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The Flipping of Traditional Economic Thinking: Contrasting the Working of Dwarf Green Market Thinking with that of Green Market Thinking to Highlight Main Differences and Implications

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Received: 12 December 2018 Accepted: 1 January 2019 Published: 15 January 2019

Abstract

From the time of Adam Smith(1776) to 2012 UNCSD Rio +20 conference we have lived in a world where government intervention in markets was not welcomed, except in very specific circumstances such as market failures, a feeling at the heart of free-market thinking. From 2012 to now June 2019, we have slowly moved to a world where permanent government intervention is not just welcomed, but also encouraged such as when governments directly intervene in markets to deal with environmental issues. This is indeed a move away from free-market thinking, and towards non-free market thinking as it represents a shift from green market solutions to dwarf green market solutions. In other words, the promotion and implementation of dwarf green market thinking like carbon pricing really require a departure from traditional economic thinking, a practice that is now accepted by today?s economists. And this raises questions such as: Has traditional economic thinking been flipped in practice when dealing with the environmental issue? If yes, what are the implications of this in terms of consumption and production in dwarf green markets? How are dwarf green markets then be expected to work? One of the goals of this paper is to share a green market framework and a dwarf green market framework with the aim of comparing them to highlight the working of green market thinking and that of dwarf green market thinking and provide that way answers to the questions listed above.

Index terms—

1 Introduction a) The world of no government intervention

Figure **??**: The world of free markets and non-free markets Notice that at point 1 in Figure **??** above optimal conditions prevail as both free consumption and free production FMQ are optimal as at this point the free market supply(FMS) cuts the demand curve D. We should expect perfect market behavior and consequences to hold at this point 1 as free prices are determined endogenously and free producers and free consumers follow here free market price signals.

his is the world of free markets(FM), where free consumer and free producers clear the market at the price where demand cuts supply; and hence the market price is determined internally by endogenous forces, no government intervention exists. This situation is indicated in point 1 in Figure **??** below:

In summary: In free markets(FM) we have optimal conditions in production and consumption because free market prices are determined endogenously by the interaction of free consumers and free producers. Government intervention has nothing to do with market price determination in free markets.

2 b) The world of permanent government intervention

This is the world of non-free markets((NFM) where non-free consumer and non-free producers clear the market at an externally decided price which tells the demand D it must cut non-free supply(NFMS) at this set price;

and hence the non-free market price NFMP here is determined externally by exogenous forces, full government intervention exists.

This situation is indicated in point 3 in Figure **??** above, where the nonfree market supply(NFMS) cuts the demand D at the set price(NFMP). Notice that at point 3in Figure **??** above non-optimal conditions hold as both non-free consumption and non-free production(NFMQ) are not optimal as their interaction is not the force determining the dwarf green market price(DGMP). We should expect non-perfect market behavior and consequences to prevail at this point as non-free prices are determined exogenously and non-free producers and non-free consumers must respond now to non-free market price signals.

Notice that the green arrow in Figure **??** above, going from the non-free market supply(NFMS) to the free market supply(FMS) indicates a sustainability gap(SG) under which the non-free market operates since there is no full costing keeping market externalities still active while production and consumption take place so that FMP -NFMP = SG.

In summary: In non-free markets (NFM) we do not have optimal conditions in production and consumption because prices are determined exogenously by an external intervention such as government intervention so that the interaction of consumers and producers has nothing to do with non-free market price determination as they have no free choice. The external intervention in the pricing mechanism creates a sustainability gap that affects the performance of non-free markets and its optimality.

3 c) The need to understand traditional economic thinking flipping to have an idea of how non-free markets like dwarf green markets should be expected to work

From the time of Adam Smith(Smith 1776) to the publications of "Our Common Future **??**WCED 1987) to the 2012 UNCSD Rio +20 Conference(UNCSD 2012a; 2012b) we have lived in a world where government intervention in markets was not welcomed, except in very specific circumstances such as market failures, a feeling at the heart of free-market thinking. From 2012 Rio + 20 to now 2019, we have slowly moved to a world where permanent government intervention in markets is not just welcomed, but also encouraged such as when governments directly intervene in markets to deal with environmental issues **??**GOC 2017;2018). Seeking goals such as inclusive green development(WB 2012)become more difficult under government intervention or non-free markets. Ideas about the structure of the perfect green markets (Muñoz 2016), about the consequences of moving away from perfect green market thinking (Muñoz 2017), and about the way green markets are expected to behave under perfect green market competition conditions (Muñoz 2019) have been recently shared. The use of permanent government intervention is indeed a move away from free-market thinking and towards non-free market thinking as this represents a shift from green market solutions to dwarf green market solutions. In other words, the promotion and implementation of dwarf green market thinking like carbon pricing for sure require a departure from traditional economic thinking, a practice that now is accepted by today's economists. And this raises questions such as: Has traditional economic thinking been flipped in practice when dealing with the environmental issue? If yes, what are the implications of this in terms of consumption and production in dwarf green markets? How are dwarf green markets then be expected to work? One of the goals of this paper is to share a green market framework and a dwarf green market framework with the aim of comparing them to highlight the working of green market thinking and that of dwarf green market thinking and provide that way answers to the questions listed above.

