"FINANCE BEHIND THE VEIL OF MONEY": A REJOINDER

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In *Finance Behind the Veil of Money*, Eduard Braun (2014, pp. 30–36) takes the minority view that opportunity costs are not only unnecessary but even unhelpful to understanding choice.[1] In doing so he follows George Reisman (1996, p. 460) who also views the "doctrine of opportunity cost" as not only unnecessary to ascertain how one makes better decisions, but that its "sole contribution is obfuscation, not perception." Both Braun and Reisman believe that it is unnecessary to include foregone alternatives in the calculus of cost since it implies that "one must suffer by virtue of possessing the very qualities that create one's success [i.e., better opportunities]" (Reisman, 1996, p. 460).

Such a view errs by overlooking the difference between the actor's *ex-ante* expectations of an action with the *ex-post* results. More importantly, it mistakes what role costs in general, and opportunity costs by extension, serve in economic theory.

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[1] Although Braun claims that "the main arguments in [his] book do not depend on [his] approach to the cost problem", there is no doubt that his variant of cost theory derives a distinct theory of interest which is of utmost importance in valuing financial assets, one of the main themes of his book.

In his "Reply" in this issue, Braun demonstrates this misunderstanding of the ex-ante and ex-post roles of opportunity costs when he criticizes Rothbard´s (1962, p. 606–607) analysis of the relationship between monetary and psychic profits.[2] In Rothbard´s example, an investor spends 5,000 gold oz. to earn 1,000 oz. net profit. The foregone alternatives are comprised of 1) 250 oz. he could have earned by investing his capital at the prevailing interest rate of 5 percent, 2) 500 oz. he could have earned by working for a competing firm, and 3) 400 oz. of lost income since he used his factory instead of renting it out. With total opportunity costs of 1,150 oz., Rothbard concludes that the "entrepreneur suffered a *loss* of 150 ounces over the period. If his opportunity costs had been less than 1,000, he would have gained an entrepreneurial profit" (Rothbard, 1962, p. 607).

Braun objects to Rothbard's conclusion for two reasons. First, he finds it questionable that Rothbard constructs "arbitrary" figures to define the investor's opportunity costs. Yet while these figures may seem arbitrary to Braun, they are an assumption by Rothbard and real to the hypothetical investor. The 1,150 oz. in foregone income is actually what the investor could have earned had he used his resources differently. The investor knows these figures through the benefit of hindsight, and from them he can determine from an *ex post facto* perspective the sum his foregone opportunities could have yielded.

Second, Braun objects to the conclusion that the entrepreneur made a loss. He did, after all, come out of his investment 1,000 oz. richer than he started and this is, as Braun correctly states, profit according to "traditional accounting principles." The point of Rothbard's example is not to show that the investor did not earn a monetary profit, but rather to show that he could have done better. The fact that he earned an entrepreneurial loss provides a signal that he must do better in the future or be forced out of the market. To forestall one objection to this conclusion, one could counter that as long as the firm earns positive monetary profits it will not risk insolvency and thus will remain in the market. Such an objection fails to realize that the firm would be forced out of the market if

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[2] Although Reisman does not cite this example from Rothbard, he argues against several similar examples (1996, pp. 459–460).

all other competing firms changed their activities in a way that maximized their entrepreneurial profits while one firm continued incurring entrepreneurial losses (as in this example). This is because a firm must not only earn positive (*absolute*) monetary profits to remain in business, but must also earn positive entrepreneurial profits *relative* to other firms, lest those firms undercut its business and steal market share (as in Carilli and Dempster, 2001, p. 326; Huerta de Soto, 2006, pp. 664–671). No firm can continue earning entrepreneurial losses indefinitel,y and so an *ex post facto* assessment of the relevant opportunity costs is an essential part of the entrepreneurial process.

Constraining cost to a specific monetary expenditure instead of a general opportunity foregone does a great injustice to the decision-making process. The beauty of Rothbard´s (1962, 606–607) example is that the entrepreneur now realizes he has erred. Braun places the goal of maximizing money income as primal for the entrepreneur (Braun, 2014, pp. 109, 115, 116 and *passim*), yet his approach leaves no method for the entrepreneur to see if he has, in fact, done so.

Although Braun focuses on this example from Rothbard, his (and Reisman's) largest objection to the opportunity cost doctrine is that it leads to the conclusion that having more options is worse for the individual, since they believe that the more options one has, the greater will be the cost of the foregone alternative. In this regard, I will (re)address Braun´s (2014, p. 32) apple example:

> Let us suppose friends X and Y are on a trip in the mountains. X has two apples in his bag. Y loves apples, but has forgotten to pack one. During the first break, X permits Y to take one of the apples. Well, one could say this is a great deal for Y! However, things look differently if one takes into account opportunity cost. As soon as Y takes one of the two apples, he abstains from taking the other one. If we assume, for simplicity, that the two apples are alike, then the disadvantage in this decision is just as great as the advantage. According to opportunity-cost theory, Y is not better off at all although he has received an apple for free. His preference for one of them cost him the other one.

