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ABSTRACT: The law of association as espoused by David Ricardo and generalized by Ludwig von Mises cannot directly convey what is at stake in exchanges involving specialization in uncertainty bearing. In this article we explain why the entrepreneurial function as conceptualized by Frank Knight and Mises does not fit in, and what other rationale for association is involved whenever specialization in uncertainty bearing takes place. We also explain how this other *raison d'être* of association is related to the Ricardian/Misesian law of association and how these insights can be combined to produce a more realistic picture of the market process. We show how specialization in uncertainty bearing, though itself escaping the law of comparative advantage, indirectly but decisively allows for an intensification of the Ricardian division of labor.

KEYWORDS: comparative advantage, uncertainty bearing, division of labor, entrepreneurship, speculation, risk aversion

JEL CLASSIFICATION: B53, D80, D90, E44, G00, J24, O16, O40

1. INTRODUCTION

The law of comparative advantage is a cornerstone of economics. Little can be said by economists without using it, at least implicitly. The basic preliminary facts are familiar (Rothbard 2004 [1962], pp. 95–102). First, for two people to engage in a voluntary exchange, they must think that they will benefit from it. The two goods must be different goods in the eyes of the parties, and they must have reverse valuations on their respective value scales. Second, in order to give up some goods, parties to the exchange must own them first and they must possess a different proportion of the two goods under consideration in relation to their wants. And since goods do not appear out of thin air in their possession, they first must have specialized in their acquisition.

In order for such a specialization to occur, there must be differences between people regarding the suitability and yield of capital goods, consumer goods, and ultimately nature-given factors they have come to own as well as in human labor skills and desirability of different tasks. Otherwise, each individual could only give up the same amount of goods in order to acquire other goods in interpersonal exchanges than in isolation. There would be no interest in specializing in the production of goods one does not use oneself—no interpersonal division of labor—and no point in participating in market exchanges.

Therefore, whenever and to the extent that variety exists among men's skills and in their environment, there is room for increased productivity for everybody through division of labor and exchanges compared to isolation. And this is true, not only when each party has an absolute superiority in productivity in regard to one of the goods exchanged ("absolute advantage") but even when one party is more productive in all fields and each one specializes in the field where he has the greatest relative superiority. This is the "law of comparative cost," the "law of comparative advantage," or, since it actually includes absolute advantage and since the law of comparative cost is usually associated with a special case analyzed by Ricardo (1821, pp. 140–141),[1] it can be considered as

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[1] Several authors have contested that the discovery of this law was made by Ricardo. James Mill and Robert Torrens have also been credited. On this controversy, see for

the more universal "law of association" (Mises 1998 [1949], pp. 157–164). Nothing except the economy of a hypothetically isolated Robinson Crusoe can be discussed if one overlooks this fundamental insight.

So far, except for the reverse valuations requirement, no insight that could be considered as specifically "Austrian" has entered the picture.[2] It is by and large common to the "neo-classical" and the Austrian schools. What happens now if we introduce uncertainty and uncertainty-bearing for which there is a sharp difference of treatment between the schools? Will specialization in uncertainty bearing fit the comparative advantage story in both cases? Or will the scope of application of the law have to be altered depending on which theoretical framework is used? To the extent that the neo-classical framework operates with a notion of risk-bearing which has the characteristics of a factor of production (Pigou, 2002 [1952], p. 771–781), an account of specialization in risk-bearing can be provided by the law of comparative advantage. Commenting on Arrow's (1992 [1965]) classic article on insurance and "risk-bearing," Dionne and Harrington (1992 [1990], p. 1) explain in no ambiguous terms that "Arrow presented a framework of analysis that explains the role of different institutional arrangements for risk-shifting, such as insurance markets, stock markets, implicit contracts, cost-plus contracts, and futures markets. All of these institutions transfer risk to parties with *comparative advantage on risk-bearing*."[3] [emphasis added]

Absent any explicit qualification to the contrary in the two general Austrian treatises, Ludwig von Mises's *Human Action* and Murray Rothbard's *Man, Economy, and State*, absent any explicit treatment of this question by Austrian economists, one might be tempted

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example Aldrich (2004) and its references. My mention of the "Ricardian law" in this article should not be interpreted as a stance in this debate. The law is usually associated with Ricardo and since I am not concerned here with who was the actual originator but with the law itself, the designation I use is only chosen so as to make it obvious to the reader what law I am alluding to.

