

# Brain-Focused Economics: More Than Just Comparative Advantage

*Economists since Adam Smith have understated the welfare gains from free trade.*

✦ BY RICHARD B. MCKENZIE

When his administration imposed substantial tariffs on steel and aluminum imports in early 2018, President Trump ignored more than two centuries of economic thinking and research. That scholarship fortified Adam Smith's key insight in *The Wealth of Nations*: tariffs and other trade restrictions are (except under very narrow conditions) counterproductive. They restrict the scope of markets, curb scale economies (especially those generated through specialization of labor and other resources), encourage rent seeking, and ultimately undercut employment and synergetic growth in the jobs, incomes, and wealth of trading nations. (See "How's Your Trade War Going?" p. 4.)

As sound and powerful as Smith's free-trade arguments are, modern economists who have followed in his intellectual footsteps continue to understate the gains from unfettered trade. Accordingly, they also understate the short- and long-term economic damage done by the type of trade restrictions Trump has imposed, even without the compounding damage of retaliatory trade barriers erected by other countries.

What modern free-trade economists continue to overlook in trade theory is that market participants are *not* innately prone to hone their market decisions with the precision and correctness that conventional economic theory assumes. In conventional (neoclassical) economists' idealized models of economies, the competitive market forces let loose by open trading can't improve decision mak-

ing. All decisions are assumed to be *perfect*, as in "perfectly rational."

In real-world markets inhabited by decisionmakers who have evolved flawed mental resources and thinking processes, competitive market forces can *reduce* decision-making flaws and thus lower production costs and raise real incomes by more than conventional economists have heretofore claimed. Flawed decisionmakers are led by competitive pressures, as if by an "invisible hand," *toward* (not *to*) *improved* (not *perfect*) decision heuristics that, when adopted—even grudgingly—add to the otherwise achievable gains from trade.

Let me explain those audacious claims by returning to the conventional case for open markets and then by briefly laying out a few of behavioral economists' major findings on pervasive flaws in human decision making, captured—supposedly—in an array of identified mental "biases."

## THE TRADITIONAL CASE FOR FREE TRADE

In *The Wealth of Nations*, Smith developed the essentials of modern free-trade theory. Countries will tend to export those products in which they have an (absolute) cost advantage and import those products in which they have a cost disadvantage. That means that trade between people in different countries can reduce production costs and increase the real incomes of all trading countries, achieved mainly through an improved allocation of world resources. Smith's reasoning had folksy roots: "It is the maxim of every prudent master of a family never to attempt to make at home what it will cost him more to make than to buy."

In the early 19th century, David Ricardo fortified Smith's case for free trade. Ricardo observed that mutually beneficial trades are possible even under seemingly unfavorable conditions, such

as when one country has efficiency and absolute cost advantages in all goods produced than another country. He reasoned that *comparative* costs—not absolute costs—in production matter in directing the flow of goods in and out of countries.

To make Ricardo's point, suppose that the United States is more productive than China in both aircraft *and* smartphones and, consequently, can produce more of either in total and with the same resources. However, suppose that the United States can produce an additional aircraft by forgoing the production of a boatload of smartphones. An additional aircraft built in China, on the other hand, requires forgoing the production of 10 boatloads of smartphones.

If the U.S.-produced aircraft can be sold in trade for five boatloads of smartphones, the United States can build an additional aircraft, cutting its smartphone production by one boatload, and then trade its aircraft for five boatloads of smartphones. The United States is thus better off to the tune of four additional boatloads of smartphones for domestic distribution. Similarly, China can produce one fewer aircraft to expand its smartphone production by 10 boatloads, which it can use to buy two aircraft

(or buy only one aircraft and keep the extra five boatloads of smartphones for domestic distribution).

Economists make a variety of refinements to Ricardo's basic trade theory. For example, open trade can also intensify competition in both countries, which can further lower production costs and add to efficiency and income gains. Tariffs and quotas (and other trade restrictions) will simply deny the gains from trade both countries could otherwise garner. Of course, if trade restrictions are possible, political interest groups can be expected to seek protection from international competition, furthering their own interests while sacrificing the general welfare by wasting resources on "rent seeking" and by curbing competition.

### CONVENTIONAL ECONOMIC THEORY

Economists' trade theory is generally developed on the presumption that market participants on both sides of trades, whether domestic or international, are innately endowed with exquisite decision-making prowess. In the jargon of economists, people are *perfectly rational*, which means they consider all relevant production costs, ignore irrelevant costs, and exploit all available technological

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efficiencies—without being pressed to do so. Producers and consumers innately discount accurately and consistently all future costs and benefits expected to emerge from today's decisions.