This case has two solutions. The first is to treat the two apples as they are in the example: alike (or, as I [Howden, 2016, p. 125fn1] have shown in more conventional terms, that X is indifferent between the

two apples). I addressed previously the unconventional nature of this problem for the Austrian-school economist, not least because the assumption of indifference is not well accepted (see, e.g., Rothbard, 1956), and I provided one method to analyze this problem within an Austrian framework (Howden, 2016, p. 126).[3]

In his "Reply" in this issue, Braun relaxes the assumption that the hiker is indifferent between the two apples. His basic result is the same, which leads Braun to conclude that "[t]he purpose of the example is to show that if one takes the opportunity cost concept seriously, having options is worse and leads to less profit than having no options at all."

On the one hand, if Braun´s hiker had "no options at all," he would starve, which is likely a worse outcome than having two apples to choose from. But there is an apparent grain of truth to the statement. The more options one has at his disposal, the more satisfying will be the "next-best alternative" the actor must forego for any course of action. While one might believe that this leads to an increase in opportunity cost for the actor a close analysis reveals this is not the case.

Assume the thirsty and hungry hiker has the following preference ranking:

Table 1: The Hiker's Preference Ranking

Rank	Alternative
1st	red apple
2nd	yellow apple
3rd	granola bar
4th	1st reading, Braun (2014)
.	.
.	.
$(n\text{-}1)$th	death
nth	2nd reading, (Braun 2014)

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[3] A second objection to Braun's analysis is that Braun combines two choices into one alternative. In actuality, the hiker first has the option of choosing an apple or starving, and second he must choose between which apple to consume. I (2016, p. 125) alluded to the similarities with Buridan's ass in the first of the two choices, and I thank Jonathan Newman for pointing out the second.

Faced with the option of consuming either the red or yellow apple, the hiker chooses the more highly valued red apple and expects to earn the psychic profit from the difference in his preference between the red apple and the best foregone alternative, the yellow apple, leaving him with the expectation of psychic profit x as in Table 2.

Table 2: Revenues, Costs and Profit

Expected Psychic Revenue	Red Apple
Less: Foregone Alternative	Yellow Apple
Expected Psychic Profit	**x**

Now assume that the offer of the yellow apple was retracted, and the hiker was offered the choice between only the red apple and a granola bar. Using Braun and Reisman's logic, since the granola bar is less highly valued than the yellow apple, his foregone alternative will be less and thus his psychic profit will increase. Taking this extension to its conclusion, if the friend only offers a red apple, the foregone alternative will be death. Forgoing this lowly valued alternative would leave the hiker with the largest amount of psychic profit. It is this logic that Braun and Reisman have in mind when they consider having more options to be bad for the actor since more options *seem*, *ceteris paribus*, to reduce psychic profits.

As any hungry hiker can attest, the fact that the hiker is nourished but will only receive a seemingly small amount of psychic profit (both *ex ante* and *ex post*) must strike the reader as odd. He did, after all, forestall death by having one apple presented to him, and surely being offered either of two apples must be better yet. The reconciliation to this paradox comes from using the opportunity doctrine within its proper domain.

The first use of opportunity cost is to determine which alternative to pursue by focusing on that which foregoes the least valuable alternative. In Table 3 we can see that there are only two possible best foregone alternatives. For the 2nd through nth ranked options the best foregone alternative will be the 1st ranked alternative (i.e., the red apple). For the 1st ranked option, the best foregone alternative will be the 2nd most highly ranked alternative (i.e., the yellow apple). Since the red apple is preferred to the yellow

apple, pursuing the 1st ranked alternative will result in the lowest opportunity cost.

Table 3: Opportunity Costs

Rank	Alternative	Opportunity Cost
1st	red apple	yellow apple
2nd	yellow apple	red apple
3rd	granola bar	red apple
4th	1st reading, Braun (2014)	red apple
.	.	.
.	.	.
$(n-1)$th	death	red apple
nth	2nd reading, (Braun 2014)	red apple

Alternatively, one can see that choosing the most highly ranked option will also result in the highest amount of expected psychic profit. The first ranked alternative will be the only one that incurs an opportunity cost valued less highly than it is. Thus only the first ranked alternative can create a positive amount of expected psychic profit, as in Table 4.