[2] Exchanges can occur while people are "indifferent" between the goods traded, in the neo-classical framework.

[3] As far as I can see, Arrow has not been that explicit regarding comparative advantage in his article, but that Dionne and Harrington would interpret Arrow's position in such a way as a matter of course is telling and illustrates the point.

to conclude that the views on uncertainty and risk exposed by Knight and Mises do not make a difference as far as this question is concerned, that specialization in uncertainty bearing can directly be accounted for by the law of comparative advantage. Another reason would be that if most economists pay tribute to the law of comparative advantage in one way or another, its generalization by Mises makes its role even more central in the contemporary Austrian edifice. After all, the law of association provides us with the most basic reason for society to exist in the first place: "The fundamental social phenomenon is the division of labor and its counterpart human cooperation" (Mises, 1998 [1949], p. 157). It would then be easy to jump to the conclusion that specialization in uncertainty bearing is part of this division of labor as accounted for by the Ricardian principle of comparative advantage.

I want to show here that the law cannot be directly applied to exchanges involving specialization in uncertainty-bearing, what rationale for association is involved in such cases and how it relates to the Ricardian law of association. Such an endeavor aims at clarifying the role of entrepreneurship *vis-à-vis* the division of labor from an Austrian perspective and, as a consequence, at improving our understanding of the market process. By focusing on a difference between the Austrian and the neo-classical approaches regarding the possible scope of application of the law of comparative advantage, it also aims at revealing a peculiar way in which the weaknesses of the neo-classical treatment of uncertainty vitiate attempts at explaining the nature and function of specialization in uncertainty-bearing, a way which has to my knowledge hardly been previously stressed.[4]

In order to reach these goals, section 2 will first briefly remind the reader of the Knight/Mises view of uncertainty and will introduce the concept of specialization in uncertainty bearing. Section 3 will explain why this view of uncertainty is such that the law of comparative advantage does not apply to specialization in uncertainty bearing while it can with a measurable risk account of uncertainty. Section 4 will introduce Frédéric Bastiat's "law of association," explaining specialization in uncertainty-bearing on

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[4] For instance, there is no trace of such an issue in Robert Hébert and Alfred Link's historical overview of the theories of entrepreneurship (Hébert and Link, 1988).

the basis of the diversity of preferences among actors regarding uncertainty-bearing. Section 5 will explore what I propose here as the key relationship between Bastiat's and Ricardo's laws which should lie at the heart of an integrated Austrian edifice. A conclusion on applications and direction for further research follows.

2. SPECIALIZATION IN UNCERTAINTY BEARING

Though it is easy to recognize how the law of comparative advantage applies when one considers the division of labor between say, a coffee producer and a corn producer, it is not immediately clear how comparative advantages would operate and a division of labor would occur between someone who produces corn and the speculator who buys it in advance at an agreed upon future price in hopes of selling it later at a higher price (or even any speculator who would instead buy the corn on the spot market in the hope of selling it later at a higher price). It is not intuitively clear what is the division of labor in the corn or coffee-producing firm between the worker and his employer who buys his services in advance in the hope that he will get a profit from the future sale of the product. It is not obviously clear either what the comparative advantages involved are between this employer and the person who lends him money at a contractually agreed upon interest rate.

What all these examples have in common is that some form of uncertainty bearing is involved[5] and is an object of the transaction.[6] More precisely, since for the Austrian economist, any action occurs in a context of uncertainty after all (general uncertainty), what all these examples have in common is that uncertainty bearing regarding some particular events (specific uncertainty) is transferred from one partner in the exchange to the other. The corn producer is relieved of bearing the uncertainty regarding the price of corn in the future by the speculator who will instead be exposed

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[5] Another example would be a contract between shareholders specifying that apart from the founders of the company and those who would eventually get their initial shares, the buyers of additional shares will benefit from a limited liability status.