Producers also are innately inclined to maximize production in all goods up to where all gains have been exploited (or until the additional cost of the last unit produced exactly equals the additional revenue gained from its sale). Similarly, all consumers will innately maximize their welfare by extending consumption of all goods until the additional values of the last units purchased equals their respective prices.

Market structures do not affect production and consumption decision making. They can't. Production decisions within monopolies are assumed to be as flawless as they are in firms that are fully competitive. Accordingly, all producers naturally minimize production costs and fully exploit production gains, no matter their market constraints. This is to say that if an industry is magically transformed from being intensely competitive to being monopolistic (even a "pure monopoly," or a single seller), the accuracy of owners' and their agents' decision making will be unaffected. The only consequential identified change is that monopolized markets will sell fewer goods for higher prices and profits than will firms in more competitive (especially perfectly competitive) markets.

Of course, this means that the advent of international trade will not—and cannot—improve decision making in conventional economic theory. There is simply no room for improvement on perfect decision making (and the underlying perfect rationality). Perfect is perfect: the idealized—and *unachievable*, for solid economic reasons—upper bound for decision-making prowess.

By the same token, in theory, trade restrictions can have no effect on the decision-making prowess of producers and consumers. Thus, the terms of trade (the exchange rate of one airplane for five boatloads of smartphones in the above example) cannot be affected by reductions in decision flaws. The only gains from trade come from exploitation of extant comparative cost advantages of trading partners.

Milton Friedman justified extreme premises in economic theory—whether perfect competition or perfect decision making (rationality)—on economic grounds. All theories, by the nature of theories, are "unreal" to one extent or another. Such unreal premises seek to make thinking about complex reality manageable. If using a sterilized, unreal premise (perfect rationality) eases the analytics and doesn't affect the accuracy of predictions, then, Friedman effectively asked, "Why not use it?" He had in mind predictions on the order of, "If the minimum wage is raised, employment will fall."

Friedman conceded that theories could not be judged by their descriptive "realism," but behaviorists didn't get that memo from Chicago. They effectively took Friedman at his word: all identifiable predictions of economic theories deserve scrutiny.

### BEHAVIORAL ECONOMISTS' CRITICISMS OF CONVENTIONAL ECONOMICS

Behavioral economists, following the lead of cognitive psycholo-

gists, have spent the past half century seeking to prove the obvious (to all aside from a few hardnosed conventional economists): people are far from perfectly rational. Indeed, people's decision making has been found to be infused with "irrationalities" (or decisions that violate economists' perfect rationality premise).

Behavioral scholars Richard Thaler and Cass Sunstein have derided modern theorizing: "If you look at economics textbooks, you will learn that homo economicus can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the will power of Mahatma Gandhi," whereas real people have trouble remembering their passwords, finding their keys, and avoiding temptations that make them obese and lazy and leave them impoverished in their retirement. Behaviorists' documentation of pervasive human decision flaws has been so thorough and impressive that two behaviorists, Thaler and Daniel Kahneman, have received Nobel Economics Prizes.

Behaviorists have found that people fail to follow the dictates of economic theory. For example (and the examples are numerous), they:

- fail to select choice options with higher expected values.
- choose inconsistently (for example, they might choose *A* over *B* and *B* over *C*, but then choose *C* over *A*).
- discount future costs and benefits inaccurately and inconsistently.
- do not "equate at the margin" (or seek to produce where marginal costs and revenues are equal).
- weigh prospective losses more heavily than prospective gains.
- consider sunk costs.
- fail to consider opportunity costs.
- prefer pursuing business ventures with in-house resources rather than with less costly outside resources.
- can't even be counted on to obey the "law of demand" (a proposition with no necessary connection to conventional choice theory, behaviorists argue).

Behaviorists have also found that human decisions can be swayed by the comparative "salience" of choice options and by how the options are "framed" and "anchored," even by incidental considerations. For example, when subjects (typically students in classroom or laboratories) are asked to write down the last four digits of their Social Security numbers and then asked to bid on, say, a coffee mug, behaviorists have found that those subjects with the higher last four digits tend to bid higher prices.

Behaviorists argue—rightfully (I think)—that their many findings should be expected, given humans' many cognitive limitations. Consider:

- Humans would never have evolved to be perfectly rational. If any early human tried to make decisions with the precision economists assume they do, they would have starved to death before they finalized their decisions on what to eat,

or they would have been eaten by predators as they studied carefully their frequent “fight or flight” decisions.

