

ON TALEB ON RICARDO: A CLARIFICATION

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Abstract: In the present work, Ricardo's Law of Comparative Advantage (also known as "Law of Association") is analyzed in order to critically respond to the analysis offered by Taleb (2012). The latter points to the invalidity of the model, since it does not assume price variability, thus exposing it to grave systemic consequences due to abrupt changes in relative prices. Our critique is based on the approach taken by Ludwig Von Mises (1949) on the same subject. The Ricardian model is viewed from a praxeological perspective. We maintain that Taleb's critique, although correct in invalidating Ricardo's analysis, not only does not harm but even reaffirms Ricardo's original conclusion pointing to the advantages of cooperation in general, and international free trade in particular.

Keywords: Taleb, Mises, International Trade, Comparative Advantage, Ricardo.

JEL classification: F19.

Resumen: En este trabajo, la ley de Ricardo sobre ventaja comparativa (también conocida como ley de asociación), es analizada para responder de forma crítica al análisis ofrecido por Taleb (2012). Éste último, apunta a la invalidez del modelo, ya que no asume la variabilidad de precios, exponiéndolo así a graves consecuencias sistemáticas debido a los cambios abruptos en los precios relativos. Nuestra crítica se basa en el enfoque de Ludwig Von Mises (1949) sobre este tema. El modelo ricardiano se observa desde una perspectiva praxeológica.

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Sostenemos que la crítica de Taleb, aunque correcta para invalidar el análisis de Ricardo, no sólo no perjudica sino que incluso reafirma la conclusión original de Ricardo que señala las ventajas de la cooperación en general, y el libre comercio internacional en particular.

Palabras clave: Taleb, Mises, Comercio internacional, Ventaja comparativa, Ricardo.

Clasificación JEL: F19.

I INTRODUCTION

David Ricardo's Theory of Comparative Advantages, originally presented in his work *On the Principles of Political Economy and Taxation* (1817), has been criticized throughout the last two hundred years for multiple reasons. A theory that extols the advantages of unrestricted international trade, its main critiques come from those authors who hold protectionism as a mechanism for progress.¹

Among the most recent critiques, there is Nassim Nicholas Taleb's work *Antifragile* (2012), where he focuses in what he identifies as the fundamental mistake in Ricardo's analysis: the non-inclusion of price variability.

In the present work, we will first proceed to a brief presentation of Ricardo's theory, and afterwards to Taleb's critique. Then, we will analyze the theory from the perspective of Ludwig Von Mises, in order to show why Ricardo's contribution is still valid. We end with our conclusions.

¹ Among the various critiques on this regard, we can find not only the Neo-Mercantilists derived from the works by Keynes (1936 [2013]) since the publication of his *General Theory of Employment, Interest and Money*, but also by other more sophisticated, such as the Stolper-Samuelson Theorem (that could be read in this light), in the context of the Heckscher-Ohlin model (Stolper and Samuelson, 1941).

II THE THEORY OF COMPARATIVE ADVANTAGE

Adam Smith, in *The Wealth of Nations* (1776, IV. ii), in analyzing the negative effects of Mercantilism, develops the concept of *absolute advantage*. Basically, this demonstrates that given two countries, *A* and *B*, both can improve their situations by trade, given that *A* is more efficient in producing some goods, while this applies to *B* for others. Thus, with free trade, global production increases, and they both benefit.

However, Smith did not analyze the case in which, given two countries, *A* and *B*, what happens if *A* has an absolute advantage in the production of *every* good in relation to *B*. David Ricardo (1817, 81-93) treated this scenario by developing the theory of *comparative advantage*².

In the famous example of two countries, *A*'s cost structure is lower than that of *B* for the production both goods in a two good world, and therefore possesses an absolute advantage with respect to both.

Nevertheless, they can still benefit from trade. Given that product *x* is relatively less costly in *A* and product *z* is relatively less costly in *B*, it is in both countries interest (based on these absolute advantages), that *B* specializes in *z* and *A* in *x*.

