

Senior Seminar on The Wealth and Well-Being of Nations:

Each year, seniors in the department of economics and management participate in a semester-long course that is built around the ideas and influence of that year's Upton Scholar. By the time the Upton Scholar arrives in October, students will have read several of his or her books and research by other scholars that has been influenced by these writings. This advanced preparation provides students the rare opportunity to engage with a leading intellectual figure on a substantive and scholarly level.

Endowed Student Internship Awards:

A portion of the Miller Upton Memorial Endowments supports exceptional students pursuing high-impact internship experiences. Students are encouraged to pursue internships with for-profit firms and non-profit research organizations dedicated to advancing the wealth and well-being of nations.

Charles G. Koch Student Research Colloquium and Speaker Series:

With generous support from the Charles G. Koch Charitable Foundation, the department has initiated a research colloquium that gives students the opportunity to read and discuss seminal articles aimed at deepening their understanding of the market process. Students also develop original analysis that applies economic ideas to novel contexts. Colloquium participants receive close mentoring as they craft an article with the eventual goal of publication in a newspaper, magazine, or academic journal. The themes of the research colloquium and annual forum are supported with a monthly speaker series featuring the next generation of scholars working on questions central to our understanding of the nature and causes of wealth and well-being.

Annual Proceedings of The Wealth and Well-Being of Nations:

The keynote address presented by the Upton Scholar is an important contribution to the public discourse on the nature and causes of wealth and well-being. Further, the annual forum includes presentations by noted scholars who expand upon or challenge the work of the Upton Scholar. These presentations are assembled in the *Annual Proceedings of the Wealth and Well-Being of Nations*, which serves as an important intellectual resource for students, alumni, and leaders within higher education.

THE ANNUAL
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WEALTH AND WELL-
BEING OF NATIONS

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VOLUME III

EMILY CHAMLEE-WRIGHT

EDITOR

JENNIFER KODL

MANAGING EDITOR



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CONTRIBUTORS

Emily Chamlee-Wright is the Elbert Neese Professor of Economics at Beloit College.

Israel Kirzner is Emeritus Professor of Economics at New York University and the 2010 Upton Scholar at Beloit College.

Peter Boettke is University Professor of Economics at George Mason University.

Frederic Sautet is a senior research fellow at the Mercatus Center, George Mason University.

Deirdre McCloskey is the Distinguished Professor of Economics, History, English, and Communication at the University of Illinois at Chicago.

Virgil Henry Storr is a senior research fellow and the director of graduate student programs at the Mercatus Center as well as a research associate professor of economics at George Mason University.

Arielle John is an economics doctoral student at George Mason University and a graduate student fellow at the Mercatus Center.

Adam Martin a post-doctoral fellow with the Development Research Institute at New York University.

Peter Nencka is a consultant with Bates White Economic Consulting in Washington DC.

Roger Koppl is the director of the Institute for Forensic Science Administration of Fairleigh Dickinson University, where he is also a Professor of Economics and Finance.

Randall Holcombe is the DeVoe Moore Professor of Economics at Florida State University.

José Ernesto Amorós is professor and director of the Global Entrepreneurship Research Center at Universidad del Desarrollo in Santiago, Chile, and coordinator and chief researcher of the GEM Chilean Team.

Oscar Cristi is professor and research fellow at the Business Research Center of the Universidad del Desarrollo in Santiago, Chile.

Maria Minniti is professor and holds the Bobby B. Lyle Endowed Chair of Entrepreneurship at the Cox School of Business at Southern Methodist University. Dr. Minniti is field editor of economics for the *Journal of Business Venturing*, and associate editor for *Small Business Economics* and the *International Small Business Journal*.

Introduction

Emily Chamlee-Wright

As the Elbert Neese Professor of Economics, it is my privilege to introduce the third *Annual Proceedings of the Wealth and Well-Being of Nations*.

Under the banner of the Miller Upton Programs, The Department of Economics at Beloit College has developed an ambitious initiative to advance understanding of the ideas and institutions necessary for widespread prosperity and human development. The centerpiece of these programs is the annual Wealth and Well-Being of Nations: a Forum in Honor of Miller Upton. Every fall, the Upton Forum brings to Beloit College a distinguished, internationally recognized scholar who works within the classical liberal tradition. The Upton Scholar engages with students, faculty, alumni, and civic leaders in an informed dialogue around the nature and causes of wealth and well-being. In 2010, we were honored to feature Israel Kirzner, Emeritus Professor of Economics at New York University as the third Upton Scholar.

Alongside our Upton Scholar, we featured leading scholars whose work complements the work of Professor Kirzner. We assemble this cadre of scholars to demonstrate that the intellectual enterprise of understanding the nature and causes of wealth and well-being is an ongoing project. The essays collected in this volume capture in written form many of the ideas exchanged, challenges posed, and questions considered during the Upton Forum and over the course of the academic year.

Before introducing the substance of the contributions made within this volume, let me say a few words about the man for whom the forum is named. R. Miller Upton was the sixth President of Beloit College, from 1954-1975. A nationally recognized leader in higher education, President Upton was known to harbor two intellectual passions. The first was a steadfast commitment to the liberal arts. He believed that the small residential liberal arts college was the ideal

place to engage the “great questions,” as it is here that students are expected to acquire the intellectual habits necessary for critical thinking and open civil discourse. His second passion was for the ideals of the liberal society: political freedom, the rule of law, and the promotion of peace and prosperity through the voluntary exchange of goods, services, and ideas. He understood that transforming the ideals of liberal democracy into real institutions was at the heart of increasing the wealth and well-being of nations and peoples. We believe that the Upton Forum represents a confluence where these enduring passions meet.

Entrepreneurship as the Driving Force of the Market Process

As a leading figure in the Austrian school of economics, Israel Kirzner has devoted much of his career to clarifying the central role entrepreneurship plays as a driving force in the market process. Here I will sketch, in ever so brief a fashion, the arc of ideas that influenced Kirzner as a young scholar and how he wove those threads of intellectual discourse to advance our understanding of entrepreneurship and the nature of the market process.

I will focus in particular on two of Kirzner’s influences: Ludwig von Mises and F.A. Hayek, both contributors to the great Socialist Calculation Debate in the 1920s and 30s. In that debate, both Mises and Hayek called our attention to the cognitive role that markets play. Comprehensive socialist planning would fail, Mises (1922, 1949) argued, not only because of the inherent incentive problems we create when we eliminate market reward and discipline, but also because we eliminate the principal means by which individuals discover the best use of resources. It is only in a context of private ownership that meaningful prices emerge. Without scarcity indicating prices, Mises argued, there is no way to discover what the best mix of resources would be for any given project that would leave the maximum resources left over for other pursuits. This means that no matter how well-intentioned our socialist planners might be, without market prices, they have no economically meaningful guides to action.

Hayek (1935, 1940, 1948, 1988) advanced this argument further by pointing out that the economic knowledge required to foster widespread social coordination is fundamentally dispersed across countless market participants. To Hayek, the fundamental economic problem is a knowledge problem. How, given the dispersed nature of economic knowledge, do we ever come to know the relevant information we need to successfully carry out our individual plans? Given the fact that the full body of relevant knowledge contained within the economic system

is never given to a single mind in its totality, how does a complex society such as ours achieve widespread social coordination? The answer, Hayek argued, was the mutual adjustment that occurs when individuals act upon price signals and learn from their experience. Another way to put this is that markets not only allow individuals to learn, they allow societies to learn—to become, in essence, smarter than the individuals who make it up.

The cognitive role that markets play is a central theme within the Austrian school—that market signals provide the means of discovering the best use of resources and drive human progress. But who is the agent of this discovery? Both Mises and Hayek recognized that the entrepreneur played the critical role of driving the discovery process, but understanding the nature and role of entrepreneurship required further development. This is where Israel Kirzner steps in.

Kirzner (1973, 1979) develops the theory of the “pure entrepreneur,” an analytical construct that invites us to imagine the entrepreneur as possessing no assets or resources, not even the power to deploy labor. Kirzner’s pure entrepreneur does, however, possess the ability to notice gaps—gaps in prices for, say, the same good in two different markets, or the same good produced by different methods, or the same resources configured in different ways. The point is not to describe a particular kind of person we are calling “the entrepreneur” but to describe a category of human action. It is entrepreneurial alertness to price differences that allows us to explain how prices, quantities and qualities of inputs and outputs change, and how the plans of countless market participants that fail to align in one moment tend to move toward greater coordination over time.

Kirzner’s insights became part of the defense of market coordination against heavy handed state intervention, but his principal target of critique were his fellow economists, most of whom considered themselves to be describing and in some sense defending the competitive market. Neoclassical presentations of competition tell a story of market perfection in which profits are instantaneously seized and efficient equilibrium obtained. While such depictions of perfect competition are internally consistent, they are irrelevant, Kirzner argues, if what we want to understand is the nature of the market process. Such models begin with the assumption that everyone possesses perfect information. But in such a world, the entrepreneurial role is completely eliminated. The world presents us with profit opportunities because it is a world in which ignorance exists, and given the dispersed nature of economic knowledge, this state of ignorance is unavoidable. But if we assume away ignorance, we also assume away the need for a discovery pro-

cess. We assume away the most interesting question the market order presents: how, given the fact that we are not perfectly informed, and never can become so, does market coordination happen?

In contrast to standard economic theory, Kirzner begins his analysis by understanding the world as it is—mired in ignorance. It is this ignorance, Kirzner argues, that triggers the entrepreneurial search for profits. In turn, it is this search for profits that renders market capitalism a process of systematic discovery. Through a lifetime of scholarly work, Kirzner examines the role entrepreneurial discovery plays in coordinating the diverse plans of market participants and the institutional rules of the social order that are required for entrepreneurship to foster widespread wealth and well-being.

Of course, the questions do not end here. For example, though we can attribute increasing prosperity to entrepreneurial discovery, the question remains as to whether that prosperity is built upon a less-than-virtuous human trait. In the 2010 June and Edgar Martin Memorial Lecture, the highpoint of the Upton Forum, Kirzner posed a question that lies at the heart of the Miller Upton Programs: Is greed the source of prosperity? Though other scholars have examined the morality of capitalism, none have tied it directly to a theory of entrepreneurship. Kirzner argues that the critical motivation that drives entrepreneurial decision-making is purposefulness. It is purposefulness, not greed that triggers entrepreneurial discovery, market coordination, and economic prosperity. Even in a world in which greed was entirely absent—a world populated by saintly characters driven solely to serve others—market discovery would unfold and prosperity would emerge. Though our saintly characters are without greed, they nonetheless have purpose, and it is this purposefulness that triggers entrepreneurship and the market coordination that follows.

The argument that Kirzner makes in the essay featured in this volume exemplifies the quality and character of his scholarship and teaching. Over the course of reading his work and during his time at Beloit, our students experienced and came to appreciate what a *careful* scholar he is. And by “careful” I mean that he handles ideas with care and precision. Every idea is built upon a foundation, which in turn, leads to the next idea. But his careful precision does not preclude boldness. In fact, it is this care that makes intellectual boldness possible. It is the equal measures of care and boldness, I believe, that is the source of Professor Kirzner’s significant influence. It is this rare combination that makes him a teacher of the highest order: a teacher of teachers. And it is this combination of

care and boldness in his inquiry into the driving force of the market process that marked him the ideal choice as the 2010 Upton Scholar.

New Questions Pursued in this Volume

This volume features both leading and rising scholars who are advancing our understanding of entrepreneurship and the market process. Peter Boettke and Frederic Sautet provide essential context for understanding Kirzner's influence by examining the intellectual influence Ludwig von Mises had upon him. In their essay "The Genius of Mises and the Brilliance of Kirzner," Boettke and Sautet recount Mises' intellectual contributions toward understanding the market as a process that prepared the way for Kirzner to develop a theory of entrepreneurship that would challenge standard thinking on how markets function.

In her essay "A Kirznerian Economic History of the Modern World," Deirdre McCloskey reflects upon the significance of Kirzner's insights by retracing her own intellectual journey in which she initially overlooked but then came to appreciate the centrality of entrepreneurial creativity and discovery in explaining economic change. Economic growth since 1800—the increase in real income per capita by a factor of at least 16 and as much as 100—she explains, had very little to do with economizing utility maximizing behavior and nearly everything to do with entrepreneurial creativity, innovation, and discovery. It is thus Kirznerian entrepreneurship that helps us understand what is the most significant fact of economic change in modern history.

Adam Martin develops this theme further in his essay "Discovering the Gains from Trade: Alertness and the Extent of the Market," by tying Kirzner's insights regarding entrepreneurial discovery to the classical economics literature of Adam Smith and David Ricardo. Martin re-examines Smith's and Ricardo's gains from trade arguments. Seen from the perspective of entrepreneurial discovery, Martin argues, we understand that it is the specialization and division of knowledge that results from entrepreneurship that explains most of the mutual gains we experience through trade.

In their essay "The Determinants of Entrepreneurial Alertness and the Characteristics of Successful Entrepreneurs," Virgil Storr ('96) and Arielle John consider some of the criticisms that have been levied against Kirzner, in particular, the criticism that his theory of entrepreneurship suffers because it abstracts away from psychological characteristics of real world entrepreneurs. Storr and John argue

that rather than limiting a deeper understanding of the psychological characteristics that shape entrepreneurship, Kirzner's theory of entrepreneurship makes such inquiry possible.

Roger Koppl returns us to the question of what, exactly, an entrepreneur is, or in this case, what an entrepreneur is *not*. When considering entrepreneurs, most of us regard them, at least the successful ones, as “experts” of one kind or another. In his essay “Entrepreneurs are not Experts,” Koppl challenges this accepted wisdom that conflates entrepreneurship with expertise. Rather than diminishing the importance of entrepreneurship, Koppl argues, the fact that entrepreneurs are not experts underscores the critical discovery role that entrepreneurs play in the market process, a role, he argues, that cannot be replaced by “experts.”

The final three essays focus on the social institutions—the rules of the game—that govern human interaction. Peter Nencka's (11) essay, “Explaining the Rise of Institutions: Toward a Kirznerian Theory of Repeated Games,” examines the conditions under which social institutions evolve and remain stable. Drawing upon the work of game theorist Ken Binmore and Austrian scholars such as Kirzner and Storr, he proposes a basic framework for thinking about this question that bridges the game theory and Austrian economics literatures.

In his essay “Are Current Economic Activities Undermining Future Prosperity?” Randall Holcombe applies the concept of entrepreneurial discovery to the question of whether current prosperity is undermining long-term sustainability by depleting natural resources. Holcombe argues that, if the rules of the game are in place such that entrepreneurial discovery can unfold, the same entrepreneurial drive to innovate that generated the increasing prosperity in the first place will generate the solutions needed to address resource depletion concerns in the future.

Finally, in their essay “Entrepreneurial Volatility: A Cross Country Study,” José Ernesto Amorós, Oscar Cristi, and Maria Minniti examine the role that government policy plays in determining the decision to engage in entrepreneurial behavior, even when few or no alternative employment options are available. Using data from 49 heterogeneous countries over the period 2001-2008, they find that the quality and size of government contribute to the volatility of necessity-driven entrepreneurship. In other words, they find that perverse public policy has a disproportionately negative impact on entrepreneurs who have few if any alternative sources of income.

With Many Thanks

On behalf of Jeff Adams, the Allen-Bradley Professor of Economics and the other members of the Department of Economics, I want to extend our thanks to everyone who played a part in making the 2010 Upton Forum and associated programs a success, including the many scholars and alumni professionals who presented during the forum and over the academic year. In addition to the contributors to this volume, I would like to thank David Luck, CEO and president of ABC Supply Co. and alumni Robert Atwell ('80), founder and CEO of Nicolet National Bank, and Stopher Bartol ('88), founder and CEO of Legacy.com for their participation on a panel honoring the late Ken Hendricks for his legacy of entrepreneurial excellence. Further, I wish to thank Merton (Marty) Finkler, the John R. Kimberly Distinguished Professor at Lawrence University, Robyne Hart, director of the Business, Entrepreneurship & Society Program at the Associated Colleges of the Midwest, Elizabeth (Betsy) Gatewood, director of the Office of Entrepreneurship and the Liberal Arts at Wake Forest University, and Beloit College alumnus and Professor of Economics Jerry Gustafson ('63) for their participation on a panel discussing the role of entrepreneurship education in the liberal arts.

The students in my 2010 Senior Seminar on the Wealth and Well-Being of Nations were also integral to the success of the forum. Their willingness to dive deeply into discussions of classical and contemporary works is the lifeblood of an intellectual enterprise such as this. And a special thanks goes to Jennifer Kodl, Program Assistant to the Upton Programs and Managing Editor of this volume for her tireless dedication to excellence and her generous spirit.

By underwriting the first three years of the Upton Forum, the Lynde and Harry Bradley Foundation has played a critical role in ensuring the early success of the program, by allowing us to feature intellectual luminaries such as Douglass North, Hernando de Soto, and Israel Kirzner. Further, this early support gave Bill Fitzgerald ('86) and Bob Virgil ('56), co-chairs of the campaign to endow the Miller Upton Programs, the time they needed to secure the donor support that would ensure its long-term viability and vitality. Indeed, that support did follow, and this last year has been marked by tremendous success. Thanks to a generous gift from the June and Edgar Martin Estate, Professor Kirzner's keynote address was the first under the banner of the June and Edgar Martin Memorial Lecture. Moreover, in February 2011, Bill Fitzgerald announced to a large and festive

crowd of students, alumni, faculty, and staff gathered for the 25th celebration of “Econ Day” in Chicago, the successful completion of the fundraising effort to endow the Miller Upton Programs. The gift that put us “over the top” was made by dozens of alumni, faculty, and staff in honor of Jeff Adams, for his steadfast commitment to creating opportunities for his students.

When we launched this effort, our goal was to create a suite of programs that would foster the kind of intense and engaged inquiry that leads to the development of liberally educated men and women. A belief in the emancipating power of critical thinking, an unapologetic passion for ideas, and a deep respect for open inquiry in which the answers are not preordained, have been our guiding principles. If we were to honor Miller’s legacy, anything less would have been unacceptable. The financial support provided by alumni, friends, and charitable foundations has allowed us to live up to the promise of those principles and has ensured that the Miller Upton Programs will serve Beloit College students and the broader community of intellectually engaged citizens for many generations to come.

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The 2010 June and Edgar Memorial Lecture

The Economics of Greed or the Economics of Purpose

Israel M Kirzner*

1. Introduction

The topic I have chosen for this Keynote Address is one that has engaged critics and defenders of the market economy, as well as critics and defenders of economic science, for at least two centuries. I venture into this well-trodden territory both for personal reasons and for reasons having much to do with the theme of the Miller Upton Forum—The Wealth and Well-Being of Nations.¹ The personal angle derives from the circumstance that most of my work in economics (ever since Ludwig von Mises, back in 1955, suggested to me a topic for a paper he assigned) has, directly or indirectly, related to this theme—and resulted in my first book, published five years later. The reasons pertinent to this Miller Upton Forum have to do with the circumstance that Mises' own work, sadly neglected in modern economics, offers critically important new insights on

* Israel Kirzner is Emeritus Professor of Economics at New York University and serves as the 2010 Upton Scholar during the Wealth and Well-Being of Nations annual forum at Beloit College.

¹ I take this opportunity to express my particular pleasure at being this year's Upton Scholar. I had the personal privilege to have known President Upton. We served together for a number of years in the 'eighties as Trustees of the Foundation for Economic Education. I learned to appreciate and deeply respect Miller Upton's intellectual integrity and his commitment to the free society. It is for me a distinct honor to participate in this year's Miller Upton Forum on the Wealth and Well-Being of Nations.

this Forum's theme—insights that can indeed be crucial for the promotion of the Wealth and Well-Being of Nations.

I hope to show that central mainstream professional and lay criticisms of both the free market economy and economic science, melt away as soon as these Misesian insights are absorbed and appreciated. What is common to the mentioned criticism is a flawed understanding of the essence of the individual decision insofar as it is the building block of the capitalist economy, and of the structure of economic theory. These criticisms accept the myth that the success of the capitalist system is based entirely on the circumstance that market-place decisions are made by cold, calculating, selfishly materialistic, greedy individuals; and they accept the related myth that economic theory sees systematic chains of cause and effect as arising in market economies, only as a result of those same greedy, calculating decisions. As we shall see, it is one thing to claim that many, or most, in a given society are greedy and selfish. It is quite another thing to claim—falsely, as it turns out—that it is due to such selfish greed that free markets are able to prosper, and that economic theory can arrive at its central results. The gross fallacies in these perennial myths have, as we shall see, been unmasked again and again during the past century. What still needs to be stated in explicit terms, however, is that the truth concerning the individual decision, both in the capitalist economy and in economic theory, involves subtleties that require a substantial overhaul of central elements of mainstream economic understanding. I shall attempt to show that, by drawing attention to the entrepreneurial element in human action—an element first identified by Ludwig von Mises—we not only immediately see the emptiness of the above standard criticisms of capitalism and of economic theory, but are at the same time able to glimpse (a) a more profound understanding of economic causation, and (b) a deeper appreciation for the manner in which simple, layman-friendly economic theory can make an important contribution towards enhancing the wealth and well-being of nations.

2. Economic Science, Free Markets, and Economic Man

It is a fact that over the past two centuries a central lesson of economics theory has taught us the spontaneously coordinative properties of free markets. This certainly does not mean that most economists have favored free markets. Much of the economic theory of the past century, at least, has in fact sought to demonstrate shortcomings in market outcomes, thus attempting to build the case

for increased government regulation of free market economies, or for outright central planning. Nonetheless, it was shown over a half-century ago, familiarity with economic theory tends strongly to generate, at least, an appreciation for the spontaneously coordinative properties of markets (Stigler 1959: 52F). It is therefore no accident that writers most critical of free market arrangements, have tended to attempt to demolish the methodological foundations for mainstream economic theory. To wish to organize an economic system by central direction is to wish to refute the body of science which apparently teaches the unwisdom of such centrally-planned arrangements.²

One route taken by these critics of free market arrangements has been to point out that the economic theory (which seems to argue for the social usefulness of such arrangements), depends crucially on the analytical construct known as “*homo oeconomicus*”—“economic man” understood to be a coldly calculating, selfishly greedy pursuer of unlimited physical pleasure (or its surrogate, unlimited pecuniary wealth). Because economic theory has indeed often seemed to assume that markets are peopled only by “economic men,” it became a standard strategy to seek to demolish the central lessons of economic science by claiming that these lessons are only as true as is the truth of the *homo oeconomicus* assumption. Historicist, Institutionalist critics have again and again hammered away at the validity of this assumption; modern critics of economics have come up with novel forms of essentially the same objections to the fundamental assumptions of economic science.³

At the same time, critics of the capitalist system have not failed to seize on the unsavory character attributed to economic man, in order to denounce the morality of a system (the freedom of which permits free rein to such disgusting, jungle-like human traits and the success of which in fact depends upon such offensive patterns of behavior). Going back to Bernard de Mandeville’s 1714 Fable of the Bees or Private Vices, Publick Benefits, writers have delighted in tracing capitalist success to selfish and/or wasteful economic activity.

² A good deal of Ludwig von Mises’ effort to focus attention on the methodological foundations of economics can be traced to his concern that the critically important teachings of economic science might otherwise be impugned by the ideologically-driven enemies of capitalism.