Table 4: Psychic Profit

Rank	Alternative	Opportunity Cost	Psychic Profit
1st	red apple	yellow apple	positive
2nd	yellow apple	red apple	negative
3rd	granola bar	red apple	negative
4th	1st reading, Braun (2014)	red apple	negative
.	.	.	.
.	.	.	.
$(n-1)$th	death	red apple	negative
nth	2nd reading, (Braun 2014)	red apple	negative

Note that adding more options does not change this analysis. The hiker will still choose the red apple even if we add a new

alternative (except if the new alternative is more highly ranked than the existing red apple). Braun is incorrect in stating that "having options is worse and leads to less profit than having no options at all." Adding a new option to the actor's preference ranking will either: 1) create a new negative expected psychic profit (which is of no relevance since the option will not be pursued), if the alternative is ranked 2nd or lower on the preference rank, or 2) increase the expected psychic profit if the newly introduced option takes the 1st place on the preference rank.

The second use of opportunity costs is an *ex post facto* assessment to determine if the chosen option was the correct one. It is this use that Braun and Reisman invoke often, though to illustrate (incorrectly) buyer's remorse.[4] While the previous *ex ante* role of opportunity cost rests on expectations of both revenues and profits, in the *ex post* role we actually know how events did turn out. Of course it could be that we chose wrong, e.g., the red apple might have been rotten. With this new knowledge we can revise our preference ranking, perhaps shifting the red apple lower in the expectation that other similar apples may also be rotten. In this way, we partake in a trial-and-error process that improves our decisions in light of newly revealed information concerning the nature and relationship of expected psychic revenues and resultant opportunity costs. Buyer's remorse is not a sign that the use of opportunity costs is deficient, but that our estimations of what those costs could have been differed from their actual realization.

Braun insists that all costs be treated as historical money costs. Of course it is one of the great advantages of the price system that money prices provide a common denominator in which all values can be distilled to and compared with. The common denominator of money is thus essential to compare different foregone alternatives on an even footing, so Braun is half right when he focuses on money costs. He errs, however, to the extent that money revenues comprise only some of the opportunities foregone.

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[4] Strangely, Reisman does not use this *ex post* role of opportunity costs in "ascertaining how one might do better" (1996, p. 460). In a similar way, Braun does not realize that when he laments that the opportunity cost doctrine "neglects costs when they actually arise—in action" that it is this *ex-post facto* assessment that allows the actor to use opportunity costs with the benefit of the hindsight that his action allows for (Braun, 2014, p. 33). (I deal with this latter objection by Braun in Howden (2015, pp. 579–580).)

In the simplest example used by every Principles of Economics instructor, the cost for the student to pursue a university degree is four years of tuition plus four years of time foregone. Four years of tuition is easily valued and (before discounts and scholarships) equal for all students (e.g., four years at $40,000 per year). The time foregone can only be compared with this monetary cost if it is valued in money terms. Since the particular monetary value on time will differ depending on one's opportunities the easiest method to value these four "lost" years is with wages foregone. If one could have worked at a job for $20,000 per year, the value of these four years will be $80,000. Taken together, the total opportunity cost of a university education is $240,000, of which $160,000 will be an actual money outlay and the remainder lost wages. The student will register for university if he values the four-year degree more than the value of the foregone alternatives, $240,000.

Braun wants to throw the baby out with the bathwater in ignoring the lost wages, since they are not a historically incurred monetary cost. This would set the bar much lower for students to decide to go to university (among other decisions) since, e.g., in the above example only two thirds of the foregone alternatives were in a historically incurred monetary form. It is trivial to state the importance of the value of the non-monetary foregone alternatives since they can, in many cases, make the monetary costs negligible.[5]

I will close by asking how Braun would solve the following question without resorting to non-historically incurred monetary costs.

Students *A* and *B* value a university education the same, and also must pay the same tuition rate. *A* has few opportunities in life and the best foregone use of the four years is a minimum wage job (i.e., $80,000). *B* has an offer to play basketball for the Cleveland Cavaliers for $13 mn. for the first three years, with an option to

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[5] I would venture that the vast majority of our decisions have no monetary component, and can only be decided on by comparing expected psychic revenues. My decision to watch Real Madrid play soccer instead of FC Barcelona can be explained with tables 1 through 4 by substituting watching Real Madrid as my most preferred alternative and FC Barcelona as my second ranked option. No money changes hands, but only one choice will have a positive expected psychic profit. Braun could counter that he focuses on business decisions, which generally have a money component. This would only beg the question as to why a different decision-making process is necessary for businesses than individuals.

play a fourth year for $6 mn. *B* opts to not go to university, while *A* registers in an undergraduate economics program.

Given that the preferences and historically incurred monetary costs are identical, how does Braun propose to explain the difference in choice?[6]

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[6] The interested reader can find the correct answer in Howden (2016b).