[6] Of course, there are other aspects involved, especially in the last two kinds of deals which have to do with the exchange of present vs. future goods and that can be meaningfully analyzed in some respects without referring to uncertainty, but this is not our concern here since we focus on uncertainty-bearing as such.

to that specific uncertainty. The worker is relieved by his employer of the uncertainty regarding the price of his product in the future compared to the situation in which he would be self-employed or a member of a workers' cooperative. Instead, the employer bears this specific uncertainty. And the lender is relieved of the additional uncertainty involved in directly investing his funds as the borrower bears it to some extent. The figure we see emerging here has a familiar face in Austrian economics: the Knightian or Misesian entrepreneur/speculator as uncertainty-bearer who earns a residual monetary income, positive or negative, profit or loss, depending on the quality of his and other people's judgments regarding future prices.[7, 8] And the process described is—as far as entrepreneurs/speculators are concerned—specialization in uncertainty-bearing. Mises (1998 [1949], p. 256) describes the example of futures markets transactions as follows:

> The futures market can relieve an entrepreneur of a part of his entrepreneurial function. As far as an entrepreneur has "insured" himself through suitable forward transactions against losses he may possibly suffer, he ceases to be an entrepreneur and the entrepreneurial function devolves on the other party to the contract. The cotton spinner who when buying raw cotton for his mill sells the same quantity forward has abandoned a part of his entrepreneurial function. He will neither profit nor lose from changes in the cotton price occurring in the period concerned.

3. SPECIALIZATION IN UNCERTAINTY BEARING DOES NOT FIT IN THE LAW OF COMPARATIVE ADVANTAGE

Let us give in to temptation then; let us try to apply the law of association to such cases and see where it leads us. The story should run like this: the futures contract, by placing the "risk" on those who want to bear it and who might be more able to bear it,

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[7] See Knight (1964 [1921]) and Mises (1998 [1949], pp. 105–118). The views of Knight and Mises on these topics are not exactly the same actually. See Foss and Klein (2012, pp. 81–88). However, what is of interest for this article's purpose is essentially what they share.

[8] To avoid equivocation, entrepreneurship refers here to the function of uncertainty-bearing. It does not refer to Mises's narrower concept of a "promoter" (Mises 1998 [1949], p. 256).

makes it possible for our cotton or corn producers to concentrate on what they do best and not spend resources in acquiring relevant knowledge on possible future prices.[9] This is the specialty of the speculator who could not exert his talents to the same extent if he also had to care about the specific knowledge required to produce corn. The same thing could be said of the labor contract. The laborer, relieved of the necessity of working for an uncertain future income, can concentrate on what he is best at, and the entrepreneur, bearing instead this uncertainty while being relieved of the necessity to provide a kind of labor for which he is relatively unfit, can concentrate on uncertainty bearing. Finally, the same thing could be said of the production loan contract. The lender is relieved[10] of the burden of bearing uncertainty regarding future prices in the process of production he invests in, and can concentrate on his best skills as a capitalist advancing present goods, while the borrower can deploy his entrepreneurial talents at grasping what the future is made of. And it should be clear that this specialization leads to a more productive economy and higher overall output.

However, the situation here is more complicated, and it is my contention that the Austrian economist would fall into a neo-classical trap with such a narrative. The reason is the following. Again, the law of comparative advantage tells us that when each person specializes in the production for which he has relative if not absolute advantage, beneficial subsequent exchanges can occur. In other words, in isolation, one might be able to produce a quantity x of something or a quantity y of something else per day so that one has an internal exchange ratio of x/y and that each one can obtain a better ratio of exchange if one specializes in the field in which one has a relative superiority and trade with other specialists. Now, if one would apply this insight to the division of tasks between the speculator and the producer of corn for example, as I did above, that would presuppose that the contribution of the speculator could be grasped through an x or a y, or, more precisely, through the concept of a monetary or physical productivity schedule. Otherwise, the very idea of a comparative advantage would be meaningless since

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[9] See Murphy (2006).