4 d) The goals of this paper

a) To introduce a green market structure and use it to point out how green market thinking is expected to work;
b) To share a dwarf green market structure and use it to indicate how a dwarf green market is expected to work;
c) To compare the green market and dwarf green market structures mentioned above to highlight among other relevant things that dwarf green market thinking results from the flipping of traditional freemarket economic thinking.

5 II.

6 The Methodology

First, the terminology in this paper is introduced. Second, some relevant operational concepts are shared. Third, the world of green markets and that of dwarf green markets are described in general analytically and graphically. Fourth, how green markets are expected to work is stressed. Fifth, how dwarf green markets are expected to work is detailed. Sixth, the working of green markets and that of dwarf green markets are contrasted to answer the questions posted in this article and to indicate other relevant differences.

And finally, some food for thoughts and some specific and general conclusions are provided. **??**

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Operational concepts

1) Traditional market(TM), the economy only market.

7 The terminology

2) Green market(GM), the environmentally friendly market.

3) Environmental or green margin(EM), to cover the extra cost of making the business environmentally friendly or to cover only the environmental cost of environmentally friendly production or to cover the environmental cost of red market production. 4) Economic margin(ECM), to cover only the economic cost of production. 5) Economic profit(i), the incentive to encourage economic activity. 6) Traditional market price(TMP), general market for profit price (TMP = ECM + i = P). 7) Green market price(GMP = GP), the for-profit price that reflects both the economic and the environmental cost of production or the price that covers the cost of environmentally friendly production at a profit (GP = ECM + i + EM = P + EM). 8) Green market knowledge gap(GMKG), the knowledge gap created by the paradigm shift from traditional markets to green markets or when correcting Adam Smith's model to reflect environmental concerns. 9) Micro-economics, the theory of the traditional firm and consumer. 10) Macro-economics, the theory of the traditional economy. 11) Green micro-economics, the theory of the environmentally responsible firm and consumer. 12) Green macroeconomics, the theory of the environmentally responsible economy. 13) The trickledown effect, the expectation that traditional markets and growth will sooner or later benefit the poor. 14) The green trickledown effect, the expectation that green markets and green growth will sooner or later benefit the poor. 15) Externalities, factors assumed exogenous to a model. 16) Full externality assumption, only one factor is the endogenous factor in the model: the others are exogenous factors. 17) Partial externality assumption, not all factors are endogenous factors at the same time in the model.

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

19) The dwarf market(DM), a false market, a market unconnected to perfect market pricing, it looks like it is a specific market, but it is not. 20) The dwarf market price(DP), the price that clears the dwarf market. 21) The dwarf quantity(DQ), the inefficient quantity produced and consumed in dwarf markets.

9 22) The dwarf green market(DGM), a false green market, a market unconnected to perfect green market pricing, it looks like it is a green market, but it is not or any market located below the perfect green market price (GP).

23) The dwarf green market price(DGP), the price that clears the dwarf green market. 24) The dwarf green quantity(DGQ), the inefficient quantity produced and consumed in dwarf green markets. 25) Free-market(FM), a market where the production and consumption price is determined endogenously. 26) Non-free market(NFM), a market where the production and consumption price is determined exogenously. **??**

-a) The world of green markets and dwarf green markets If we assume that the free market(FM) in Figure **??** is the perfect green market(FM = GM) and that the non-free market(NFM) in Figure **??** is the imperfect dwarf green market(NFM = DGM), then their supply and demand interactions would look like the ones shared in Figure 2 below: At point 1 in Figure 2 above we have perfect green markets(GM) where green consumers and green producers determine the green market price(GMP)and the optimal quantity to be produced and consumed(GMQ).

Notice that the green market price(GMP = GP) at point 1in Figure 2 above reflects environmental cost internalization or full eco-economic costing; and therefore, in green markets there is no environmental sustainability gap(ESG). And see that at point 1, the green market price(GMP = GP) is determined by the interaction of green supply(GMS) and green demand with no government intervention(NGI). Also you can notice in Figure 2 above that markets placed below green markets(GM) are affected by an environmental sustainability gap(ESG).

At point 3in Figure 2 above we have now nonperfect green market or dwarf green market(DGM)where consumers and producers must produce and consume at the set price(DGMP = DP). Notice that the non-green price or dwarf green market price(DGMP = DP) does not reflect environmental cost internalization practice or full eco-economic costing as this set price(DGMP) is less than the green market price(GMP) so that DGMP < GMP. And see that at point 3 in Figure 2 above, the dwarf green market price(DGMP = DP) is not determined by the interaction of dwarf green supply(DGMS) and demand D, but by external forces or by exogenous factors or direct government intervention(GI) as it is price set by an external factor.

Notice that the green arrow in Figure 2 above going from the dwarf green market supply(DGMS) to the green market supply(GMS) indicates an environmental sustainability gap(ESG) under which dwarf green market(DGM) operates since there is no full ecoeconomic costing leaving the environmental externality still active as we produce and consume so that GMP -DGMP = ESG.

