Sustainability thoughts 103: How the shift from traditional markets to green markets would have looked like had the 1987 Brundtland Commission recommended then an environmental sustainability fix?

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Abstract

It can be said that the traditional market is a free market that brings together traditional producers(K) and traditional consumers(L) under the assumption of full social and environmental externality neutrality. And this create a circular traditional economy illusion, the idea that production activity can take without generating production and consumption externalities. The fact that the social and environmental externalities associated with the traditional market are real leads to a disconnect between social and environmental externalities and traditional market pricing. In order to correct this disconnect, the 1987 Brundtland Commission recommended the use of sustainable development thinking, which was the wrong recommendation since the externality problem affecting the traditional market was and is a sustainability issue, not a sustainable development issue. There were 3 possible corrections to this sustainability problem: i) a full social and environmental externality correction or sustainability fix; ii) a partial correction through green markets or an environmental sustainability fix; and iii) a partial correction through red markets or a social sustainability fix. The discussion above raises some interesting questions depending of the type of fix that is recommended. With respect to the first possibility, the sustainability fix recommendation, the answer of how it would have looked like was recently shared in detail graphically and analytically(Muñoz 2020b). With respect to the second possibility, the question is how the shift from the traditional market model of Adam Smith towards green markets would have looked like had the 1987 Brundtland Commission recommended then an environmental sustainability fix? The main goal of this paper is to provide an answer to this question.

Key concepts

Environmental externality, social externality, Traditional market, green market, green economy, cost internalization, cost externalization, externality neutrality assumption, circular traditional market illusion, circular green market, circular green market illusion, the traditional market price, the green market price.

Introduction

a) The structure of the traditional market of Adam Smith

It can be said that the traditional market(TM) is a free market that brings together traditional producers(K) and traditional consumers(L) under the assumption of full social and environmental externality neutrality, a situation that has been recently summarized(Muñoz 2020a) as follows:

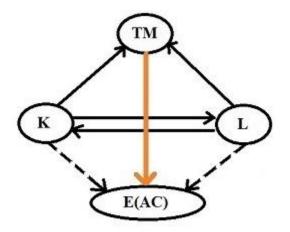


Figure 1 The structure of the traditional market

Figure 1 above tells us the following about the traditional market(TM): i) social and environmental externalities[E(AC)] are exogenous issues to the model so they are externalized as indicated by the continuous orange arrow from TM to E(AC); ii) traditional production(K) and traditional consumption(L) externalities are irrelevant as indicated by the broken black arrows from K and L to E(AC); iii) traditional producers(K) and traditional consumers(L) interact freely in the traditional market(TM) as indicated by the continuous and opposing black arrows between K and L; iv) the traditional market price(TMP = P) is determined then by the free interaction of traditional supply(K) and traditional demand(L) as indicated by the continuous black arrows from K and L to TM; and v) the model operates under rationality and fully independent choices.

b) The circular traditional market illusion

Since according to Figure 1 above social and environmental externalities[E(AC)] are assumed irrelevant in the traditional market model(TM), then they can be left out of the model, which leads to the circular traditional market illusion depicted in Figure 2 below:

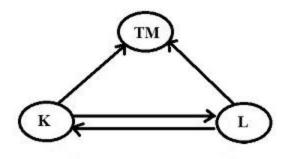
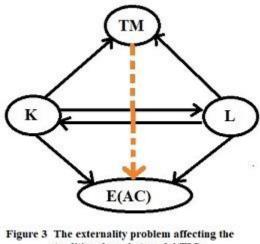


Figure 2 The circular traditional economy illusion

Figure 2 above simply says economic activity and economic growth take place in the traditional market(TM) without producing social and environmental effects[E(AC) = 0], which is the thought behind the circular traditional market illusion. In other words, we produce and consume under zero social and environmental externality impact when operating under the full externality neutrality assumption. This assumption makes the traditional market(TM) a distorted market in social and environmental terms(Muñoz 2010).

c) The externality problem affecting the sustainability of the traditional market model