[10] Except for the risk of default.

there would be no basis for the comparison involved between the skills of different people.

This view of a productivity schedule for entrepreneurial skills is of course incompatible with Knight's (1964 [1921]) and Mises's views on the entrepreneur as uncertainty-bearer, for strictly speaking, entrepreneurship is not a factor of production according to them. As Klein (2010, p. 70) puts it, commenting on Knight's take on the entrepreneur, "Entrepreneurship represents judgment that cannot be assessed in terms of its marginal product and which cannot, accordingly, be paid a wage." Or, as Blaug (1997, p. 463) wrote, commenting on Knight's views about profit as the income of the entrepreneur:

> The entrepreneur as a residual, noncontractual income claimant may make a windfall gain if actual receipts prove greater than forecasted receipts. We cannot describe this noncontractual, windfall gain as a necessary price that must be paid for the performance of a specific service, the cost of bearing uncertainty, for that would imply a definite connection between the level of profit and the burden of uncertainty. But no such connection exists. If it did exist, uncertainty-bearing would have all the *characteristics of a productive factor and marginal productivity theory would apply to it*: profits would equal the marginal product of entrepreneurship and would therefore constitute a charge on production. [emphasis added]

In other words, profits and losses would not be residual but permanent incomes that do not vanish in general equilibrium, or in Mises's imaginary construct of the evenly rotating economy where uncertainty has disappeared and where entrepreneurs are replaced by automatons as a consequence. There is therefore no way, on standard Austrian grounds, to argue that the contribution of an entrepreneur can be reduced to a marginal productivity schedule, and therefore no way to directly apply the law of comparative advantage when specialization in uncertainty-bearing is involved.

On the other hand, the charm of the neo-classical approach is that such a problem does not need to arise in its framework. Indeed, authors normally do not see it there as the above quotation from Dionne and Harrington (1992 [1990]) illustrates. That the afore-mentioned issue would not arise in this framework makes perfect sense. For, to the extent that it allows uncertainty to enter the picture, it is mostly the kind of uncertainty that Knight and Mises

called "risk," which can be dealt with by insurance, assigning to it a permanent production "cost." As Kirzner (1997, p. 70) puts it,

> For neoclassical microtheory each decision, whether made by consumer, firm, or resource owner, is made within a definitely known framework made up of a given objective function, a given set of resource constraints, and a given set of technologically or economically feasible ways of transforming resources into desired objectives. (Uncertainty, while of course recognized as surrounding each decision, expresses itself in the form of known probability distributions relating to the given elements of this known framework.) [emphasis added][11]

Now if risks can be dealt with as mere "production costs," the contribution of specialists in charge of them can be grasped through the concept of a productivity schedule. This advantage of the neo-classical view is hardly a real one since it can only be obtained at the price of sacrificing realism in getting rid of true uncertainty and therefore of genuine entrepreneurship. The kind of uncertainty people have to deal with on an everyday basis is not simply or only actuarial risk. As Blaug's (1997, p. 462) favorable take on Knight makes clear,

> Many uncertainties of economic life are like the chances of dying at a particular age: their objective probability can be calculated and to that extent they can be shifted via insurance to the shoulders of others. *Such risks thus become an element in the costs of production*, a deduction from and not a cause of profits or losses. There are other uncertainties, however, which can never be reduced to objective measurement because they involve *unprecedented situations*. [emphasis added]

Indeed, the problem here is that uncertainty regarding future prices, the uncertainty we are concerned with, cannot be subsumed under the heading of "risk" because the events defined as more or less favorable price conditions are social phenomena or outcomes of human action. And actions are not automatic responses to external stimulus but the deliberate employment of chosen means to reach chosen ends. Different actors or even the same actors

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[11] See also Hoppe (1997, p. 56) on "rational expectations." There are exceptions, however. Not all mainstream studies use this framework. In recent years, Knightian uncertainty has been taken more seriously by some. On this, see Foss and Klein (2012, p. 90) and its references.

facing the same situation at different times can make different choices. Therefore, there can be no question of grouping some acts in a class of supposedly homogeneous events (Mises, 1998 [1949], pp. 110–113) whose frequency distribution could be experimentally discovered, and for which probability calculus would apply.[12] Each action is a class of its own and it cannot be known for sure, even in probabilistic terms, what will be its outcome before the future becomes the past.