In summary: In green markets(GM), we have optimal conditions in production and consumption because green market prices are determined endogenously by the interaction of green consumers and green producers. Government intervention(GI) has nothing to do with green market price determination in green markets. In dwarf green markets(DGM), on the other hand, we do not have optimal conditions in production and consumption

9 22) THE DWARF GREEN MARKET(DGM), A FALSE GREEN MARKET, A MARKET UNCONNECTED TO PERFECT GREEN MARKET PRICING, IT LOOKS LIKE IT IS A GREEN MARKET, BUT IT IS NOT OR ANY MARKET LOCATED BELOW THE PERFECT GREEN MARKET PRICE (GP).

Because prices are determined exogenously by external intervention such as government intervention(GI) so that the interaction of consumers and producers has nothing to do with dwarf green market price determination as they have no free choice.

The external intervention in the pricing mechanism creates an environmental sustainability gap that affects the performance of dwarf green markets and its optimality. Some observations to highlight based on Figure **??** above are: a) The initial position of the green market is at point 1 where the green market supply(GMS) cuts the demand D determining the original green market price(GMP); b) market dynamics lead to expanding production and consumption as green prices decrease due to environmental efficiencies and innovations following the green profit-seeking behavior of green firms; c) production and consumption decisions are optimal as the green price decreases as indicated by the continuous black arrow moving down to the right starting from the initial green market supply(GMS) as there is no government intervention(NGI); and d) market actions move from left to right with a clear link to green market culture creating goals or to the need of generating a true green consumer and green producer culture.

Now we can use Figure **??** above to stress the expected working of the green market. At point 1 in Figure **??** above there is full market cost internalization through full costing, the green market price(GMP = GP) reflects both the economic(ECM) and the environmental cost(EM) of production at a profit so that GMP = GP = P + EM. At point 1 and the green market price GMP the green quantity produced and consumed is GMQ. As the environmental cost of supplying green products and services decreases due to technological innovations and efficiency, the environmental margin(EM) decreases to EM 1 <EM leading to a lower green market price(GMP 1 = GP 1) such as the one at point 2 in Figure **??** above. At a lower green market price GMP 1 = GP 1 optimal consumption and production of even more environmentally friendly products or less pollution based products increases to GMQ 1.

As the environmental cost keeps decreasing to EM 2 > EM 1 > EM we can reach the green price GMP 2 = GP 2 at point 3 in Figure **??** above, and we see again the expansion of optimal consumption and production again to GMQ 2 . The above means that reducing pollutions can be profitable for green firms; and green consumers can expand consumption of even more environmentally friendly products or less carbon based products at lower prices.

Notice that GMP >GMP 1 >GMP 2 and therefore, GMQ <GMQ 1 <GMQ 2 .

The direction of the continuous black arrow in Figure **??** above going from the green market supply(GMS) down to the right highlights the continuity of optimality as the green market price(GMP = GP) decreases. Notice that if at one point like at point 4 in Figure **??** above the environmental margin is minimal(min EM) or zero(EM = 0) we may be in the world of a dominant or fully renewable energy based economy or clean economy. Hence, a link can be made between green market thinking and clean market thinking as the environmental margin(EM) approaches zero. Some main observations to stress based on Figure **??** above are: a) The initial position of the dwarf green market is at point 3 at the originally given dwarf green market price(DGMP); b) ongoing external/ government intervention(GI) pushes market dynamics to contract production and consumption as dwarf green prices increase due to the setting of higher environmental cost portions to be used by firms as signals and pass it to consumers following the environmental goals that the external factor or the government is pursuing; c) production and consumption decisions are not optimal as the dwarf market price increases are externally determined as indicated by the broken black arrow moving up to the left starting from the initial dwarf green market supply(DMS); and this non-optimality also represents sustainability gap(ESG) pressures; d) Government intervention actions(GI) in the market moves from right to left without a clear link to green market culture creating goals or to the need of a world of green consumers and green producers; and e) some government intervention(GI) or external price setting is sustainable(from point 3 to point 2) as indicated by the continuous portion of the red arrow in Figure **??** above and some government intervention(GI) or external price setting is not sustainable(above point 2) as indicated by the broken section of the red arrow in the same Figure **??** A few more things about the nature of the dwarf green market structure in Figure **??** above that can be pointed out are: a) At point 3 in there is no full market cost internalization through full costing, the non-green market price or dwarf price(DGMP = DP) reflects only a portion(t) of the environmental cost(EM) of production as set by external factors such as the government so that so that EM >t , which leads to DGMP = DP = P + t and therefore, GMP = P + EM> DGMP = P + t since EM > t; b) As external factors such as the government intervention(GI) push the environmental cost portion "t" upwards to force lower desired levels of production and consumption the market should be expected to contract accordingly, but this contractions are only expected to be sustainable up to a point; c) Government intervention(GI) may have a limit, if environmental cost increases force prices to go beyond DGMP 1 consumption and production contraction can no longer be sustained at these prices as indicated by the broken part of the red arrow moving upwards to the left and then the dwarf market may crash as consumers may no longer be willing to take that higher cost and producers would not be able to pass the higher environmental cost to consumers; d) Hence, the continuous portion of the red arrow in Figure **??**above indicates that the range of dwarf market price increases that consumers will take or that can be maintained go from point 3(DGMP) to point 2(DGMP 1); and the broken portion of the red arrow indicates the range of price increases that consumers would not take or which are not sustainable, such as all dwarf market price increases > DGMP 1 . For example, consumers would not take the dwarf market price DGMP 2 at point 1 as DGMP 2 > DGMP 1 falls inside the broken part of the red arrow in Figure **??** above and the dwarf market would crash; and e) Finally, the broken black arrow moving upwards to