As it is a fact that production and consumption externalities associated with economic activity[E(AC)] are real, then there is a disconnect between the pricing mechanism of the traditional market(TMP = P) and social and environmental externalities[E(AC)] that need to be accounted for, which lead to the externality problem affecting the sustainability of the traditional market model(TM) as indicated in Figure 3 below:



traditional market model(TM)

The broken orange arrow between TM and E(AC) in Figure 2 above represents the externality problem affecting the sustainability of the traditional market(TM) as the relevant externalities indicated by the continuous black arrows from K and L to E(AC) are not accounted for in the traditional market price(TMP = P) of the traditional market(TM). As indicated recently, correcting now the externality problems in Adam Smith's traditional market model has led us to approaching sustainability backwards in terms of economic ideas(Muñoz 2012).

d) The 1987 Brundtland commission's sustainable development solution to a sustainability problem

The Brundtland commission in 1987(WCED 1987) saw the social and environmental disconnect indicated in Figure 3 above under which business as usual had been operating; and it called for solutions to this social and environmental disconnect through sustainable development means. The Brundtland commission in 1987 apparently failed to see that the externality problem affecting the traditional market model of Adam Smith detailed in Figure 3 above was and is a sustainability problem, not a sustainable development problem; and therefore, the Brundtland Commission recommended the wrong approach to deal with the sustainability problem. There were 3 possible corrections to this sustainability problem depicted in Figure 3 above: i) a full social and environmental externality correction or sustainability fix; ii) a partial correction through green markets or an environmental sustainability fix; and iii) a partial correction through red markets or a social sustainability fix. It has been pointed out that using sustainable development tools to address a sustainability problem is a direct violation of the theory-practice consistency principle(Muñoz 2009), and if we do so we are using tools that are inconsistent with the nature of the problem we are trying to solve.

e) The need to understand the nature of a partial fix through green markets to the environmental externality problem affecting Adam Smith's model

The discussion above raises some interesting questions depending of the type of fix that is recommended. With respect to the first possibility, the sustainability fix recommendation, the answer of how it would have looked like was recently shared in detail both graphically and analytically(Muñoz 2020b). With respect to the second possibility, a correction that was the focus of attention at the United Nations Conference on Sustainable development Rio +20 in 2012(UNCSD 2012a; UNCSD 2012b), the question is how the shift from the traditional market model of Adam Smith towards green markets would have looked like had the 1987 Brundtland Commission recommended then an environmental sustainability fix? The main goal of this paper is to provide an answer to this question.

Goals of this paper

i) To indicate the structure of the environmental externality problem affecting the traditional market model; ii) To highlight the structure the green market fix to the environmental externality problem affecting Adam Smith's traditional market model; iii) To stress the structure of the circular green economy associated with the environmental sustainability fix; and iv) To point out the environmental externality gap or environmental sustainability gap embedded in the circular traditional market illusion.

Methodology

First, the terminology used in this paper is shared. Second, the operational concepts and externalization and internalization rules supporting this paper are discussed. Third, the structure of the environmental externality problem affecting the traditional market model is indicated. Fourth, the structure the green market fix to the environmental externality problem affecting Adam Smith's traditional market model and its implications are shared. Fifth, the structure of the circular green economy associated with the environmental sustainability fix; and its implications are highlighted. Sixth, the structure of the circular traditional market illusion in the face of real environmental externality cost is shared to highlight the environmental externality gap or environmental sustainability gap embedded in the traditional market. Seventh, the structure of the perfect green market or environmentally friendly market is pointed out. Eighth, the nature of the circular green market illusion is highlighted. Finally, some food for thoughts and relevant conclusions are provided.

Terminology

A = active social system	a = passive social system
B = active economic system	b = passive economic system
C = active environmental system	c = passive environmental system
TM = traditional market	GM = green market
K = traditional producers/supply	L = traditional consumers/demand
GK = green producers/supply	GL = green consumers/demand
$EEM = environmental externality management$ $M_i = market type i$	
E(T) = externalization of T	I(t) = internalization of t
E(AC) = externalization of A and C	I(ac) = internalization of a and c
TMP = traditional market price	GMP = green market price
ESG = environmental sustainability gap EEG = environmental externality gap	

Operational concepts and externalization and internalization rules

i) Operational concepts

- 1) Traditional market, the economy only market
- 2) Green market, the environmentally friendly market

3)Traditional market price, the general market economic only price or the price that covers the cost of production at profit(TMP = ECM + i = P) or zero profit(TMP = ECM = P).