³ For a survey of some of these new-old criticisms, see Kirzner (1990).

3. *Homo Oeconomicus and a New Attack On Economics*

One eminent economist has, with an integrity and consistency admirable as an exercise in intellectual morality—but appalling in the *reductio ad absurdum* conclusions from which he could find no escape, was George J. Stigler. A Nobel-prize winning star of the economics profession, and illustrious leader of the post-World War II Chicago School of Economics (a school of thought often seen as the foremost intellectual spokesmen for free markets), Stigler found himself trapped into a corner from which economics must be seen as a sterile exercise without anything to teach society in regard to public policy. Stigler's astounding conclusions depend on his understanding of the individual economizing decision in markets. Stigler was too sophisticated to focus on greed or selfishness; he focused on the coldly calculating behavior which standard microeconomics attributes to market participants. Standard equilibrium theory, the theory central to the Chicago School's understanding of the real world, assumes that rationally calculating economic agents can be relied upon not to be making decisions that mistakenly anticipate other decisions that are in fact not being made, or decisions which would imply that uncaptured pockets of pure profit remain available for the taking. Pursuing the logic of such theorizing to its ultimate implications, Stigler is forced to conclude that, at each moment in time the world is, given the existing legal patterns of rights assignment, the best of all possible worlds. If it seems to an economist that a change in policy (e.g., the elimination of tariffs) could enhance aggregate "well-being," this turns out, in Stigler's view, to the economist's wishing to impose his scale of values upon a society in which rights (including voting clout) have been assigned in a way that leads participants in the political-economic system, to decide differently. No one has made an error which the economist has discovered; it is merely that the economist would have wished that a different set of decisions could have been made. So Stigler finds himself, as a result of the omniscient rationality attributed by his economics to market decision makers, to conclude that economic advice offered by economists (e.g., advice to eliminate government regulation) is merely "preaching," i.e., offering to, or urging upon, voters a value system which they have, up until they hear the economic "sermon," not shared (Stigler 1982).

What we shall see in the remainder of this paper is that the fallacy in Stigler's position is (although it focuses on a different feature in the make-up of economic man) closely related to the fallacies that mar the older criticisms of economic

science, and of capitalism, to which we drew attention in the preceding section of this paper.

4. Traditional Responses to the Critics of Economic Theory

Defenders of economic theory had traditionally responded to its critics (i.e., the critics who have challenged the realism of the model of economic man deployed in standard theory) in either of two types of response. One approach is to concede that “of course” the real world is more complicated than are the models of economic theorists, but that these models nonetheless offer useful approximations to reality, and that the conclusions drawn from these models can usefully be applied to guide public policy in the admittedly more complex world of reality.⁴ The second approach, associated with a tradition including Philip Wicksteed (1910) and Lionel Robbins (1932), denies that in fact economic theory needs to invoke assumptions of selfish, materialistic greed, at all. All that is needed to generate the main theorems of economics, this defense argues, is the assumption that market participants consistently pursue their purposes (whatever these purposes may be, altruistic or selfish). (Much of formal modern theorizing, involving the assumption that market participants maximize “utility” [subject to their income constraints] have indeed attenuated the meaning of “utility” to the point where the analysis has been understood, and dismissed, as consisting of essentially empty tautologies.)

Our approach in this paper will, in broad terms, follow the second (“Robbinsian”) route, with an important difference, deriving from my understanding of Ludwig von Mises’ articulation of the novel concept of “human action” as constituting the analytical building block of economic science. For Robbins (1932) (and, as a result, for most of subsequent mainstream microeconomic theory) the crucial analytical unit is the individual constrained-maximization decision.⁵ An economizing individual finds himself confronting a world in which he has at his disposal a given, limited, array of resources—which he seeks to transform into the utility-maximizing bundle of consumer purchases. He thus “economizes” against a given background of ends and means. The ends are emphatically, not confined

⁴ One defense (associated primarily with eminent Chicago School economist Milton Friedman), argues that the truth of assumptions is not needed by a theory that is able, in “black-box” terms, to make valid real-world predictions.

⁵ Robbins, later Lord Robbins, wrote his book with ample acknowledgement of intellectual indebtedness to the Austrian School, in its ‘twenties incarnation.

to selfish, materialistic goals; they may include spiritual objectives and altruistic objectives—but they all call for the utilization of scarce material resources (which are given). Understanding the mathematics of constrained maximization, the economic theorist then predicts in principle the buying and selling decisions that will, from an initially given situation, (i.e., a situation in which each individual finds himself confronted by his own specific ends-means configuration) emerge from the informed decisions of all market participants, viewed simultaneously. Notice that the phrase “informed decisions” implies that market participants are aware of the decisions which other (equally “informed”) decision makers are making. (After all, the given “means” available to any one economizing individual reflects, especially all the buying opportunities and all the selling opportunities, which are implicit in the decision which other similarly informed market participants are currently making). Modern microeconomics has thus deployed the critical Robbinsian insight (that market participants are “economizing” decision makers) to reach a Walrasian analytical conclusion. In escaping from an economic man who greedily seeks materialistic selfish pleasure, modern economics has fallen into the trap of assuming that all markets are, at all times, in equilibrium. The Robbinsian economic man of microeconomics textbooks has, somehow, while no one was looking, as it were, come to be defined as an analytical entity unthinkable outside the equilibrium state. Notice that this eyebrow-raising result proceeds from the analytical presumption that the make-up of Robbinsian man permits and requires us to predict, in principle, the outcome of each individual decision—with this prediction having to be made simultaneously regarding every single participant in the market.

What has emerged then, from the Robbins-Walrasian tradition in modern microeconomics, is a body of theory that makes no attempt whatever to explain how all these individual decisions have, indeed, been brought into a state of utter mutual consistency. Instead this body of theory consists, in principle of two segments: a) one segment explaining the constrained-maximization character of each decision (whether it be a consumer decision, a potential laborer’s decision, a business firm’s hiring or production decision, or whatever); b) with the second segment working out the mathematical conditions which will have had to have been satisfied in order for an equilibrium state to exist. At no point does this theory, in its pure analytical form (as distinct from its less precise classroom-didactic form) seek to explain any possible equilibrating process (or, indeed, any systematic processes of market causation!)

We have stated that our approach (in abandoning the older assumptions of homo oeconomicus, the greedy, selfish seeker after what more money can buy) will, broadly, follow the Robbinsian path (rather than the path which claims that models built on the older assumptions are useful approximations to the truth). But we shall find that, following Mises' notion of "human action" (a subtle concept going beyond Robbinsian "economizing"), we will be led decisively to reject the view which sees economic theory as a theory of the equilibrium state. Instead we shall find that in reaching our understanding of the way in which human beings make decisions (i.e., in our understanding of the implications of "human action") we will have discovered the crucial element in modern Austrian economics, viz. that economic theory permits us to understand the nature of the market process (and, even more fundamentally, the nature of purely economic causation)—as this market process (and this process of economic causation) occurs under initial disequilibrium conditions.

5. Mises and The Science of Human Action

For Mises, the analytical unit for economic reasoning calls for no departure from full reality. This analytical unit is "human action," a concept grounded in the truth that human beings pursue purposes, they are *purposeful* human beings. Just as Robbins' "economizing man" pursues ends of all kinds (altruistic as well as selfish), so too Mises' homo agens ("acting man") pursues purposes of all kinds. So that Mises and Robbins do share their recognition that economic theory does not rest on the assumed selfish, materialistic greed of economic man. But it is in the next step that Mises goes beyond Robbins. As we have seen, for Robbins the economizing man is seen as facing a given (and known) configuration of ends and means. For Mises, however, acting man's purposefulness includes, most importantly, the entrepreneurial element of determining for himself what in fact the relevant ends-means configuration is, at each moment in his life. Whereas, in the mainstream microeconomics deriving from Robbins, there is no scope whatever for any entrepreneurship (because it is assumed that nothing remains to be discovered!); in the Misesian "science of human action," there is room for both entrepreneurial error and entrepreneurial discovery, in every single example of human action.

For Mises, in fact, the market process, the element in social interaction that generates systematic chains of economic causation, is attributed to the entrepre-

neurial propensity to discover pockets of available pure profit. For mainstream microeconomics there never are any available pockets of pure profit. (The mind-set of the mainstream economist has been likened to the mind-set behind the assertion that there never are any twenty-dollar bills to be picked up in Times Square—because any such bills would already have been picked up!) For Mises the market process is set into motion purely by the lure of available pure profit opportunities—with these understood to be always available as the result of (earlier) imperfect entrepreneurship.

So that, for Mises, the rebuttal of the claim that economic theory rests on the analytical myth of selfish, materialistic, greedy, economic man, is at the same time, the key to a fresh and illuminating understanding of the market process.

6. The Sainly Market Process

Thus the market process can now be understood in Misesian (and Hayekian) terms, as the mutual learning process through which, by means of entrepreneurial trial and error, grosser misunderstandings of market possibilities tend to be replaced by less erroneous beliefs (concerning opportunities available in the market). It is important to notice that this market process of mutual discovery⁶ is one driven by purposefulness, not by constrained maximization; it is driven by the pursuit of pure profit.

And it is important to notice that such pursuit of pure profit has nothing essentially to do with selfish greed. It is certainly true that in our imperfect world selfish greed is, regrettably, all too prevalent. But even in a world peopled by saintly, utterly altruistic individuals, the very same market phenomena can be expected to emerge.

Imagine a society in which everyone is primarily concerned to help others. That is, imagine a society in which human beings engage in consumption (eating, wearing clothes, and the like) only in order to be able to have the strength and ability to pursue their primary philanthropic goals. Notice that these goals may be different for different people. Some individuals wish to feed the hungry, others wish to care for the sick; perhaps others wish to educate and raise orphans, or to care for the elderly. All this is entirely compatible with profit-seeking entrepreneurial activity and discovery.

⁶ Hayek (1978) used the phrase “Competition as a Discovery Procedure” as the title of a paper, published in his *New Studies in Philosophy, Politics, Economics, and the History of Ideas*.

Business firms, in such a saintly society, would still be charging the highest possible prices, and paying the lowest possible wages. The profits won by discovering which consumers are prepared to pay the highest prices, and which workers are prepared to work at the lowest wages, would, in this saintly society, be dedicated almost entirely to lofty, philanthropic purposes. The entrepreneur whose highest altruistic goal is to eliminate the ravages of a dread disease, might, for example, manufacture furniture, squeezing the maximum legally permissible services from his workers, offering no unnecessary price-discounts to potential furniture buyers, regardless of their poverty-stricken need for moderately-price furniture. He will pursue such a strict business regimen because, by assumption, he ranks the virtue of building hospitals and promoting medical research, as higher than that of benefitting healthy, but poverty-stricken, workers and consumers. His philanthropic purposefulness leads him to be alert to all possibilities of enhancing his profits. This purposefulness, together with the similar philanthropic purposefulness of all his fellow saintly market participants, will thus generate the very same (“ruthless”?) market competition (and the same entrepreneur-driven profit-seeking market process) familiar to us from our participation in less saintly economic environments.

We have thus seen that the prosperity widely recognized as being characteristic of the capitalistic system, in no way depends on the selfish greed of the participants in that system. To be sure, the purposefulness of greedy, selfish entrepreneurs, workers, and consumers, that may fill a given society, will generate prosperity and growth in that society. But it is the pure purposefulness, the potential for entrepreneurial discovery in that society, which will be responsible for that prosperity—not the materialistic greed that may be driving that purposefulness.

And we see at the same time, that the economic analysis which has illuminated our understanding of this entrepreneurial market process, in no way depends on any necessarily unattractive features of economic man. The market process is a discovery process, driven by the alertness of entrepreneurs—and every human being is, to some extent, an entrepreneur!—to the profits generated by earlier entrepreneurial error.

7. Economics and The Well-Being of Nations - I

We are now in a position to perceive the disastrous fallacy in Stigler’s (tongue-in-cheek?) dismissal of all advice proffered by economic theorists. As we saw ear-

lier, Stigler, constrained as he was by the mainstream assumption that no market participants ever lack relevant information (i.e., that they know everything which it is worthwhile for them deliberately to learn)—found himself forced to the conclusion that we live in the best of all possible worlds (i.e., “best” in terms of the existing accepted system of initial rights-assignments). Given such a perspective on the world, there is nothing that economists can offer that might, relevantly, increase societal well-being. For Stigler, we saw, all condemnation on the part of economists for existing public policy, all endorsements offered by economists by specific public policy proposals, are, at best, simply unscientific “preaching”—i.e., expressions of the economists’ opinions regarding what ought to be the appropriate pattern of rights-assignment, or what ought to be the appropriate scales of value to be applied. The very circumstance that the economists are offering advice to change matters reflects the truth that the participants in the economic system (since they have not already adopted the advised policies) do *not* share these opinions. Economic advice amounts to nothing more than “preaching”—i.e., an attempt to change people’s values (not to teach them how better to pursue their goals.) But the perspective on economic theory which we have developed in this paper, demonstrates the utter fallacy of such attitudes towards economic advice. Everything depends on our recognition of the possibility of genuine error (Kirzner 1979).

For Stigler, genuine error is never evinced in the market. (Notice we are not denying that Stigler recognizes the possibility of genuine ignorance; but ignorance may not necessarily be an example of error. I may be ignorant of the Sanskrit language, this may not be an error on my part; I may simply, and correctly, have concluded that the cost to me of learning Sanskrit is not justified by the benefit to me of learning the language. My ignorance would then be optimal ignorance, not at all an example of error.) Stigler indeed pioneered the Economics of Information; he developed a sophisticated theory of how ignorance is deliberately minimized, subject to cost constraints. But at all points in that theory, every market participant knows as much as he wishes to know (given the [known] costs of learning). For Stigler, people always succeed in getting the best possible outcomes (given their preferences, and given the assets to which they own title). No genuine errors ever occur.

But the truth is that the market is, at all times, a showcase for the possibility of genuine error! Any market not (yet) in equilibrium demonstrates, by definition, the existence of erroneous decisions. As we have seen, the Misesian (entrepreneur-

ial) market process is a process of mutual discovery. What is discovered in each step in this process is the fact that potentially mutually profitable transactions (now seen to be possible), up until now and for no justifiable reason (such as cost), had simply not been noticed. The competitive entrepreneurial market process is a process of error-discovery and error-correction. Because the underlying variables (consumer preferences, resource availabilities, and technological possibilities) are constantly changing, the market process never ceases—because unanticipated exogenous changes render earlier decisions erroneous. Markets never do attain equilibrium, because the tendencies towards systematic correction (read: discovery) of error, are continually disrupted by exogenous changes in tastes, in the state of technological knowledge, and in resource availabilities. Once we admit the possibility of error (more precisely, once we admit the *impossibility*, in practice, of an errorless universe), our attitude towards the potential social usefulness of economic science must surely undergo a dramatic change. Economic science can teach us, not only *that* errors are near-inevitable in any society—it can also teach society how best, and how most rapidly, to move towards the *correction* of error.

8. *Economics and The Well-Being of Nations - II*

We have seen that the key to the discovery and the correction of error lies in the scope which a society permits its entrepreneurs. Whenever errors have been made, this manifests itself in the circumstances that pure entrepreneurial profit is available for the taking. It is the availability of pure profit opportunities which, in ways we admittedly do not fully understand, attract entrepreneurial attention. Where a method exists whereby low-cost resource services can be deployed to produce high-value consumer goods, this is evidence of earlier error. Owners of these low-value resources must have been unaware of the high-valued productive capabilities of their resources (or else they would never have permitted their resources to be available at low cost). This unawareness constitutes error—but an error that has prevented society at large from enjoying the additional value that might have been extracted from these low-value resources. These resources have, in truth, been wasted. This error and societal waste are, however, one side of a coin, the other side of which constitutes the opportunity for pure entrepreneurial profit which switches on the entrepreneurial antennae, leading them to discover (and thus also to tend to correct) where earlier errors have been made.

The winning of pure entrepreneurial profit has often been seen as a disreputable feature of the free market system. First of all, winning such pure profit seems to be taking advantage of other people's ignorance. Second, pure profit seems in no way related to effort or sweat expended, or to ownership of productive assets. Many moralists have no problem with a high wage being paid to a worker who has worked exceptionally hard; or with the fruit which spontaneously grows on a legitimately owned-fruit tree, belonging to that owner. But the entrepreneur who has bought all the needed resource services at a low cost, and subsequently sells consumer goods at a much higher total value, appears, to many *not* to be entitled to the gain represented by this pure profit.

This paper is not the place to address these moral concerns; I have, as it happens, written a book showing, I believe, that these moral concerns are based on an inadequate understanding of the pure economic theory of pure entrepreneurial profit (Kirzner 1989). This paper cannot address these concerns; its purpose is to point out how a more profound and subtler economic theory can explain how freedom for entrepreneurial discovery can indeed promote the well-being of nations.

The point is a simple one, but one very often overlooked. Errors deprive society of available additional goods and services. Errors are responsible for useful resources being allocated "wastefully" to uses that provide society with less than their full potential. A free market is a market into which anyone who believes he can see a better way of using resources (than is presently the case)—is free to attempt to profit by his insight. Only in such a market is there the yeast which inspires discovery. Any impediments to pursuing pure profit opportunities, not only block attempts that might have been socially useful—much more seriously, they switch off the current of entrepreneurial excitement and alertness which are the only source for the discovery of error. The point is that pure error may continue indefinitely. What people have not known today—in the sense that they have not known that they lack any knowledge—they may never know. It is only entrepreneurial, profit-inspired alertness to what is around the corner, as it were, that tends actively to erode error.

9. Greed, Purpose, Profit, and The Well-Being of Nations

We have reached the end of our brief journey. We have seen the fallacies—yes, the errors!—in the hoary complaints that free market systems prosper purely

because of human greed. What drives free markets is not necessarily greed at all, it is the purposefulness of potential entrepreneurs whose purposes, in the disposition of their pure profits, may be altruistic, selfish, or whatever. We have seen that economic science, at least in its Misesian incarnation, does not depend on the model of a materialistic, greedy *homo oeconomicus*—it depends merely on the insight that human beings do not simply choose from given menus, they act, with the entrepreneurial element in action identifying what the relevant menu should be.

And, most important of all, we have seen that all this is vitally important. Economic Science matters. A wider understanding of the fundamental, essentially simple truths of economics can help us appreciate the crucial significance for societal well-being, of the free market economy.

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The Genius of Mises and the Brilliance of Kirzner

Peter Boettke and Frederic Sautet*

What Mises taught us in his writings, in his lectures, in his seminars, and in perhaps everything he said, was that economics is crucially important. Economics is not an intellectual game. Economics is deadly serious. The very future of mankind—of civilization—depends, in Mises' view, upon widespread understanding of, and respect for, the principles of economics.

—Israel Kirzner (2006)

1. Introduction

The neoclassical model of the pure market economy is a frictionless world where the decentralized decisions of agents are coordinated seamlessly through the price mechanism. The neoclassical model of market failure and thus government interventionism, on the other hand, deals with the complications of the real world (i.e. the frictions in the world), and demonstrates how the price system cannot perfectly operate. In this view, government can improve upon the failures of the market.

By contrast, the works of economists such as Armen Alchian, James Buchanan, Ronald Coase, Douglass North, Vernon Smith and Elinor Ostrom fully embrace the frictions that exist in the real world, and attempt to show how market forces work to adjust behavior and change practices in order to ameliorate the imperfections in the world and promote the coordination of plans. The price system

* Peter Boettke is University Professor of Economics at George Mason University. Frederic Sautet is a senior research fellow at the Mercatus Center, George Mason University.

is important precisely because we are imperfect actors in an imperfect world of frictions, uncertainty, and human ignorance. Ludwig von Mises and Israel Kirzner are two of the most prominent scholars who have attempted to gain a richer understanding of how the invisible hand operates in coordinating the vast array of economic exchanges that occur on a daily basis in the actual imperfect world. The “invisible hand” works precisely because of the imperfections in this vision of market theory, and does not require any of the assumptions associated with the formal theory of general competitive equilibrium—neither large numbers, price taking, homogenous goods, nor perfect knowledge. As Ludwig von Mises (1978: 36) wrote, “[w]hat distinguishes the Austrian School and will lend it immortal fame is precisely the fact that it created a theory of economic action and not of economic equilibrium or non-action.” Austrian economists, most notably Mises, Hayek and Kirzner, have sought to demonstrate how human behavior guided by prices, as well as monetary profits and losses, and under a system of private property, would adjust and cope with the world’s imperfections. This methodology focuses on the institutional structure that creates a unique incentive-based framework that in turn influences the behavior of actors. This behavior includes the dissemination of information which then directly influences the decisions and actions of agents in coordinating their activities and hence in improving the overall efficiency of the economic system. It took some great minds to develop this analysis, and amongst them stand Mises, Hayek and Kirzner. For purposes of this occasion we focus our attention on the unique contributions of Mises and Kirzner.

2. Mises and the Market

Israel Kirzner often comments on the reaction he had upon hearing Mises explaining that the market is a process during his course of graduate studies at New York University. Kirzner describes the experience as intellectually jarring. Indeed, he understood what it meant to say “the market was a place,” but what could it possibly mean to say, “the market is a process”? Mises meant that the market is not only a space where people may haggle over prices; it is also a process, by which knowledge is generated, information comes to be known, and prices are determined throughout society. The Misesian emphasis over the notion of market as a process is what separates traditional market theory from the Austrian view. The market is central in the Austrian approach because it is a process.

Indeed, in the letters between Menger and Walras one can already trace the differences between an approach to the theory of price that focuses on price determination in a system of simultaneous equations on the one hand, and price formation through a process of ongoing bargaining and exchange, on the other. But the leading representatives of the respective schools thought this was merely a difference in emphasis rather than a difference in substance. Hans Mayer (1932) identified in more depth the significant differences between what he called a “functionalist theory” and a “causal-genetic theory” of price. The conscious application of the notion of market process analysis was juxtaposed with general equilibrium theory. While the other leading representatives of the Austrian school in Vienna at the time such as Machlup, Mayer, and Morgenstern clearly understood the importance of market process in economic analysis, it was Mises, Hayek, and later Kirzner who put forth a mature rendering of the Austrian market process analysis.

To understand the origin of market process analysis, one must go back to Mises’s *The Theory of Money and Credit* (1912) in which he employed “period analysis” or the “step-by-step” methodology and sought, way ahead of his time, to integrate micro and macroeconomic theory in developing an analysis of money and the widespread consequences of monetary mismanagement by political authorities. Mises’s theory of the business cycle was intimately linked to the way he came to understand the market process. Mises, along with Hayek, worked on questions of business forecasting and what came to be known as the “Austrian theory of the trade cycle.” Critical aspects of that theory were: (1) a picture of the capital structure in an economy as consisting of heterogeneous capital good combinations that had to be maintained or reshuffled in more productive and advantageous combinations; (2) a vision of the production process as taking place over time, thus generating a need for a mechanism for the intertemporal coordination of production plans to meet consumer demands; and (3) the notion that increases in the money supply work through the economy not in an instantaneous adjustment of prices, but through relative price adjustments. Mises’s work both defended the quantity theory of money against monetary cranks that sought to eliminate poverty by printing more money, and criticized the quantity theory as interpreted in mechanical interpretations which postulated instantaneous adjustments of the price system to changes in the quantity of money and therefore underestimated the negative consequences of the manipulation of money and credit by political authorities in an economy.