the left from the dwarf green market supply(DGMS) in Figure **??** Thinking with that of Green Market Thinking to Highlight Main Differences and Implications consistent non-optimality regardless of pricing or environmental cost portion 't" and it also represents the existence of an active environmental sustainability gap(ESG) under dwarf green markets at all levels of production and consumption. Now we can use Figure **??** above to highlight the expected working of the dwarf green market a) The case of contractions of production and consumption that can be sustained: At point 3 in Figure **??** above and at the first set dwarf green market price DGMP = P + t the dwarf green quantity produced and consumed is DGMQ. As external factors such as government intervention(GI) increases the environmental cost portion slowly from "t" to "t 1 " the set environmental cost of supplying dwarf green products and services increases leading to a higher dwarf green market priceDGMP 1 = P + t 1 such as the one at point 2. At a higher dwarf green market price DGMP 1 we can see that non-optimal consumption and production as shown in Figure **??** above decreases to DGMQ 1 since DGMQ > DGMQ 1 .Notice that DGMP < DGMP 1 since t <t 1. All consumption and productions levels from point 3 to point 2 can be sustained because consumers are willing to take the environmental cost increases government intervention(GI) prescribes for firms to pass to consumers in the dwarf green market as indicated by the continuous portion of the red arrow; and b) The case of contractions of production and consumption that cannot be sustained: firms may not be able to pass any increase in environmental cost portion given by the external factor that are placed higher than t 1 or price DGMP 1 as then the market then would collapse as consumers would not accept them. For example, if the government wants to force production and consumption such as DMGQ 2 at point 1 in Figure **??** above, then it has to increase the environmental cost to t 2 > t 1 making DGMP 2 > GMP 1, but if consumers are not willing to pay that extra environmental cost t 2 , then producers cannot pass them to consumers, and then the dwarf green market collapses. Now imagine that government intervention(GI) puts forward an environmental cost so high like t 3 that it is higher than the environmental margin(EM), t 3 > EM such as the one at point 5, then the dwarf green market(DGM) would collapse right away as firms would not be able to pass such a high environmental cost t 3 to consumers, and such a contraction would fall under the broken part of the red arrow as unsustainable.

Finally, it can be added based on Figure **??** above that the direction of the black broken arrow from the dwarf green market supply(DMS) up to the left highlights the direction of non-optimality as the dwarf green price increases to an area where the market would collapse. And notice that since the environmental cost set by the government or the forced consumption and production levels are not linked to green market prices or to goals like creating a green market culture, then we cannot link the dwarf green market pricing with the idea of minimal or zero environmental margin required in a world of a dominant or fully renewable energy based economy or clean economy. Hence, a clear link cannot be established between dwarf green market thinking and clean market thinking as the environmental sustainability gap is still active.

10 d) Contrasting the working of green markets with that of dwarf green markets

For the purpose of contrasting green markets(GM) and dwarf green markets(DGM)we will assume equal pricing and consumption and productions positions as indicated in Figure 5 below: Some of the main observations that can be made based on Figure 5 above are the following: a) green markets and dwarf green markets work in opposite ways as green market actions move down to the right from point 1 while dwarf green market actions move up to the left from point 3; b) Green markets seek to make pollutions reduction profitable so green firms can expand production of greener products at lower prices while dwarf green markets seek to contract production and consumption by increasing environmental cost portion without a clear link to pollution reduction goals; c) green production and consumption are continuously optimal as indicated by the black continuous arrow going down to the right from point 1 while dwarf production and consumption is continuously non-optimal as indicated by the broken black arrow moving up to the left from point 3; and d) the working of green markets requires a strong green culture and perfect green economic thought while the dwarf green markets do not require that.

Among the specific observations that can be made based on Figure 5 above are: a) green markets require no government intervention(NGI) as they are free markets while dwarf green markets need permanent government intervention(GI) as they are non-free markets; b) Optimality in green markets move along the demand curve as green prices decrease as indicated by the black continuous arrow moving down to the right from point 1 as each consumption and production bundle is optimal while in dwarf green markets nonoptimality moves up as consumption and production is contracted by increases in the set pollution cost to be passed to consumers as indicated by the broken black arrow moving up to the left from point 3; c) there is no environmental sustainability gap in green markets due to full eco-economic costing or to full environmental cost of doing business internalization while there is an environmental sustainability gap in dwarf green markets due to partial eco-economic costing or to partial environmental cost internalization; and d) At the point of minimum pollution cost or zero pollution cost green markets can be linked to dominant or fully renewable based economies or clean economies as in point 4 in Figure 5 above while such a clear link to clean economies cannot be made from dwarf green markets as they still have an active environmental sustainability gap.