4) 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.

5) Cost externalization, the leaving out of the pricing mechanism of the market relevant costs associated with production.

6) **Social cost externalization**, *the leaving out of the pricing mechanism of the market the social costs associated with production.*

7) Environmental cost externalization, the leaving out of the pricing mechanism of the market the environmental costs associated with production.

8) Economic cost externalization, *the leaving out of the pricing mechanism of the market the economic costs associated with production.*

9) Cost externalization assumption neutrality, the assumption that production has minimal or no cost impact on external factors to a market model.

10) Full costing, the reflecting in the pricing mechanism of the market all cost associated with production; there are no market distortions.

11) Partial costing, *not reflecting in the pricing mechanism of the market all cost associated with production; there are partial market distortions.*

12) No costing, not reflecting in the pricing mechanism of the market any costs associated with production; there is full market distortion.

13) Full inclusion, all factors are endogenous to the model, there are no exclusions.

14) Partial inclusion, some factors are exogenous to the model, there are some exclusions.

15) Fully independent development choices, when we have individual development choices unrelated to each other or pure choices such as society only(A), economy only(B), and environment only(C). In this world only fully independent development choices exist so the set = $\{A, B, C\}$. This is the world of the Arrow Impossibility theory and theorem.

16) Partially codependent development choices, when we have mixed/paired development choices such as socio-economy(AB), socio-environment(AC), and eco-economy(BC). In this universe only codependent development choices exist so the set = $\{AB, AC, BC\}$. This is outside the normal world of the Arrow Impossibility theory and theorem.

17) Fully codependent development choices, when all development choices are mixed together such as the socio-economy-environment(ABC) model. In this paradigm only fully codependent

development choices exist so the set = {ABC}. This is outside the world of the Arrow Impossibility theory and theorem.

18) Full cost externalization, all costs associated with production are not reflected in the pricing mechanism of the market.

19) Partial cost externalization, some costs associated with production are not reflected in the pricing mechanism of the market.

20) No cost externalization, all costs associated with production are reflected in the pricing mechanism of the market.

21) Full cost internalization, all costs associated with production are reflected in the pricing mechanism of the market.

22) Partial cost internalization, *some costs associated with production are reflected in the pricing mechanism of the market.*

23) No cost internalization, all costs associated with production are not reflected in the pricing mechanism of the market.

24) Externalities, factors assumed exogenous to a model

25) Full externality assumption, only one component is the endogenous factor in the model; the others are exogenous factors.

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

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

28) Economic externality, the economic costs associated with production not reflected in the pricing mechanism of the market.

29) Social externality, the social cost associated with production not reflected in the pricing mechanism of the market.

30) Environmental externality, *the environmental cost associated with production not reflected in the pricing mechanism of the market.*

31) Green or environmental margin, to cover the extra cost of making the business environmentally friendly.

32) Social margin, to cover the extra cost of making the business socially friendly.

33) Economic margin, to cover only the economic cost of production

34) Profit, the incentive to encourage economic activity

35) Full cost price, a price that reflects all costs associated with production.

36) Some cost price, a price that reflects only some costs associated with production.

37) No cost price, a price that does not reflect any cost associated with production.

38) Circular market illusion, the idea that production activity can take place without producing relevant externalities.

39) Circular traditional economy illusion, the idea that production activity can take place without producing relevant social and/or environmental externalities.

40) Circular dwarf green economy, the idea that market prices can be manipulated externally to generate revenue to cover the cost of dealing with the environmental externality they create to close the non-free market cycle dwarf green production-dwarf green consumption-environmental externality.

41) Circular green economy, the idea that market prices reflect the cost of making business environmentally friendly in order to cover the cost of dealing with the environmental externalities they create to close the free market cycle green production-green consumption-environmental externality.

42) Circular environmental externality management based market illusion, the idea that you can solve an environmental externality problem by dealing with the consequences of that problem, not the cause.