Hence, if *A* produces less *z* and more *x*, and *B* produces less *x* and more *z*, it is possible that both benefit at the same time that global production increases.

However, it is also true that both countries benefit *even* if one of them has an absolute advantage in the production of both goods over the other.

For example, suppose the following; there are two countries, two goods, two seasons. If there is no trade, Japan can produce 100 TV sets and 50 units of wheat, devoting half of its inputs into each, while Canada can manufacture 5 TVs and 10 wheat units, with the same allocation of inputs. With no trade, the world, consisting of these two

² An accurate exposition can be seen in Krugman, Obstfeld and Melitz (2012). Indeed, virtually every economic textbook properly explains this brilliant insight of Ricardo's.

countries, boasts 105 TVs and 60 bushels of wheat. The Japanese GDP is 150, while that of Canada is 15, for a total of 165. Then, trade occurs. Each country apportions its entire endowment to the product which exemplifies its comparative, not absolute advantage. Japan produces only TV sets, doubling its production to 200 of them, while Canada does the same with wheat, harvesting 20 units instead of 10.³

World GDP, consisting of the annual production of both nations, rises from 165 to 220. Both countries gain. See table 1.

TABLE 1

<i>(assume no trade)</i>	<i>Japan</i>	<i>Canada</i>	<i>Both</i>
TV sets	100	5	105
Wheat	50	10	60
GDP	150	15	165

(Now assume trade, in which Japan specializes in its comparative advantage in TV sets, while Canada focusses on its comparative advantage in wheat).

	<i>Japan</i>	<i>Canada</i>	<i>Both</i>
TV sets	200	0	200
Wheat	0	20	20
GDP	200	20	220

In addition, this happens while factor allocation has not changed, and the assumptions of the model apply:

- a) There is perfect mobility of factors inside the country.
- b) There are only two countries and two products.
- c) There are constant returns to scale (the slope of the production possibilities frontier does not vary between the two countries, thus constituting a linear function).

³ We assume these two products are additive.

- d) There are no transport costs.
- e) There are no barriers to trade.
- f) There is *stability* in marginal costs and the means of production.

The basis for the analysis is point f). This is the target of Taleb's critique, which we will present next.

III

TALEB'S CRITIQUE: PRICE VARIABILITY

Taleb (2012, Appendix II) identifies that, in the previous example, the *apparent* optimum strategy is specialization and trade on the base of comparative advantage. In effect, Taleb recognizes that there are advantages derived from trade and, as presented in the example of the doctor and the secretary: even when the former can very well do the work of the latter, it is preferable that he focuses in his specialty and leaves the work of the typist to his assistant. Even so, the author notes that comparative advantage is not the only variable to take into account, but there are others equally relevant such as:

- a) Labor stability associated with the work of a doctor, derived from the fact that people will continually get sick.
- b) Superior social status derived from the prestige of the profession of doctor in relation to secretary.

Thus, Taleb points to what he interprets as the fundamental mistake in the theory: it is based in the assumption that unitary costs of production assume a *normal distribution*, where extremes have no significant influence. In other words, there are no large changes in costs and prices, and therefore variability is irrelevant (or inexistent). In addition, he criticizes Krugman (1998) given that in one of his essays defending Ricardo's theory he does not include tail risks and risk management. Taleb thinks that this must be taken as a central part of the theory since it is not possible nor reasonable to talk about returns or profits without contemplating that these must be discounted by the risks involved (as any reasonable portfolio analysis would do).

According to Taleb (2012, 449), "... Traditional Ricardian analysis assumes the variables are endogenous, but does not add a layer of stochasticity". Moreover, even if we assume that costs are variable, these values represent the unbiased long-term average, and if these follow a "fat tail" distribution (thus with a higher probability of occurrence of extreme events)⁴, then if any of the values increases, important profits are registered. However, if any of the values decreases, the results can be negative and of a "massive" magnitude. Thus, "There are concavities to the exposure—severe concavities" (2012, 449).