It is also important to point out now that one main implication of the discussion above is that the working of dwarf green markets is based on traditional economic thinking flipping. In other words, if we flip the way green

markets thinking works in Figure 5 above, we arrive at the thinking that support the working of dwarf green markets.

Figure 5 above can be used to highlight that since 2012 UNCSD Rio +20 green markets such as the one at point 1 should have been established, and since then governments should have aimed regulation and incentives towards promoting them. This together with the help of schools and universities and civil society groups could have put the advance of a green market culture on solid ground. One strong green culture willing to support green consumption and green production in a way that makes pollution reduction a profit-making matching for green firms, expanding this way the consumption choices of green consumers at a lower price while at the same time producing larger government revenues in terms of collecting not just economic revenues from the market, but environmental margins too which can then be used to reinvest in a more efficient green economy.

That has not happened yet.

Figure 5 above can also be used to stress the structure of dwarf markets currently being planned; and in some cases being implemented like carbon pricing based markets, which aim at contracting production and consumption by imposing pollution costs. As can be appreciated in Figure 5, consumption and production can be contracted by increasing pollution cost in a sustained fashion, but up to a point. In other words, government intervention(GI) works as long as consumers take the set environmental cost increases pushed by the government. But when consumers are no longer willing to take a set cost increase, especially if there is evidence on the ground showing that environmental problems keep still getting worse, then government intervention(GI) should be expected to fail and lead to dwarf green market collapse.

Figure 5 above can also be used to highlight too something about the role of governments in these markets: a) The buck stops with firms and consumers in free green markets, not with governments: Green markets work without government intervention(NGI). If things do not go well with green market action and the market fails, then governments can intervene as needed, and its action is justified and under those environmental circumstances is welcomed. Governments here are not liable to popular social backlash, the environmental responsibility rest on green firms and consumers; and b) the buck stops with the government in non-free green markets or dwarf green markets, not with firms and consumers: Dwarf green markets work with permanent government intervention (GI). If things do not go well with dwarf green markets, then governments will be blamed for the failure, and be subject to extreme social discontent as they are directly intervening in the market. This is because in this market, environmental responsibility falls on the government as the source of permanent intervention. Firms and consumers regardless of their actual pollution behavior in production and consumption can avoid blame if the dwarf green market fails. In summary: dwarf green markets work in the opposite way of green markets, and they are not aiming at producing and consuming at the lowest environmental cost possible, and they are not free markets as they require permanent government intervention. And therefore, since they are not free markets dwarf green market production and consumption levels are not optimal. Hence since dwarf green markets work in the opposite way green markets do, then this means that the rationale for understanding how dwarf green markets work or should be expected to work is found by inverting or flipping perfect green market economic thinking, a practice that is now accepted by today's economists. In other words, the current promotion and implementation of dwarf green market thinking means that traditional free-market economic thinking has been flipped and brought into a world of non-free markets and non-free decision makers.

11 Specific Conclusions

First, it was shown that dwarf green markets work in the opposite way as green markets do as they do not seek to encourage firms to produce at the lowest environmental cost possible. Second, it was pointed out that government intervention leads to non-optimal levels of production and consumption. Third, it was stressed that government intervention may have limits if the environmental cost portion is set too high as then the contraction of production and consumption that can be induced is not sustainable, and the dwarf green markets would collapse. As all the above is not consistent with traditional free-market economic thinking, it was indicated that the way a dwarf green market works can be understood simply by flipping traditional free-market thinking. And finally, it was mentioned that today's economists seen to be comfortable with permanent government intervention in markets, something inconsistent with free-market thought a la Adam Smith.

12 IV.

13 General Conclusions

First, it was stressed that green markets aim at producing at the lowest green cost possible generating an optimal path of production and consumption as the green price decreases, creating in the process a strong green market culture, and it was pointed out as well that green markets are free markets where no government intervention is needed. Second, it was highlighted that dwarf green markets work in the opposite way as green markets, their production and consumption bundles at all levels of government intervention are not optimal as they are non-free markets. And finally, it was indicated that to be able to justify, plan, implement, and promote dwarf green