43) Circular green economy illusion, the idea that green production and green consumption can take place without having social impacts(E(A) = 0).

ii) Externalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the externalization rules(E) work as follows:

1) $\mathbf{E}(\mathbf{A}) = \mathbf{a}$ ----> relevant social costs(A) are assumed irrelevant

2) E(C) = c ----> relevant environmental costs(C) are assumed irrelevant

3) $E(AC) = ac \quad \dots \rightarrow relevant \ social \ costs \ and \ economic \ costs(AC) \ are \ assumed \ irrelevant$

iii) Internalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the internalization rules(I) work as follows:

4) I(a) = A ----- *irrelevant social costs(a) are now relevant*

5) I(c) = C ----- *irrelevant environmental costs(c) are now relevant*

6) $I(ac) = AC \quad \dots \rightarrow irrelevant social costs and economic costs(ac) are now relevant$

iv) Model structure and externalization rules

Let's assume we have the following three market structures M1 = ac, M2 = Ac and M3 = AC, then the following holds true:

7) M1 = ac = E(AC) = a fully irresponsible market as all costs are externalized

8) M2 = Ac = [I(a)][E(C)] = a partially responsible market as social cost is internalized

9) M3 = AC = [I(a)][I(c)] = a fully responsible market as all costs are internalized.

v) Reversing externalization rules

Let's assume we have a market with two relevant components, society(A) and environment(C), where A = active component, a = passive component, C = active component, and c = passive component, then the process of reversing externalization-internalization rules works as follows:

The case of internalizing the externality: if E(AC) = ac, the following holds true:

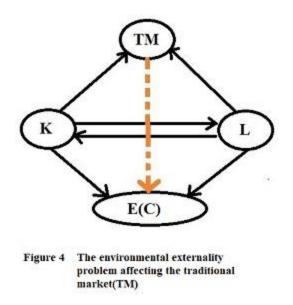
10) I[E(AC)] = I(ac) = AC, internalization-externalization forces cancel each other out

The case of externalizing the internality: if I(ac) = AC, the following holds true:

11) E[I(ac)] = E(AC) = ac, externalization-internalization forces cancel each other out

The structure of the environmental externality problem affecting the traditional market(TM)

If we assume that social costs do not matter[E(A) = 0], but take the view now that the environmental externality matters[E(C) > 0], then the simplified version of the externality problem affecting the traditional market(TM) in environmental terms can be indicated as in Figure 4 Below:



The broken orange arrow between TM and E(C) in Figure 4 above represents the environmental externality problem affecting the sustainability of the traditional market(TM) as the relevant environmental externalities indicated by the continuous black arrows from K and L to E(C) are not accounted for in the traditional market price(TMP = P) of the traditional market(TM).

The structure of the green market(GM) fix

To fix the environmental externality problem affecting the traditional market model(TM) summarized in Figure 4 above and to be able to fulfill the Brundtland Commission's wish of making business as usual model an environmental externality friendly model we have to recognize two things: i) Environmental externalities[E(C)] are real; and ii) hence they must be internalized in the pricing mechanism of the traditional market(TMP = P). The internalization of environmental costs{I[E(C)]} in the pricing mechanism of the traditional market(TM) leads to a shift to green markets(GM) or environmentally friendly market, a situation summarized in Figure 5 below:

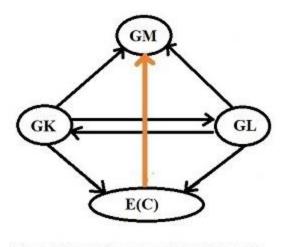


Figure 5 The way the green market solution to the environmental externality problem affecting Adam Smith's model would have looked like if 1987 Brundtland Commission would have recommended to do so.

