiii) **Partial partnership paradigm**, *a partially inclusive model(e.g. the green market).*

xiv) **Full partnership paradigms**, *a fully inclusive model(e.g. the sustainability market).*

xv) **Externalities**, *factors assumed exogenous to a model.*

xvi) **Full externality assumption**, *only one factor is the endogenous factor in the model, the others are exogenous factors.*

xvii) **Partial externality assumption**, *not all factors are endogenous factors at the same time in the model.*

xviii) **No externality assumption**, *all factors are endogenous factors at the same time in the model.*

xix) **Green margin**, *to cover the extra cost of making the business environmentally friendly.*

xx) **Social margin**, *to cover the extra cost of making the green business socially friendly or of making the traditional market socially friendly.*

xxi) **Perfect market competition**, *the expected behavior of firms and consumers in the short and long term under perfect market thinking.*



xxii) **Perfect green market competition**, *the expected behavior of green firms and green consumers in the short and long term under perfect green market thinking.*

xxiii) **Market shift**, *a move from one market paradigm to another market paradigm.*

xxiv) **Perfect market shift**, *a move from one perfect market paradigm to another perfect market paradigm.*

xxv) **Red markets**, *the socially friendly markets*

**The structure of the perfect shift from traditional market to the perfect sustainability market assumptions**

We can think of a shift from a perfect market to another perfect market as bringing each assumption of the previous model to a higher responsibility level model, a move in this case from full exclusion to full inclusion as indicated in Figure 5 below:

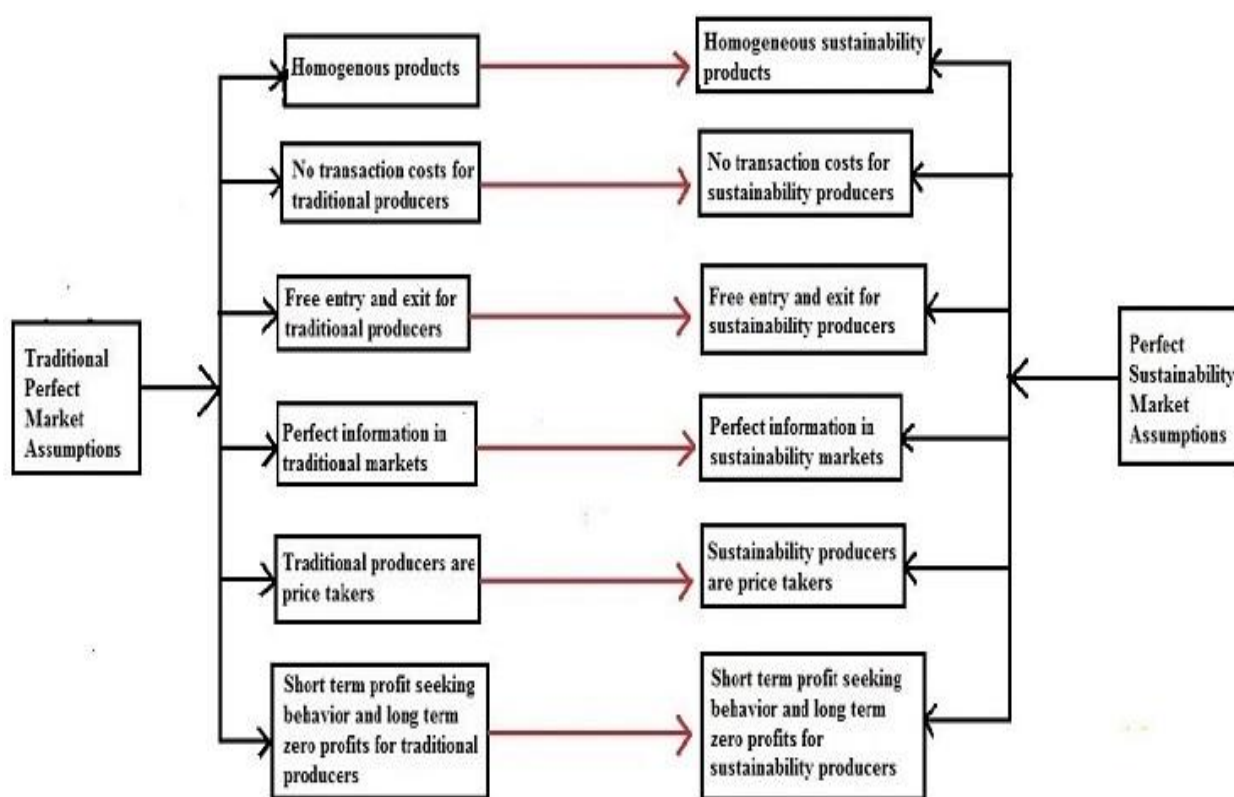
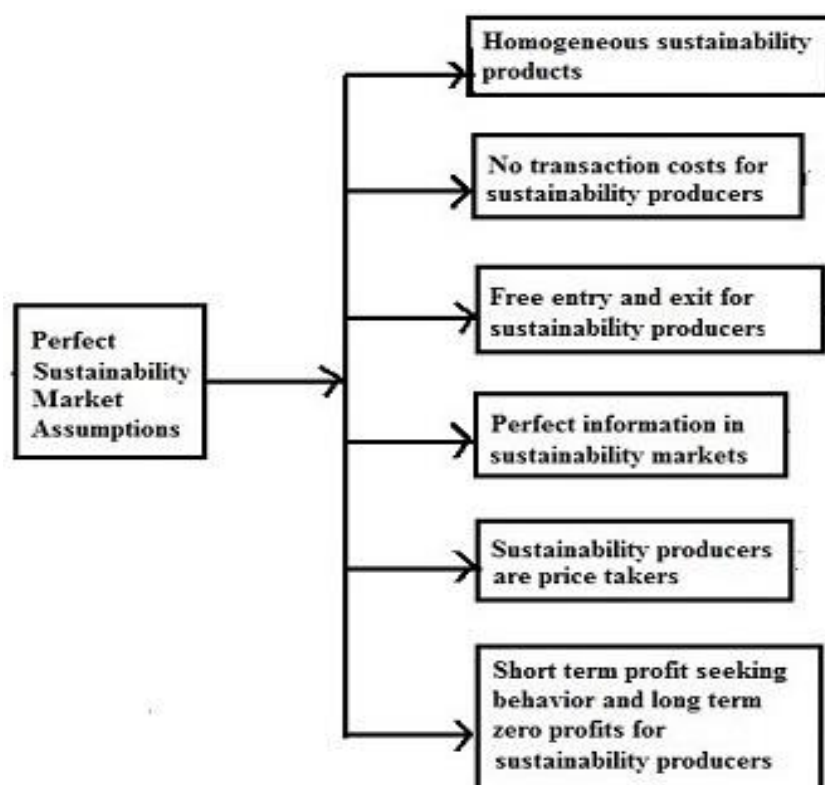


Figure 5 The perfect shift from traditional market assumptions to sustainability market assumptions

The structure in Figure 5 above shows in detail the full correction of traditional market to transform it into a sustainability market, a move from only the economy matters to a world where all components matter, the economy, the environment, and society matter at the same time.

**The basic assumptions of the perfect sustainability market**

Consistent with the shift structure in Figure 5 above we can stress the perfect sustainability market assumptions as listed in Figure 6 below:



**Figure 6 The perfect sustainability market assumptions**

The assumptions summarized in Figure 6 above provide the environment under which perfect sustainability markets operate, many sustainability based producers under a perfect sustainability market setting, perfect sustainability based substitutes, perfectly elastic sustainability demand, none of them with sustainability based production capable of affecting the sustainability market. Hence, this is the world of sustainability based producers and sustainability based consumers under free sustainability markets as no government intervention is needed, the world of the sustainability man.