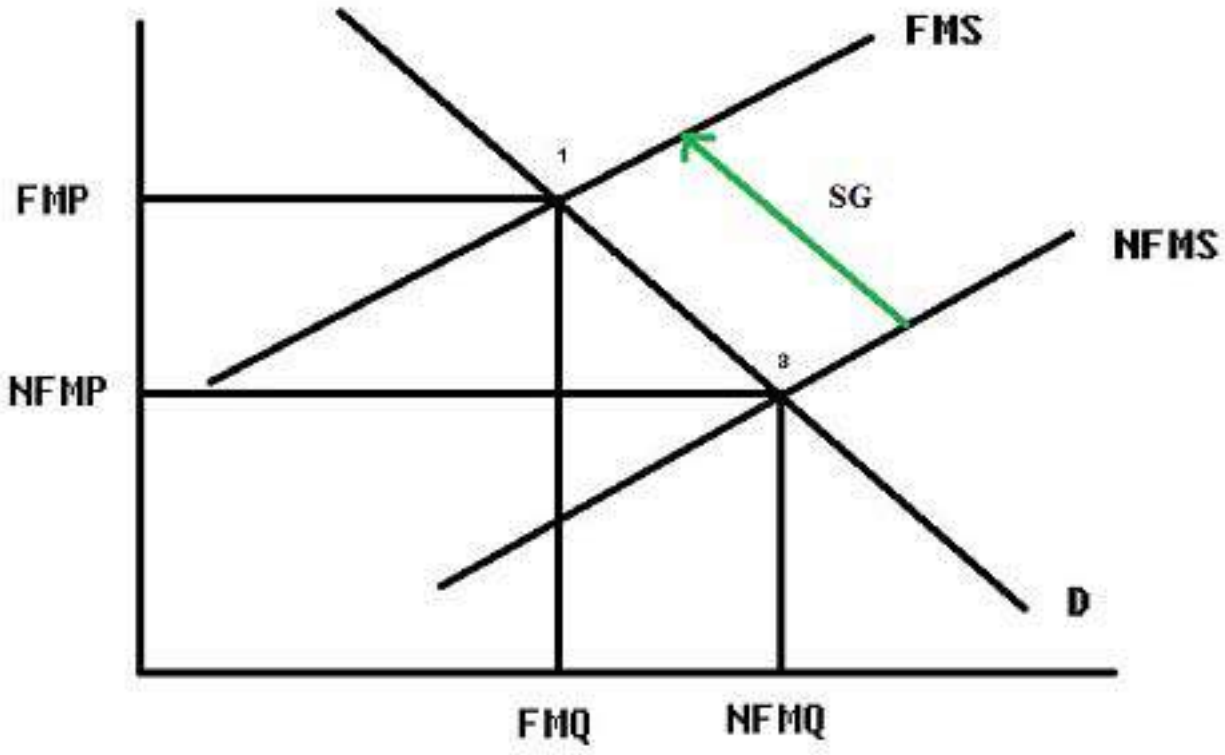

Figure 1:

13 GENERAL CONCLUSIONS

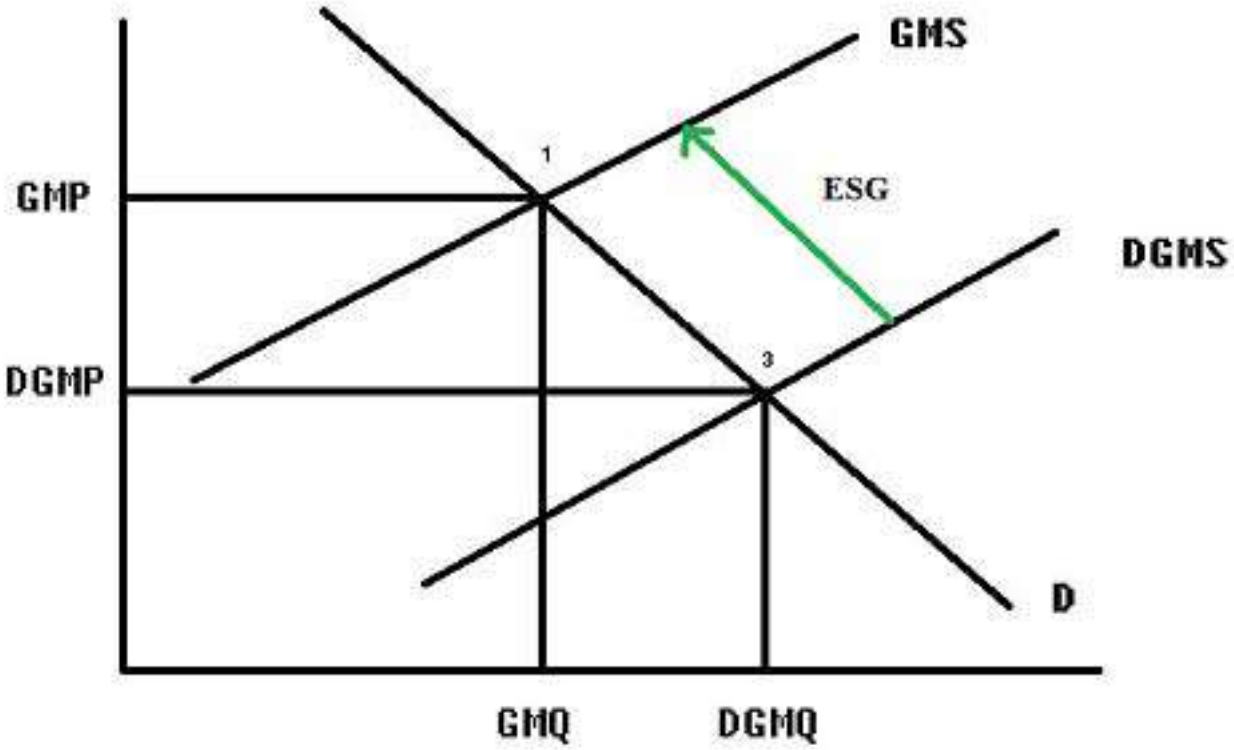

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Figure 2: Figure 2 :

markets there has been recently a systematic flipping of traditional free-market economic thinking, a practice that appears now to be accepted by today's decision makers, including economists. [1]