Figure 5 above tells us the following about the green market(GM) or environmentally friendly market: i) if you internalize the environmental externalities[E(C)] in the pricing mechanism of the traditional market(TMP = P) you shift the traditional market model(TM) towards green markets(GM) as indicated by the continuous orange arrow from E(C) to GM; ii) the green market(GM) is driven by green supply/producers(GK) and green demand/consumers (GL) as indicated by the opposing continuous black arrows between GK and GL; iii) in the green market(GM) the free interaction of green or environmentally friendly producers(GK) and green market price(GMP = GP), a price that also reflects the environmental cost of production, as indicated by the continuous arrows from GK and GL to GM; iv) this is a market where environmental externalities are relevant as indicated by the continuous black arrows from GK and GL to E(C); and v) the green market(GM) operates under rationality and partial codependent choices or ecoeconomic choices.

In other words, based on Figure 5 above it can be said that the green market(GM) is a free market that brings together green producers(GK) and green consumers(GL) under conditions of no environmental externality neutrality or under eco-economic costing.

The structure of the circular green market based economy

Since under the green markets(GM) the green market price(GMP = GP) reflects the environmental costs of production[I(c)], then the green market generates the resources needed to deal with the environmental cost associated with economic activity, closing the cycle green production-green consumption-environmental externalities as indicated by the connecting green arrows in Figure 6 below:

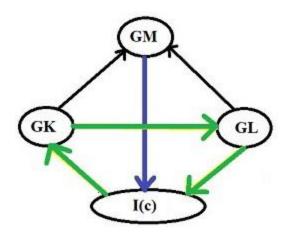


Figure 6 The structure of the circular green economy(GM).

We can see in figure 6 above that environmental costs[E(C)] in the green market(GM) are now endogenous issues[I(c)] to the model as indicated by the blue line. Hence, green markets(GM) take responsibility for the environmental externalities they produce so they generate the resources needed to create and support the programs and/ businesses necessary to close or deal with the environmental externality gap. The circular green market structure in Figure 6 above indicated by the continuous green arrows GS, GL, I(c) represents an end to the circular traditional market's environmental externality neutrality illusion that environmental costs did not matter as here all environmental costs related to economic activity are accounting for.

In other words, environmental externality costing transforms the green market(GM) and its circular structure green production(GK), green consumption(GL), and environmental externalities internalization[(I(c)] into responsible structures in environmental terms as indicated by the continuous green arrow circling GK-GL-I(c) in Figure 6 above. Hence, there are no environmental externality gaps(EEG) or environmental sustainability gaps(ESG) in green markets(GM) as they are environmentally friendly markets.

The environmental externality gap affecting the circular traditional market illusion

Since under the traditional markets(TM) the traditional market price(TMP = P) does not reflect the environmental costs of production[E(C)], then the traditional market(TM) does not generate the resources needed to deal with the environmental cost associated with economic activity, passing them to society as a whole, leaving open the cycle traditional production-traditional consumption-environmental externalities as indicated in Figure 7 below:

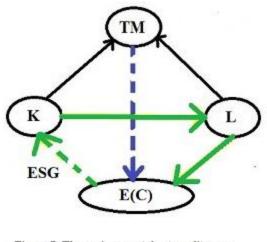


Figure 7 The environmental externality gap (ESG) embedded in the circular traditional market(TM) illusion.

We can appreciate in figure 7 above that now in the traditional market(TM) environmental costs[E(C)] are exogenous issues to the model so they are externalized as indicated by the broken blue line. Therefore, traditional markets now do not take responsibility for the environmental externalities they produce and therefore, they do not generate the resources needed to create and support the programs and/ businesses needed to close the environmental externality gap(EEG) or environmental sustainability gap(ESG) they create, leaving it open as indicated by the broken green arrow from E(C) to K; and hence passing this way the responsibility to deal with those externalities to society as a whole.

In other words, there is an environmental externality gap(EEG) or environmental sustainability gap(ESG) embedded in the circular traditional market illusion as in this market relevant environmental costs related to economic activity are not accounting for. Partial costing(economic only costing) transforms the traditional market(TM) and its circular structure traditional production(K), traditional consumption(L), and environmental externality externalization [(E(C)] into distorted or irresponsible structures in environmental terms as indicated by the broken green arrow in the circle K-L-E(C) in Figure 7 above.