- All human senses are subject to limitations, as evident by the fact that they don’t see as well as hawks or smell as well as wolves.
- Human brains are biological systems and all biological systems have built-in error rates.
- Moreover, human brains don’t have the resources (mainly neurons and energy) to fine-tune decisions as well as economists assume. The demands on the brain’s limited resources from bodily functions and sensory information inflows are enormous, which means the brain must first economize on its own internal resources before it can contemplate economizing on external resources.

Behaviorists have identified at least 200 decision and behavioral “biases” and other cognitive flaws. These decision-making flaws, which are considered serious and pervasive, include availability bias, attention cascade, confirmation bias, congruence bias, hostile attribution bias, hindsight bias, hyperbolic discounting, illusion of validity, impact bias, information bias, irrationality escalation, and omission and optimism bias. This list seemingly grows by the journal publication.

Indeed, human decision making has been found to be so profoundly and consistently defective and at odds with the conventional rational premise that behavioral psychologist Dan Ariely has concluded, seemingly representing the perspective of many enthusiastic behaviorists, that people are best described as “predictably irrational.” After all, he quips, people are effectively “goslings,” with more or less the same limited mental proclivities to define and make their own life choices.

Because of humans’ decision-making shortcomings, behavioral enthusiasts have concluded that improvements in human welfare can be achieved broadly only by a government department of “choice architecture,” with hired “choice architects” responsible for devising “nudges” under the banner of “libertarian paternalism” (which, behaviorists declare, is not an oxymoron). These nudges would proscribe and “frame” people’s choices, which can only enhance welfare and which the choosers would welcome in spite of any loss in choice freedom, they contend.

The behaviorists seem unconcerned that the choice architects would be drawn from a population of predictably irrational humans, with their decisions likely as defective as those subjected to nudges.

### CONVENTIONAL ECONOMISTS’ CRITICISMS OF BEHAVIORAL ECONOMICS

Behavioral enthusiasts may have fallen prey to their own central criticism of conventional economics: they assume too much, given that so many of their findings on flawed decision making have come in large measure from relatively small samples of undergraduate students. These subjects are forced to consider choice options, many involving relative assessments of unfamiliar complex gambles, in confined and artificial classrooms and

laboratories where the subjects are given little time to make their choices and with no feedback on the flawed choices of other subjects. The choice options are not, as Nobel Laureate Vernon Smith has argued, “ecologically adaptive,” which is to say the options are imposed by the researchers and do not emerge from choice processes familiar to or created by the subjects themselves. In behaviorists’ terms, the choices available are often “framed” to induce behaviorists’ chief finding: pervasive irrationality.

My favorite behavioral “experiment,” supposedly showing widespread irrationality, is framed this way: Student-subjects are asked to choose between a sure-thing choice option of \$800 and a gamble with an expected value of \$850 (with an 85% chance of receiving \$1,000 and a 15% chance of getting nothing). The behavioral researchers have declared the subjects’ choices to be “irrational” because upwards of 85% of them choose the lower-value sure-thing and the rest choose the gamble. But should that division be unexpected? The subjects were given little time (maybe two or three minutes) to make their choices and were given no incentive—or even permission—to confer with each other to determine the “right” choices. They also were not told about the choice division for all subjects in past experiments and were given no chance to find ways to correct the dominant “irrational” choices.

I gave my own MBA students the two options and got a similar choice division. I then gave them a paper assignment to be organized around two questions:

- Is there money being left on the choice table?
- If there is, can they think of ways to pick up the overlooked money?

Some 70% of the student teams (over several years of giving the assignment) had no problem devising several methods for making money off the “irrational” student choices, the most incisive of which was to offer students choosing the sure-thing more than \$800 to sell their choice option. My students quickly deduced that if they could entice enough of their fellow subjects to make deals, they could make the gamble a money maker.

More importantly, if behaviorists’ damning view of human rationality were on target, freeways and parking lots would look more like bumper-car rinks than fairly orderly processes in which road rage, collisions, and deaths exist but are relatively infrequent (per million miles driven). The clear majority of freeway drivers seem to earnestly seek to avoid accidents and do get to work without incident.

If behavioral enthusiasts were on target in claiming pervasive and entrenched irrationalities, we must wonder how tens of millions of sophisticated smartphones (and a million other goods) involving global supply chains could be made available for sale each year. Yes, markets are replete with mistakes, but the order achieved in most markets hardly matches the chaos that would be expected from totally defective, “predictably irrational” market participants.