In other words, Taleb is telling us that the absolute costs affecting the determination of relative costs are not stationary. Moreover, they often do not follow a normal distribution. In terms of Ricardo's theory, this undermines the assumption of constant returns of scale, or stable marginal costs.

Taleb (2012, 450) states that "Indeed, we have had problems in history with countries specializing in some goods, commodities, and crops that happen to be not just volatile, but extremely volatile. *And disaster does not necessarily come from variation in price, but problems in production*: suddenly, you can't produce the crop because of a germ, bad weather, or some other hindrance. A bad crop, such as the one that caused the Irish potato famine in the decade around 1850, caused the death of a million and the emigration of a million more... It is very hard to reconvert resources—unlike the case in the doctor- typist story, countries don't have the ability to change. Indeed, monoculture⁵ (focus on a single crop) has turned out to be lethal in history—one bad crop leads to devastating famines" (emphasis added by present authors). History, then, will often work contrary to what the theory indicates.

The author continues (2012, 450): "The other part missed in the doctor-secretary analogy is that countries don't have family and friends. A doctor has a support community, a circle of friends, a collective that takes care of him, a father-in-law to borrow from in the event that he needs to reconvert into some other profession, a

⁴ Presents leptokurtosis, above normal.

⁵ However, there is no reason why free trade in general or the law of association in particular would lead to monoculture.

state above him to help. Countries don't. Further, a doctor has savings; countries tend to be borrowers."

Finally, Taleb contends that Ricardo's theory is analogous to the strategy of "probability matching", that is, to predicting the membership in a class according to unconditional class probability. In other words, if one extracts (with replacement) a black ball from an urn 60% of the time, and a white one 40%, then to predict these percentages for the next ball would be to engage in a "probability matching" strategy. Even if decision theory literature, says this NYU professor, considers it mistaken given that probabilities are unstable or unknown, to use this strategy operates as a regulator. Taleb (2012, 450) concludes:

"The reader should not interpret what I am saying to mean that specialization is not a good thing—only that one should establish such specialization after addressing fragility and second-order effects. Now I do believe that Ricardo is ultimately right, but not from the models shown. *Organically, systems without top-down controls would specialize progressively, slowly, and over a long time, through trial and error, get the right amount of specialization—not through some bureaucrat using a model.* To repeat, systems make small errors, design makes large ones. So the imposition of Ricardo's insight-turned-model by some social planner would lead to a blowup; letting tinkering work slowly would lead to efficiency—true efficiency. The role of policy makers should be to, *via negativa* style, allow the emergence of specialization by preventing what hinders the process" (emphasis added by present author).

IV

A PRIORI VISION OF RICARDO'S THEORY

Taleb criticizes Ricardo's model not because it is incorrect with respect to the logic by which it is construed (based on the fact that trade benefits agents), but because it omits price variability. Moreover, it gives rise to a possible mistaken conclusion: one can determine the optimum specialization for a country by means of central planning, *given that* the relevant variables are normally distributed; where it is assumed that extremes are not relevant. Therefore,

we can see why Ricardo's approach is correct, even though the model illustrating it is not.⁶

We will now make use of praxeology⁷ in response to Taleb. Let us begin by identifying the underlying logic behind the development of the law of diminishing returns, such as it was presented by Ludwig Von Mises (who called it "law of returns"), in his *magnum opus Human Action* (Mises, 1949, 127-130).

Mises contends that such a law does not derive from experience (and its accuracy in describing reality in the context of specific technical processes of production is irrelevant), but it is an *a priori* deduction, implicit in the category of human action.