The link to the market process, while not explicit, was always present in this analysis. Entrepreneurs rely on price signals to guide them in their production projects so that they are allocating scarce capital resources in the most valuable direction and employing the least costly technologies. The capital structure does not automatically replenish itself, but instead requires the careful calculations of economic actors to determine which production plans are the most profitable ones to pursue. If price signals are confusing, then decisions concerning the maintenance and allocation of capital will be mistaken from the point of view of economic value maximization. The monetary theory of the trade cycle developed by Mises and Hayek in the 1920s contrasted a vision of the entrepreneur-based economy with the more mechanistic understanding of a monetary economy associated with economists in the US and the UK, and the chaotic vision of economic life associated with the critics of capitalism.

Contemporaneously with the work on monetary theory and the trade cycle, Mises was embroiled in a debate over the economic feasibility of socialism. Mises' analysis of socialism is, like his monetary theory, based on the subjective theory of value as applied in the context of a capital-using economy. In fact, Mises went as far as to claim: "To understand the problem of economic calculation it was necessary to recognize the true nature of the exchange relations expressed in the prices of the market. The existence of this important problem could be revealed only by the methods of the modern subjective theory of value" ([1922] 1951: 186). At the core of Mises's comprehensive critique of socialism lies his understanding of the market process. What makes socialism impossible is not only the perverse incentives of collective ownership and the cumbersomeness of bureaucracy; it is more importantly the inability to simulate entrepreneurial innovation outside the context of a market economy and the lure of profit and the penalties of loss.

Indeed, the critical point Mises raised against the most coherent form of socialism was that collective ownership in the means of production would render rational economic calculation impossible. Without private property in the means of production, there would be no market for the means of production. Without a market for the means of production, there would be no market prices for the means of production. In the absence of market prices (reflecting the relative scarcities of capital goods), economic planners would not be able rationally to calculate the most economically efficient investment path. Without the ability to engage in rational economic calculation, production could not be rationally organized. No individual or group of individuals could discriminate between the

numerous possibilities of methods of production to determine which ones are the most cost effective without recourse to calculations based on monetary prices. Monetary prices and profit and loss accounting are indispensable guides in the business of economic administration. In their absence, the human mind would be at a loss to decide between different processes of production. Socialism in its attempt to overcome the anarchy of production substitutes instead planned chaos. As Mises puts it:

To suppose that a socialist community could substitute calculations in kind for calculations in terms of money is an illusion. In a community that does not practice exchange, calculation in kind can never cover more than consumption goods. They break down completely where goods of higher order are concerned. Once society abandons free pricing of production goods rational production becomes impossible. Every step that leads away from private ownership of the means of production and the use of money is a step away from rational economic activity ([1922] 1951: 102).

Mises' critique of socialism was greeted with resistance by such figures as Karl Polanyi, Fred Taylor, Oskar Lange, and Abba Lerner. The theoretical discussion among professional economists took place within the historical context of the 1920s and especially 1930s, when western capitalist economies were embroiled in the Great Depression while the socialist Soviet system of centralized economic planning was understood to have transformed a peasant country into an industrial economy in one generation. Supposedly capitalism was proved by the events of the 1930s to be not only unjust, but also unstable and inefficient. Socialist central planning, on the other hand, provided the Soviet Union with the material base to fight the fascist threat that arose in Germany in the 1930s and 1940s.

All through the debate on the feasibility of socialism, Mises slowly developed a more mature understanding of the entrepreneurial market process. In *Socialism* (1922), he argued that the price system as a whole serves a three-fold function, which by definition socialism would have to do without. In a market economy, the current array of prices signals to decision makers the relative scarcities of the goods and services in question. If the price is relatively high, it can be inferred that the commodity in question is relatively scarce and thus must be economized in its use, whereas if the price is relatively low, it can be inferred that the commodity in question is relatively abundant and thus can be utilized more. The current array

of prices aid decision makers in making decisions by providing ex ante knowledge of the situation. However, the price system also provides ex post knowledge to economic actors in the form of the constellation of prices that emerge in the next period and the profit and loss statements of businesses. If an actor can buy low and sell high, the market communicates that the previous decision was in the right direction, whereas if it is revealed that, based on that earlier knowledge, you bought high and now must sell low, an error in judgment is revealed that needs to be addressed. The very discrepancy between the ex ante expectations set by the array of prices at the moment of decision, and the ex post realizations of profit and loss sets in motion the discovery of better ways to arrange economic activities. These discoveries are made either by the original parties to the transactions or by new parties who enter the fray and bid resources away from the earlier actors. It is through the price system and the constant adjustments of relative prices that economic coordination and continual learning occurs. The strong claims about the market system's ability to self-correct are predicated on the veracity of the price system to achieve coordination and learning.

With the rise of socialist planning in the world and the support it received from Western intellectuals, Mises decided to continue the fight against what he considered unorthodox and "bad" economics and started writing what would become his magnum opus, first published in 1940 in German and later published in English translation with significant modifications in 1949. In *Human Action: A Treatise on Economics* (1949 [1966]) Mises skillfully applied and developed the step-by-step methodology to the economics of time, uncertainty, economic calculations, the market economy, the process of price formation, interest, credit expansion, the trade cycle as well as many other topics. In this way, Mises expanded on the work of his Viennese teachers and colleagues in incorporating the dynamic element of the economic process into the analytical framework of modern economics. In *Human Action*, Mises develops further the idea of the market as a process and shows how market prices are generally "false," or non-equilibrium prices, yet are informationally and motivationally useful in guiding and coordinating economic activity through time. In this context, Mises (1966: 337–8) stated that, "the essential fact is that it is the competition of profit-seeking entrepreneurs that does not tolerate the preservation of false prices of the factors of production. The activities of the entrepreneurs are the element that would bring about the unrealizable state of the evenly rotating economy if no further changes were to occur."

Unlike what Walras had assumed, prices do not reflect all the knowledge available. Because prices don't reflect all available knowledge, discrepancies exist which create pockets of profit that entrepreneurs may discover. In other words, the communication system is not perfect; prices do not convey all the knowledge that Walras would like them to convey. However, it is precisely in this "imperfection" that lays the engine of the economic system. The imperfection of prices is what creates the ability of the system to communicate information concerning its own faulty communication properties.

Ultimately, the notion of market as a process in Mises's work rests on the idea of interconnectedness among human activities (i.e., "connexity" as Mises puts it). The connexity of the market can only be explained if one views the market as a process. The mechanism that creates the connexity of human activities is entrepreneurial monetary calculations. Its consequence is social cooperation under the division of labor upon which economic growth and development depends. This mechanism rests on the existence of private property, freedom of contract, and a medium of exchange. As money is present in all exchanges and thus links together the decisions of everyone by virtue of being a medium of exchange, entrepreneurs are able to discover opportunities that may require, for their exploitation, a large division of labor and knowledge. The simultaneous exploitation of numerous entrepreneurial discoveries creates a concatenation of affairs among the various economic actors because entrepreneurs bid resources away from their alternative uses. This bidding process (based on entrepreneurial monetary calculation) creates interconnectedness among human activities. Prices are not isolated elements in the marketplace; they result from the complex relationships that prevail at any moment in society, and upon which the material, scientific and technological advances of western civilization rests.

3. Kirzner and Entrepreneurial Discovery

Israel Kirzner has described his graduate education in economics at New York University as one of profound confusion and intellectual enlightenment. One night a week he learned standard price theory through close study of George Stigler's *Theory of Price* (1946) and on another night of the week he learned about the market process from Ludwig von Mises and his *Human Action* (1949). Both approaches were diametrically opposed to the macroeconomics of Keynesianism that was also taught at the time, but they also seem to oppose each other in a

fundamental sense. It is against this background that Israel Kirzner developed his market process theory. In a series of books starting in 1960 and spanning more than three decades, Kirzner rigorously developed the modern Austrian theory of market process, specifically in the context of the role of the entrepreneur.

The brilliance of Kirzner rests in the way he opened the closed framework of traditional microeconomics by introducing the entrepreneurial element. In Walras's view, prices are parameters in the system that no agent can influence. Everyone is a price taker and prices convey sufficient information for every individual to make choices. Walras labored to solve the following problem. While prices are best seen as parametric from the perspective of each agent, they are seen as variables from the point of view of the system as a whole. In general equilibrium theory, prices are not under the influence of anyone in particular but are determined at the systemic level to clear markets. Prices are seen as conveying sufficient knowledge for agents to allocate resources to their most valued use, are incentives for action, and as such, they convey the necessary information for resources to be allocated efficiently.

This approach raises an immediate issue. If one adopts a parametric view of prices, it falls short of explaining how prices are determined at the system-wide level. The Walrasian dichotomy between prices as parameters for individuals and prices as variables at the system-wide level has propelled market theory into a corner. "How are market prices arrived at?" is the question that the Walrasian system of perfect competition cannot answer—except by stipulating the existence of a fictitious agent, the auctioneer. As Frank Hahn (1973) argued, this view has robbed economics of the ability to explain price changes and actual adjustments. As Arrow (1994: 4) put it:

Even if we accept this entire story [that of general competitive equilibrium], there is still one element not individual [i.e. not chosen by individuals]: namely, the prices faced by firms and individuals. What individual has chosen prices? In the formal theory at least, no-one. They are determined on (not by) social institutions known as markets, which equate supply and demand. ... The failure to give an individualistic explanation of price formation has proved to be surprisingly hard to cure."

In this view of market theory, agents are passive in the sense that they do not originate change, they just respond like robots to the situation of the market and the incentives offered by parametric prices.

Ultimately, the parametric/incentive view of prices rests on a specific view of the economic problem and of knowledge. The Walrasian approach treated resources in the economy as fully known and given. Hayek in 1937 criticized this view by explaining that unless one provides a theory of the acquisition of knowledge; one cannot explain the allocation of resources and the true role of prices. With Hayek, the economic problem becomes not only one of allocation of resources but one of acquisition and communication of knowledge, which is necessary for individuals to make the best allocative choices possible. Only by providing a solution to that problem, can one offer a solution to the determination of prices. Establishing the right economic problem led Hayek to focus on the nature of knowledge. The Walrasian approach treats knowledge as given, while the Hayekian view sees knowledge as dispersed and not available to all. If knowledge is idiosyncratic and tacit, then prices cannot be treated as parameters that convey all the existing information. Instead they are communicators of knowledge that individuals both determine and use as determinants in their choices.

Again, this is where Kirzner's brilliance lies: in providing a solution to the conundrum of price theory, i.e. the determination of prices. As Kirzner saw it, the problem of entrepreneurship as an analytical category stems from the insight that we cannot explain the existence of sheer novelty (and pure profit) referring to productive factors already in use. Kirzner presented the profession the most daring solution, confronting head-on the problem of change and novelty by devising a theory that could account for the presence of pure profit in the market by focusing on the pure entrepreneurial element in human action. To that end, he distinguished optimizing behavior from entrepreneurial alertness. Isolating the two functions led him to posit the distinction between entrepreneurship and asset ownership. Kirzner also used the equilibrium construct as a foil against which he could study the role of the entrepreneurial function. For it is only against a background of optimizing agents (i.e. Robbinsian maximizers to use Kirzner's terminology) that one can illumine the role of the entrepreneur.

The essence of entrepreneurship in Kirzner's work also revolves around the fundamental idea that the discovery and exploitation of gains from trade does not take place automatically, but rather stems from purposeful human action. This departs from traditional microeconomics in which existing gains from trade are

always known. Instead, Kirzner emphasizes that in order for these gains to be exploited, they first have to be noticed. The essence of the entrepreneurial function rests on this fundamental insight. In contrast with traditional microeconomics, Kirzner's view of the entrepreneurial function in the market process consists primarily in liberating human choice from its deterministic structure by introducing alertness. Alertness to unexploited gains from trade sets the market process in motion. Thus, it is also because of its relationship to market process that the notion of alertness is crucial.

A key foundation of Kirzner's market process theory is that the underlying variables, including tastes, technology, resource endowment, and the induced variables of profit and loss accounting are in a lagged but determinant relationship. That is, given the dynamics of the economy, the underlying variables, at any one point in time, are not perfectly aligned. The market discovery process provides the mechanism, through which the induced variables move in the same direction as the underlying variables. Overall, Kirzner's contribution to market process theory provides the missing link to the neoclassical theory. Given an institutional framework of private property, low barriers to entry, and frozen underlying variables, the process of entrepreneurship will lead to a pattern of production and exchange, which would guide the economy toward a state of equilibrium. The missing link in traditional price theory that Kirzner provided was an understanding of the disequilibrium foundations of the economy as well as the path from disequilibrium to a state of equilibrium (if and only if underlying variables are frozen).

When individuals determine prices, they act as entrepreneurs. This means that the marginal condition price theory has established (price equals marginal cost) is not an assumption going into the theory. Rather it is a tendency of a competitive market process that results from individuals acting upon the discrepancies that may exist between their own knowledge and the knowledge available in the marketplace. The foresight of the entrepreneur is to discover the value of some knowledge that he possesses but which is not yet reflected in market prices.

What distinguishes Austrian economists is the elaborate understanding of the role of the entrepreneurial function and how it gives rise to the market process. The traditional understanding of the market is limited because it rests on a "closed" framework, which cannot account for novelty. Kirzner has drawn attention to the open-ended environment in which "relevant opportunities may exist without their having, at the outset of the analysis, already been recognized." As Kirzner explains, in an open-ended framework "there are no known limits to the

possible. An economics which seeks to grapple with the real-world circumstance of open-endedness must transcend an analytical framework which cannot accommodate genuine surprise. Austrian economics has sought to accomplish this goal by focusing attention on the nature and function of pure entrepreneurial discovery” (Kirzner 2000).

4. The Refinement of the Market Process

The entrepreneurial role is one of a discoverer of information that was hitherto unknown. This discovery process rests on the capacity of entrepreneurs to notice information that is not presently conveyed by prices and to act upon it. Entrepreneurs act upon the knowledge they possess of the circumstances around which trades could take place. When an entrepreneur proposes a new good at a new price because she believes that enough people will be interested in her new product to make it worthwhile to produce it, she introduces new knowledge in the system, thereby reducing ignorance. The price system, in its inability to convey all information, creates the incentives to discover what is missing. The entrepreneurial role ultimately is one of discovering knowledge and thereby reducing ignorance.

Ignorance is always present. It is not, however, of the same nature in the open-system as it is in the closed competitive equilibrium. In the former, ignorance is radical because it pertains to ignorance itself: individuals do not know what they do not know. This implies a world where “true uncertainty” exists, that is, where future events are truly unpredictable. It is because of this context of radical ignorance and true uncertainty that the Hayekian economic problem is real. Assuming the problem away, as competitive equilibrium does, reduces the economic problem to a mechanistic issue (i.e., which prices clear markets?), as opposed to an epistemic one (i.e., how can the system self-correct?).

In this context, the entrepreneurial function, this unique human characteristic, offers a response to the challenge of radical ignorance. The veil of ignorance is continually under attack because human imagination is always at work. It is important to emphasize that human imagination, the possibility of sheer creation of information, is the principal characteristic of the entrepreneurial function. However, in the social context, creativity is necessary but often not sufficient. What is also needed is a compass to determine, as Joseph Schumpeter emphasized, that invention (i.e., creativity) is also innovation (i.e., socially useful creativity). This

compass is the profit and loss mechanism, which helps determine whether invention is socially useful and thus becomes innovation and is adopted by others. The two sides of the entrepreneurial coin are sheer creativity (of information) and discovery (of a knowledge gap in the social fabric through the price mechanism). These two aspects of entrepreneurship are the make up of the market process (i.e., the constant discovery of socially relevant inventions). In this sense, the market process is a self-correcting system based on the discovery of hitherto ignored possibilities for trade. These possibilities for trade reflect at once the discovery of a social need that was not already expressed in the market (and thus was not transmitted by the price system) and the expression of human creativity.

5. Conclusion

The intellectual landscape of modern political economy has shifted considerably since the Classical period of the 19th century. In the 20th century, economists sought to refine the universal principles of their discipline by expressing them in a more formal language with all the restrictive assumptions that needed to be employed to assure mathematical tractability. The entrepreneurial element of human action was a casualty of this mathematical revolution because it defies tractability. Both Mises and Kirzner at respective moments in the development of the discipline sought to reemphasize that the market is a process operating in an open-ended universe. One cannot explain the operation of the market and the adjustments of the price system without recourse to the entrepreneur.

For almost three quarters of a century, economic discourse has embarked on a detour in which the role of the entrepreneur within the market economy is systemically ignored. Against this tide, Ludwig von Mises's genius provided an inspiring vision upon which Kirzner developed his theory of market process during the second half of the century. Kirzner understood well the implications of the idea that optimizing behavior cannot explain the market as a process. Without the introduction of ad-hoc exogenous elements, economics is limited in its capacity to explain social change and novelty. This is not to say that the equilibrium construct is to be jettisoned; it occupies an important place in the toolbox of the economist, as it is only against equilibrium, seen as a foil, that one can understand change. Economics, however, focused so much on the absence of change that it became detrimental to what economists were trying to explain. In this sense, Kirzner's brilliant research is fundamental, as it puts the notion of change—and

entrepreneurial action in the face of the changing conditions—back at the center of economic theory and in particular our understanding of the market economy and the price system.

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A Kirznerian Economic History of the Modern World

Deirdre Nansen McCloskey*

I think the history of How I Discovered Israel illuminates the trouble that Austrian economics has had against Samuelsonian economics (which we commonly but self-defeatingly call the “mainstream”). And it shows how in the end the Austrians can save economics from itself.

In college during the early 1960s I had been taught to respect at least Schumpeter, which was reinforced as a graduate student when I specialized in economic history. In college I had a roommate, a brilliant electrical engineer, who would break from solving second-order differential equations by reading Ludwig von Mises’ Austrian classic *Human Action*. But I was the *official* economics major, so I supposed that what my teachers were telling me in classes about Keynesian economics and social engineering was the Real Thing. My roommate’s Misesian hobby was obviously “conservative” nonsense.

Oy veh iz mir. How I wish I had earlier read Mises—the senior colleague of Friedrich Hayek and the teacher of Kirzner! It would have sped up my intellectual development by two or three decades, and given me more respect for the entrepreneur-centered thinking of my friendly opponent early in my career as an economic historian, the historian David Landes. It might have allowed me as early as the 1970s to use the Kirznerian entrepreneur to make progress on the puzzle of economic growth—instead of having to wait until the 2000s, painfully extracting myself over the decades from a Samuelsonian-Friedmanite devotion to equilibrium and routine.

* Deirdre McCloskey is the Distinguished Professor of Economics, History, English, and Communication at the University of Illinois at Chicago.

In my first year of grad school in 1964 I was assigned to read some of Böhm-Bawerk's theory of capital, though without getting much out of it. Otherwise my first training was purely Samuelsonian and Keynesian and Chamberlainian—though when writing my dissertation on economic history I started to see that competitive supply-and-demand economics was more useful, and tilted that way. The progression was Prince-Kropotkin left anarchism (discovered at the local Carnegie library in 1956 at age 14), Joan-Baez socialism (age 16), Keynesian economics (age 19), engineering economics (age 21), supply-and-demand economics (age 25), fully Chicago-School economics down to $MV = PT$ (age 30), Austrian economics (age 48), and finally, age 68, humanomics, an economics for complete humans. Notice the slowing down.

The first time I heard of Kirzner's work was in the 1970s when I was teaching at the University of Chicago. Its Press had published one of his books (Kirzner 1973; and later Kirzner 1979). But in Hyde Park in the 1970s even the Chicago School—which in those days was itself outside the Samuelsonian mainstream—was contemptuous of Austrian economics, to the small extent that it paid attention to it. The high theorists at Yale and Princeton and Berkeley sneered at our lack of mathematics. But we Chicago-School economists sneered in turn at the Austrians' lack of math, and their Misesian disdain in those days for empirical work. The Austrian economist Mario Rizzo was a student at Chicago, and later I came to admire his breadth as a scholar. But as I paged through Israel's books during the 1970s—I wouldn't claim to have actually *read* them—I didn't get the point.

Israel's point about entrepreneurship, which much later was the main influence on me of his ideas, was of course not all that difficult to understand: an old-fashioned way to put it is that the unhirable factor of production has to be something like Israel's notion of "alertness." Entrepreneurship can't be something that can be provided routinely, such as the services of banking or management. It *must* be creative. I vaguely understood the point, because after all Schumpeter and Frank Knight, whom I did read, had stressed that the entrepreneur is the residual claimant. But as a Harvard-trained economist in 1968 with a Chicago-School job I was not much interested in Austrian ideas. My failure to appreciate the importance of the insight shows the blinding force of ideology in economic thinking. Indeed, my early work as an economic historian, from about 1964 to 1975, was a sustained attack on the idea that entrepreneurship was important to economic growth.

I did not feel the need to educate myself seriously about Austrian economics until in the 1980s I met the blessed Don Lavoie, a student of Israel's, in a context in which another Austrian, Karen Vaughn as chair at George Mason, was trying to hire me. I had by then turned to rhetoric, the study of the available means of unforced persuasion. Yet I was still a materialist so far as entrepreneurship was concerned, and confined my study of speech ways to those in academic economics itself. Science, I understood, was about rhetoric. But the economy was Real.

Lavoie persuaded me at least that hermeneutics was the listening side of the speech that a rhetor gives. Don and I were postmodernists together, and chatted amiably with pomo Marxist economists such as Jack Amariglio and Stephen Cullenburg about our belief held in common that facts in science do not speak for themselves (Amariglio and McCloskey 2008; Lavoie 1991). All of the rhetorical/hermeneutic economists, left and right, including my old ally in rhetorical studies of economic science, Arjo Klamer, kept saying to me: "You know, McCloskey, rhetoric has to do with the *economy*, too." I couldn't see it.

Anyway I learned from Don and Karen Vaughn and Jack High as exemplars that Austrian economics was not merely a pointlessly vicious doctrinal war against ones natural allies carried out on the field of German texts, as some Austrians still appear to believe. I learned that Austrian economics could be brought to the study of our actual world, which was Don's project until his too-early death. In the 1990s at last I reread some of Kirzner. I started to get it. I was drifting towards accepting the force of words *in the economy*. My main thought was to add a persuasive, rhetorical stage to Israel's account of entrepreneurship. With Klamer I wrote a paper in 1995 claiming that "sweet talk," persuasion, rhetoric accounted for a quarter of annual earnings (Klamer and McCloskey 1995). Yet Israel's way of thinking was still not central to my own.

I wrote in 2006 *Bourgeois Virtues: Ethics for an Age of Commerce*, which continued my agonizingly slow march since 1980 away from a wholly materialist and mechanical view of the economy. But it was not until I returned as it were to economic history fulltime, in the late 2000s, in order to write *Bourgeois Dignity: Why Economics Can't Explain the Modern World*, that I truly Got It. Or so I now imagine.