Maybe both conventional and behavioral theorists have overlooked market conditions that induce participants to be more

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rational than behaviorists have found them to be absent market forces, but who will never be as rational as conventional economists assume. Maybe economists should adopt a revised perspective of scarcity and rationality. I recommend a “brain-focused economics,” described at length in my new book *A Brain-Focused Foundation for Economic Science*, that can help settle many disputes among economists—and transform our assessments of the gains from trade within markets.

## BRAIN-FOCUSED ECONOMICS

In spite of their many methodological deficiencies (which I cover in detail in my book), behavioral economists (and psychologists) are certainly correct that people are not perfectly rational, or even approximately so. They are innately prone to flawed decision making, which—if not subject to correction—will undercut efficiency, profits, and consumer welfare in markets. Perfect rationality is, indeed, perfectly irrational from the perspective of the economy of the human brain.

However, markets can help to overcome innate flaws in people’s thinking, leading to greater cost saving, efficiency, and welfare. As noted, with conventional economic theories grounded in perfect rationality, there is no way markets (or any other institutional setting) can improve (or worsen) the brain’s allocation of its own resources and decision making. With less-than-perfect decision making, improvement is not only possible but almost assured.

To accommodate behavioral findings, my proposed reformation of economics starts with a founding proposition, that people are beset with a variety of evolved, limited, and defective mental resources (mainly neurons and energy) and thinking proclivities. The human brain faces the classic economic problem—scarcity—and that necessitates less-than-perfect rationality and flawed decision making. The brain confronts a multiplicity of demands on its resources from all bodily organs and functions (including keeping the heart, lungs, and digestive track—and life itself—going) and from a vast, unrelenting, and varying inflow of sensory information. The demands on the brain are so intensive and unrelenting that it can’t possibly satisfy them all. This means that the human brain must have a rational mind of its own!

Not unreasonably, the human brain has (with a high probability) evolved to do the best it can in satisfying its demands within its constraints, which is to say that it must weigh the competing demands with the intent of maximizing its own net gain from the use of its own resources. This means the brain will make internal decisions with an evolved level of rationality, seeking to refine its decision making. But it will do that only up to the point that the additional gains (which, beyond some point, will diminish) are greater than the additional costs (which, beyond some point, will increase). Its (ever-changing) equilibrium rationality will necessarily fall short of perfect rationality. Perfection is simply not an option in nature—or in any economy, including the brain’s.

The brain will seek to reduce the pressure on its own internal resources by partially ignoring or setting aside much sensory

information and by devising heuristics for classes of decisions. Those heuristics are bound to fall short of perfection to one extent or another. The brain simply doesn’t have the resources (including time) to perfect them or ensure that its heuristics never lead to decision errors. Indeed, the brain can be expected to choose heuristics that have built-in and economical error rates because the internal costs of perfecting them can be greater than the added cost incurred from bad decisions, even when the count of bad decisions dominates the good ones.

However, a rational brain will hardly be opposed to making improvements in its heuristics *when the economics of doing so are favorable*. Clearly, even behaviorists believe the brain can learn or else they would not devote their careers to their science, disseminate their findings, and teach their classes. The human brain must use some Bayesian-type analytics and revisions as it gets feedback on its internal decisions and learns. Even very young children quickly devise an elemental decision rule when they touch a hot pot: “Don’t touch something that has just come off the stove.”

By adopting decision-making heuristics, the brain commits to a form of “decision-making portfolio management” employing many of the strategies and goals of financial portfolio managers. The brain will judge the value of its heuristics not strictly by the emergence of faulty decisions (as behaviorists seem prone to do). Decision errors are bound to emerge just as even successful financial portfolios are bound to have failed investments. The issue for the brain is whether any heuristic, and the decision portfolio organized around it, can be improved *economically*, and it is in the brain’s interest to be on the lookout for such improvements. With improvements, it can relax or satisfy unattended demands, such as the development of more dendrites or muscle mass.

A rational brain, however, will not necessarily give up immediately on a heuristic with the advent of a cluster of bad decisions, any more than an investor will give up immediately at the first sign of poor results on stocks in a portfolio. The brain will want to see evidence that the bad decisions persist because it knows that bad decisions can come in clusters for any heuristic. If the heuristic has worked reasonably well (or better than known viable alternatives), it could face a form of Clayton Christensen’s “innovator’s dilemma.” The brain may discern ways to tweak its heuristic to improve performance, which is a positive reason for hanging onto it. On the other hand, there could be a better heuristic. However, the brain could very well incur more costs by trying out replacement heuristics that prove less productive than it will incur sticking with a heuristic that yields some bad decisions but an overall successful record.