Mises begins by stating that in the case of first order goods, a quantity a produces a quantity α of *effect* (instantaneously or after some time). In the case of higher order goods, a quantity b of the good B produces a specific quantity of the effect β , while a specific quantity c of the good C produces a quantity of effect γ . The combined effects of β and γ of both complementary goods produce the quantity p of the first order good D . If b is fixed, the optimum value of c is such where the relation p/c is the biggest. If more than one value of c implies the highest value of p/c then the optimum is such where p is maximized. Thus, the largest return occurs when both factors are used in optimum proportions. An increase in the quantity of one of the factors generates a boost in the return, but at a decreasing rate as more input is added, otherwise we could not talk of an optimum in the former relation.

For example, if fewer units of b could be replaced with more of c at the same time that production of p is held constant, then B would be a good of unlimited production (always assuming that there are enough units of C available), and therefore it would no longer be regarded as an economic good, since it would no longer be scarce. Thus, it would be a free good.

⁶ Or, at least, it is incomplete.

⁷ The science of Human Action, based on the action axiom and its logical implications. For a full description of this science, see Mises (1949). We choose to follow the praxeological approach to the law of association since it is a more refined version of the Ricardian analysis. However, this is not the only *a priori* methodology that could state such a law. For instance, see Stigler (1966), and even, to some extent, Krugman (1998).

On the other hand, if the quantity of b rises but the production of p remains the same, then the previous increase of p would have to be entirely created by the increase of c , in which case B no longer is regarded as an economic good.

The law of diminishing returns states that in the case of higher order goods there are optimum combinations of factors that produce a higher quantity of production, and whenever there is a reduction in the use of one of the factors then the growth in the quantity produced will decrease, or increase less than proportionally to the surge in the consumption of the factor of production (higher order good) used. The key to this reasoning is that the quantitative effects of the consumption of the factor in relation to the produced quantity of p must be limited, and therefore these must receive the name of economic goods.

Mises (1949, 158) analyzes the law of absolute advantage in this way:

“If A is fit to produce in 1 unit of time $6 p$ or $4 q$, and B only $2 p$, but $8 q$, they both, when working in isolation, will produce together $4 p + 6 q$; when working under the division of labor, each of them producing only that commodity in whose production he is more efficient than his partner, they will produce $6 p + 8 q$.”

Let us now see how this author presents the law of comparative advantage (1949, 159):

“If A is in such a way more efficient than B that he needs for the production of 1 unit of the commodity p 3 hours compared with B 's 5, and for the production of 1 unit of q 2 hours compared with B 's 4, then both will gain if A confines himself to producing q and leaves B to produce p . If each of them gives 60 hours to producing p and 60 hours to producing q , the result of A 's labor is $20 p + 30 q$; of B 's, $12 p + 15 q$; and for both together, $32 p + 45 q$. If, however, A confines himself to producing q alone, he produces $60 q$ in 120 hours, while B , if he confines himself to producing p , produces in the same time $24 p$. The result of their activities is then $24 p + 60 q$, which, as p has for A a substitution ratio of $3/2 q$ and for B one of $5/4 q$, signifies a larger output than $32 p + 45 q$.”

Observe that numbers could be changed according to the example employed, but as long as quantitative relations are the same, this analysis will be valid for any possible world where the conditions of the model apply. Mises contends that (1949, 160):

“If and as far as labor under the division of labor is more productive than isolated labor, and if and as far as man is able to realize this fact, human action itself tends toward cooperation and association [...] Experience teaches that this condition--higher productivity achieved under the division of labor--is present because its cause--*the inborn inequality of men and the inequality in the geographical distribution of the natural factors of production*--is real” (emphasis added by present authors).

The theory as presented by Mises constitutes an *a priori* truth⁸. It also refers to reality as such, because men *are* unequal, and therefore will have different capabilities and wishes, and also the factors of production *are not* necessarily homogeneous geographically⁹. Why, then, is the law of association attacked? Mises explains (1949, 160):

“This law is an offense to all those eager to justify protection and national economic isolation from any point of view other than the selfish interests of some producers or the issues of war-preparedness.