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What I got with a jolt around age 65 was that economic growth since 1800, the Great Fact of an increase of real income per head by a factor of anything from a factor of 16 (using the most conventional statistics in the countries that were

richest at the outset) all the way to (if you properly account for improved quality) a factor of 100, had very little to do with routine, Samuelsonian/ Friedmanite/ Douglass-Northian adjustment of marginal cost to marginal benefit. That is, mere supply-and-demand efficiency does not explain the modern world. On the contrary, it was explained by creativity (the non-economist's word) or with innovation (the Samuelsonian word) or with discovery (the Austrian word). Of course, since using Robert Solow's Residual heavily in my anti-entrepreneurial work around 1970, I had realized that most of growth is about innovation, not investment. But like other Samuelsonians since Solow I kept trying and trying to find some routine attainment of equilibrium with which to explain innovation, investment in another guise. (Unified growth theory has since the 1990s taken up the task of explaining the Great Fact with routine investment [Galor 2011].)

For example in the early 1970s, inspired by Steven N. S. Cheung (my office mate at the University of Chicago), and by Ronald Coase across the way at the Law School, I studied the legal history of England during the eighteenth century with the Samuelsonian prejudice about economic "incentives" and "efficiency." I wanted the story to be one of moving from bad allocation to good, from a point away from the intersection of supply-and-demand curves to the blessed, efficient intersection. The changing institutions, I reckoned, simply let the intersection occur. The idea was delightfully mechanical—and it was exactly what my Samuelsonian training and my Friedmanite employment told me. It became in the 1990s the dogma in the parts of economic history and economics inspired by Douglass North's ruminations about "institutions"—which one can find in the first volume of our Annual Proceedings here (North 2009, 1990, 1991). I find it still in the otherwise dazzlingly good and true work of Hernando de Soto, reported on in the second volume (de Soto 2011).

I started to realize during the 1970s in my studies of legal change—which came to focus on the enclosure of open field agriculture (McCloskey 1972 for example)—that the timing of institutional change in England fits poorly with its economic change. But it took decades for me to make the Austrian leap. The marginal product curves in the economy as a whole moved out violently (and hardly at all, for example, in newly privatized open fields in the eighteenth century), by a factor of one hundred, far, far too much to be explained by routine changes in institutions, even educational institutions, even property institutions—which after all had come and gone many times before in human history. North and de Soto do not recognize that China, for example, had secure property for millen-

nia before failing to have an industrial revolution, and that ancient Rome had laws of contract and property, and ancient Greece had banks and wide trade, and Mesopotamia had detailed records of ownership without the slightest signs in the ancient world of a Great Fact.

Holland and England 1600-1800, by contrast, I realized at last around 2007, witnessed an obvious and historically unique improvement in the dignity and liberty of the bourgeoisie, apparent for example in the invention of the science of political economy itself. The surrounding *institutions* of the economy were centuries old in northwestern Europe, and had full parallels all over the world. North and de Soto are transfixed by the example of the U.S.A. Unhappily, they do not have a wide historical view, and so they (and especially North, the economic historian of the pair) do not test their ideas against historical counterexamples. Startlingly the recent book by North, Weingast, and Wallis (2009, which Doug was summarizing in Volume I here), though modestly subtitled “A Conceptual Framework for Interpreting Human History” does not have in its index a single entry for “China,” “Ottoman Empire,” “Japan”; hardly anything on Holland; or much of anything but England, France, and the U.S.A.

Routine reshufflings of the sort that North and de Soto favor could not explain the most surprising event in human secular history. (We Christians, incidentally, think that the most surprising *spiritual* event in human history has already happened; Rabbi Kirzner, the leading disciple of Rabbi Isaac Hutner, has another opinion). I had faced repeatedly 1964 to 2010 the failure of oomph in the routine, Samuelsonian arguments, such as accumulation inspired by the Protestant ethic, or trade as an engine of growth, or Marxian exploitation, or imperialism as the last stage of capitalism, or factor-biased induced technical change, or Unified Growth Theory. My colleagues at the University of Chicago in the 1970s, Al Harberger and Bob Fogel, pioneered the point that Harberger Triangles of efficiency gain are small (Harberger 1964; Fogel 1965). None of the allocative, capital-accumulation explanations of economic growth since Adam Smith have worked scientifically, which I show in depressing detail in *Bourgeois Dignity*. None of them have the quantitative force and the distinctiveness to the modern world and the West to explain the Great Fact. No oomph.

What works? Creativity. Innovation. Discovery. The Austrian core. And where did discovery come from? It came from the releasing of the West from ancient constraints on the dignity and liberty of the bourgeoisie, producing an intellectual and engineering explosion of ideas. As the banker and science writer

Matt Ridley has recently described it (2010; compare Storr 2008), ideas started breeding, and having baby ideas, who bred further. The liberation of the Jews in the West is a good emblem for the wider story. A people of the book began to be allowed into commercial centers in Holland and then England, and allowed outside the shtetl and the ghetto, and into the universities of Berlin and Manchester. They commenced innovating on a massive, breeder-reactor scale, in good ways (Rothschild, Einstein) and in bad (Marx, Freud).

Ridley explains how the evolutionary biologist Leigh Van Valen proposed in 1973 a Red Queen Hypothesis that would explain why commercial and mechanical ideas, when first allowed to evolve, had to run faster and faster to stay in the same place. Economists would call it the dissipation of initial rents, in the second and third acts of the economic drama. Once breeding ideas were set free in the seventeenth century they created more and more opportunities for Kirznerian alertness. The opportunities were alertly taken up, and persuasively argued for, and at length routinized. The idea of the steam engine had babies with the idea of rails and the idea of wrought iron, and the result was the railroads. The new generation of ideas—in view of the continuing breeding of ideas going on in the background—created by their very routinization still more Kirznerian opportunities. Railroads once they were routine led to Sears, Roebuck and Montgomery Ward. And the routine then created prosperous people, such as my grandfather the freight conductor on the Milwaukee Road or my great-grandfather the postal clerk on the Chicago & Western Indiana or my other great-grandfather who invented the ring on telephones (which extended the telegraph, which itself had made tight scheduling of trains possible). Some became prosperous enough to take up the new ideas, and all became prosperous enough under the Great Fact to buy them. If there was no dissipation of the rents to alertness, and no ultimate gain of income to *hoi polloi*, no third act, no Red Queen effect, then innovation would not have a justification on egalitarian grounds—as in the historical event it surely did have. The Bosses would engorge all the income, as Ricardo in the early days of the Great Fact had feared. But in the event the discovery of which Kirzner and the Austrian tradition speaks enriched in the third act mainly the poor—your ancestors, and Israel's, and mine.

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Discovery depends on alertness (Kirzner 1976: 83). A big or small entrepreneur, encouraged by dignity and enabled by liberty, alertly notices an opportunity, and takes it. To have good effects in social terms, of course, the alertness cannot be

of the monopolizing sort that people have so persistently sought, or of which the Tammany Hall politician George Washington Plunkitt spoke in 1905: “There’s an honest graft, and I’m an example of how it works. I might sum up the whole thing by sayin’: ‘I seen my opportunities and I took ‘em’” (Riordan 1905). Such “opportunities” to extract bribes out of a government-enforced monopoly will at best shuffle the community’s income from the taxpayer to Plunkitt. More likely the shuffling will reduce the size of the pie. Kirzner has always observed that criminals and corrupt politicians, too, exhibit entrepreneurship. But factually speaking the new dignity and liberty for the bourgeoisie that gave us our new gadgets and new institutions have not been matters of power and theft.

Such an optimistic claim runs counter to a good deal of thinking on the left and on the right. The French historian Fernand Braudel, for example, had a vision in 1979 of a routine world of normal profits for little people. Economists call it the “stationary state.” It is not just normal and steady. It is stagnant. By contrast, real innovation—the modern innovation that has made the average poor person rich by historical standards—depended, Braudel claimed, on bribery, force, and fraud. Yet the history suggests not. Most innovation depended on Kirzner’s alertness in *good* deals, good in every way. That is, it depended on noticing opportunities for supernormal profit that in the context of a new liberalism of dignity and liberty proved to be good for most of us.

Innovations can be bad: mustard gas and asbestos insulation were. It is easiest to see that innovation can be bad by thinking of artistic or scientific examples, to which Israel’s theory of alertness also applies. For example the scientific innovation of eugenics, reaching its dismal height in 1945 but now revived by writers such as Stephen Pinker, was indeed an innovation, and scientific. It was not “pseudo” or “junk” science (which are qualifiers used by uncritical admirers of science to protect it from democratic scrutiny). In 1910 almost all the *best* scientists believed in sterilizing poor people and Jews, if they could get their hands on them. And in the 1920s the governments of Germany, the U.S., Sweden, and, worst of all, Norway let them.

The market provides one test of goodness. That is one reason that Austrian economists see the static merits of markets as essential to their dynamic. My Samuelsonian masters taught me to view the test of efficiency as the **end** of history. They were uneasily aware that economic growth depended on something other than getting to the contract curve—after all, their own Robert Solow, with Moses Abramowitz and Edward Dennison, as I said, had shown that routine capital ac-

cumulation didn't explain growth. Yet they went on dragging the argument under the lamppost of allocative economics. On the ameliorist left and the fascist right the solution was to dream of infant industries, economies of scale, corrections by industrial policy, and criticism of externalities to be corrected by the superior intelligences gathered in Washington. The Austrian alternative is to think of static efficiency as a good, first test of a proposal's long-run merit. Then let time tell.

The problem with all the economic explanations lies deep within classical and most of subsequent economic thought: the conviction that shuffling stuff around makes us a little better off, which is true; and therefore that the shuffling makes us as rich as modern people are, which is false. Trade. Transportation. Re-allocation. Information flow. Accumulation. Legal change. As Kirzner expressed it, "For [the British economist flourishing in the 1930s Lionel] Robbins [and the Samuelsonians], economizing simply means shuffling around available resources in order to secure the most efficient utilization of *known* inputs in terms of a *given* hierarchy of ends" (Kirzner 1976: 79). Yet the path to the modern was not through shuffling and reshuffling. It was not by the growth of foreign trade or of this or that industry, here or there, nor by shifting weights of one or another social class. Nor indeed was it by reshufflings of property rights. Nor, to speak of another sort of reshuffling, was it by rich people piling up more riches by shuffling income away from their worker-victims. They had always done that. Nor was it through bosses being nasty to workers, or through strong countries being nasty to weak countries, and forcibly shuffling stuff toward the nasty and strong. They had always done that, too. Piling up bricks and money and colonies had always been routine. "Foreigners shall rebuild your walls," says the Lord to Jerusalem through His prophet Isaiah, "and their kings shall be your servants. . . . Your gates shall be open continuously. . . that through them may be brought the wealth of nations and their kings under escort" (*Is.* 60:10,11). The new path was not about anciently commonplace theft or accumulation or commercialization or reallocation or conquest of foreign kings or any other reshuffling. It was instead about discovery, and a creativity supported by novel words. In terms of the seven principal virtues, the routine of efficiency that Samuelsonian economists love so passionately depends only on the virtue of Prudence (the analysis of the virtues derives from Aristotle, Aquinas, and Adam Smith—the three A's—and is detailed in *The Bourgeois Virtues*). What I am claiming here is that Austrian discovery and creativity depends also on the other virtues, in particular on Courage and Hope. (I am working now on later volumes which will test whether the conversational

society honoring such a commercial Courage and Hope depended in turn on a new, bourgeois construal of the virtues of temperance, justice, love, and faith.) As a result, previously unknown inputs were discovered (coal for steam engines; then coke for iron; then natural gas to replace the sickening coke burnt in French kitchens), fresh hierarchies of ends were articulated (in the new political economy, for example, which tended to the democratic end of general vs. privileged prosperity; in the new politics, which tended to the radical end of strict equality), new goods and services were created (black tulips, common stocks, reinforced concrete). All of it was very far from routine Prudence. The new path around 1700, on account of the change in rhetoric, led by around 1800 and especially by around 1900 to shocking innovations in factory machinery and in business practice. It was supported and extended by shocking innovations in politics, with the result that as early as 1832 a few countries protected your life, liberty, and pursuit of innovation from progressive or conservative assault. The result was the Great fact.

To put it another way, economics in the style of Adam Smith, which is the mainstream of economic thinking, is about scarcity and saving and other Calvinistic notions (see Nelson 1991, 2001). In the sweat of thy face shalt thou eat bread, till thou return unto the ground. We cannot have more of everything. Grow up and face scarcity. We must abstain Calvinistically from consumption today if we are to eat adequately tomorrow. Or in the modern catchphrase: There Ain't No Such Thing as a Free Lunch (TANSTAAFL).

But over time, taking the long view, modern economic growth has been a massive free lunch. Discovery, not reshuffling, was the mechanism, and the springs were the nonprudential virtues. As Kirzner put it, entrepreneurship is not about optimal shuffling, since a hired manager can carry out such a routine. "The incentive is to try to get something for nothing, if only one can see what it is that can be done" (Kirzner 1976: 84). A new rhetorical environment in the eighteenth century encouraged (literally: "gave courage" to the hope of) entrepreneurs. As a result over the next two centuries the production possibility curve leapt out by a factor of one hundred.

A Max U (utility maximization) model, as much as I have loved such a Samuelsonian-Beckerian idea, and have written numerous books and scores of articles in its praise, cannot work to explain real innovation. Routine maximizations, such as by the extension of foreign trade or by investment in routine projects of swamp drainage or canal digging, do not explain the modern world. What explains it, as the Austrian economists would put it, is discovery. And, as they (such as Kirzner)

argue correctly, a real discovery, Mokyr's "macro invention" (1990), is never an outcome of methodical investment, but always an accident in the prepared mind and in the open conversation. There is no U to max and no constraint to obey if real discovery is at issue, as against routine exploration for, say, oil. About oil, the startling macrodiscovery was that you could get it in bulk from the ground and then use it to make kerosene and then gasoline. By contrast, investing an optimal amount in drilling for additional oil, after the discovery of the idea, is a project of rational search. The difference (I speak again to economists) is the same as between Knightian risk (which is calculable, and therefore often insurable and therefore partially avoidable in a world of Max U) and uncertainty (which is not). No one would have bet on Europe in 1500, or on England in 1600, or on the factor of one hundred in 1800. It was uncertain—as in "astounding."

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Notice that from a wider perspective there is something very strange about the modeling and mathematics of Samuelsonian economics. It is: *nobody talks*--except to say yes/no to offers expressed in numbers of dollars. "Toyota Avalon in good condition: \$9,600." "No." The automobile customer might feel moved to add, "Because I can get the same for \$9,400 down the street: shame on you for charging more than he does!" The seller might be similarly moved to say something like, "My good friend, that would be a mistake: the seller down the street is a nasty case." But in the economic theory of markets such remarks lack point. They are, as the game theorists put it, mere "cheap talk." They do not signal anything of import, precisely because they are cheap. If they worked, everyone would use them, and therefore they would stop working.

Is it a scientific problem that Samuelsonian economics and its mathematics of social entities has no room for talk, which humans do so much? Not necessarily. That some people are left-handed is not something that economics needs to acknowledge, unless perhaps an economist were studying the market for scissors. Institutional economists of an older variety often claim that Samuelsonian economics is, say, bourgeois, and suitable therefore only to the Bourgeois Era. You will hear them claiming that an African economics suits Africa, and an Indian economics India. The Samuelsonian economist merely smiles and carries on taking a first partial derivative.

But if a certain activity bulked very large in the economy—larger in most countries than foreign trade, say, or larger than investment expenditure—then a

scientific suspicion would be aroused. And that is the case of talk. In particular, persuasion beyond mere transmittal of offers and acceptances and information is in fact a startlingly large item in a modern economy. We economists might have to stop ignoring the fact, if it is a fact.

Is it a fact? David Lodge's novel, *Nice Work*, shows an English professor, Robyn Penrose, seeing that the managing director she was assigned to watch was first and last a persuader:

It did strike [her] that Vic Wilcox stood to his subordinates in the relation of teacher to pupils. . . . She could see that he was trying to teach the other men, to coax and persuade them to look at the factory's operations in a new way. He would have been surprised to be told it, but he used the Socratic method: he prompted the other directors and middle managers and even the foremen to identify the problems themselves and to reach by their own reasoning the solutions he had himself already determined upon. It was so deftly done that she had sometimes to temper her admiration by reminding herself that it was all directed by the profit-motive. (Lodge 1988 [1990]: 219).

I repeat the finding of Klamer and McCloskey: to be statistical about it, and to speak of many people motivated by profit of a Max U character, about a *quarter* of national income, is earned from such merely bourgeois and feminine persuasion: not orders or information but persuasion, "sweet talk," you might say. Economists have centrally ignored it.

* * * *

In explaining the fact of 25 percent of national income being sweet talk a temptation of the modern economist is to try to model it in the style of Samuelson, as the outcome of still another adventure of the prudent person, Mute Max U. (I say "Mute" because we are talking about talking here, and Samuelsonian economics does not talk about it.) The modern Samuelsonian economist does so because it is her only model. If something—love or justice or courage—does not fall within a utilitarian maximization subject to a resource constraint, she has nothing to say. But language, I am suggesting, unless reduced to bits of information put through conduits between minds, as it cannot entirely be so reduced, cannot be modeled as Mute Max U.

The limits and patterns of human speech do of course limit and give pattern to the economy. Some conversations are impossible in humans. At the most abstract level, some sort of Chomskyan limits of deep structure might possibly apply, though it seems doubtful. Perhaps there are deals, orders, desires, plans that would be possible in a language of another species but are interestingly impossible, or at any rate difficult, in human language. Beings that were not differentiated individually, for example, would find orders naturally persuasive in a way that humans do not. Wittgenstein said that “to imagine a language is to imagine a form of life” (Wittgenstein, 1953: 19). He might as well have said that to imagine a form of life is to imagine a language. “It is easy, he remarked, “to imagine a language consisting only of orders and reports in battle” (Wittgenstein, 1953: 19). An army that is something other than a gang of Homeric heroes clashing one-on-one in single combat is a form of life that responds to particular orders issued by particular people. The phalanx on the left flank moves when the general speaks, as though it were an organism and not a collection of free citizens of Athens.

But economics still has something to say, in Austrian. Israel put his finger on what a free society achieves, from which we can understand how meaningful language works in one. “It [is] highly desirable to choose among alternative social arrangements those modes of organization that minimize [ignorance of knowledge that can be absorbed without decision and search, by the sheer noticing of it]. . . that is, those modes of organization that generate the greatest volume of spontaneous, undeliberate learning” (Kirzner, 1979: 147, 145). His assertion runs against the love of explicitness in modern life, the proliferation of handbooks on leadership and of axiomatizations of thinking. Surely, the handbook-writer avers, we need to transmit through a conduit to the student’s mind numerous bits of information, and if this can be centrally planned, all the better. Every schoolchild in France is on the same page at the same hour of the same day, thanks to the planners in Paris. But real innovation, Kirzner is saying, entails real ignorance, that is, “knowledge about which nothing is known” (1979: 144).

It can be put economically: *known* knowledge (shades of Donald Rumsfeld) earns its normal reward. If you know how to read a balance sheet you do not on that account alone become Warren Buffett, because so many other people know how to read a balance sheet. *Unknown* knowledge, on the other hand, generates supernormal profits. When sometime before 1211 an anonymous Florentine invented the idea of a double-entry balance sheet, then he, or his Italian imitators, could pick up the profit from the innovation, and did (Origo, 1957 [1986]: 109).

Once the reading of balance sheets was widely known, however, the supernormal profits fell to zero.

It is still a good idea for people to learn to read balance sheets, engaging in “search” that has a known reward to the MBA graduate or law student who engages in it. The opportunity cost of such searching may be good for the society, as against a worthless search for, say, learning to read the stars astrologically. But routine learning is not an innovation. National income does not actually fall, since learning to read balance sheets has a marginal product equal to its opportunity cost, at the margin, and therefore has intramarginal gains (“rents” economists call them, if not the “supernormal” profit of real entrepreneurship), whereas learning to read the stars does not. The intramarginal reward to routine learning sustains the national income. As a matter of fact, as an economist can persuade you in one of her maddening diagrams, it simply *is* the national income. But national income will not rise unless the innovation is Kirznerian.

“The ease of calculation provided by money,” writes Kirzner, “is thus not merely a device for lowering transaction costs relevant to deliberate search,” as the Samuelsonians claim when trying to understand sheer information (Kirzner, 1979: 150). “It represents a social arrangement with the ability to present existing overlooked opportunities in a form most easily recognized and noticed by spontaneous learners.” Kirzner makes a parallel point in his writings on entrepreneurship.

* * * *

Kirzner’s analysis is correct so far as it goes. What is missing from it, however, is, again, language. The alertness that Kirzner thinks of as the essence of entrepreneurship involves language in its fulfillment. Unfulfilled it is just another bright idea. The necessary, next entrepreneurial step of persuading a banker, a supplier, an employee, a customer, oneself is rhetoric all the way down. Kirzner does not treat the persuasive step, on the probably sound justification that he is a theorist, not a practical entrepreneur. But persuasion matters. A community of free speech briefly unique to Northwestern Europe after 1700 or so, for example, “represents a social arrangement with the ability to present existing overlooked opportunities in a form most easily recognized and noticed by spontaneous learners” (Kirzner, 1979: 150).

Tyler Cowen has noted that there is an odd omission in Kirzner’s view of entrepreneurship, namely, that it does not involve the *audience* for the acts of dis-

covery (remember Lavoie and a hermeneutics in the economy). After all, it is the cash applause of consumers that determines which innovation, or which artistic or scientific advance, continues to evolve. Kirzner and Immanuel Kant, Cowen notes, both sought a “law without a law” (as Kant put it) to leave a space for a creativity necessary to make sense of the modern world, and both therefore focus on the artistic “genius” or the economic “entrepreneur.” But “ironically Kant’s notion of genius is more consumer-oriented and more demand-oriented” than is Kirzner’s. “Kant starts with the ‘consumer’ (i.e., the audience) judgment of the product of the genius” (Cowen 2003: 12). What the Kirznerian argument needs is a role for the rhetor’s *audience*. The free play of imaginative faculties that Kant and Kirzner join in admiring are neither purely objective nor purely subjective (as Cowen points out, p. 13). They are, to coin a word, “conjective,” or as Cowen puts it “relative to human purpose” (p. 15).

The crucial point here was discovered in 2007 by Sarah Millermaier, who argues in the way of Jürgen Habermas that communication is after all a *cooperative game* (Millermaier 2007). A real conversation, “communicative action” in Habermas’ words, “specifies which validity claim a speaker is raising with his utterance, how he is raising it, and for what” (Habermas 1981 [1984/1987]: 278). I would put it that a real conversation entails serious and self-conscious rhetoric and hermeneutics. What Habermas calls “strategic” speech is on the contrary a reading *through* the speech to the “underlying” interests. It is speech meant to achieve a result external to the practice (to use, as Millermaier does, the language of still another student of these matters, Alasdair MacIntyre). Millermaier observes—and here with MacIntyre and myself—that the conversation must be ethical and the ethics must be of the virtues and therefore that what I am calling “real conversation” must draw on the seven principal virtues (McCloskey 2006 once again). Habermas constrains communicative action on the level of logic, pragmatics, and participation. Millermaier and I would constrain it on the more fundamental level of ethics.