In the process of trying to use its scarce resources, the brain could persist in making bad decisions, although it does so as purposefully as it can. An economist’s brain, for example, might not give up on the law of demand when confronted with occasional evidence of an upward sloping demand curve. The *law* (and there are good reasons it is called that) has proven its worth over a wide range of applications, so it would be a waste of time and

other mental resources to run regressions every time a seemingly conflicting price change is observed.

Behaviorists see their catalog of irrationalities or decision-making failures as show-stopping evidence of the bankruptcy of conventional economics and as a scientific foundation for calls for added government market intrusions. Some conventional economists consider behaviorists' evidence a professional embarrassment or sidestep them with the Friedmanian refrain, "All theories are necessarily unreal," while others have found sufficient grounds for abandoning their deductive theories for the inductive methods of behaviorists. Still others have reviewed their work and concluded, "My models, while defective, work pretty darn well for my purposes, so why change?"

From my brain-focused perspective, I have come to see behavior-

correct decisions of a subset of their subjects, as if those subjects' choices don't matter (and so often they really don't in classroom and laboratory settings). However, subsets of "rational" decision-makers are critically important in markets, especially with time. They show the larger group of wrong decisionmakers how they can garner more value with fewer resources, and they put competitive pressures on poor decisionmakers to reform their ways.

And what of those who don't learn or are disinclined to change their wayward-thinking ways? Well, most should not be expected to last long in markets, as Friedman noted long ago. If people in business tend to ignore opportunity costs, consider sunk costs, and don't equate at the margin, their success will be limited over time (if not converted to outright failure). They will tend to lose their own financial and real resources and limit access to the addi-

tional resources of others. Consumers will tend to buy competitors' products. Investors will tend to move their financial support to those competitors who make more rational decisions from better heuristics. Even workers will gravitate toward firms that have the greatest access to resources and a greater chance of survival and prosperity.

Those people resistant to correcting their irrational ways will select out of market dealings and crowd into nonmarket settings. And those who do not self-select

out and misjudge their irrational tendencies will tend to be shown market exits, or be pressed to move off into institutional settings with less corrective competitive pressures (for example, large business bureaucracies, governments, universities, and nonprofits, where "irrationalities" may have greater staying power). In these ways, market *processes* (as distinct from separated snapshot market events, which behaviorists' experiments tend to capture) will make market outcomes far more rational than the innate, uncorrected rationalities might suggest.

Indeed, markets will tend to make persistent participants more rational—more calculating and more profit-seeking—than they might otherwise be inclined, just as markets put pressure on firms to charge lower prices than they would ideally choose.

Smith heralded the force of the "invisible hand" in markets that engineered unanticipated societal gains from trades. He and his intellectual descendants haven't seemed to appreciate just how deeply seated the power of the invisible hand is, the "fingers" that work inside the human brain. Since early humans learned to exploit trades, evolution has likely favored those who made decisions with some (relatively greater) rational care. Hence, no matter how irrational behaviorists deem people to be today, their rationality has likely improved over the eons *because* of the advent of markets (an unheralded rationality-inducing institution).

How can defective decisions made within less-than-perfect heuristics give rise to greater rationality and welfare gains than would otherwise be the case? Consider how basketball players, pressed by

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ists' findings of flawed decisions—especially when they persist, even with potentially corrective feedback loops—as evidence that the brain is likely maximizing the use of its own scarce internal resources. Overall, in spite of some flawed decisions, it is accomplishing its goal: improving its own overall rationality and increasing its chances for survival and greater prosperity for itself and its host.

#### MARKETS AND DECISION-MAKING IMPROVEMENTS

The many irrationalities behaviorists have uncovered largely emerge in temporary, nonmarket, and often artificial settings—classrooms and laboratories—that lack ongoing, evolved competitive market pressures and the informational feedback loops endemic to markets. People in real markets face the pressure of being outproduced, outmaneuvered, and underpriced by competitors (both existing and new), with many having their fortunes and short- and long-term livelihoods at stake. They get continual, if not continuous, feedback on their relative success and failure from the submarkets they face in all directions: their many product, labor, and finance markets. People in markets are constantly scanning the activities of others for clues on how they can (and must, to one extent or another) enhance their performance through improved heuristics and resulting decision portfolios, as well as the suppression of innate tendencies toward making irrational choices. These improvements enhance their prosperity, if not survival.