⁸ It is true that we must not confuse the place of the law of comparative advantage within praxeology with the demonstration and validity of the law of comparative advantage as a praxeological theorem. We treat these subjects together here because our goal is to analyze Taleb’s approach, not the law of association itself.

⁹ Does this affect the validity of the subjective theory of value? Not in our view, because the law of returns, as well as the law of association, deal with objective aspects of the external world (such as the geographically unequal distribution of resources). Hence, the relations among men and men’s evaluations of the external world (Mises, 1949, 92) follow the subjective theory of value. The law of returns and the law of association, however, correspond (in our view) to what Böhm-Bawerk (1888 [1930], 10) called “the theory of the Production of goods”. This addresses the cases of real constraints and objective variables affecting production. Thus, praxeology deals with both aspects, the subjective evaluation of men of other men and the world, and the conditions of the world (as in the case we analyze here). Let us also note that the *a priori* methodology of praxeology is not the relevant factor here, but instead that the law of returns and the law of association are praxeological theorems because they explain aspects of man’s conduct with regard to his external world.

Ricardo's first aim in expounding this law was to refute an objection raised against freedom of international trade."

Therefore:

"But Ricardo deals with a world whose conditions are determined by settlement in earlier days, a world in which capital goods and labor are bound to the soil by definite institutions. In such a milieu free trade, i.e., the free mobility of commodities only, cannot bring about a state of affairs in which capital and labor are distributed on the surface of the earth according to the better or poorer physical opportunities afforded to the productivity of labor. Here the law of comparative cost comes into operation. Each country turns toward those branches of production for which its conditions offer comparatively, although not absolutely, the most favorable opportunities. For the inhabitants of a country it is more advantageous to abstain from the exploitation of some opportunities which--absolutely and technologically--are more propitious and to import commodities produced abroad under conditions which--absolutely and technologically--are less favorable than the unused domestic resources." (1949, 161).

Let us remember here the distinction Taleb makes between the case we analyzed and that of the doctor-secretary. However, we can still say that both cases are analogous because they focus on just *one* aspect: comparative advantage. And abstract from the others. Mises contends that (1949, 162):

"If we do not want to deal with the law of comparative cost under the simplified assumptions applied by Ricardo, we must openly employ money calculation. We must not fall prey to the illusion that a comparison between the expenditure of factors of production of various kinds and of the output of products of various kinds can be achieved without the aid of money calculation [...] In comparing the conditions of two countries we must say: If conditions are such that in England the production of 1 unit of each of the two commodities *a* and *b* requires the expenditure of 1 working day of the same kind of labor, while in India with the same investment of capital for *a* 2 days and for *b* 3 days are required, and if capital goods and *a* and *b* are freely movable from England to India and vice versa, while there is no mobility of labor, wage rates

in India in the production of *a* must tend to be 50 percent, and in the production of *b* 33 1/3 per cent, of the English rates. If the English rate is 6 shillings, the rates in India would be the equivalent of 3 shillings in the production of *a* and the equivalent of 2 shillings in the production of *b*. Such a discrepancy in the remuneration of labor of the same kind cannot last if there is mobility of labor on the domestic Indian labor market. Workers would shift from the production of *b* into the production of *a*; their migration would tend to lower the remuneration in the *a* industry and to raise it in the *b* industry. Finally Indian wage rates would be equal in both industries. The production of *a* would tend to expand and to supplant English competition. On the other hand the production of *b* would become unprofitable in India and would have to be discontinued, while it would expand in England. The same reasoning is valid if we assume that the difference in the conditions of production consists also or exclusively in the amount of capital investment needed."

Thus, we can see that the particular conditions where such a theory could apply are not relevant at judging its general validity. Moreover:

"Ricardo, however, starts from the assumption that there is mobility of capital and labor only within each country, and not between the various countries. He raises the question what the consequences of the free mobility of products must be under such conditions. [...] The theory of comparative cost answers this question. [...]

However, the teachings of the classical theory of interregional trade are above any change in institutional conditions. *They enable us to study the problems involved under any imaginable assumptions*" (1949, 163) (emphasis added by present author).