Think of an academic discussion—perhaps one on how the way that language works in an economy adumbrates a humanistic science of economics going far beyond the prudence-only, Benthamite-Samuelsonian routine on which economists have been grinding for so long. Imagine contrary to the urgings of Rawls or Habermas or MacIntyre or McCloskey that the main speaker is *not* trying earnestly to uncover the truth, say, or to learn from the audience by listening, really listening. Suppose instead that he is focused entirely on some result

external to the practice of serious scientific inquiry—getting a job offer that will raise her salary at home, perhaps; or demonstrating to the admiring audience how very intelligent she is. Imagine that the audience is similarly engaged in a non-cooperative game (the Industrial Organization seminar held at the Law School of University of Chicago in the 1970s was like this when certain members were present, and others absent). Such a boys' game may be fun to play. But it is not serious conversation, not science—except in those cases in which the very science is run on boys' rules.

If speech is merely strategic, a non-cooperative game, then the only virtue in play is prudence. *Every attempt to characterize speech by a well-trained Samuelsonian economist is going to try to reduce it to such prudent tactics.* Economics is after all the pure theory of prudence, and in the Samuelsonian as against the Misesian form it supposes that there's nothing more to be discovered in achieving a prudent consequence. It is natural to the rhetoric of economics since Bentham and especially since Samuelson to imagine that all behavior is reducible to that of the charmless, unloving, and above all calculating fellow, Mute Max U, equipped with an optimal amount of "information."

Millermaier's point is that such a reduction is corrupting of real conversation. It makes impossible the mutual formation of meaning, which much of our economic life is about, and depends on. We engage in polite chatting around the water cooler and are able thereby to cooperate with our colleagues. If we engage in it obviously *for that purpose*, though, people catch on, and we find it more difficult to gain cooperation. An economic way to make the point is a paper by Paul Ingram and Peter Roberts in the *American Journal of Sociology* in September, 2000, "Friendship Among Competitors in the Sydney Hotel Industry." They find that the friendships among competing hotel managers in the 40 Sydney hotels in their study generate about \$2.25 million Australian more of gross revenues per year per hotel—for example, through recommendations of the competing hotel when it is fully booked—than would be generated by a hotel with friendless managers (p. 417). So far so good for Bentham and Samuelson and Becker. They add, however, "the critical caveat that the instrumental benefits of friendships are inextricably tied to the affective element," that is, you can't successfully fake friendship (p. 420; compare Mueller 1999, p. 39). The faithless ones get found out. Considering the depth of skill among primates in performing and detecting falsehood, this is not surprising. Both Prudence and Solidarity work. "Individuals who try to form and maintain friendships solely as a means to material gain will fail to

evoke trust and reciprocity.” That is, Prudence Only will not work, and so “those who would limit the intrusion of society into economy by . . . characterizing embedded relationships between buyers and suppliers as predictable outcomes of a repeated, non-cooperative game” are mistaken (Ingram and Roberts 2000: 418).

That’s another reason that prices and meanings cannot be sheer, non-cooperative games. It would be like insisting that married people *only* deal with each other instrumentally, in the style of a Beckerian marriage between “M” and “F.” As Millermaier observes, for another example, programs of corporate ethics that declare themselves as “using” values to achieve Mute Max U’s goals will undermine the cooperative game that makes language and ethics possible.

The puzzle of language in the economy, then, and the correct characterization of the conditions favorable to the entrepreneur, cannot be approached within Mute Max U models. To the extent that language is reduced to Mute Max U, it ceases to exhibit one defining characteristic of human language, which is, I hope you believe by now, *not* the mere transmission of information but the making of meaning and the imagining of novelties:

The mind, that ocean where each kind
Does straight its own resemblance find;
Yet it creates, transcending these,
Far other worlds and other seas,
Annihilating all that’s made
To a green thought in a green shade.

To put it another way, the Mute Max U model fits smoothly with the metaphor of speech as a conduit, which would be good news if human communication were largely a matter of transmitting preformed messages between minds. But Mute Max U does not fit at all with a rhetorical (or Wittgensteinian or Burkean or Austinian or Habermasian or MacIntyrian) theory of language. And it does not fit with Austrian economics, when properly extended to the persuasive role of the entrepreneur.

If these were just silly theories, amusing to the effete snobs in the Department of English but unworthy of the tough, masculine science of economics, and econowannabe sciences like political science or law-and-economics, then economics could go on ignoring them. But they are in fact the best thinking about what language is that the 20th century offered. It would be unscientific to go on insisting that all we economists can talk about is our old, if unreliable, friend, the

implacably silent Mute Max U. And it would be bad for the promise of Austrian economics.

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Discovering the Gains from Trade: Alertness and the Extent of the Market

Adam Martin^{*1}

1. Introduction: Ricardian and Smithian Gains

The phrase “gains from trade” perches on the lips of economists as easily as “compared to what?” or “incentives matter.” Virtually all students of economics have the phrase drilled into their heads from their first principles class. Positive sum exchange plays a central role through the whole wide world of economics, from research to pedagogy to policy debates (Caplan 2002, Whaples 2009). That trade allows for not only subjective gains in utility but also gains in the sheer quantity of goods available is one of the most trumpeted insights of economics. Among economists, it is nearly universally held not only as a theoretical possibility but as a robust concept with extremely wide-ranging applicability. The professional burden of proof falls squarely on the shoulders of those who would posit an exception, whether theoretical or practical.

The gains from trade are, arguably, the central lesson of economics as a discipline since Adam Smith explicated its causal role in determining the wealth of nations (1776) and David Ricardo (1817) detailed the principle of compara-

^{*} Adam Martin is a post-doctoral fellow with the Development Research Institute at New York University.

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tive advantage. But there exist substantial differences between the Smithian story about the extent of the market and the Ricardian tale of comparative advantage (c.f. Warsh 2006). In the Ricardian approach, natural productivity differences furnish an instrumental reason for trade. In the Smithian approach, natural trade is what generates potential differences in productivity.

Both the Smithian and Ricardian approaches have their own strengths and appeal. Ricardian thinking has traditionally dominated economists' imaginations, probably owing to its neat conformity to the canons of rational choice. Though formulated in a pre-marginalist framework, the principle of comparative advantage carries over to modern economics nicely due to its implicit reliance on opportunity cost and emphasis on the instrumental exploitation of underlying technical factors. Since productivity differences are treated as given,² such gains are dissipated by the act of specialization. In the limit, such analysis explains why agents are specialized to the extent they are rather than why they would specialize any further.

Not so with the Smithian vision. Rather than producing a static, one-time gain, trade leads to a virtuous cycle of economic development. Different relative productivities emerge from the division of labor rather than causing it. Smith argues that existing specialization prompts the discovery of better ways of doing things. He offers the example of a boy working on a steam engine who, having been assigned a particular task, figures out a simple labor saving way to automate it (Smith 1776: 20). Productivity increases emerge from the extant division of labor. The division of labor, in turn, is limited by the extent of the market. Fortunately for the inhabitants of a Smithian world, the extent of the market is not limited by an instrumental assessment of extant differences in productivity, but by the "natural propensity to truck, barter, and exchange" (Smith 1776: 25). The desire to trade is a sort of unmoved mover in Smith. Rather than dissipating, the gains from trade snowball.

To some extent, these simplified accounts are caricatures of Ricardo's and (especially) Smith's rich ideas. But there remains a fundamental analytic distinction between Smithian and Ricardian gains from trade. Ricardian gains are realized through the exploitation of existing productivity differences. Smithian gains are

² "Given" in this context refers primarily to the standard method for teaching comparative advantage as a short run phenomenon, in which productive capacity is static. However, this ultimately also applies to approaches that treat changes in productivity as following a functional form in the long run.

the result of changing productivity. Ricardian gains are far more ably handled by standard economic theory. They are also economically significant. Cline (2004) estimates as-yet unrealized Ricardian gains owing to international trade restrictions, finding them large enough to potentially lift half a billion people above the World Bank's \$2/day global poverty line. Even in the U.S., a rich nation with relatively low trade barriers, Bradford et. al. (2006) survey extant estimates and report that eliminating existing protectionist policies would result in a gain of between \$400 billion and \$1.3 trillion per year, which comes to \$4,000-\$12,000 per household.

These are hefty figures, but viewed historically Smithian gains have been much larger. McCloskey (2010) provides the most extensive survey of the evidence from economic history that increases in income per capita over the past two centuries have dwarfed plausible Ricardian gains by several orders of magnitude at least. The explosion in material well being since the Industrial Revolution has been largely the result of changing productivity, not the exploitation of given productivity differences. The economic growth literature has reflected this finding since the 1950's, even if it is only sometimes connected to Smithian gains from trade.

Modern economic theory is much more comfortable with Ricardian gains, and they are empirically quite real. But Smithian gains dwarf them. This essay investigates how one might account for Smithian gains without sacrificing the intuitive and empirical appeal of Ricardian instrumental gains. How do Smithian gains fit into a modern, instrumental logic of choice? How do the gains from trade snowball in the absence of a non-instrumental propensity to truck, barter, and exchange?

Section 2 lays out the most common extant explanation of Smithian gains with instrumental action, the Increasing Returns Approach. This approach is rooted in the literature on endogenous growth theory and turns on the non-rivalry of knowledge.

Section 3 uses Israel Kirzner's theory of entrepreneurship to develop an alternative to Increasing Returns, which I dub the Discovery Approach. In Kirzner's theory, entrepreneurs discover profit opportunities to which they are alert. I argue that discovery is a plausible source of Smithian-sized gains that does not abrogate the centrality of instrumental action, and further that the specialization of alertness allows those gains to generate further gains rather than dissipating.

Having laid out the broad contours of the Discovery Approach, Section 4 draws out an important implication of the theory: the Hayekian division of

knowledge is a key driver of economic development. Examining this implication in detail allows for a preliminary comparison of the relative plausibility of the Discovery and Increasing Returns Approaches. Some basic stylized facts of development, I argue, favor the Discovery Approach. Section 5 concludes.

2. *The Increasing Returns Approach*³

In the modern literature on economic growth, all roads lead back to Robert Solow (1956). He set out to test whether capital accumulation could explain the growth in the U.S. economy by relating growth in Gross Domestic Product (GDP) to returns on capital. Land had long ago ceased to be a significant fraction of GDP, and the addition of extra labor to GDP tells us nothing about GDP per capita. What he found was that none of the returns to accumulating factors of production accounted for the overall increase in output. The bulk of growth was in the *residual* of his equation, the return to some omitted factor. The ordinary reshuffling and accumulation of capital, as economists have known since the marginal revolution, follows the same principles that govern Ricardian gains from trading fixed stocks. Rents, or returns to capital, are dissipated. Empirically, Solow's findings began the process of establishing that empirically observed growth rates dwarf plausible Ricardian gains.

Momentously, Solow's residual came to be interpreted as technological innovation (c.f. Easterly 2001: ch. 3). Of course, there is no variable to cleanly measure technological change. A cynic might believe that this is why the idea has found such unshakeable purchase. But it does make intuitive sense. If more tools were insufficient to account for increased growth, perhaps better tools could explain it. Technological change in this context means having tools made with better recipes or blueprints. It is difficult to deny that we have more effective tools than our ancestors, and increasingly so. Technological innovation is a wholly plausible explanation for Solow's residual. This explanation also plays right into the Smithian vs. Ricardian distinction. Ricardian gains accrue to reshuffling factors of production into higher valued uses—including accumulating them—while Smithian gains are the result of increased productivity brought about by technological change.

³ In this section the literature I identify as constituting the Increasing Returns Approach is detailed best by Romer (1994) and Warsh (2006). For the sake of space I ignore other strands of the tradition, notably Buchanan and Yoon (1994).

Endogenous growth theory picks up where the Solow model leaves off. It can be seen as the concerted attempt by a number of economists to eliminate Solow's residual. The residual provokes such hostility for two reasons. Despite the common acceptance that it represents technological innovation, the residual in Solow's equation is still a black box. The model depicts technology as wholly exogenous to the economy, a thoroughly implausible characterization. Endogenous growth theory—a strange moniker given that *any* theory of growth would purport to endogenize growth itself—is so named because it models *technological change*. The dominant strain of this theory treats technology as resulting from investment, the output of a function whose inputs include human capital and previous technology.

The second impetus for excising the residual comes from an empirical puzzle it generated, convergence. The application of the Solow model to cross-country analyses of economic growth—admittedly not the end it was designed for—generated a stark prediction that countries' growth rates would converge to a common number, namely the residual rate of GDP growth due to technology. The reason followed strict Ricardian logic: poorer nations would have lower capital stocks and thus a higher marginal return on capital. Capital should flow to poorer nations until the rates of return equalize, leaving on the residual change in technology. But technology is easy to copy since technology is just recipes for tools. Poorer countries today, for instance, can skip wired telephone lines and go straight to cell phone towers.⁴ The problem is that convergence did not happen (c.f. Easterly 2001: ch. 3). Growth rates vary a fair amount from one nation to another, and poor countries are not systematically catching up. Endogenous growth theory, then, tries to take more seriously the question of differences in cross-country growth.

The major puzzle confronting endogenous growth theory from the outset is: if technological recipes are produced by investment in research and development, how is technological change any different than capital accumulation? If technological innovation is the outcome of investment, why are the gains from innovation not dissipated just as the Ricardian gains to capital accumulation are? Endogenous growth theory attempts to escape this conundrum by ascribing to the production of technological knowledge what Kenneth Arrow dubbed the “under-

⁴ Olson (1996) points to some more systematic empirical support for the idea that technological knowledge is extremely cheap to import and thus not a constraint on growth.

ground river” in economics, the idea of increasing returns (Arrow 1994). Increasing returns to technological knowledge—new recipes, blueprints, etc.—means that the more technology you have, the cheaper it is to develop new technology. Since existing technology is an input into future technology, the rate of technological innovation should increase over time leading to exponential increases in GDP. Since this is the primary mechanism by which endogenous growth theory attempts to introduce Smithian gains into contemporary Ricardian economics, I refer to it as the Increasing Returns Approach.

The idea of increasing returns predates endogenous growth theory, but economists were typically hesitant to employ it until about three decades ago (c.f. Young 1928). The reason was that if output became cheaper to produce the more one already produces, then one firm with an early start could easily monopolize an industry by undercutting its competitors (c.f. Warsh 2006: 46). But where are all these monopolies, especially in high tech industries? To solve this conundrum, the Increasing Returns Approach leans on the *non-rivalry* of knowledge. If you utilize a piece of knowledge, there is no less of that knowledge for me to utilize. This is especially important in the formation of new ideas. Ideas are inputs into future ideas. But an idea that you have can serve as an input into my future ideas as well as your own with no tradeoff between the two.

But if knowledge is non-rival, the convergence conundrum rears its ugly head again. Utilizing technology does not require having developed the technology. That includes utilizing it for developing more technology. The Increasing Returns Approach thus looks appealing when one only looks at the historical trend of average world GDP. To the extent that it does matter empirically, that long-run global trend is its most natural and convincing application. But what about cross-country differences?

To explain why some nations are rich and others are poor, the Increasing Returns Approach relies on *neighborhood effects* (c.f. Warsh 2006: 80-81). Neighborhood effects, in this context, are localized knowledge spillovers. These are spillovers that only benefit those in a limited proximity. The classic example is Silicon Valley. A high concentration of computer and software engineers allows for the transmission of knowledge and problem-solving techniques to spillover from one firm to another, whether its through employees in different firms interacting with one another or employees’ ease of movement from one firm to another.

These neighborhood effects allow for an industry in a given area to innovate at a rapid pace, capturing a larger portion of the returns to that innovation.

Increasing Returns take hold when the payoff from existing technological know-how and human capital increases simply by being in proximity to others similarly endowed. Because that effect is recognized, individuals with high-tech human capital will tend to congregate in some areas, while individuals with low-tech human capital will congregate elsewhere. Since technological knowledge and human capital are inputs into innovation, those areas with concentrations of high-tech human capital will grow more quickly and become wealthier over time in an explosion of Smithian gains from increased productivity.

3. *The Discovery Approach*

Two signature concepts highlight the distinctive features of Kirzner's theory of entrepreneurship: discovery and alertness. Entrepreneurs discover profit opportunities because they are alert to them. In the context of a market economy, a "discovery" takes place when an entrepreneur becomes aware of a new possibility for mutually beneficial exchange (Hayek 1968, Kirzner 1997a). That is, he recognizes a Ricardian gain waiting to be grasped. Prior to the discovery, the entrepreneur is in a state of "sheer ignorance" concerning the potential trade (Kirzner 1997a).⁵ Alternatively, the discovery can be labeled "sheer creativity," but it makes little difference *qua* economic theory whether opportunities are "out there" waiting to be discovered or are genuine ontological novelties. What matters is that some entrepreneur is in a position to identify hitherto unrealized gains. And while many potential gains will turn out to be illusory, for the purposes of what follows (and for reasons that will be made clear) a discovery is taken to mean a genuine profit opportunity that pans out for the entrepreneur who follows through on it.⁶

Kirzner often appends the adjective "costless" to the notion of discovery (c.f. Kirzner 1973: 226-7). This strikes some economists as strange, given our predilection for insisting that free lunches are the most mythical of creatures. Economics is about choices between options, and options have costs. What Kirzner appreciates is that options have to be grasped by the mind before they can be chosen. Discovery is costless because it is logically prior to choice. The cost of a

⁵ This section draws extensively on Martin (2011). In that paper I deploy Frank Knight's (1921) definition of uncertainty as a more apt description of the ignorance to which (Kirznerian) entrepreneurship is a response. That argument is broader, discussing social processes more generally. Since this article seeks to answer a narrower question these points have been summarized here.

⁶ Kirzner (1997b) makes clear that in speaking of discovery as perception he is using a metaphor, and is not taking a position on whether the future is "a rolled-up tapestry."

pure discovery is not zero; it is null. This distinguishes it from Stigler's conception of search (1961), which is a choice to look for a given piece of information. Search is costly because search is an activity that is chosen. But a discovery cannot be chosen because, by definition, one is not aware that a given option exists before it is discovered.

Distinguishing discovery from search does not imply that discovery must be wholly accidental. The two concepts are analytically distinct but may be empirically bundled. Just as a wage earner in a modern economy is earning returns on both labor and human capital, searching may prompt discovery. In fact, while discovery is not itself a chosen course of action, it always occurs while engaged in some action. Time does not stop. Individuals are always allocating their scarce time to some costly activity or another. Some activities may in fact entail a greater propensity to discovery.⁷ Admitting this may seem to blur the distinction between discovery and search, but crucial differences remain.

Even though costly activities can be intentionally undertaken as precursors to discovery, the returns to a discovery can be wholly disproportionate to the cost of the precursory activities. Pure search assumes some expected value to the information sought. But when the nature of the knowledge is unknown beforehand—that it is this or that sort of opportunity, for instance—then the expected value is unknown. The expected value of a car cannot predate the idea itself of a car. What this means is that the returns to discovery do not follow the normal principles that govern returns to factors of production (whereas the returns to search do).⁸ That is exactly what makes discovery a good candidate for explaining economic development.

McCloskey (2010) argues forcefully that factor accumulation cannot explain the remarkable growth of the past few centuries. Ricardian instrumental trade, which includes allocating factors to production, produces growth several orders of magnitude too small to explain the modern world. The payoffs, thanks to competitive market pressures, are always proportionate to the cost. Discovery severs the link between cost and reward, creating space for much larger increases in the

⁷ Evans and Friedman (2011) make a helpful distinction between searching, in which one knows what one is looking for, and browsing, in which one is looking but not for a particular piece of information. Holcombe (2007: 64-5) argues that, while technological innovations are Kirznerian discoveries, research and development activities increase the propensity to make such discoveries.

⁸ Kirzner (1973: 66) argues that entrepreneurship must be distinguished “sharply” from factors of production.

size of the overall economic pie. McCloskey argues that something like discovery must be taking place in order to explain growth beyond factor accumulation. Discovery—like the increasing returns analogy—drives a wedge between instrumental action and rent dissipation. Already discovered profit opportunities are competed away after their initial implementation, but there remains the possibility of new discoveries.

I thus refer to the attempt to (however partially) explain how the gains from trade relate to economic development with Kirzner's theory as the Discovery Approach.⁹ Fundamentally, the Discovery Approach differs from the Increasing Returns Approach in how it explains super-Ricardian gains from trade. Ricardian trade, recall, is instrumental choice. Increasing Returns identifies *post-choice spillovers* as the source of explosive gains. The Discovery Approach instead identifies *pre-choice creativity* or perception as the source. The gains from discovery cannot be normalized by competition until after the discovery is implemented.

To move from individual discoveries to a full-blown Smithian process, however, a bit more is needed. One must explain why discoveries lead to further discoveries. Without such chain reactions, discovery just becomes another source of exogenous shocks.

Martin (2011) offers a taxonomy of different forms that discovered gains from trade might take. I expand that analysis here, classifying entrepreneurial gains from trade as Adjustments, Producer Innovations, and Consumer Innovations. These forms are analytic; like discovery and search, they may be empirically bundled. By definition, they all involve a pure economic profit and thus occur before other entrepreneurs have arbitrated away the profit opportunity.

Adjustment is when the entrepreneur recognizes or anticipates a shift in consumer demand or a supply shock. He reallocates resources from a lower to a higher valued use, but that is more or less the end of the story. Pure Adjustment involves no new goods or services. Other factors of production may have to be reshuffled on account of changing prices. But beyond the initial discovery, Adjustment is just Ricardian rationality responding to a change in underlying variables. New discoveries may happen, but under an assumption of consumer sovereignty

⁹ Kirzner himself uses the phrase “discovery approach” to refer to his particular concerns in the Austrian theory of the market process (Kirzner 1997a). My use is far more narrow and idiosyncratic.

there is no obvious mechanism to spur them on; they would be exogenous vis-à-vis the initial discovery.¹⁰

Producer Innovations are discoveries of lower cost methods of bringing existing kinds of consumer goods to market. Those methods might involve more efficient technologies, but could also involve the discovery of new trading opportunities, new resources, or new organizational methods. “New” in this context includes both new local applications of non-rival ideas and globally new ideas. Such discoveries free up resources for use in other lines of production. They also increase real consumer income with which to purchase the fruits of that production. Releasing resources from other lines of production decreases their price by eliminating their previously most-valued use, lowering the cost of pursuing other opportunities. But while Producer Innovation allows other entrepreneurs to pursue projects they have “waiting in the wings”—discovered but not yet acted upon—it does not *in itself* give a reason to suspect more discoveries. After the initial discovery we are back to Adjustment, wherein other entrepreneurs respond to the innovation as a supply shock. Adjustment, as we have seen, is not self-reinforcing.

Consumer Innovations are discoveries of new consumer (or first order) goods. As with a Producer Innovation, a Consumer Innovation only needs to be locally new in order to turn a profit. Consumers must value the new good more than some other good that they spend their income on *and* more than the alternative uses of the inputs used to create it. But it need not free up resources on net; a greater benefit may well be worth more overall resource expenditure. Such a discovery would constitute psychic but not material gains: not more, but more highly valued goods. Displacement of close market substitutes may free up the inputs used to produce them, but producing a new good requires that inputs be diverted from other lines of production. The net effect on resource consumption could go either way. In either case, the process leads back to Adjustment and fails to provide a reason to expect more (or fewer) discoveries. None of the three forms that a discovery might take, then, seems capable *in itself* of accounting for further discoveries. Kirznerian alertness, I posit, can.

¹⁰ It is possible that shifts in consumer demand lead to further shifts in consumer demand, such as with network goods, but this is making an idiosyncratic technical assumption the driver of change. While this sort of change is a possibility, the purpose of this essay is to find a more robust explanation that can explain more widespread patterns of development across different types of goods.