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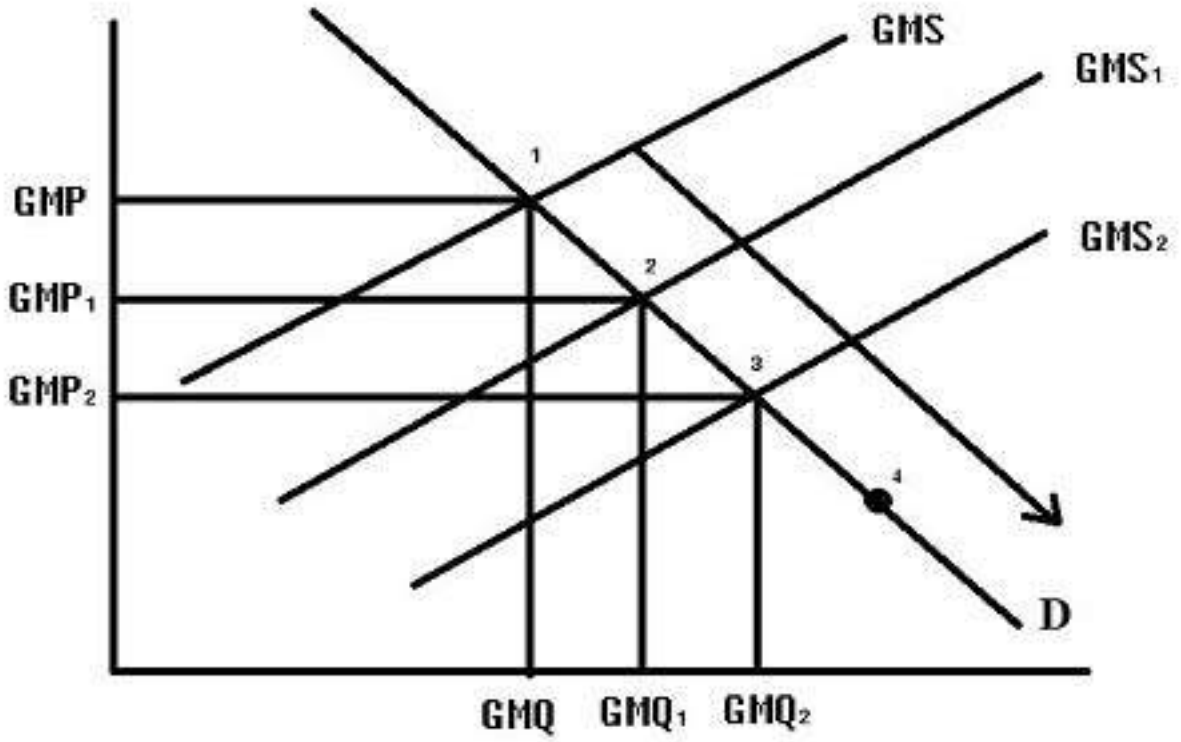