Behaviorists highlight the many wrong decisions of subsets (even supermajorities) of their subjects. They tend to disregard the

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the desire to win, can improve their game by practicing long hours to develop neuronal networks (misleadingly described as “muscle memory”) to routinize or automate complex moves—say, a jump shot—that can have the effect of *improving* (not perfecting) their game.

### TRADE RESTRICTIONS, RATIONALITY, AND DECISION MAKING

The thesis that I laid out at the start of this article should now be self-evident. Markets open to trade—domestic or international—do far more than allow prospective traders to exploit known comparative cost advantages. They allow the introduction of added competitive pressures, which can put downward pressure on price and production costs and upward pressure on product quality. That gives rise to the growth-inducing “creative destruction” highlighted by Joseph Schumpeter seven decades ago.

In arguing this, I simply accept the behaviorists’ admonition to conventional economists: people are not as innately rational as conventionally presumed. However, acceptance of that finding means that markets can do more than Smith, Ricardo, and all following conventional economists have assumed. Open markets, with added competitive pressures, can correct and improve (though not perfect) the errant decision-making proclivities of market participants.

Thus, competitive market pressures can improve the brain’s allocation of its own resources through the development of less-flawed heuristics (and fewer irrational decisions than behaviorists have found in noncompetitive market settings). While market participants will never meet the perfect-rationality standard of conventional economists, they will not likely sink consistently over time to the pervasive irrationality findings of behaviorists. Hence, in market-based economies, “nudges” are less relevant and necessary than behaviorists have surmised from their classroom and laboratory findings.

The conclusion here is, don’t look for ways to impose nudges. Instead, look for ways to increase competitive market pressures, one of which is to keep markets open to international trade (or, at least, don’t close them). And that added pressure can be substantial, given that U.S. international trade is upwards of a quarter of gross domestic product (and a much higher percentage for other advanced economies). The decision-making effects of open international trade can come from improved heuristics that need not remain narrowly applied to exports and imports. Those heuristics can have general applicability in much of economic life, including most parts of the domestic economy.

Of course, the arguments offered here lead to a conclusion not usually seen in conventional economics: trade restrictions should be opposed because they likely induce more irrational decision making than otherwise. These irrationalities, in turn, can induce more unexploited mutually beneficial trades. Trade restrictions thus do more damage—especially in the long run—than heretofore imagined. They set in motion people’s return to a lower level of rational decision making, which can make behaviorists’ favored nudges all the more appealing.

### CONCLUSION

In summary, conventional economists have been on target by showing how markets can induce people to improve the allocation of scarce external resources (e.g., labor, steel, trees) through trades. But they have overlooked—no doubt, attributable to their premise of perfect rationality—how markets can improve the brain’s allocation of its own internal resources. Better allocation, in turn, can improve decision making of market participants and can increase the extent to which participants discover and exploit comparative cost advantages. Hence, trade restrictions can be expected to not only deny people in trading countries the benefits of comparative advantages, they can worsen their decisions-making propensities.

Granted, the gains from trade deduced from conventional economic models cannot be superseded, but only because those models presume that all potential gains from trade are exploited without fail. Perfect rationality combined with perfect competition leads to perfect outcomes. Such perfect outcomes are simply not achievable in a world bedeviled with scarcity.

In thinking through trade theory, we must start with where we are and ask, how can added competitive pressures from open trade lead to welfare gains? In conventional economics, the gains are limited to improved allocations of external resources. In my brain-focused approach, competitive pressures can have the added effects of improving the brain’s allocation of its own internal resources and the performance of its (less-than-perfect) decision heuristics.

Those improvements, I stress, can lead to even greater gains (or fewer losses) in the allocation of external resources. If people are as imperfectly rational as behaviorists insist they are, there is no reason to believe that they will, without meaningful pressures, minimize costs and discover their comparative cost advantages or even exploit the potential trades that are self-evident in economists’ blackboard discussions of the gains from trade.

Nonetheless, economic market models do have an unappreciated didactic purpose: they suggest an array of heuristics—tagged “principles” (e.g., equate at the margin, ignore sunk costs)—that market participants might consider adopting (or employing more frequently) if they want to survive, if not prosper, under market pressures. And the more competitive their markets, the more closely they will need to follow them, instead of following their innate decisionmaking biases. R

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