Alertness is the second signature concept characterizing Kirzner's theory of entrepreneurship (Kirzner 1973: 35ff, 65ff). It is "the human propensity to sniff out opportunities lurking around the corner" (Kirzner 1979: 29). That is, it is the propensity to make discoveries. Discovery, Kirzner surmises, is not wholly a matter of luck (Kirzner 1997a: 72). It does involve being in the right place at the right time, but also depends on the entrepreneur's ability to correctly perceive the profit opportunity. Alertness might involve pattern recognition, data interpretation, signal extraction, imagination, or some other cognitive function that does not reduce to merely gathering information. What matters is that discovery is neither automatic nor deliberate. One can wish to recognize profit opportunities but cannot do so by sheer act of will. Discovery with any reliability requires honed alertness.

Kirzner's "propensity" to discover serves a function similar to Smith's "propensity to truck, barter, and exchange." Both propensities serve as engines driving a process forward in time. Alertness drives the market process toward mutual plan coordination; without it, discovery might be no more likely than error, belying the order that we in fact observe in the marketplace. Smith's propensity to trade drives the extension of the market, allowing for the further division of labor. The crucial difference is that alertness is an epistemic engine rather than a motivational one. Knowledge drives the process rather than incentives. This is why it can bridge the gap between Ricardian gains and Smithian gains: Ricardian instrumental rationality need not be overridden in order to endogenously generate ongoing activity and change.

Alertness is a sort of unmoved mover in Kirzner's major works. He takes it as a given (Kirzner 1992: 26) because the puzzle he seeks to explain is the proximate cause of plan coordination in the market process. While this works well for disentangling the puzzle of coordination, we would go wrong in applying Kirzner's framework to other puzzles if we were to mistake "given" for "constant." Alertness is exogenous in Kirzner's work; it need not be fixed when extending it. Endogenizing alertness allows Kirznerian entrepreneurship to account for long-run economic change as well as short-run adjustment, bridging the gap between the Ricardian and Smithian gains from trade.

One key feature of alertness is that it is not a *general* ability to perceive profit opportunities. All agents "share in this ability to some extent... [b]ut some have higher degrees of this ability—some in some lines of endeavor, others in other lines of endeavor" (Kirzner *ibid.*). Alertness is specialized to a context of action.

If we make the plausible assumption that experience in a “line of endeavor” specializes individuals’ alertness to the context of that endeavor, then we can explain how discoveries can lead to further discoveries. A discovery can lead to further discoveries when it allows an entrepreneur’s alertness to be further specialized. Hayek may have had this sort of cognitive specialization in mind when he wrote:

Competition is as much a method for breeding certain types of mind as anything else: the very cast of thinking of the great entrepreneurs would not exist but for the environment in which they develop their gifts. The same innate capacity to think will take a wholly different turn according to the task it is set (Hayek 1979: 76).

Of the three forms that discovery might take, Producer Innovation most clearly opens the door to ongoing gains from trade. A cost-saving discovery frees resources for entrepreneurs to pursue new lines of endeavor; it is only in actual pursuit that alertness is cultivated. Imagination and forecasting are a function of present alertness. Until the context of a new production process or new market activity is lived in, it cannot be an incubator of new alertness. That requires an actual investment of resources and especially time. By freeing resources for use in other entrepreneurial plans, Producer Innovation enables the cultivation of alertness that might not have come to be otherwise.

Adjustment and Consumer Innovation can likewise open up new contexts that are alertness incubators. In their pure form, however, they do this by shuffling resources out of other activities. Specialized knowledge can lose the context of its usefulness.¹¹ Producer Innovation is different because, by providing some service or a close substitute at lower cost than before, it allows for increased resources to be channeled into other lines of endeavor without giving up production of the service thus innovated. That is, Producer Innovation allows for more intensive specialization and *systematic* increases in the economy’s diversity of enterprises. Discoveries of lower cost means of production enable increases in the extent of the market. Increasing the extent of the market increases the scope for specialized alertness to develop, prompting more discoveries. We are back to a Smithian understanding of specialization and the gains from trade, which is depicted in Figure 1:

¹¹ In genuine market competition, of course, this is only because such specialized alertness noticed less valuable profit opportunities than what displaced it.

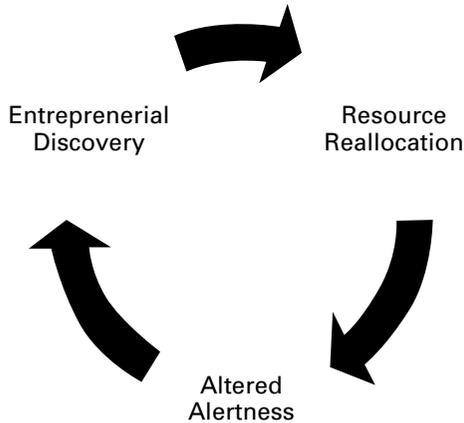


Figure 1: The Discovery Approach

The Discovery Approach goes as follows: an entrepreneur discovers a lower cost means of production and reallocates resources accordingly, earning an entrepreneurial profit. Doing so frees up resources for entrepreneurs to initiate projects that were previously too expensive. In so doing, the alertness of those entrepreneurs is altered, making them more adept at discovering certain types of profit opportunities. Some of those discoveries may themselves involve lower cost means of production, allowing the whole cycle to repeat. In Smithian fashion, existing specialization prompts the discovery of new exchange opportunities. In Ricardian fashion, that existing specialization comes about not through some natural propensity, but through the instrumental allocation of resources to exploit a comparative advantage. The gains from trade are twofold. The Ricardian gains from trade occasion Smithian gains by allocating freed resources to a new context and inculcating alertness.

The basic features of the Discovery Approach are not new. Technical elements of Kirzner's theory are deployed in new ways to explain the specific puzzle of development, such as discovery being a source of explosive returns and alertness being the relevant sort of specialized knowledge. Smith's child innovator notices the profit opportunity in automating the steam valve because of the task to which his mind is set. That trade is both a cause and consequence of the division of labor was recognized at least as far back as Mises in *Socialism*:

Had the strength and abilities of all individuals and the external conditions of production been everywhere equal the idea of division of labor could never have arisen. Man would never of himself have hit upon the

idea of making the struggle for existence easier by co-operation in the division of labor...

Once labour has been divided, the division itself exercises a differentiating influence. The fact that labour is divided makes possible further cultivation of individual talent and thus co-operation becomes more and more productive. Through co-operation men are able to achieve what would have been beyond them as individuals, and even the work which individuals are capable of doing alone is made more productive (Mises 1922: 260).

4. The Division of Knowledge and the Wealth of Nations

Civilization advances by extending the number of important operations which we can perform without thinking about them. Operations of thought are like cavalry charges in a battle—they are strictly limited in number, they require fresh horses, and must only be made at decisive moments (Whitehead in Hayek 1960: 22).

Hayek described the “division of knowledge” as “quite analogous to, and at least as important as, the problem of the division of labor” (Hayek 1937: 39). The knowledge embedded in social processes continually expands in developing economies, but the percentage of that knowledge that an individual can command grows ever smaller. Individuals’ knowledge of productive activities is ever-increasingly differentiated and specialized. Leonard Read (1958) famously described how no one mind could master all that was necessary to make a pencil. The division of knowledge is central to the Discovery Approach. Local knowledge of time, place, and particular circumstances enables the development of more finely honed alertness and thus an increased propensity to discover gains from trade in the context of that locality.

The Discovery Approach’s emphasis on the differentiation and division of knowledge stands in contrast to the Increasing Returns emphasis on technology, defined as *non-rival* and thus replicable knowledge. This of course grew out of the distinction with scarce capital from the older Solow model. Increasing Returns, like the Solow model before it, relies on the possibility of re-using good ideas to escape from the Ricardian box. Technological change is just changing recipes for

combining existing materials, and recipes can be copied. That is, ideas cause progress to the extent that they can be held in more than one mind.

While the non-scarcity of ideas is beyond doubt, it is a strange thing to identify as the source of growth when no one mind contains the knowledge necessary to create a pencil (Wagner 2006). This is not to deny that technology is, empirically, a vital part of development. But this is a long way from saying that *non-rivalry of knowledge* is the crucial component of Smithian gains. The Discovery Approach diverges in several important ways from such a conclusion:

- Even when technological recipes spread, they must be adapted to local conditions and particular production processes (Holcombe 2007: 80).
- Specialization is neither a one time phenomenon nor a continuously separating equilibrium between some predefined set of goods and services, but rather an ongoing process that involves structural, morphological change to the economy's capital structure and increasing social complexity (Lachmann 1956, Beinhocker 2006).
- The salient relationship between knowledge and development is not aptly characterized by an ever-wiser representative agent or firm but by the growing relative ignorance and increasingly heterogeneous knowledge of all members of society (Hayek 1960).

For the Discovery Approach, the crucial fact is not the non-rival *possession of knowledge* but the non-rival *use of knowledge*. Put differently, it is not because knowledge can be possessed by multiple individuals but that it need not be in order to benefit all of them that is key to development. Through trade, individuals make use of others' knowledge in the pursuit of their own ends. This frees them to engage in more specialized tasks and thus accumulate more refined knowledge of the tasks in which they engage.

That ever increasingly refined knowledge can be embodied technologically, but it need not be. From the perspective of allowing others to further specialize, the usefulness of the replicable knowledge embodied in a frozen dinner on the one hand and of the idiosyncratic, local, and tacit knowledge of a cook using his own specialized tools on the other is no different in principle. Benefitting from others' knowledge is the general form of prosperity; technology is but one form that such prosperity can take.

Another important aspect of divided knowledge is heterogeneity. Non-rivalry of knowledge only drives development to the extent that it is useful for

many individuals to have the same kind of knowledge. The Increasing Returns Approach is predicated on the idea that strength builds on strength. Endogenous growth theorists such as Paul Romer latch onto examples like Silicon Valley and Hollywood. Jane Jacobs advances an understanding of urban growth more focused on the division of knowledge. For Jacobs, it is because different sorts of work exist side by side in cities that they are engines of growth. Glaeser et. al. (1992) test these implications, finding that Jacobs was right. Cities with more diverse industries grow faster than those with more concentrated industries. Today's Silicon Valley can be tomorrow's Detroit.

Moving beyond cities, the emphasis on divided knowledge over non-rival knowledge also leads the Discovery Approach to locate Smithian vs. Ricardian gains at different scales of interaction than does the Increasing Returns Approach. Increasing Returns treats Smithian gains as local and Ricardian gains as global. Recall that endogenous growth theory identifies Smithian gains with *neighborhood* effects in order to explain cross-country income differences. Larger gains are due to localized knowledge spillovers, while smaller Ricardian gains obtain between trading areas (e.g., nations). More precisely, they obtain between representative agents of the two areas. The Discovery Approach, by contrast, treats Ricardian gains as local and Smithian gains as global. Ricardian gains obtain between the two parties to a trade. Smithian gains, by contrast, are a property of the global network of trading relationships that maps onto the social division of knowledge. Ricardian gains are realized in individual markets, Smithian gains in the market process as a whole.

Olson (1996) points to some stylized facts that favor the Discovery Approach over Increasing Returns on this margin. He notes that, according to endogenous growth theory, the wealthiest nations should also grow the fastest. By definition, increasing returns mean that the more knowledge one has the easier it is to accumulate yet more. But while rich countries have better growth rates on average than poor countries, they are not the fastest growing. The fastest growing countries at any given time are a subset of poorer nations. Olson speculates that these rapid growth areas are recently liberalized economies eliminating (Ricardian) inefficiencies, a speculation consistent with evidence on international trade liberalization as well as broader measures of economic freedom.

Olson's insight is consistent with the Discovery Approach's identification of Ricardian gains as local and Smithian gains as global. In the last few decades, the Smithian gains from trade emerge from an international division of knowledge.

Tapping into that global network of dispersed knowledge allows a country to grow faster than if it was left to develop on its own. The initial gains will be huge as one establishes first (or more intensive) contact with an existing division of knowledge. But accessing that network requires trading with those who already participate in it, in the same way that the existing stock of information on the internet requires a computing device with a network connection. Barriers to realizing Ricardian gains can thus limit the realization of Smithian gains as well, an implication that fits Olson's observations on growth rates precisely. The Smithian story tells us why such incredible material gains have been realized over the past few centuries; the Ricardian story tells us why those gains do not spread to all corners of the globe.

5. Conclusion: Economic Development as an Economic Problem

As Adam Smith famously observed, the division of labor is limited by the extent of the market. It should be abundantly clear that, in spite of borrowing Smith's rhetoric, the Discovery Approach fundamentally differs from Stigler's (1951) classic re-interpretation of the two halves of that statement. "The division of labor" or "knowledge" is not the division of a given task, but the division of the multitude of varied and often incompatible plans. Similarly, "the extent of the market" does not refer to the demand for a particular product but to the scale and scope of the overall nexus of trade. It is because some have specialized in a given task that others can specialize in different tasks. Ricardian gains explain when individuals will find it in their interest to further specialize. Smithian gains are the product of the resultant specialized alertness.

And yet, Stigler's appropriation of Smith's dictum, in contrast to the Discovery Approach, analogizes Smith's insight to a production function for a single firm. Stigler's interpretation is the dominant one.¹² While Smith did use the pin factory as an example of the effects of dividing labor, his discussion is far broader. The passage about the boy and the steam engine moves from common laborers to machinists to "philosophers and men of speculation" (Smith 1776: 21). This is Hayek's extended order, not a factory floor. In pointing out this gap, I am not so

¹² Warsh, for instance, tries to pigeonhole Smith into a "contradiction" between the invisible hand of perfect competition and the pin factory's increasing returns (Warsh 2006, p. 47). Neither of these is a good characterization. The invisible hand is better described by Kirzner's market process than by perfect competition (c.f. Holcombe 2007, pp. 51-4), and the pin factory is not the sum total of the division of labor.

much attacking Stigler's argument as much as theories that make a similar move with respect to the entire economy. Economic development is poorly described by a production function. Solow's original findings should have freed economists from that dementia, but instead they fashioned it into a straight jacket. Development economists' solution to Solow's finding that firm-like factor accumulation could not explain growth patterns was to imagine the economy as an industrial park of several similar firms and tweak the production function accordingly. From the perspective of the Discovery Approach, this solution is far from satisfying.

The fundamental problem with the Increasing Returns Approach is that it analytically reduces a Smithian process to a Ricardian allocation. The divergence between these two stories about the gains from trade connects to a deep and wide gulf between two analytic visions in economics (c.f. Wagner 2004). The Ricardian vision is one of allocative response to given constraints. The Smithian vision is of an open-ended process of ongoing social interaction and individual transformation. Both of the visions can shed light on aspects of the social world, but to force a Smithian phenomenon into a Ricardian box is to rob it of the features that give it unique explanatory power. The dominant paradigm in economics is to reduce all facets of social reality to a Ricardian allocation. This is a mistake. The two visions can be connected—this is what the Discovery Approach tries to do—but one cannot be made to do the work of the other.

In addition to its analytic niceties and pedagogical advantages, the Ricardian vision has two viscerally appealing features. First, it allows the economist to tell stories with a beginning, middle, and end. In the beginning was the productivity difference, followed by specialization and production, all of which is consummated in trade until the zero profit condition obtains. Second, it explains why it makes sense to trade from an individual, instrumental point of view. We trade because we expect it to make us better off. Importantly, the Ricardian approach also tells us why we stop trading: when we think that is no longer the case.

The appeal of the Smithian vision rests in its open-endedness. That open-endedness emerges from its more strictly *social* character, by which I mean that the Smithian emphasis on *interaction* (rather than just action, such as allocation) highlights the role of inter-individual forces. A Smithian approach, unlike a Ricardian one, would never see a fundamental equivalence between Robinson Crusoe and an entire economy. Representative agents are the opposite of Smithian individuals, who are differentiated by various social processes including the division of labor. When economists lose sight of the interactive element of exchange, they

lose sight of the distinction between technical problems and economic problems (Buchanan 1964).

Economic development is an economic problem, one that can only be “solved” by a genuinely Smithian process. Robust long-run development involves coordinating a continuously differentiating division of knowledge, an insight that should be obvious when economists cease modeling economies as production functions. But the important insights of the Ricardian vision—those that arise from its application to individual behavior, rather than its misapplication to entire economies—should not be discarded. Israel Kirzner’s signature concepts of entrepreneurial alertness and discovery allow us to break out of the Ricardian box and into a larger Smithian world without abandoning those Ricardian insights. In this as in many other economic and social puzzles, the usefulness of Kirzner’s ideas reaches far beyond the tasks to which he put them. Economists wishing to discover new insights would do well to hone their alertness to his work.

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The Determinants of Entrepreneurial Alertness and the Characteristics of Successful Entrepreneurs

Virgil Henry Storr and Arielle John*

1. Introduction

Israel Kirzner has made considerable contributions to our understanding of capital theory (Kirzner 1966), the nature and meaning of the market process (Kirzner 1992), the problems with theories of distributive justice (Kirzner 1989) and the history of economic thought, particularly the history of the Austrian school (Kirzner 1960). Most importantly, however, Kirzner (1973, 1979) has made key contributions to our understanding of the critical role that entrepreneurship plays in markets. For Kirzner, understanding the role of the entrepreneur is essential to understanding how errors get corrected in the market and understanding the role of alertness is essential to understanding how it is that entrepreneurs come to identify these errors. As he explains, in a world where knowledge is necessarily dispersed and individuals are necessarily ignorant of all changes that occur in markets, alert entrepreneurs discover profit opportunities (i.e. opportunities to buy at a low price and sell at a high price) and, thus, drive the market process toward equilibrium.

* Virgil Henry Storr is a senior research fellow and the director of graduate student programs at the Mercatus Center as well as a research associate professor of economics at George Mason University. Arielle John is an economics doctoral student at George Mason University and a graduate student fellow at the Mercatus Center.

Kirzner's insights on entrepreneurship have been widely celebrated and have had considerable influence in economics, public policy and entrepreneurship studies. Although Kirzner's work on entrepreneurship has been widely celebrated, it has been criticized on several fronts. Specifically, his theory of entrepreneurship has been criticized for abstracting from the psychological characteristics of real world entrepreneurs and the determinants of alertness. High (1982, 1990), for instance, has criticized Kirzner for abstracting from the uncertainty that necessarily surrounds real world entrepreneurship and so neglecting the critical role played by judgment in entrepreneurial activity in practice.¹ Additionally, Lavoie (1994) has criticized Kirzner for abstracting from the cultural dimension of entrepreneurship and so neglecting the critical role played by interpretation in real world entrepreneurship.

These criticisms, we contend, are unfair and misunderstand Kirzner's project. In order to identify the essence of entrepreneurship, he purposely abstracted from the circumstances that condition entrepreneurship in the real world (including both the psychological and cultural determinants of successful entrepreneurial activity in practice). Kirzner separates the ignorance that plagues market participants from the uncertainty that necessarily conditions all human action in-the-world. Rather than being a shortcoming of Kirzner's theory, Kirzner's abstraction allows him to identify and elucidate the entrepreneurial element in economic behavior. As Kirzner (1973: 15-16) writes, "the entrepreneurial element in the economic behavior of market participants consists ... in their alertness to previously unnoticed changes in circumstances which may make it possible to get far more in exchange for whatever they have to offer than was hitherto possible." Similarly, by assuming an environment where opportunities are readily identifiable rather than on the challenges that real world entrepreneurs face in identifying profit opportunities (i.e. his focus on arbitrage), he was able to isolate the role that entrepreneurship plays in the market process. As Kirzner writes, an analytical world without alert entrepreneurs "completely lacks the power to explain how prices, quantities and qualities of inputs and outputs are systematically changed during the market process" (ibid.: 42) and so cannot explain how the market equilibrates (ibid.: 73).

Rather than closing off inquiry, we contend, his theory of entrepreneurship makes a fruitful analysis of the psychological characteristics of entrepreneurs and

¹ Foss and Klein (2010) have recently criticized Kirzner along similar lines. Foss and Klein's critique, though borrowing a lot from High, is much more extensive.

the determinants of alertness possible. As we problematize the environment in which Kirzner's entrepreneur operates by complicating the simple theoretical model with a single period and a single good that he employed, we are better able to explain how entrepreneurs are likely to behave and to isolate which traits entrepreneurs must possess if they are to be successful in different environments. Consider how with the aid of Kirzner's theory we might discuss the impact of culture on entrepreneurship. We might, for instance, expect that culture will direct an entrepreneur's gaze as well as her ability to recognize certain opportunities as in fact opportunities. We might also expect entrepreneurs with different traits to be more successful or less successful at identifying and deciding between different opportunities in different contexts. Entrepreneurs with different cultural backgrounds will likely be alert to different sorts of opportunities and so will see and fail to see different opportunities.

Admittedly, Kirzner has at times objected to extending his analysis in this way and insisted that such a discussion requires moving beyond his theory of entrepreneurship. Kirzner (1979: 8), for instance, has remarked that "we do not clearly understand how entrepreneurs get their superior foresight. We cannot explain how some men discover what is around the corner before others do." And, "my own work has nothing to say about the secrets of successful entrepreneurship. My work has explored, not the nature of the talents needed for entrepreneurial success, not any guidelines to be followed by would-be successful entrepreneurs, but, instead, the nature of the market process set in motion by the entrepreneurial decisions (both successful and unsuccessful ones!)" (Kirzner 2009: 145). Still, Gaglio (1997), Venkataraman (1997), Shane and Venkataraman (2000), Gaglio and Katz (2001), Shane (2003) and others have relied on Kirzner's theory of entrepreneurship and specifically his emphasis on alertness in their explorations of the process and dynamics of opportunity identification. And, Kirzner has acknowledged that the determinants of entrepreneurial alertness are not entirely mysterious (see, for instance, Kirzner and Sautet 2006, 17).

This article has a dual purpose. First, we wish to defend Kirzner against the criticism that his theory of entrepreneurship is too simplistic. Although he does not discuss the role of judgment or interpretation, his simple model, because it isolates the role of alertness, actually helps us to identify how interpretation and judgment enter into the entrepreneurial process. Second, we wish to explore how a discussion of the determinants of entrepreneurial alertness (and in particular the role of culture in entrepreneurship) might proceed. By extending Kirzner's theory

of entrepreneurship, it is possible to discuss how culture affects entrepreneurship theoretically and to explain real world differences in entrepreneurship across cultures. *Section 2*, thus, summarizes Kirzner's theory of entrepreneurship. *Section 3*, then, explains some of the most trenchant critiques of Kirzner's theory of entrepreneurship and attempts to defend his theory of entrepreneurship against these critiques. Next, *Section 4* extends Kirzner's theory to explore the determinants of entrepreneurial alertness and the characteristics of successful entrepreneurs. Special emphasis will be placed on how culture might affect an entrepreneur's alertness to and her ability to see and evaluate particular opportunities. *Section 5*, then, offers concluding remarks.