The Austrian economist can certainly enjoy the advantage of having a theory of the entrepreneur, but he is left with a conundrum since his views on entrepreneurship are such that specialization in uncertainty-bearing does not fit in the seemingly all-encompassing law of association. There is a solution, however, based on already existing insights which just need to be combined properly.

4. UNCERTAINTY BEARING AND BASTIAT'S LAW OF ASSOCIATION

If our corn producer can shift uncertainty-bearing regarding the future price of its product to a speculator, or a laborer to his employer, or a lender to the borrower, no comparative advantage can or need be directly involved. Instead, it must be realized that even if two people are identical in every respect but their subjective distaste toward uncertainty, one could be ready to abandon any possible future gain to make a safe deal in advance at or above a certain price P1 for a certain quantity of one's product, while the other one could take his chance and agree to bear the uncertainty by buying the product in advance, provided he does not pay more than a certain price P2. If P2 happens to be higher than P1, there is room for exchange.

Though the concept of risk-aversion is not exactly new and is of course routinely used in the contemporary mainstream literature, Frédéric Bastiat had elaborated on this idea far before economists started to discuss agency or game theory, for example. Bastiat's neglected "law of association," as Lane (2001) termed

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[12] See also Hoppe (2007, p. 11)

it,[13] is explained in the chapter on wages in *Economic Harmonies*. It consists entirely in explaining association as caused by different attitudes toward uncertainty-bearing along the same lines as above.[14] Bastiat does not allude there at all to the Ricardian law of comparative costs, not even implicitly. Referring to a productive partnership between two people, Bastiat (1964, p. 371) explains that "one of them may assume all the risks in consideration of a stipulated payment." He adds:

> It is easy to understand in what respects it is to their advantage. One party, by assuming all the risks of the undertaking, gains the advantage of having it completely under his control; the other gains that stability of position so dear to men's hearts…. Evidently there is in mankind a longing for stability that is constantly working to restrict and circumscribe the role of chance and uncertainty. When two persons share a risk, they cannot eliminate the risk itself, but there is a tendency for one of the two to assume it on a contractual basis. If capital takes the responsibility, then labor receives a fixed return, which is called wages.

He goes so far as to say this was the origin of wages, ignoring time preferences as the other relevant aspect to explain why someone could buy someone else's labor in advance of the delivery of its product ("Capital, will take all the risks and all the extraordinary profits, while the other party, Labor, will enjoy all the advantages of stability. Such is the origin of wages"). Bastiat (1964, p. 372) also explains that the same phenomenon occurs in a productive loan, except that in this case it is the capitalist who partially gives up uncertainty bearing in exchange for a fixed interest:

> Often it is the entrepreneur who says to the capitalist: "We have worked hitherto on the basis of a common sharing of the risks. Now that we have a better knowledge of our expectations, I propose that we draw up a contract. You have twenty thousand francs invested in the enterprise, for which one year you received five hundred francs, and another year fifteen hundred. If you are willing, I will give you a thousand francs a

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[13] I am indebted to Georges Lane for pointing out to me Bastiat's text as well as his own article on this issue. See also Salin (2002) who draws from the same source material some more implications for the theory of the firm. I am indebted to Gil Guillory for this reference.

[14] Except that Bastiat had the unfortunate tendency to equate uncertainty with a form of measurable risk.

year, or five per cent, and will free you of all risk, on condition that I direct the enterprise as I wish." Probably the capitalist will reply: "Since, with considerable and vexatious ups and downs, I receive on the average no more than a thousand francs per year, I prefer to be assured of this sum regularly. Therefore, I shall continue the association by keeping my capital invested in the business, but without assuming any of the risks."