In other words, it is certainly true that the real conditions in specific time and space may imply that some of the assumptions of the model do not apply (such as the normality in the distribution of the costs of production and prices), *but this does not mean that agents must no longer guide their choices based in their comparative advantages*. In fact, if they changed their practice in this regard, they would abstain from obtaining the benefits derived thereby.

Also, in the case of facing the risks of variability they would not only necessarily see their benefits diminished, but also would have to add the inefficiencies associated to the fact that they are not profiting from those more suitable sectors of the economy.

How is this related to the law of returns? Mises (1949, 161-2) explains¹⁰:

“The law of comparative cost is as independent of the classical theory of value as is the law of returns, which its reasoning resembles. In both cases we can content ourselves with comparing only physical input and physical output. With the law of returns we compare the output of the same product. With the law of comparative costs we compare the output of two different products. Such a comparison is feasible because we assume that for the production of each of them, apart from one specific factor, only nonspecific factors of the same kind are required.”

Taleb’s critique refers to the possible negative implications of central planning with respect to Ricardo’s model and its assumptions, but not necessarily to the idea of comparative advantage itself, such as Mises explains with the use of praxeology. This is so because the formal analysis of the theory permits to identify, *ceteris paribus*, how convenient it is to guide oneself by the theory *only in the context of the market process*.

We can conclude from these considerations that, as even Taleb recognizes, the mistake is not to support the theory as such, but to do so based on central planning schemes. Due to the absence of spontaneous and dynamic information, these will likely create a system of production allegedly based in comparative advantages, but with systemic risks due to ignorance (mainly, of price variability and its risk). This problem derives, in part, from the exposition of a model where prices are a given, when in reality this is far from

¹⁰ We must state that the place of the law of comparative advantage within praxeology, the validity of the law of comparative advantage as a praxeological theorem, and the relation between a praxeological law with the advocacy of free-trade are different subjects. Nevertheless, Mises (1949) treats them together, so as to defend a free-market economy. Since we are following Mises’ approach here, we also conform to his treatment of these subjects.

true. As Taleb (2012, 450) says, “systems make small errors, design makes large ones”.

Moreover, the model presented by Taleb, could be seen as refuting the advantages of free trade whether if we accept it (because by denying the relevance of price variability it expounds the system to catastrophic risks), or if we reject it (since its assumptions are unrealistic). This is why it is important to point out that what is *being criticized is the model, and not the theory that inspires it*. In addition, such a theory can be presented as well under Mises’ approach.

Scott Gordon (1993, 208) explained:

“Any theory, whether in natural or social science, must employ *ceteris paribus*. Otherwise every theory, no matter how small, would have to take everything in the universe into account. So there cannot be any serious criticism of classical political economy simply on the ground that it constructed *ceteris paribus* theories. However, Ricardo and other classical economists were not as clear about this matter as they should have been. Ricardo sometimes spoke of the conclusions he had arrived at as ‘tendencies’ and sometimes as if they were certain. Properly stated, the conclusions were *analytically certain* under the conditions of *ceteris paribus*, but they could be construed only as *empirically probable*, because in the real world ‘other things’ are not constant” (emphasis in the original).

In this respect, any theory could be refuted if the assumptions on which it stands do not apply. Nevertheless, according to Gordon (1993, 208) there are four different meanings of *ceteris paribus*:

1. When the exact formal conditions, which allow the application of a proposition, hold.
2. When the variables not included in the theory are irrelevant or constant.
3. When such variables are neither relevant nor constant but have turned out to be so in a laboratory.
4. The variables not included in the theory are neither constant nor irrelevant nor established in a laboratory, but we accept the current hypothesis, until we can make a new one that includes them. (This is valid for economics).

Mises's praxeology, grounded in the synthetic a priori, can be interpreted as belonging to category 1.¹¹ But, at the same time, the *ceteris paribus* of Ricardo's model, that assumes price stability, would deprive it of the empirical validity that makes possible to recognize, for example, the relevant part of Taleb's critique, which would make it adequate for classification 4.