Figure 3: Global

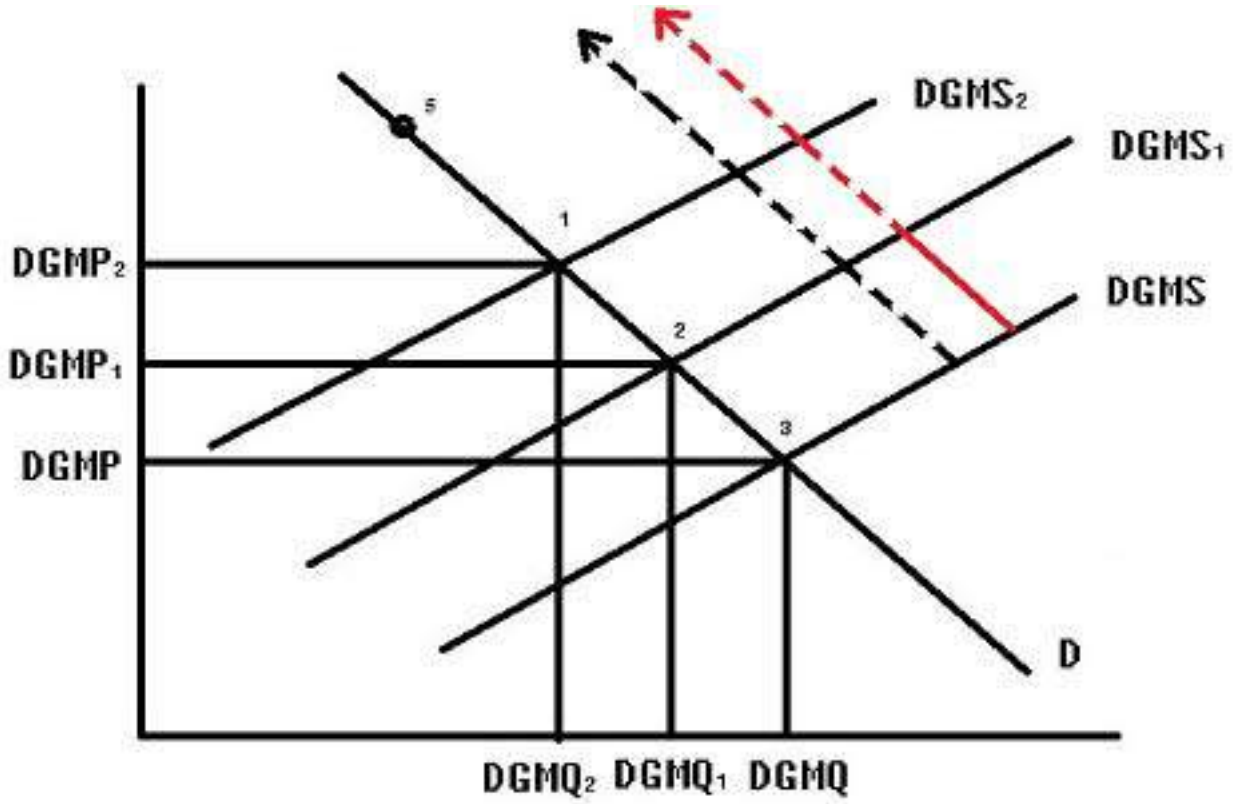

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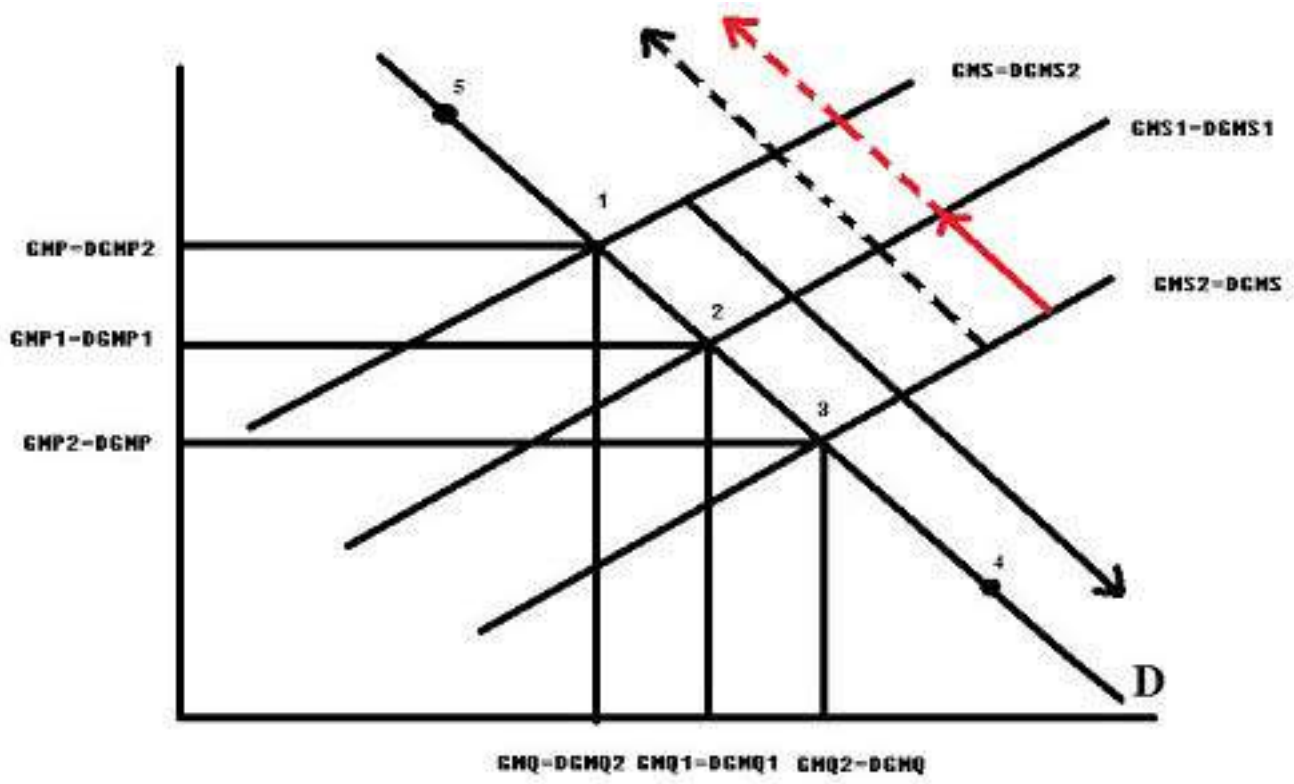
Figure 4: Figure 3 : 6 GlobalFigure 4 :


GMS=DGMS2
GMS1=DGMS1
GMS2=DGMS
GMP=DGMP2
GMP1=DGMP1
GMP2=DGMP
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GMQ=DGMQ2 GMQ1=DGMQ1 GMQ2=DGMQ

Figure 5:

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