Now, the question is, if one wishes to call Bastiat's insight the second law of association: how are the first and second laws of association related or, how interpersonal exchanges based on the Ricardian division of labor are related to interpersonal exchanges based on different preferences toward uncertainty-bearing, if they are related at all?

5. ON THE RELATIONSHIP BETWEEN THE FIRST AND THE SECOND LAW OF ASSOCIATION

Let us come back to Mises's views on the law of association. Mises (1998 [1949], p. 160) writes:

> The task with which science is faced in respect of the origins of society can only consist in the demonstration of those factors which can and must result in association and its progressive intensification. Praxeology solves the problem. 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. [emphasis added]

The first "if" refers to the Ricardian/Misesian explanation of comparative advantage based on differences in commensurable productivity schedules. The second "if" refers to the fact that the recognition of comparative advantages by actors is not automatic. It takes entrepreneurs or speculators to realize where comparative advantages are, to see what other people will want, and to act on these insights. In this context, we can now see how Bastiat's law and Ricardo's law of association can be articulated.

Let us then imagine a simplified economy in which we have two sectors (see the diagram below) where people are engaged in the production of corn on the one hand and coffee on the other hand. We can easily depict how Bastiat-type associations and Ricardo-type associations are involved, how complementary and

intertwined they are. On the left we have the corn sector and on the right the coffee sector. At the bottom of each, we have laborers A and B working in one or the other. We find above them the capitalist-entrepreneurs D and E who relieve them of the uncertainty regarding the prices of their future products by employing them for a wage paid in advance. We can also see their partners C and F on the same line, some capitalists who are eager to participate in these productive ventures but who mobilize their savings insofar as they can be relieved from uncertainty by a specialized entrepreneur. Therefore D and E are the central figures here as far as specialization in uncertainty bearing is concerned, unless they too partially abandon this entrepreneurial function through futures or other derivatives contracts, transferring uncertainty bearing to the speculators G and H who are at the top. All the exchanges involving transfers of uncertainty bearing are Bastiat-type relationships and are depicted with red arrows. We know that Ricardo-type relationships can only occur between factors whose contributions are reducible to productivity schedules, i.e. between individuals A and B found at the bottom of each sector.[15] They are depicted with a blue arrow.[16]

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[15] I do not want to suggest that there is a direct exchange between these factors. The products are owned by some specialists in uncertainty bearing before their final sale and the exchange of the products therefore go through them. But ultimately, the Ricardian relationship holds between A and B even if they do not directly exchange their products.

[16] That these relationships seem to hold here only between individuals contributing in different sectors is the outcome of our simplified presentation which is only intended to outline the relationship between Bastiat's law and Ricardo's law. Since we have here two workers, one in each sector, the Ricardian-type relationship will be visible only between actors of the two different sectors. They actually hold between all individuals at the bottom regardless of the sector in which they are employed, if we allow more than two people to fit in.

Figure 1. Diagram of Bastiat-Type and Ricardo-Type Relationships
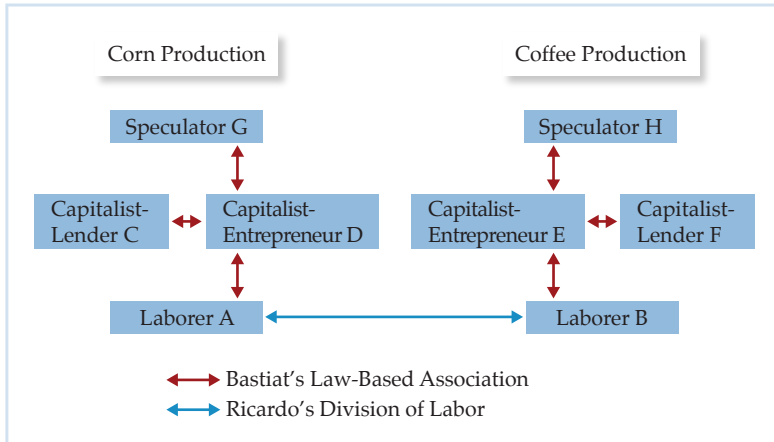
Now, people who are to some extent relieved of uncertainty bearing by the specialized uncertainty-bearers in a Bastiat-type relationship become specialized in a particular field or more specialized in a particular field than they otherwise would. Indeed it is clear that insofar as one is protected against failure in a field, the costs of specializing in this particular field are lowered. As Rothbard (2004 [1970], p. 1313) explains in the context of discussing the relationship between employers and employees: "Imagine the universal risk if laborers could not be paid until the final product reached the consumers! The pain of waiting for future income, the risk in attempting to forecast consumer demands in the future, would be almost intolerable." And as Arrow (1992 [1965], p. 223) puts it: "The possibility of shifting risks, of insurance in the broadest sense, permits individuals to engage in risky activities which they would not otherwise undertake."