In addition, we can recognize that by including variability in the theory, we not only do not refute it but rather enrich it. Therefore, instead of assuming that this theory refutes the advantages of trade or free markets, it reaffirms them by showing that if there is price and cost variability, central planning would be disastrous for the economy, and even more so if such prices and costs follow a "fat tail" distribution.

To conclude this section, comparative advantage theory is valid, but the model used to illustrate it does not reproduce its foundations faithfully. Moreover, due to the absence of price variability in its assumptions, it may allow the unwary to assume that specialization and division of labor could be centrally planned without a market process¹², which in turn makes it impossible to permit the efficient transfer of information via the price system.

Taleb contends that price variability may have a huge and negative impact on international trade relations. Nevertheless, it does not follow that:

- a) Prices are the only guides to identify comparative advantage.
- b) Crises should necessarily correspond to price changes¹³.

Comparative advantage is identified and refined through the market process, over time and by means of trial and error, in the

¹¹ We take praxeology to be a formal science; if this is denied then it equally applies to 4 as a set of simple assumptions.

¹² Since price changes are a given in the real world, it is thought all the planner needs to do is to identify comparative advantages and promote the production of the relevant goods. This is mistaken.

¹³ With respect to the case of Ireland in the XIXth century, see Thornton (2000; 2008). About the source of economic crises, see Hayek (1931), Mises (1912 [1953]), and Rothbard (1963 [2000], 1963 [2008], 1983 [2008]).

context of entrepreneurial ventures. It is not due to self-evident facts (even when, as Mises declares, geographical dotation of factors and individual conditions are heterogeneous). Were this the case, there could only be profits, never losses, a non-existent situation.

Therefore, we can see that, following Taleb's critique (but also building on it), to focus in price variability is certainly relevant, but focusing *only* on this variable is mistaken.

Taleb's critique could be read as maintaining that Ricardo's model of comparative advantage mistakenly (and implicitly) allows us to think that it is possible to centrally plan specialization and the division of labor. But to focus only in price variability as the fundamental factor also leads to mistaken conclusions. This, paradoxically, assumes that specialization must be centrally planned but from a different perspective.

For example, the theory of the "deterioration in the terms of trade" by Raúl Prebisch and Hans Singer¹⁴ held that, since the terms of trade of periphery countries (such as Latin American countries like Argentina; Cortés Conde, 2009) increasingly worsen with respect to those of the core countries (Europe and the US), it is convenient for the former to develop government subsidized import substitution industries. In Latin and South America, these policies have been an abject failure.¹⁵ This error was based on the premise that the law of comparative advantages, one of the most profound laws in all of economics, is false. And the focus was price variability. To conclude, *the mistaken interpretation of Ricardo's theory under an excessively simplified model may imply the application of policies that would lead to disastrous failures*. Such disasters must not be blamed on the theory, but to a mistaken interpretation of it due to both placing excessive emphasis on price variability and interpreting such a factor as the fundamental one.

¹⁴ Toye and Toye (2003), Etchebarne (2008), Ocampo and Parra (2003), Ocampo (2015, 352-3).

¹⁵ As they would be were Kansas, Iowa, Missouri, to compel the substitution of manufactured for agricultural products.

V CONCLUSION

As we have argued throughout this paper, Taleb's critique is valid insofar as it identifies Ricardo's model as too simplistic and does not allow us to fully understand the fundamental importance of price variability in the development of international trade, specialization and the division of labor processes¹⁶. Despite this, it is incorrect to view this factor (price variability) as the only relevant one.