2. Kirzner's Theory of Entrepreneurship and the Critical Role of Alertness

For Kirzner, the entrepreneur is at center stage in the market process and, so, the process of economic development. As Kirzner (1997a: 31) summarizes, "the success which capitalist market economies display is the result of a powerful tendency for less efficient, less imaginative courses of action, to be replaced by newly discovered, superior ways of serving consumers—by producing better goods and/or by taking advantage of hitherto unknown, but available, sources of resource supply." Entrepreneurs in the market, Kirzner explains, notice and exploit opportunities to earn profits by replacing "less efficient, less imaginative courses of action" with "superior ways of serving consumers." For Kirzner, the entrepreneur also plays a key role in micro-economic theory. Ironically, though most economists will employ the entrepreneur in classroom discussions of how the market moves from disequilibrium to equilibrium, "standard theory has not been able to explain how markets systematically gravitate towards the equilibrium states (relevant to the given conditions of those markets)" (Kirzner 2008: 4). Introducing the entrepreneur and outlining her role in "driving the process of equilibrium" is critical to understanding the market as a dynamic process. Kirzner's theory of entrepreneurship, thus, makes an important contribution to standard price theory and our understanding of real world markets. This section will outline the basic elements of Kirzner's theory of entrepreneurship.

In an effort to understand the nature of the market process and to tease out the essential role that the entrepreneur performs, Kirzner (2008: 4) begins his theorizing in the "*simplest* Marshallian demand-supply context," that is, a single

period world with a single commodity and no scope for uncertainty. The only assumption that typically accompanies this framework that Kirzner relaxes is the perfect knowledge assumption. In a world of perfect knowledge, individuals do not really make decisions about how to succeed but instead calculate optimum strategies on the basis of given data. Deciding is merely a matter of deciding to exchange something that is less preferred or valued for something that is more preferred or valued. The results of this “decision” is implied in and perfectly determined by the decision-maker’s situation. “If each individual knows with certainty what to expect,” as Kirzner (1973: 37) explains, “his plans can be completely explained in terms of economizing, of optimal allocation, and of maximizing—in other words, his plans can be shown to be in principle implicit in the data which constitutes his knowledge of all the present and future circumstances relevant to his situation.” In such a world, there is no possibility of the same good selling for different prices in the market. Any apparent price discrepancies that did exist would necessarily be explained by differences in transaction costs, like differences in transportation costs between the space where the good was produced and the two points-of-sale. As such, in a world of perfect competition, there is no possibility of earning pure profits (that is, profits apart from normal rates of return on investments) and so there is simply nothing for the entrepreneur as seeker of pure profit to do.

In Kirzner’s view of the world, however, knowledge is imperfect and imperfectable. And, it is the very imperfection of knowledge that allows for the entrepreneur to have a function and for market process to take place. Because knowledge is imperfect, Kirzner (1973: 37 footnote 4) points out, there is the possibility of the same good selling for different prices in the market and, thus, the possibility for arbitrage. As an example, in a world of imperfect knowledge, a Store A may be selling a particular Brand X shoe for \$50.00 while Store B sells the same Brand X shoe for \$100.00 with neither the storeowners nor their customers being aware of the price discrepancy. In such a market, it would be possible for some individual to buy shoes from Store A and sell them to customers of Store B at a profit.

These arbitrage opportunities exist because, where knowledge is imperfect, buyers and sellers can make errors of over-optimism which lead to frustrated plans and errors of over-pessimism which lead to unexploited opportunities. Because of their ignorance and “errors made in the course of market exchanges,” Kirzner (1999: 6) explains, market participants can be led,

(i) over-optimistically to insist on receiving prices that are ‘too high’ (to enable them to sell all that they would like to sell at those prices) [or on paying prices that are ‘too low’ (to enable them to buy all that they would like to buy at those prices)]; or (ii) over-pessimistically to enter into transactions that turn out to be less than optimal in the light of the true market conditions as they in fact reveal themselves (e.g., a buyer discovers that he has paid a price higher than that being charged elsewhere in the market; a seller discovers that he has accepted a price lower than that which has been paid elsewhere in the market).²

The over-optimistic seller is unable to sell her wares. Similarly, the over-optimistic buyer is unable to find the goods she desires at the price she is willing to pay. On the other hand, the over-pessimistic buyer or seller has left money on the table. She could have made more or saved more than she did on the transaction.

According to Kirzner, individuals qua entrepreneurs are alert to these arbitrage opportunities (that result from errors of over-pessimism and over-optimism) and, it is their alertness to these opportunities, which explains the tendency of entrepreneurs to equilibrate the market. As Kirzner (2000 16) explains, “each market is characterized by opportunities for pure entrepreneurial profit. These opportunities are created by earlier entrepreneurial errors which have resulted in shortages, surplus, misallocated resources. The daring, alert entrepreneur discovers these earlier errors, buys where prices are ‘too low’ and sells where prices are ‘too high.’” If these errors/opportunities are to be discovered, individuals must be vigilant and embody a “natural alertness” to such errors (ibid.: 18). As he (ibid.: 23) writes, alertness is a key factor, “discovery is attributable, at least in significant degree, to the entrepreneurial alertness of the discoverer.”

² Stated another way, “a state of market disequilibrium is characterized by widespread ignorance. Market participants are unaware of the real opportunities for beneficial exchange which are available to them in the market. The result of this state of ignorance is that countless opportunities are passed up. For each product, as well as for each resource, opportunities for mutually beneficial exchange among potential buyers and sellers are missed. The potential sellers are unaware that sufficiently eager buyers are waiting, who might make it worth their while to sell. Potential buyers are unaware that sufficiently eager sellers are waiting, who might make it attractive for them to buy. Resources are being used to produce products which consumers value less urgently, because producers (and potential producers) are not aware that these resources can produce more urgently needed products. Products are being produced with resources badly needed for other products because producers are not aware that alternative, less critically needed resources can be used to achieve the same results” (Kirzner 1973: 69).

This alertness, it is important to point out, is quite different from possessing superior knowledge. It is true that the entrepreneur knows something that his fellow market participants do not know. He knows, for instance, that there is an opportunity to buy Brand X shoe from Store A and sell it at a higher price to the customers of Store B. But, it is not that he possesses superior knowledge that he can take advantage of—he is not at all like the doctor who possesses superior knowledge of medicine than lay individuals that he can take advantage of—but that the entrepreneur noticed that opportunity when others who might have noticed it did not that explains the essence of entrepreneurship.³ It is also important to point out that deliberately searching for profit opportunities is altogether different than an entrepreneur being alert to and so discovering profit opportunities. An individual will only decide to engage in a deliberate search for knowledge if the costs of search are less than the expected returns from search. In order to calculate the costs and benefits of a deliberate search, an individual must possess some degree of knowledge about the landscape and the likelihood of finding what he hopes to find. That knowledge of the landscape and the likelihood of finding what he is looking for must necessarily be given to him in advance of his search. Consequently, any so-called “search for profitable opportunities” necessarily follows the discovery of an opportunity to potentially benefit from a particular kind of search.⁴

For Kirzner, then, entrepreneurship is an equilibrating force that consists of (and is reducible to) an alertness to arbitrage opportunities which are readily discernable and that only exist because of widespread ignorance in the market. Admittedly, this view of the market process is quite simplistic. In the real world (i.e. where there are multiple periods and multiple commodities), market participants

³ As Kirzner (1973: 67) states, though “the element of knowledge is tied to the possibility of winning pure profits, the elusive notion of entrepreneurship is, as we have seen, not encapsulated in the mere possession of greater knowledge and market opportunities. The aspect of knowledge which is crucially relevant is not so much the substantive knowledge of market data as *alertness, the “knowledge” of where to find market data.*” Furthermore, (1979: 8), “entrepreneurial knowledge is a rarefied, abstract type of knowledge—the knowledge of where to obtain information (or other resources) and how to deploy it.”

⁴ As Kirzner (1985: 22) states, “If an entrepreneur’s discovery of a lucrative arbitrage opportunity galvanizes him into immediate action to capture the perceived gain, it will not do to describe the situation as one in which the entrepreneur has decided to use his alertness to capture this gain. He has not “deployed” his hunch for a specific purpose; rather his hunch has propelled him to make his entrepreneurial purchase and sale. The entrepreneur never sees his hunches as potential inputs about which he must decide whether they are to be used.”

are not simply prone to commit errors because of their ignorance but are also necessarily uncertain as to the best course of action available to them (i.e. there is scope for creativity and judgment). Furthermore, they are not able to unambiguously make sense of their circumstances and their options (i.e. there is scope for interpretation). However, in working with this simple model, Kirzner is able to isolate the essence of entrepreneurship. He is able to demonstrate that if the market is to move toward equilibrium (i.e. the elimination of errors of over-optimism and over-pessimism) it must be comprised of not only agents who can economize (i.e. Robbinsian maximizers) but must also contain agents who are alert to profit opportunities (i.e. pure entrepreneurs). As will be argued in the next section, those criticisms of Kirzner's project that argue he focuses too exclusively on alertness and disregards the creativity, judgment and interpretation that are necessarily a part of entrepreneurship in-the-world are somewhat unfair. He should not be faulted for not discussing the determinants of entrepreneurial alertness and the psychological characteristics of successful entrepreneurs, particularly, since (as we hope to show in *Section IV*) his theory of entrepreneurship actually makes a fruitful analysis of the determinants of alertness and the psychological characteristics of successful entrepreneurs possible.

3. Ignoring Judgment and Interpretation when Discussing the Essence of Entrepreneurship

As noted above, Kirzner's theory of entrepreneurship has been criticized for abstracting from the psychological characteristics of real world entrepreneurs and the determinants of alertness. Kirzner's theory of entrepreneurship, it is suggested, overemphasizes the role played by alertness and ignores the critical role played by judgment and interpretation. Arguably, the most compelling critiques along these lines were articulated by High (1982, 1990) and Lavoie (1994). High (1982, 1990), for instance, criticized Kirzner for stressing ignorance rather than uncertainty and, as a result, neglecting the critical role played by judgment in entrepreneurial activity in practice. Additionally, Lavoie (1994) has criticized Kirzner for describing profit opportunities as if they were readily identifiable (e.g. \$20 bills on the sidewalk) and so minimizing the critical role played by interpretation

in real world entrepreneurship.⁵ Kirzner (1994, 1999, 2008) has offered direct and indirect defenses against both charges. Ironically, while his indirect defense against the charge that he too quickly disregards uncertainty and judgment is quite effective,⁶ his direct defense against the charge that he leaves no scope for the interpretive element of entrepreneurship (though accurate) deserves to be augmented. This section will, thus, focus on Lavoie's critique of Kirzner's theory of entrepreneurship.

Lavoie (1994) argues that Kirzner's theory of entrepreneurship does not take into account the interpretive dimension that is a part of all human action including entrepreneurship. For Kirzner, Lavoie (*ibid.*: 43-44) correctly explains, the entrepreneur is an individual who notices a hitherto undiscovered opportunity for pure arbitrage. These opportunities, though only spotted by the alert entrepreneur, are unambiguous. The same Brand X shoe is being sold at different prices in the market. There is a clear opportunity to buy the shoe at a relatively low price from Store A and sell it at a relatively high price to the customers of Store B. Kirzner has at times likened the profit opportunity to be discovered by the entrepreneur to a twenty dollar bill lying on the beach, waiting to be snatched up. That picking up the twenty dollar bill would be beneficial is entirely obvious. Once the

⁵ Baker, Gedajlovic and Lubatkin (2005: 495) issue a similar critique of Kirzner's ignoring cultural context and argue that "people perceive opportunities through a cultural or institutional lens," and that "individuals are influenced by social circumstance and express a broad range of idiosyncratic motives as they enact entrepreneurial opportunities. By drawing attention to—rather than holding constant—differences in human motivations and national contexts, we base the CDEE framework on the view that entrepreneurial opportunities—and not just their discovery—are inescapably subjective and context dependent."

⁶ See, for instance, Kirzner's (2000: 247-248) recent discussion of why he did not stress creativity: "In recognizing how, (in order to act entrepreneurially in the uncertain context of time-consuming producing possibilities) the entrepreneur will need to display qualities of boldness and creativity, there was no intention (and no real need) to see these qualities as essential to the pure entrepreneurial role, as that role enters into our analysis and understanding of the market process. In acknowledging that, for Mises, the uncertainty within which the entrepreneur operates is an essential defining condition for the situations in which scope for entrepreneurship exists, there was no intention (and no need) to see boldness and creativity as anything more than the psychological qualities needed in order for the entrepreneur to effectively recognize, in peering into the future, those pure price differentials in which prospective entrepreneurial profits are to be won." Kirzner continues (*ibid.*: 247) to say that "while psychological and personal qualities of boldness, creativity and self-confidence will doubtless be helpful or even necessary in order for a person to "see" such price-differentials in the open-ended, uncertain world in which we live (with "seeing" defined as necessarily implying the grasping of the opportunity one has seen), the analytical essence of the pure entrepreneurial role is itself independent of these specific qualities." The same logic would apply to the critique that he did not stress the superior judgment that entrepreneurs would have to possess.

entrepreneur notices the twenty dollar bill as a twenty dollar bill, there is nothing left to do other than pick it up.

As Lavoie (1994: 43) explains, however, individuals do not experience the world unambiguously. We must attach meaning to our environment and to the opportunities in front of us before we can choose between the courses of action available to us. Interpretation necessarily precedes all human action. The problem with the “twenty dollar bill” example is that it trivializes the interpretive element that is a necessary part of entrepreneurship. Recognizing that this piece of paper lying on the beach with colored ink stenciled across it is in fact a twenty dollar bill does require an act of interpretation. However, the interpretive act involved here is quite straightforward for almost everyone who comes across the bill. The profit opportunities that the real world entrepreneur must discover if the market is to tend toward social coordination, then, are not really like twenty dollar bills lying on the beach. The interpretive act involved in real world discoveries is much more complex. As Lavoie (1991, 44) states, “most acts of entrepreneurship are not like an isolated individual finding things on beaches; they require efforts of the creative imagination, skillful judgments of future costs and revenue possibilities, and an ability to read the significance of complex social situations.”

Lavoie contends that, for Kirzner, the entrepreneur is like the person who has sight in a world where blindness and sight are predetermined. As such, there is no real choice in the matter. The blind simply never get to see. Those with sight only need open their eyes to see. And so, many individuals just do not see profit opportunities that might be right in front of their faces, because they are not alert to them. The person with ‘sight’ however, notices yet to be discovered opportunities that others might have noticed had they only been alert to them. Lavoie (*ibid.*: 44) contends that, for Kirzner, “being more alert seems to be simply a matter of opening one’s eyes to see what is right there under one’s nose.”

Kirzner’s view of alertness, Lavoie (*ibid.*: 46) complains, is too simplistic and says far too little about why certain individuals are alert to certain opportunities and about why some profit opportunities are discovered and others are not. As Lavoie (*ibid.*: 44) explains, “if entrepreneurship is like vision...it is like human vision, which does not merely see patches of color but meaningful things.” That is, when we open our eyes and look around, we attach meanings to what we see. And, as such, different individuals see the same phenomena in different ways. Consider, for instance, what Jack and Jill notice from their shared vantage point at the top of the hill. As Jack looks round, he might see a large tree, their black

minivan and a crowd of ten children. Jill, however, from the same plateau, looking at the same objects, might see a large, dying sequoia, their black walnut colored Toyota Sienna, and ten neighborhood teenagers walking home from high school. Jack and Jill essentially see the same things but interpret what they see in different ways. Similarly, Lavoie maintains, this difference in perception and interpretation is crucial in explaining why some individuals are able to notice opportunities that others have been unable to see. As he (1991, 44) maintains, “the profit opportunities the entrepreneur discovers are not directly copied off reality in itself; they are interpreted from a point of view.” That Jill might see an opportunity to provide transportation services for the neighborhood teenagers to and from school while Jack does not see this opportunity makes sense given the different meanings they attach this situation.

If we are to understand entrepreneurship we must understand why certain individuals are alert to certain opportunities and not others. Understanding entrepreneurship, it would thus seem, must involve a discussion of the role of not only alertness but of interpretation as well. Lavoie (*ibid.*: 46) worries that in failing to emphasize the interpretive dimension of entrepreneurship, Kirzner’s theory leaves too much of the entrepreneurial process unexplained. As Lavoie (*ibid.*) complains, in Kirzner’s theory, “it appears to be an arbitrary matter why some things get noticed before others.” Statements by Kirzner that “entrepreneurs are alert to what it is in their interest to be alert to” do not satisfactorily elucidate the determinants of entrepreneurial alertness or the characteristics possessed by successful entrepreneurs. As Lavoie (*ibid.*) suggests,

Profit opportunities are not so much like road signs to which we assign automatic meaning as they are like difficult texts in need of a sustained effort of interpretation. Entrepreneurship is not only a matter of opening one’s eyes, of switching on one’s attentiveness; it requires directing one’s gaze. When an entrepreneur sees things others have overlooked, it is not just that he opened his eyes while they had theirs closed. He is reading selected aspects of a complex situation others have not read.

For Lavoie, recognizing that alertness is not merely about “opening one’s eyes” but about “directing one’s gaze” raises the question about “what gives a predirectedness to the entrepreneur’s vision, of why he is apt to read some things and not others” (*ibid.*: 46). The answer that Lavoie poses has to do with culture. In failing to address the address the interpretive dimension of entrepreneurship,

then, Kirzner's theory of entrepreneurship is, according to Lavoie, unable to discuss the cultural dimension of entrepreneurship.

For Lavoie, culture is a lens through which individuals see and make sense of the world. Stated another way, it is a source of their interpretations; it is the fount from which they derive meanings. As such, it is akin to the "social stock of knowledge" that Schutz (1932) explained individuals employed when they were attaching because-of and in-order-to motives to their actions and the actions of others. According to Lavoie, Kirzner's theory of entrepreneurship does not acknowledge the role of culture in entrepreneurial discovery and so ignores a key factor that affects entrepreneurs. But, as Lavoie (*ibid.*: 49-50) explains, the entrepreneur's

... ability to read new things into a situation is not primarily due to his separateness from others, but, indeed, to his higher degree of sensitivity to what others are looking for. The really successful entrepreneurs we know are not unusually separate from others; on the contrary, they are especially well plugged into the culture. What gives them the ability to sense what their customers will want is not some kind of mysterious alertness that gets "switched on" but their capacity to read the conversations of mankind. They can pick up the sense of where their fellows in the culture stand, what values they adhere to, what purposes they pursue, what they consider beautiful, and what they deem profane.

Successful suppliers are able to figure out what their consumers will like, are able to tweak their product to better suit their customers' preferences, are able to present those products in the manner that they sense will appeal to their customers, all because they are "especially well plugged into the culture." This entire process is interpretive, and interpretation necessarily occurs through a cultural lens. Being immersed in a culture, thus allows the entrepreneur to make accurate interpretations. For Lavoie (*ibid.*: 51), then, a more complete theory of entrepreneurship must begin with a hermeneutical theory which stresses cultural transmission and the interpretive dimension that is a part of all human decision making.

Kirzner (1994: 329) has conceded that Lavoie is likely correct when he stresses the interpretative dimension of entrepreneurship and how culture impacts entrepreneurial alertness. But, Kirzner argues, Lavoie's insights ought only to affect the application of economic theory not the content of economic theory. "It does follow," Kirzner (*ibid.*) argues, "that for the purposes *within economic theory* for which the entrepreneurial role has been introduced, it is necessary to

go beyond the bare propensity of being alert. In *applying* economic theory, one immediately looks for the cultural, historical, and social detail ... through which the economic processes make themselves manifest.” Kirzner believes that Lavoie has confused economic theory with economic history. Paying attention to culture does not add to understanding of the “systematic market forces.” The market is driven toward equilibrium because of the existence of entrepreneurs who are alert to yet to be discovered profit opportunities. This is true regardless of the cultural context. “To suggest that the ‘incompleteness’ of such pure theory is in any way an inadequacy,” Kirzner (*ibid.*) explains, “would be an unfortunate misunderstanding of what theory is all about.” Kirzner is, of course, correct that theory necessarily abstracts from cultural and institutional detail and that understanding the theory must precede any effort to understand actual entrepreneurs within a particular context. As Kirzner (*ibid.*) explains, “it is only when one has grasped the pure entrepreneurial character of market processes that one can begin to enrich one’s understanding of the real world by drawing attention to cultural and institutional detail.”

It is our contention, however, that while it is unfair to criticize Kirzner’s theory of entrepreneurship for not accounting for culture, that it is also possible for a theory of entrepreneurship to elucidate the interpretive dimension of entrepreneurial activity and the role for culture in directing the gaze of entrepreneurs. Though incompleteness is not a fair criticism of theory, it is possible to extend theories in an effort to make them more complete. Rather than seeing Lavoie’s criticisms of Kirzner as critiques, we believe that it may be more appropriate to view them as suggestions for how Kirzner’s theory of entrepreneurship may be fruitfully amended. It is simply not true that Kirzner’s theory of entrepreneurship, because it is silent on the role of interpretation and culture, “leaves no room for culture.” Instead, we contend, that his theory of entrepreneurship makes a fruitful analysis of the psychological characteristics of entrepreneurs and the determinants of alertness possible. Indeed, as Storr (2004: 29) argued elsewhere, “if Kirzner’s theory of entrepreneurship was really not amenable to discussions of culture then Lavoie would have had to discard it.” Lavoie, however, did not abandon Kirzner’s framework but set out to build upon it. The next section extends Kirzner’s theory to explore the determinants of entrepreneurial alertness and the characteristics of successful entrepreneurs. Ironically, Kirzner’s own efforts in this regard have not been all that successful.

4. A Kirznerian Theory of the Culture of Entrepreneurship

In discussing the consequences of extending his model to discuss a multi-period, multi-commodity market process where not only ignorance but uncertainty is endemic, Kirzner contends that the entrepreneur would not only have to be alert but would possess the psychological characteristics that Schumpeter attributes to the entrepreneur.⁷ “To see things in [my] way,” Kirzner (2008: 9) has written, “did not (as the critics have somehow understood) mean that I was in any way denying the elements of boldness, creativity, and innovativeness which, in the real world, certainly do characterize entrepreneurial activity.” And, Kirzner (1997b: 12) has conceded that

once we permit the multi-period character of real world entrepreneurial behavior to be explicitly considered, the relevance of the active aggressive characteristics of Schumpeter’s entrepreneurs becomes understandable and important. Entrepreneurial alertness, in this essentially uncertain, open-ended, multi-period world must unavoidably express itself in the qualities of boldness, self-confidence, creativity and innovative ability.

This concession of Kirzner, however, both concedes too much and too little. He concedes too much because he seeks to add to the realm of theory attitudes and propensities that we have no reason to believe would characterize all entrepreneurs in all contexts. For instance, one might imagine that the successful entrepreneurs in some contexts are not the bold ones, but the unassuming ones who are alert to the profit opportunities that might come from marketing the familiar and making only minimal changes to what is already popular. Similarly, the copycat rather than the innovator may prove to be more successful in some contexts. As such, boldness and creativity may sometimes actually obscure rather than enhance an entrepreneur’s ability to notice hitherto undiscovered profit opportunities. Kirzner concedes too little, on the other hand, because he does not admit that once the market environment utilized in the model becomes more complex, the scope for interpretation grows larger and it becomes necessary to employ something like culture to explain why some opportunities get noticed and others do not.

⁷ See Schumpeter (1960) for his discussion of the attributes of the entrepreneur.