As far as the relationship between the capitalist-entrepreneur D or E and the speculator G or H is concerned then, the capitalist relieved of an obstacle will be more eager to invest at any hypothetical rate of return than otherwise. As far as the relationship between the entrepreneur-capitalist D or E and the laborer A or B is concerned, it means that the supply schedule of labor will be raised compared to the amount of labor that would be used at any hypothetical implicit wage in a self-employment setting or

in a workers' cooperative. As far as the relationship between the lender C or F and the borrower D or E is concerned, it means that the lender will be ready to bring more funds at any hypothetical rate of return than he otherwise would if direct finance were the only option available. Since this phenomenon is not specific to one sector, but will appear wherever specialization in uncertainty bearing is possible,[17] there is no question that this intensification effect should come in one sector at the expense of another one. What is at stake here is the general intensification of efforts in all sectors and for all productive functions—a higher supply schedule of labor in general and a higher supply schedule of savings in general—to the extent that there is specialization in uncertainty-bearing.[18]

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[17] It will be possible because people will have discovered the possibility of engaging in the corresponding transactions, because these transactions will be allowed by the existing legal apparatus (ultimately because public opinion will be mature enough to allow such a legal apparatus to be born in the first place and to be heretofore sustained), and insofar as the proceeds from these transactions can be kept without the threat of coercive expropriation.

[18] It is true that by specializing in uncertainty bearing, some people—typically new business owners—are likely to abandon the work they would have otherwise done. However, this is hardly a factor of decrease of the supply schedule of labor "in general," in Rothbard's (2004, p. 574) words. For new business owners are likely to be managers, to switch jobs that is. And all investors, even those who do not engage in day-to-day business operations, must not only cope with uncertainty regarding the "state of the market" (Mises 1998, p. 290) and earn profits or losses as a consequence. Their decisions must also reflect the energy spent in figuring out and dealing with the (insurable) risks involved and other essentially technological concerns (Mises 1998, pp. 288–290). See also Salerno (2008, p. 201) for a discussion of Mises's views on the subject. In line with our discussion above of contributions to production which can and cannot be grasped through productivity schedules, this expenditure of energy is to be properly referred to as a kind of "labor" which commands a rent dependent on the skills of the business owner in dealing with this aspect of decision making. And these tasks are imbedded in capital ownership, as well as the purely entrepreneurial aspects of investing.

Now, strictly speaking, one can meaningfully refer to a higher schedule of labor in general only as a way to say that the supply schedules of all labor factors rise, for there is no such thing as one labor market "in general" since labor factors are not homogeneous goods. And insofar as people are switching from one labor market to another (say a management market) and/or to the necessary labor of the capitalist-entrepreneur or investor, not all kinds of labor activities might expand. This minor caveat must be kept in mind when we speak of a higher schedule of labor.

Now, it should be clear that the intensification of Bastiat-type relations implies an intensification of Ricardo-type relations. If specialization in uncertainty-bearing implies as the other side of the same coin further specialization of people into their roles as workers or savers, the Ricardian division of labor between the hedged laborers engaged in the coffee and corn sectors in our example is *de facto* pushed further. This is done in two ways.