We have also analyzed Ricardo's theory and showed that it is valid in the light of Praxeology. In addition, it promotes an understanding of how countries benefit from trade, *as an instance of the more general law that any individual can benefit from such cooperation*.¹⁷

In this sense, Taleb's excessive focus in price variability supports the belief that free trade can lead to inefficient results, despite his own defense of the Hayekian (1944) spontaneous orders vis a vis central planning. Although his critique is valid, it is so only in the context of the exposition of a more important factor: specialization, such as any other criteria for resource allocation in the market must be performed organically, and not by means of central planning. And this is true *even if price variability did not exist*. But even more so because it does exist. Moreover, price variability will continue to occur under a system of free prices and unhampered

¹⁶ Ricardo's mistake, also, resides in what can be called methodological nationalism. Countries do not benefit from specialization, the division of labor and trade. Rather, this applies, only, to *individuals* within the nation. The doctrine of methodological individualism of the Austrian school is definitive in this regard (Boettke and Coyne, 2005; Hayek, 1948; Hoppe, 1992, 1995; Infantino, 1998; Mises, 1962, 1998; Selgin, 1988; White). Moreover, as Taleb holds, antifragility is indeed relevant. There could be producers of commodities or products with characteristics that do not show simple comparative advantages with other competitors, but which are useful in certain scenarios (for instance, the proximity of the producer in a natural disaster, such as a wheat producer in Japan, although Canadians are better at this endeavor). Moreover, some customers may prefer locally produced products, rather than imported, despite comparative advantages. In any case, *this* would be the comparative advantage of the product in the eyes of local customers, i.e. that they are locally produced. These relevant aspects were pointed to the present authors by an anonymous referee.

¹⁷ This is necessarily true in the ex ante sense, and almost always so ex post as well.

markets.¹⁸ Under anything even approaching laissez faire capitalism, its effects will be more readily seen as beneficial, since they would help allocate resources more effectively and contain poor results in specific sectors of the economy. In contrast, under a centrally planned system, *its effects can be systemic*, and thus negative for the economy as a whole.

In sum, Taleb's critique does not undermine the truth of the law itself, but does so for some of the assumptions of the model. The mistake, then, lies in Ricardo's *analysis*, not in Ricardo's *law*. Price variability is neither an argument *against* free markets, nor *for* interventionism.

To conclude, Taleb's critique, in the present context, offers more justifications for, and therefore strengthens Ricardo's fundamental insight: free trade, and cooperation in the context of a free market, brings more benefits for all agents. In other words, Taleb excessively focuses on price variability, although he does offer an important insight in favor of sound economics. That, unfortunately, may encourage the belief that free trade can lead to bad results, despite his own undoubted support for the spontaneous order argument against central planning. Although this author does not oppose free markets, his implicit view that Ricardo's mistaken model affects in a way the validity of Ricardo's law, may lead to the very opposite of what he intends to defend, interventionism. This is so because some interventionist economist¹⁹ can argue, "look, price variability is too important and free trade will not work because of it". This may well occur despite Taleb's view that free trade should be based on an organic process, on the market, precisely because

¹⁸ Milton Friedman (1982, 36) was once asked about the future course of the stock market: "Sir, to continue on that — in a general sense, what is the matter with the stock market now where virtually all of the good companies are substantially undervalued in terms of their real assets?" Came the answer: "If you think they are substantially under-valued in terms of their real assets you have an opportunity to make some money. I am not going to second guess the stock market. I have a very simple answer that I always give when people ask me what is going to happen to the stock market. I repeat the answer John Pierpont Morgan used to give and his answer was, '*It will fluctuate.*' I think that is a very good answer don't you?" (emphasis added by present authors).

¹⁹ Such as the Raúl Prebisch and Hans Singer theory of the "deterioration in the terms of trade" (Ocampo, 2015).

of price variability. Also, price variability is not often the cause of crises, these regularly happen due to monetary and fiscal interventions²⁰. So, our critique of Taleb is more a *clarification* than a rebuttal, but, hopefully, an important and relevant one.

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²⁰ Hayek (1931), Mises (1912 [1953]), Rothbard (1963 [2000]; 1963 [2008]; 1983 [2008]).

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