#### **The model structure shift from perfect traditional market to the perfect sustainability market**

When the perfect traditional market price(TMP) depicted in Figure 2 above is corrected to reflect at the same time the cost of being environmentally friendly and of being socially friendly the traditional market model structure(TM) shifts from an economy only model to an economy, environment, and society model, a model now cleared by a sustainability price(SP). In other words, the internalization of the environmental cost or green margin(EM) and of the social cost or social margin(SM) in the pricing mechanism of the traditional market(TMP) shifts the traditional price structure P towards the sustainability price structure SP as indicated analytically below:

#### **4) $TMP + EM + SM = SP = P + EM + SM$ , and therefore, $SP > P$**

And the price structure shift towards a higher price SP indicated above shifts the traditional supply S towards the sustainability supply SS as represented graphically in Figure 7 below:



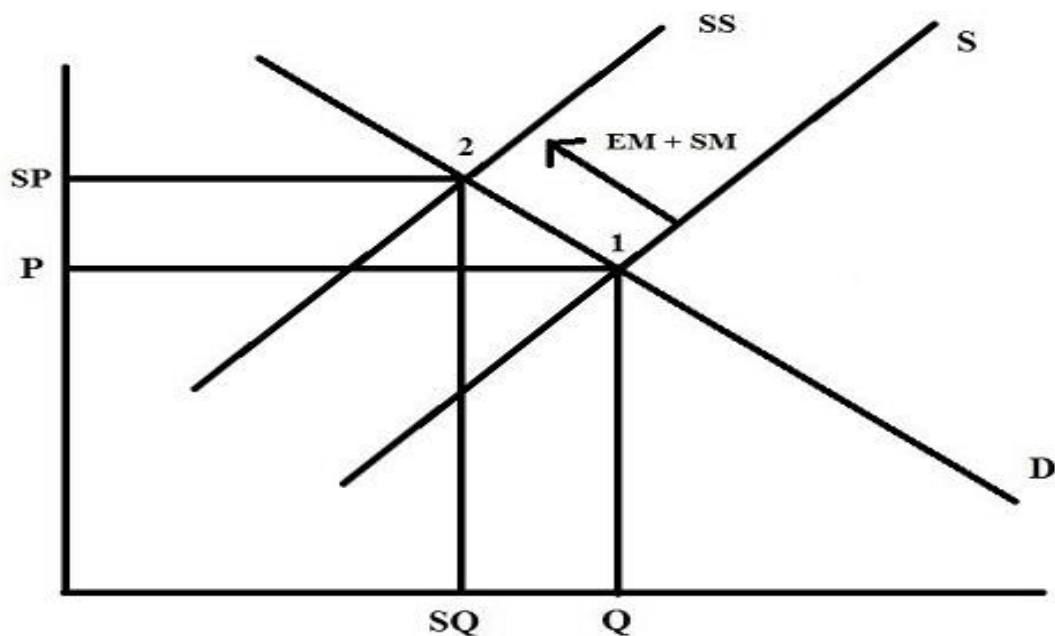


Figure 7 The structure of the perfect shift from traditional markets to sustainability markets

Figure 7 above summarizes the structure of the shift from perfect traditional markets(TM) to perfect sustainability markets(S), where  $SP > P$ ,  $SQ < Q$  and where  $SP - P = EM + SM$ .

**The structure of the perfect sustainability market**

As indicated at point 2 in Figure 7 above, the perfect sustainability market(S) is the one where the sustainability supply(SS) and the sustainability demand(SD) interact to determine the perfect sustainability market price(SMP = SP) and the perfect sustainability market quantity(SMQ = SQ) to be consumed and produced, a situation highlighted graphically below:

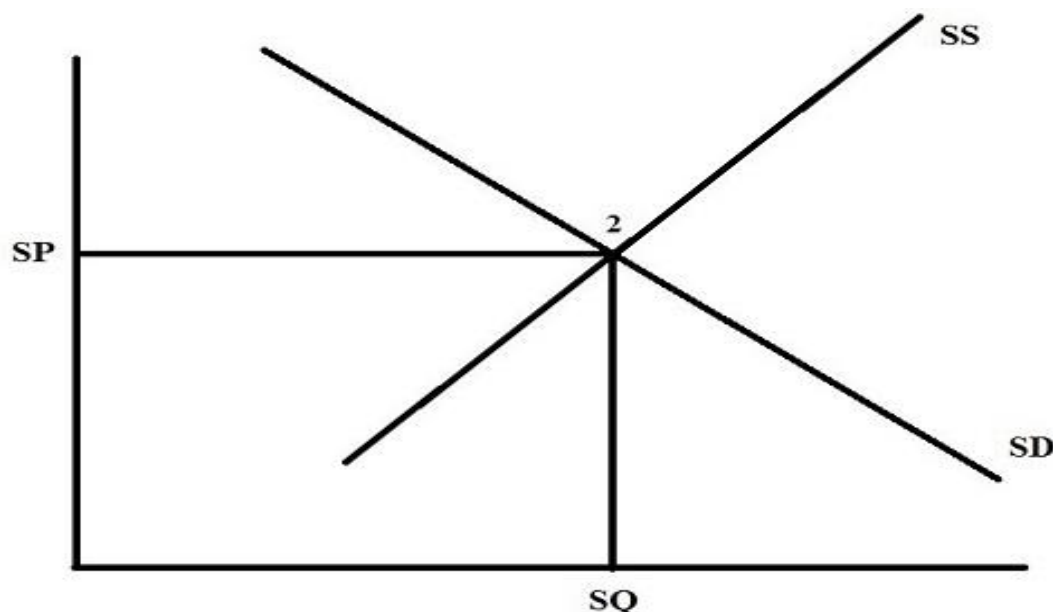


Figure 8 The structure of the perfect sustainability market

We can see in Figure 8 above that at point 2 the sustainability supply(SS) and sustainability demand(SD) determine

the sustainability market price(SMP = SP) and the sustainability quantity(SMQ = SQ). We can also see now in Figure 8 above that the choice structure has shifted from independent economy only choices shown in Figure 2 above to full codependent eco-socio-economic or sustainability choices, as now all components the economy, society, and environment, matter. This is because the sustainability market(S) has no room for externalities so its structure is  $S = ABC$ . The environment issue(C) and society issue(A) here now are endogenous issues; and sustainability based Pareto optimality holds as no one can be better off or worse off.

And therefore, the price structure of the perfect sustainability market at SQ can be stated as follows:

5)  $SP = TMP + EM + SM = P + EM + SM$

And the formula 5 above tells us that the price structure of the perfect traditional market(TMP) has shifted to the price structure of the perfect sustainability market(SMP) shifting also in the process the short term and long term cost and revenue structures of the perfect traditional market as it is shown below in detail:

**The shift from the perfect traditional market short term cost structure to the perfect sustainability market short term cost structure**

When the traditional market price(TMP) is corrected to internalize the environmental margin(EM) and the social margin(SM) to make it environmentally and socially friendly the traditional short term cost structured depicted in Figure 3 above shifts towards that of sustainability market short term cost structure as indicated in Figure 9 below:

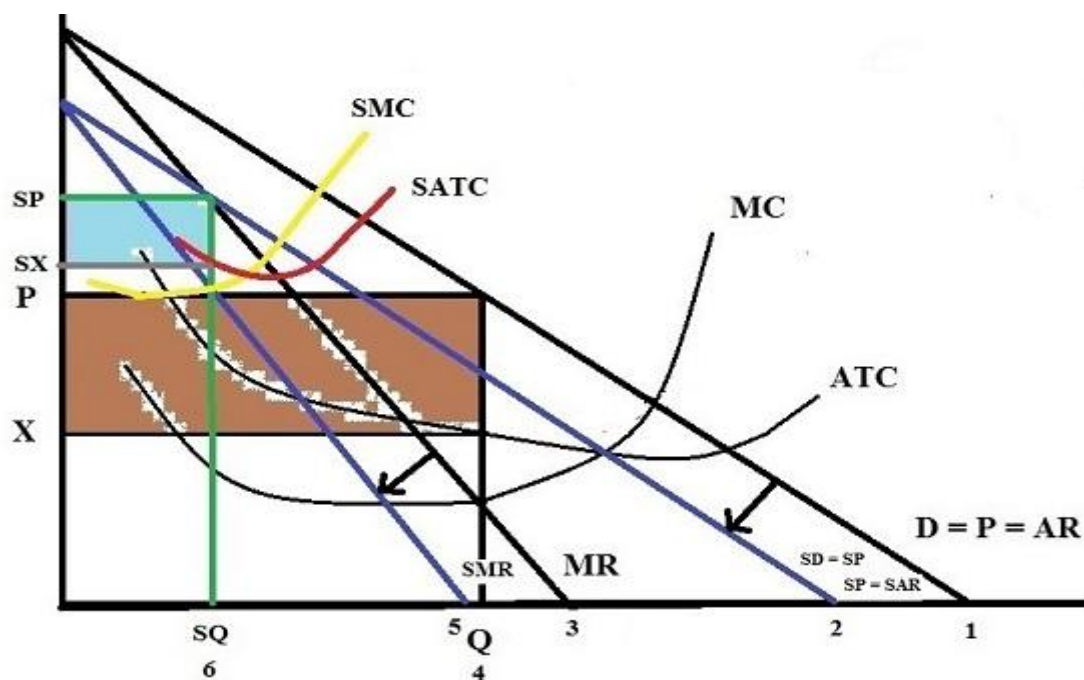


Figure 9 The perfect shift from traditional market short term cost structure to that of the perfect sustainability market

Figure 9 above tells us the following when we shift from the traditional market short term cost structure to the sustainability market short term cost structure: a) The demand shifts down as less is demanded at a higher price SP from point 1 where the traditional market demand(D) is to point 2 where the sustainability demand(SD) is; b) The marginal revenue shifts down from point 3 where the traditional marginal revenue(MR) is to point 5 where the sustainability marginal revenue(SMR) is; and c) the contraction of traditional demand(D) and traditional marginal revenue(MR) shifts the traditional short term cost structure up to the left from traditional marginal cost(MC) to sustainability marginal cost(SMC) and from traditional average total cost(ATC) to sustainability average total cost(SATC).

Figure 9 above also shows that profit seeking exist in both in traditional markets and in sustainability markets as indicated by the colored rectangles associated with each perfect market at point 4 and at point 5 respectively.

**The structure of the perfect sustainability market short term cost under perfect sustainability market competition**

Based on the shift structure in Figure 9 above the following can be said about perfect sustainability market competition in the short term: a) sustainability production(SQ) is kept at the point where the sustainability marginal revenue(SMR) equals the sustainability marginal cost(SMC),  $SMR = SMC$ ; b) where the sustainability market price( $SMP = SP$ ) equals the sustainability average revenue(SAR),  $SMP = SP = SAR$ ; and c) depending on the sustainability price(SP) position related to the sustainability average total cost(SATC), sustainability profit can be negative, positive or zero, a situation simplified graphically in Figure 10 below:

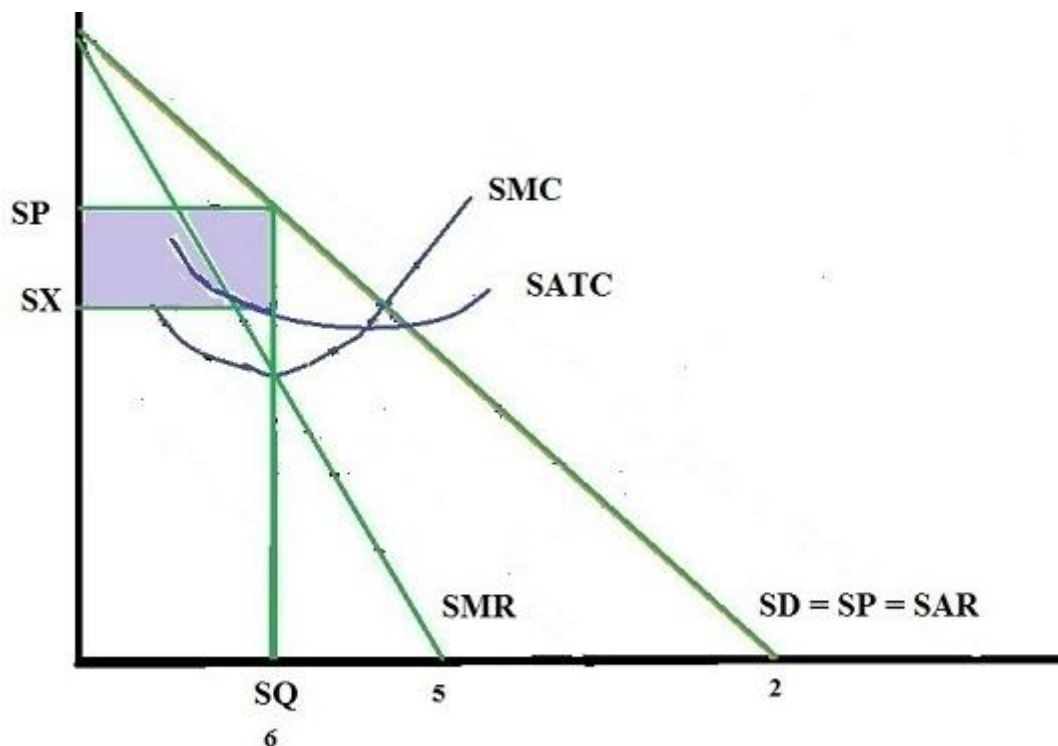


Figure 10 The sustainability market short term cost structure under perfect sustainability market competition

Figure 10 above summarizes the short term cost environment under which perfect sustainability market competition takes place.

And based on Figure 10 above we can express the short term sustainability price structure of the perfect sustainability market at SQ as follows:

**6)  $SMP = SP = SAR$**

Notice that in the short term under perfect sustainability market competition as reflected in Figure 10 above: a) sustainability firms can make positive sustainability profits if  $SP > SATC$ , then new entries will keep coming in and bring the sustainability profit down towards zero; b) sustainability firms can make zero sustainability profit if  $SP = SX = SATC$  and as long as that is true they will remain in the sustainability market; and c) sustainability firms can make negative sustainability profits if  $SP < SATC$ , then those sustainability firms will exit the sustainability market leading to an increase in SP and then sustainability profit will rise until it becomes zero.

**The shift from the perfect traditional market long term cost structure to the perfect sustainability market long term cost structure**

When the traditional market price(TMP) is corrected to internalize the environmental margin(EM) and the social margin(SM) to make it environmentally and socially friendly the traditional long term cost structured depicted in Figure 4 above shifts to that of the long term cost structure of perfect sustainability markets as indicated in Figure 11 below:

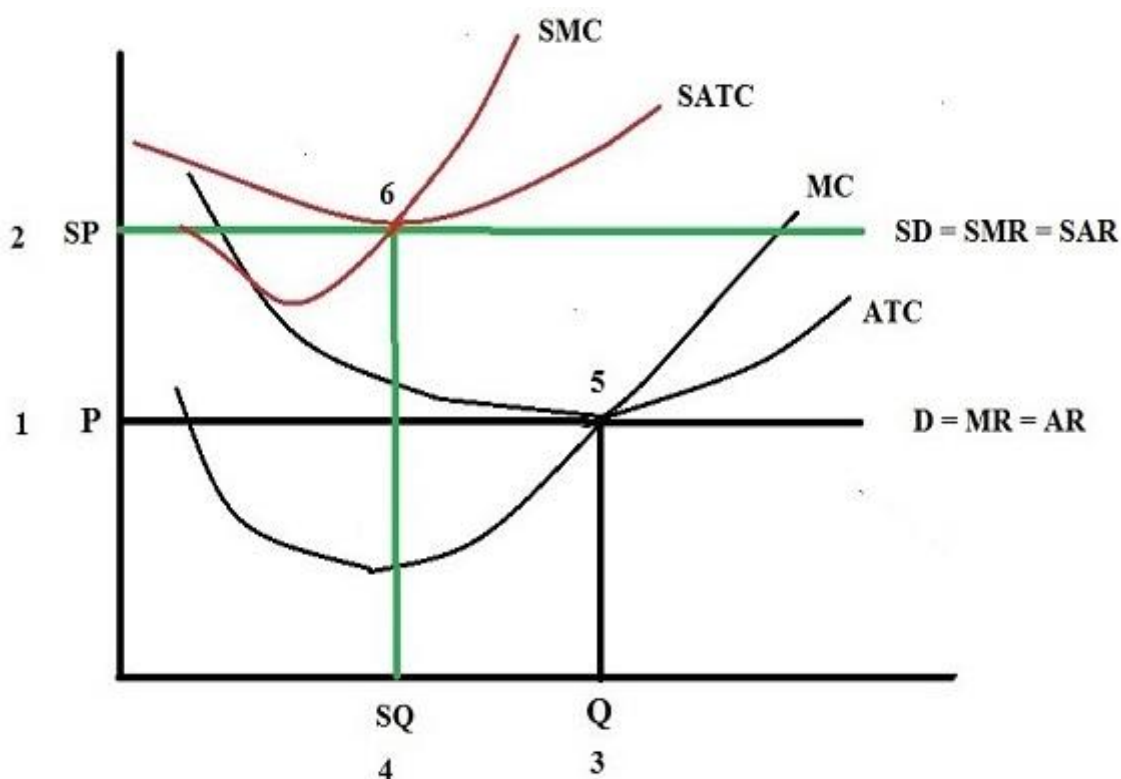


Figure 11 The perfect shift from the traditional market long term cost structure to that of the perfect sustainability market

Figure 11 above tells us the following when we shift from the traditional market long term cost structure to the sustainability market long term cost structure: a) the price structure shifts up from P to SP as  $SP > P$ ; b) the quantity consume falls from Q at point 3 to SQ at point 4 due to the higher SP; c) The traditional demand(D) at point 1 shifts up to the sustainability demand(SD) at point 2; and d) The traditional market(TM) long term cost structure at point 5 shift up to the left to point 6 where the sustainability market(S) long term cost structure is.

Figure 11 above also shows that in both perfect markets zero profit prevails in the long term as it can be seen at point 5( $P = ATC$ ) and at point 6( $SP = SATC$ ).

**The structure of the perfect sustainability market long term cost structure under perfect sustainability market competition**

Consistent with Figure 11 above, the following aspects can be highlighted about the perfect sustainability market competition in the long term: a) sustainability production(SQ) is kept at the point where the sustainability marginal revenue(SMR) equals the sustainability marginal cost(SMC) equals the sustainability average total cost(SATC),  $SMR = SMC = SATC$ ; b) where the sustainability market price( $SMP = SP$ ) equals the sustainability average revenue(SAR) equals the sustainability marginal cost(SMC),  $SMP = SP = SAR = SMC$ ; and c) therefore, here sustainability profit is always zero since the sustainability market price( $SMP = SP$ ) is equal to the sustainability average total cost(SATC),  $SMP = SP = SATC$ , a situation highlighted graphically in Figure 12 below:

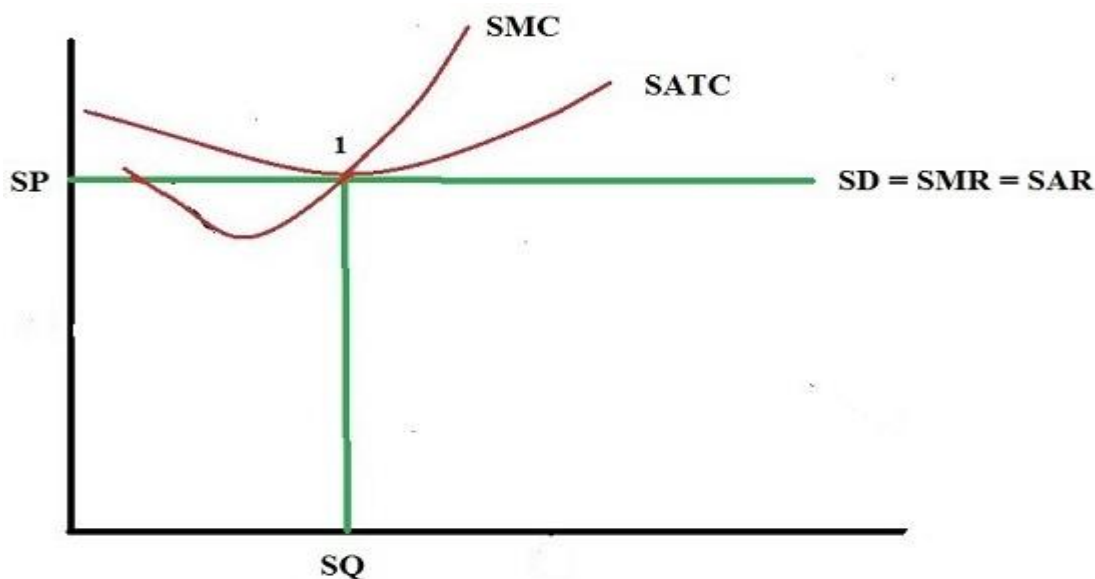


Figure 12 The sustainability market long term cost structure under perfect sustainability market competition