First, the emergence of a separation between capitalist-entrepreneurs and laborers, and further specialization of such a type, makes the general supply schedule of labor rise by relieving laborers (to some extent) of the burden of bearing uncertainty, as we have just explained. This in itself allows for a higher special-ization and brings about a higher output out of the social fabric. Second, the emergence of a production loan market, as well as of speculation on spot and derivatives markets, allows for a higher supply schedule of present goods on the time market by relieving to some extent savers from the uncertainties of investing, which pushes the pure interest rate downward and the level of aggregate investment upward. The corresponding reallocation of funds toward the higher stages of the production structure favors on average longer processes of production over shorter ones and hence allows for more roundaboutness in the structure and therefore a higher overall productivity.[19]

This process implies an intensified division of labor since the comparative advantages of specializing in the production of different capital goods at various stages cannot be exploited to the same extent when production is less roundabout. Without the additional savings, people can only work in the shortest processes. All the tasks in higher stages in which some people could specialize are out of reach. The lower the supply schedule of present goods is on the time market, the more people find themselves in such a situation where possibilities to become more specialized are absent (including specialization in research on new technologies). Therefore, specializations in uncertainty bearing that make the supply schedule for present goods in the

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[19] See Rothbard (2004 [1962], pp. 517–550) for the basics regarding such a change in the time market and production structure.

time market rise will trigger an intensification of the division of labor by the same token.[20]

In other words, the specialized entrepreneurs have an indirect but decisive role in the Ricardian division of labor since in ultimately directing workers toward more specialized roles they participate in its intensification. And the Ricardian/Misesian insight regarding comparative advantages as the fundamental basis for social bonds remains central once enriched by explicit considerations of "aversion to uncertainty"-based associations since the second are hardly conceivable without the first. Deals involving the transfer of uncertainty-bearing regarding the price of corn or coffee would make no sense at all without the physical conditions of variety in human skills and environmental conditions giving rise to the possibility of specialization and allowing for the very existence of a market for corn or coffee or any other product in the first place.

6. CONCLUSION

Specialization and the division of tasks in a market economy cannot all be subsumed under the Ricardian law of comparative advantage. The law cannot be all-encompassing from an Austrian point of view, precisely because the Knightian/Misesian view of uncertainty is not compatible with the idea of uncertainty-bearing as a factor of production whose contribution could be conceptually grasped through a marginal productivity schedule. In order to obtain a more complete picture of the market process at work, one needs to take into account specialization in uncertainty-bearing under what has been called Bastiat's law of association, purely based on the different attitudes actors can have in regard to uncertainty bearing. "Aversion to uncertainty"-based specializations

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[20] The division of labor can also be intensified in a third way. The higher productivity of labor under a more roundabout structure of production implies that the overall demand schedule for labor is higher in real terms if not in nominal terms, which means that it intersects the overall supply schedule at a higher real price (higher real wages). This higher position along the supply schedule implies that a higher amount of work hours is offered on the market, unless workers profit from these higher wages to consume more leisure. To the extent that the predominant tendency is for a higher supply offered, this allows for the exploitation of some comparative advantages which could not be exploited otherwise.

and exchanges are related to comparative advantages only in the sense that specialization in uncertainty-bearing indirectly fosters a higher degree of exploitation of comparative advantages between factors which are hedged by the entrepreneurs/speculators. The emergence or intensification of specialized uncertainty bearing allows for an extension of the Ricardian division of labor.

The above analysis focuses on voluntary exchanges. It holds insofar as actual transfers of uncertainty bearing are voluntary. Applications to the present world must be carefully handled since interventionism is part of the picture. Two broad lines of theoretical research which would be helpful to pursue in this regard are the following. On the one hand, there is certainly room for more explorations on the impact of obstacles to exchanges—forced exclusion—involving specialization in uncertainty bearing. On the other, it should be clear that an important part of what interventionism entails in the present circumstances is a form of forced integration, the forced transfer of uncertainty bearing from privileged firms toward taxpayers and users of money which find themselves on the wrong side of the Cantillon effect of monetary expansion. This too calls for additional research.

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