Notice that the existence of this embedded environmental externality gap(EEG) or environmental sustainability gap(ESG) indicated in Figure 7 above provides a rational for the existence of environmental externality management markets or programs(EEM) designed to produce the funds needed to manage environmental externalities without attempting to correct the root cause of the environmental externality generation and accumulation problem associated with the traditional market, a distorted traditional market price in environmental terms. Finally, when comparing Figures, we can see that the closing of the environmental sustainability gap(ESG) or environmental externality gap(EEG) represented by the broken green arrow in Figure 7 leads to the structure of the circular green market based economy presented in Figure 6 above, where there are no environmental externality(EEG) or environmental sustainability(ESG) gaps as indicated by the continuous green arrow going from I(c) to GK.

The structure of the green market(GM)

Based on the discussion above, it can be said that the green market(GM) or environmentally friendly market is a free market that brings together green producers(GK) and green consumers(GL) under the assumption of no environmental externality neutrality and the assumption of full social externality neutrality, a situation that is summarized as in Figure 8 below:

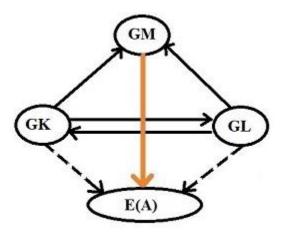


Figure 8 The structure of the green market

Figure 8 above tells us the following about the structure of a green market(GM) or environmentally friendly market: i) social externalities[E(A)] are exogenous issues to the model so they are externalized as indicated by the continuous orange arrow from GM to E(A); ii) green production(GK) and green consumption(GL)'s social externalities are irrelevant as indicated by the broken black arrows from GK and GL to E(A); iii) green producers(GK) and green consumers(GL) interact freely in the green market(GM) as indicated by the continuous and opposing black arrows between GK and GL; iv) the green market price(GMP = GP) is determined then by the free interaction of green supply(GK) and green demand(GL) as indicated by the continuous black arrows from GK and GL to GM; and v) the model operates under rationality and partial codependent choices or eco-economic choices.

The circular green market illusion

Since according to Figure 8 above social externalities [E(A)] are assumed irrelevant in the green market model (GM), then they can be left out of the model, which leads to the circular green market illusion depicted in Figure 9 below:

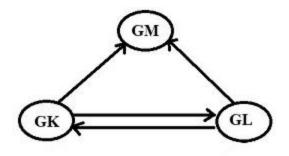


Figure 9 The circular green economy illusion

Figure 9 above simply says green economic activity and green economic growth take place in the green market(GM) without producing social effects[E(A) = 0], which is the thought behind the circular green market illusion. In other words, we produce and consume under zero social externality impact when operating under the full social externality neutrality assumption. This assumption makes the green market(GM) or environmentally friendly market a distorted market in social terms.

Food for thoughts

Is there a sustainable development solution to an environmental sustainability problem? I think no, what do you think?; Can we solve an environmental sustainability problem by attacking the consequences? I think no, what do you think?; and Are environmental externality management markets free markets? I think no, what do you think?

Conclusions

First, it was shown that when environmental externalities are real and accounted for, then there is a disconnect between the pricing mechanism of the traditional market and the environmental externality. Second, it was indicated that the shift from traditional market to green markets requires the internalization of the environmental cost associated with economic activity. Third, it was highlighted that when environmental cost internalization takes place the circular traditional economy illusion with respect to environmental externalities ends as now all environmental costs are reflected in the pricing mechanism of the green market. Fourth, it was pointed out that as the green market takes responsibility for the environmental externalities it produces it generates the resources needed to close the green market cycle green productiongreen consumption-environmental externalities.

Fifth, it was stressed that as the traditional market does not take responsibilities for the environmental externalities it produces, there is an environmental externality gap or environmental sustainability gap preventing the closing of the traditional production-traditional consumption-environmental externality cycle when environmental externality accounting

becomes binding. Sixth, it was mentioned that the existence of this embedded environmental externality gap or environmental sustainability gap in the traditional market and its circular market illusion provides the opportunity to deploy environmental externality management approaches to keep environmental externalities within a bearable level. Seventh, it was exalted that green markets are driven by actions of green producers and green consumers under the assumption of full social externality neutrality. Finally, it was pointed out that at the heart of the green market illusion is the idea that green economic activity can take place without producing social externalities.

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