Figure 12 above highlights the long term cost environment under which perfect sustainability market competition operates, where the sustainability demand(SD) touches the minimum point of the sustainability average total cost(SATC).

And based on Figure 12 above we can express the long term sustainability price structure of the perfect sustainability market at SQ as follows:

**7)  $SP = SAR = SATC$**

Notice in Figure 12 above that sustainability firms selling at SP are operating at zero sustainability profits as  $SP = SATC$ . And we expect that under perfect sustainability market competition all sustainability firms will operate at zero sustainability profits in the long term.

**Summary:**

The shift from one perfect market to another can be seen as a systematic evolution in assumptions, model structure, and cost and revenue structures as shown above. Correcting the traditional market’s pricing mechanism to reflect the cost of being environmentally and socially friendly at the same time leads to a shift to the sustainability world, where markets are cleared by the sustainability market price; and where sustainability producers and sustainability consumers respond to sustainability market price signals guiding the working of perfect sustainability market competition.

**Implications:**

The expected behavior of sustainability consumers and sustainability producers is different than the expected behavior of traditional consumers and traditional producers as they would not be interested in consuming and producing goods and services that are not environmentally and socially friendly. By fully correcting traditional market assumptions, model, and cost structures we create the conditions needed for sustainability producers and consumers to work under perfect sustainability market competition, a world that falls under sustainability based micro-economic and sustainability based macro-economic thinking.

**Note:**

- 1) Had Adam Smith not assumed full externality neutrality in 1776, the price structure of his market would have been similar to the price structure of the sustainability market discussed above as the price of his market would have reflected full costing.

- 2) It is difficult right now to see markets going to full costing as easy as they would have done in the time of Adam Smith as at that time the cost of being socially and environmentally friendly was not as high as it is today .
- 3) Perhaps poverty and environmental degradation still would have taken place, but they would be minimal as this pricing would have discouraged over production and over consumption behavior since the time of Adam Smith.

### Food for thoughts

1) Does perfect traditional market competition thinking holds under perfect sustainability markets?. I think no, what do you think?; 2) Can global warming be addressed properly inside perfect sustainability market thinking?. I think yes, what do you think?; and 3) would a sustainability market fix be politically feasible in the future?. I think yes, what do you think?

### Specific conclusions

First, it was stressed that when we recognize that both the environment and society matter and decide to correct the traditional market to reflect that, then the assumptions of perfect market competition shift towards the assumptions of perfect sustainability market competition. Second, it was indicated that when we internalize the environmental cost and the social cost of doing business, the price structure and the choice structure of the perfect market shifts towards that of the sustainability market. Third, it was pointed out that a shift in the price structure to sustainability markets means also a shift of the cost and revenue structures, short and long term too to those of sustainability markets. Fourth, the sustainability market assumptions, the sustainability market model structure, the sustainability market short term cost structure and the sustainability market short term cost structure, all were linked to point out how markets should be expected to work under perfect sustainability market competition.

### General conclusions

To properly deal with traditional economic issues, we need the microeconomic and macroeconomic thinking behind the expected working of perfect market competition and perfect market thought. To properly deal with sustainability market issues, we need sustainability based micro-economic and sustainability based macroeconomic thinking behind the expected working of perfect sustainability market competition and sustainability market thought. As the latter type of thinking does not currently exist, it was shown in this paper how traditional perfect market thinking can be transformed into sustainability market thinking in terms of assumptions, model structure, and short and long term cost structures. In other words, it was described in detailed how to transform perfect market competition thinking into perfect sustainability market competition thinking to be able to highlight how markets should be expected to work under perfect sustainability market competition.

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