A discussion of the determinants of entrepreneurial alertness and the characteristics of successful entrepreneurs, we suggest, would result in a Kirznerian theory of the culture of entrepreneurship. A Kirznerian theory of the culture of entrepreneurship would not try to single out characteristics that may or may not describe actual entrepreneurs. Instead, such a theory would focus on how cultural and psychological factors affect the opportunities that entrepreneurs perceive. It would also have to give some hint as to what cultural factors scholars wanting to understand entrepreneurship in some particular context should look for when they seek to apply their theory of entrepreneurship.

A Kirznerian theory of the culture of entrepreneurship, we contend, would proceed as follows: (a) entrepreneurs alert to profit opportunities are the driving force in the market process and explain the tendency toward equilibrium in the market; (b) these opportunities exist to all market participants because there is widespread ignorance (and uncertainty) in the market; (c) these opportunities are not readily identifiable as opportunities but must be interpreted as such; (d) differences in stocks of knowledge (both individualized and social/cultural) explain why different individuals are alert to certain opportunities and not others; (e) applied efforts to make sense of real world entrepreneurship must pay attention to the differences in stocks of knowledge that might explain the differences in interpretative frameworks across contexts. Kirzner (with Sautet 2006: 17) has largely endorsed this way of moving forward. “Culture,” he explains, “can shape what an individual perceives as opportunities and thus what he overlooks, as entrepreneurship is always embedded in a cultural context. ... culture for the most part has to do with orientation (affecting where an entrepreneur may direct his gaze) and results in entrepreneurship looking differently across contexts.”

To illustrate how a Kirznerian theory of the culture of entrepreneurship might help us explain real world entrepreneurship, we turn to two examples from our own research into entrepreneurship in the Bahamas and in Trinidad and Tobago. Storr (2004) gives an account of the economic history of the Bahamas, in order to explain the particular flavor of enterprise there. In Storr’s narrative, there are two “ideal types” of entrepreneurs. The first is the “master pirate” who is alert, like the Kirznerian entrepreneur. However, because of the importance of piracy in the Bahamas’ past, she is alert to *profiteering* opportunities (ibid.: 10). The master pirate Bahamian entrepreneur is therefore a “trickster”, who is known for her cunning, has a “narrow radius of trust” (ibid.: 106), and is rather impatient with a high discount rate. The other ideal type is the “enterprising slave” type who,

because of Bahamians' previous experiences with slavery, has come to understand the value of hard work even when obstacles are evident. The enterprising slave is alert to profit opportunities in the regular sense. Both the piratical and enterprising entrepreneurial types are evident in Bahamian culture, sometimes even within the same individual (ibid.: 106). Storr explains how the culture has evolved so that entrepreneurship in the Bahamas is explainable and fairly predictable using those two metaphors.

While Storr's narrative elucidates the cultural dimension of entrepreneurship in the Bahamas, we never lose sight of that Kirznerian entrepreneurial process at work. To illustrate the point, we refer to the cultural legacy of the *master pirate* type of entrepreneur. Remember that the master pirate is always alert to opportunities for profiteering. The way the master pirate's culturally inherited behaviors manifest in individual business activity is often through the "nepotism and predominance of small, hierarchically organized family firms" (2004, 107), the relatively low national savings rates, and the underinvestment in capital-intensive industries that are all typical of the Bahamian entrepreneur. As Storr (ibid.: 108) describes, "the master pirate is on the lookout for the quickest route to prosperity," which explains why Bahamians "tend to invest in restaurants, salons, clothing stores, and other retail or service oriented companies and not in large-scale manufacturing or commercial agriculture." Thus, the master pirate's alertness to alternative business types seems to be switched off, whereas she appears to be hyper alert to opportunities for quick and easy bounty in the form of rent seeking and political profits. The Kirznerian discovery process is still at work, in that the master pirate is alert to arbitrage opportunities. However, the spheres of business activity to which she is alert are to a large extent determined by her historical experiences with piracy, her culture.

Similarly, the narrative of the enterprising slave also involves the Kirznerian discovery process. "The peculiarity of Bahamian slavery," Storr (2004, 99) contends, "and the presence of a large population of free and materially well-to-do blacks in the Bahamas gave birth to the *enterprising slave* (an equally prominent figure in the economic story of the Bahamas)." During slavery, blacks were assigned to task groups where they were made responsible for particular chores (ibid.: 89). Additionally, they were allowed to work on their own plots of land when official work was completed for the day. As a last point, slaves in the Bahamas did not work on tropical staple crops, and faced with so much free time, the farmers allowed slaves to seek paid work on their own when their slaves had

the time. Storr argues that these experiences with slavery explain, at least in part, the attitudes of the present Bahamian entrepreneur, who displays ingenuity and a “strong work ethic” (ibid.: 109). Furthermore, Storr (ibid.: 110-111) claims that this spirit of “resourcefulness” and hard work in the face of difficulty is the reason why the Bahamian entrepreneur, “whether he is a “peanut boy” or a straw vendor or a shopkeeper or a restaurateur, is a capable, creative creature. Like the master pirate, the enterprising slave is an entrepreneur in the Kirznerian sense, in that she is alert to a different set of opportunities for profit. She notices the errors made by other entrepreneurs, and, seeing hungry tourists waiting near docks and parking lots, she exploits those opportunities by setting up shop there.

Colonialism has, likewise, left a particular legacy in Trinidad and Tobago that colors entrepreneurial alertness in that context. John and Storr (2010) have detailed the peculiar arrangement of entrepreneurship in Trinidad by race/ethnicity—the distinct ethnic groups exhibit distinct entrepreneurial patterns. John and Storr’s empirical study of the labor force revealed that those Trinidadians of African descent have the lowest self-employment rate of the four ethnic groups in Trinidad, at 16.1 percent. This number is below the average self-employment rate for the entire sample, which is 19.7 percent. In fact, Trinidadians of African descent are the only ethnic group to perform below average. One-fifth of Mixed persons in the sample are self-employed, and therefore their rate is average. Indians (now considered the new business class) have an internal group self-employment rate of 22.7, which ranks second only to the Chinese, Syrian-Lebanese and White Trinidadians, who outperform all the other groups substantially. If a person in Trinidad is of Chinese, Syrian-Lebanese or European ancestry, he/she is 35.5 percent likely to be self-employed, which makes him/her at least twice as likely as an African person to be self-employed (John and Storr 2010).

What explains these patterns in Trinidad? Like Storr’s work on the Bahamas, culture and history have a lot to contribute to the explanation. Because of colonialism, Whites have traditionally been the owners of big businesses, and this minority ethnic group retained control over the most important sectors of the economy (John and Storr 2010). Over generations, this control has been passed down, and the children who inherit their ancestors’ companies tend to remain in the same business. Crichlow (1998) adds that the Whites were able to consolidate their dominant position in business in the 1960s and 70s because the elites benefited most from post-independence industrialization programs created by the government. In general, then, members of different ethnic groups in Trini-

dad, because of their different experiences during and after colonialism, are alert to different kinds of opportunities. The Syrian-Lebanese control over the garment industry in Port-of-Spain, for instance, provides evidence of this. Ryan and Barclay (1992) claim that the advantages that the other ethnic groups had over blacks were “those resources they possess which have proven critical to their entrepreneurial success”, resources that were both “cultural and ethnic” (ibid: 143). Indians, Chinese and Syrian-Lebanese learned the virtues of hard work, thrift and planning for the future from their ancestors, who saved greatly in preparation for their return to their homelands (ibid.:145). Those three groups, like Whites, also formed business associations to support their race’s success in business. Bridget Brereton, in her book “Race Relations in Colonial Trinidad, 1870—1900” (1979: 36), also mentions that among the white elite, “a high value was placed on family connections” and French Creoles routinely inbred and intermarried to keep economic networks and kinship tight. These cultural patterns map somewhat neatly to present day Trinidad and Tobago, where Indians, Chinese, Syrian-Lebanese and Whites have relatively high internal group self-employment rates.

A combination of practices that occurred during and after slavery appears to determine African Trinidadians’ low entrepreneurship rates in comparison. In the early 1900s, the planter class took deliberate steps to raise taxes and make land acquisition difficult for blacks (Ryan and Barclay 1992: 4), blacks depended on volatile crop prices for their success yet spent their incomes “lavishly” (ibid: 8), and blacks tended to borrow too much credit from white planters, who ended up seizing blacks assets when the blacks could not repay (ibid: 9). Blacks also frequently migrated to urban areas in search of jobs and schools, thus forfeiting their lands to Indians, who preferred to work in rural areas (ibid: 11). Furthermore, in contrast to Whites and Indians, blacks never saw themselves as transients in Trinidad’s history—they always regarded themselves as Trinidadians and hence focused instead on “education rather than business as a vehicle for social mobility” (Brereton 1979, 146). Brereton (ibid.: 85) argues that Afro-Trinidadians were more likely to seek status by investing in education, as opposed to entrepreneurship, because “school represented the main chance of mobility for the sons of the black and coloured lower class and lower middle class.” Black parents discouraged their children from becoming businessmen, choosing instead to instill academic values so that their children could grow up and secure status from “good” jobs, particularly in the public service. Contemporary findings indicate a preponderance of blacks in the public sector and a low rate of self-employment for the group.

The Trinidad and Tobago case study shows that while Africans have a different “taste” for entrepreneurship than other ethnic groups, and this taste is a cultural legacy, this is tantamount to saying that blacks in Trinidad are more likely to have their alertness to commercial entrepreneurial opportunities switched off. Stated another way, while some ethnic groups (say Trinidadians of African descent) are likely to be alert to opportunities for political and bureaucratic entrepreneurship, members of other groups appear to be more acutely alert to particular opportunities for commercial entrepreneurship. Blacks are less likely to discover these opportunities period, because they are generally looking elsewhere to improve their standard of living. In contrast, the other ethnic groups have their alertness switched on. They see arbitrage opportunities in economic markets, while blacks have a propensity to notice opportunities in politics (John and Storr 2010).

The examples of the Bahamas and Trinidad and Tobago are presented here in order to show that the Kirznerian theory of the culture of entrepreneurship can actually be quite useful in helping us explain cultural differences in entrepreneurship. Indeed, while all decisions are made within a cultural context, as Lavoie pointed out, the process of entrepreneurial discovery that occurs because of the fundamental ignorance and radical uncertainty in the world can still be identified.

5. Conclusion

If entrepreneurship is the driving force of capitalism and hence economic growth and development, then economists should engage in the project of understanding how that force works. Israel Kirzner has made significant strides in advancing a theory of entrepreneurship. While the theory is not without its limitations, it has proved useful and as a point of departure for theories that attempt to incorporate culture in the decision-making process of entrepreneurs. Those who would object to Kirzner’s theory based on its simplicity must recall certain indelible tenets in economics such as “people are rational” and “demand curves slope downward” also involve basic observations about human action. Without such foundational statements of theory, economics as a social science would be constrained. While critics are correct in pointing out that a discussion of culture is largely absent in Kirzner’s earlier work, this is not to say that Kirzner’s project is not useful in helping to explain how entrepreneurship differs across culture. On the contrary, the concepts of alertness and discovery can and arguably should be conjured even when highlighting at a theoretical level how culture impacts entre-

preneurship and at an applied level when discussing the specific cultural aspects of entrepreneurship in some context. An opportunity, as Kirzner pointed out, can only exist to the discoverer when she notices it. In order to notice it, she must be alert to it. Culture will largely explain why she is alert to certain activities and not to others.

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Entrepreneurs are not Experts

Roger Koppl*¹

... In that Empire, the Art of Cartography attained such Perfection that the map of a single Province occupied the entirety of a City, and the map of the Empire, the entirety of a Province. In time, those Unconscionable Maps no longer satisfied, and the Cartographers Guilds struck a Map of the Empire whose size was that of the Empire, and which coincided point for point with it. The following Generations, who were not so fond of the Study of Cartography as their Forebears had been, saw that that vast Map was Useless, and not without some Pitilessness was it, that they delivered it up to the Inclemencies of Sun and Winters. In the Deserts of the West, still today, there are Tattered Ruins of that Map, inhabited by Animals and Beggars; in all the Land there is no other Relic of the Disciplines of Geography. Suarez Miranda, Viajes de varones prudentes, Libro IV, Cap. XLV, Lerida, 1658

—Jorge Luis Borges

1. Introduction

Expertise is valued today. It is esteemed a good thing to be an expert. Entrepreneurship is also valued, and it is esteemed a good thing to be an entrepreneur. It may therefore seem paradoxical or at least surprising to say that entrepreneurs are not experts. And if they are not, one might suppose, then

* Roger Koppl is the director of the Institute for Forensic Science Administration of Fairleigh Dickinson University, where he is also a Professor of Economics and Finance.

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so much the worse for entrepreneurs. As we shall see, however, the sense in which entrepreneurs are not necessarily experts is intimately linked to the claim that we need entrepreneurs and cannot replace them with experts such as bureaucrats, planners, and business professors. If entrepreneurs are not experts, then so much the worse for experts.

2. Entrepreneurs

The claim that the entrepreneurial function in the market process cannot be replaced by an expert, or group of experts, is a characteristically “Austrian” claim about how knowledge is produced and distributed in society. Israel Kirzner has emphasized the epistemic function of entrepreneurs. Entrepreneurial discovery, he showed us, is required to correct errors in the market process and to bring our actions into closer conformity to underlying fundamentals.

The Austrian epistemic vision of the entrepreneurial market process differs radically from the sort of equilibrium theory that dominated Anglo-American economics in 1973 when Kirzner made the first book-length statement of his theory. In the old neoclassical microeconomics, the knowledge guiding economic choice was somehow present at once and freely available to all actors, who never failed to employ such knowledge properly. Kirzner showed that even in the narrow context of static neoclassical equilibrium, a theory of entrepreneurship is required to complete the theory.² We cannot account for adjustment to equilibrium without a theory of error discovery and correction. The old equilibrium theory was incoherent because it vaguely assumed that all knowledge is somehow given to all actors who, therefore, never change their plans. And yet the theory included comparative statics, whereby a change in market data induces adjustment to a new equilibrium. There can be no such adjustment if no one learns that his current plans are based on a mistaken view of the underlying fundamentals. Such learning is error discovery and the corresponding plan change is error correction. Thus, Kirzner showed, our theory will be incomplete and incoherent unless we view the market process as an entrepreneurial process of error discovery and error correction.

In the context of a static neoclassical world, Kirznerian entrepreneurship is necessarily equilibrating. Without it, there can be no movement toward equi-

² I thank Peter Boettke for many conversations over the past 25 years or so in which he has insisted on the importance of the “neoclassical” context of Kirzner’s 1973 book.

librium; with it, there can and will be movement toward equilibrium. In this setting, entrepreneurial discovery is error discovery, and entrepreneurial action is error correction. In a static setting, the market process is an error correction process whereby previously disparate and inconsistent actions of different persons are brought into greater harmony and coordination. Outside of the narrow context of a static neoclassical model of market equilibrium, entrepreneurial learning can move us in radically new directions. In the more open-ended context of a dynamic entrepreneurial market process, entrepreneurial discovery is not necessarily equilibrating. We could save the idea that entrepreneurship is necessarily equilibrating by giving the word “equilibrium” a greatly enlarged meaning that would imply a kind of ultimate position in which no further learning or innovation is possible. Kirzner has sometimes taken this route (Kirzner 2009) and sometimes avoided it (Kirzner 1982). Even when he sees innovations as coordinating relative to a “hypothetical world operating with as yet undreamed of technological breakthroughs,” he does so only to help us “to see with clarity that there is a single explanation for all market movements” (Kirzner 2009: 150).

I prefer not to give the word “equilibrium” such a large meaning. It seems likely that the “equilibrium” so defined would not be unique if it could be said to exist at all. Which of the seemingly infinite number of final equilibriums we are headed toward would depend on the particular entrepreneurial discoveries made and the order in which they were made. (Economists often call such dependence “path dependence.”) As far as I can tell, however, nothing of substance depends on whether we like or dislike that particular use of the word “equilibrium.” We seem to have a case in which semantics are “mere” semantics.

Even in the open-ended world of potentially disequilibrating change, it is entrepreneurship that preserves coordination among actions. If an entrepreneurial innovation or other novelty has caused our different plans to become inconsistent, the inconsistency cannot be resolved or mitigated until an alert entrepreneur discovers it. Experience seems to suggest that the coordinative function of entrepreneurship has been good enough to prevent the sort of discoordination we might think of as “chaotic.” If the trains do not always run on time, they are not so chaotic that we give up on trains altogether. This homey example may also help to explain why it is not a sort of cosmic coincidence that entrepreneurial discovery is generally able to preserve a relatively high degree of plan coordination. If passengers cannot coordinate their actions with trains, they will find ways to get along without using trains. If I find myself less able to rely on others to act than I

had expected, I will likely revise my plans in the direction of less dependence on others. If, for example, I am not confident that local vendors will have vegetables for sale at affordable prices, I may plant a garden and do some canning for the winter. More generally, if our plans grow too far apart, each of us will have to rely on the others somewhat less. The overall reduction in interdependence allows each of us to plan more satisfactorily and thereby bring our plans into a greater degree of mutual coordination. Similarly, if I find that I cannot formulate reliable expectations of the future, I will probably reduce my planning horizon. If I can't be confident that my heirs will be able to keep the property they inherit from me, then I am less likely to provide shade to my grandchildren by planting an oak tree, though I may plant carrots and cabbages to eat later in the season. In a world in which people adjust their plans to what they can reliably expect, their expectations will be more often right than wrong and a rough equilibrium among expectations will prevail. (Butos and Koppl 2001 call this idea the "horizon principle." See also Koppl 2002: 106-110.)

Israel Kirzner carefully distinguishes the role of the entrepreneur from that of the capitalist and the laborer. He therefore conceived the "pure and penniless" entrepreneur as a distinct economic function. Somewhat inexplicably, this theoretical isolation of the entrepreneur has caused difficulty. Some scholars have challenged the idea and insisted that any entrepreneur is also a capitalist. These same scholars, however, do not seem to object to the economist's practice of isolating the economic function of the worker from other functions, such as capitalist.

Any real person is, among other things, part capitalist and part worker. Even the poorest worker performing the dreariest physical task is part capitalist. His physical vigor is an asset he protects through several forms of investment, including eating food. At night, our weary worker might wish to enjoy the present consumption of beer, books, or the company of dear friends. He sacrifices such present enjoyment, however, and goes to bed so that he might rise refreshed in the morning and ready to work. He does so because he anticipates a larger future consumption enabled by resting at night than he sacrifices in current carousing, reading, or warm conversation. But sacrificing present consumption for a larger prospective future consumption is the characteristic function of the capitalist, not the worker. In spite of the fact that no real worker can be a worker only, economists isolate the theoretical function of labor from that of capital. And they are right to do so. Similarly, I think, we should follow Kirzner in isolating the theoretical function of the "pure and penniless" entrepreneur from that of all other

economic functions, including that of the capitalist.

Israel Kirzner distinguishes the entrepreneur from the capitalist. In this paper I draw a similar distinction between entrepreneurs and experts. It may be that a given entrepreneur is, in some sense, an expert. It may even be that every entrepreneur is in part an expert. And yet entrepreneurship is not expertise. To make my case, I need to say what I mean by “expert.”

3. *Experts*

There is a small literature on the economics of experts, and interest in the topic seems to be growing (Feigenbaum and Levy 1993, 1996; Froeb and Kobayahi 1996; Koppl 2005a, 2005b; Levy 2001; Milgrom and Roberts 1986; Peart & Levy 2005; and Posner 1999a, 1999b.) The definition of “expert” has remained vague in this literature. To discuss “experts” meaningfully, however, we need to distinguish them from others who happen to know something. After all, everyone knows *something*, but not everyone is an expert. The distinguishing feature of an expert is that he or she is *paid* to render an opinion. Experts are paid for their opinions. The impoverished worker we earlier imagined is paid for his back, not his opinion. The entrepreneur is paid for his output. The young Steven Jobs, for example, was paid for the Apple Computers he produced, not his opinions on the future of digital technology. This is true even though Jobs would not have co-founded Apple Computers if he had not held prescient opinions on digital technology. Experts are in a different position. They are paid for their opinions themselves.

Because experts are paid for their opinions, they must choose what to say. They must choose what information to share. Scholars have often made the implicit assumption that experts are pure seekers of the truth. Peart & Levy (2005: 87) note cases, however, in which “the presumption that experts seek only the truth was terribly wrong.” Such scholars should probably have known better. In ordinary life we insist on hearing both sides of the story. When the doctor tells us we need surgery, we get a second opinion in part because we worry that his financial interest in performing the surgery may have distorted his judgment about medical options. And so on. Economists do not forget that a car mechanic may recommend unnecessary procedures to the unwary. And yet they forget that their fellow economists are in a similar epistemic position.

The expert is supposed to tell the truth, but what incentive does he have to do so? It is a question of motivation, and there are three key motivational assumptions of information choice theory. First, experts seek to maximize utility. Thus, the information sharing choices of experts are not *necessarily* truthful. Second, expert cognition is limited and erring. Third, incentives influence the distribution of expert errors.

Experts seek to maximize utility. Their efforts do not always succeed. It can be hard to know what path will produce the best result. Thus, I had better not say that experts “maximize utility,” which might seem to suggest a superhuman ability to achieve intended outcomes. But they try. This motivational assumption is the very same one economists bring to any human action. To say that experts try to maximize utility is just to say that they are humans and act like it.

To say that experts try to maximize utility is *not* to say that they are “selfish” in any crude or boorish sense. It depends on the expert. No doubt some are selfish by any measure. But others will be driven by motives to which Adam Smith (1759) drew our attention, namely sympathy, approbation, and praiseworthiness. In other words, they may care about others, and the opinions of others, while also wishing to *deserve* a high opinion from others. Some experts have a conscience, and others do not.

Expert cognition is limited and erring. In other words, experts are dumb. It is probably not surprising that an economist would say experts try to maximize utility. It might be surprising, however, that an economist would call experts “dumb.” Am I not an expert of sorts myself? The point is that all of human cognition, and thus that of experts, is limited and erring. To err is human. Economists often use the term “bounded rationality” instead of “dumb.” And the assumption of bounded rationality is now standard, though not universal, in economics.

Finally, incentives skew errors, including “honest errors.” This point might be traced back at least as far as Julius Caesar, who said, “men freely believe what they will.”³ In more recent times, however, the point emerges from the literature on “observer effects,” which seems to show that our opinions may serve our inter-

³ I must admit that my translation is based on other translations and not on knowledge of Latin. I must also admit that it may be a bit too pithy to fit the original, which is “(H)omines fere credunt libentur id quod volunt,” Citing his source as G. Julius Caesar, *Caesar’s Commentaries on the Gallic War* 155 (51 B.C.E.) (Frederick Holland Dewey ed., Translation Publishing Co. 1918), D. Michael Risinger translates it as “men generally believe quite freely that which they want to be true” and used it in Risinger et al. (2002: 6).

ests even when we know it not. We are generally more likely to observe, perhaps mistakenly, what we expect than what we do not expect. Errors of observation tend to be skewed in the direction of our expectations. Figure 1 illustrates.⁴ If the central figure is seen only with the vertical elements, it will be seen as the numeral 13. If it is seen only with the horizontal elements, it will be seen as the letter B. Context creates expectations that influence perception.



Figure 1: Context influences perception

Observer effects matter because they show that objectivity is hard to achieve. Masking is the main therapeutic response scholars have suggested to minimize observer effects. The expert should hide from himself potentially biasing information. Such masking is employed in double-blind placebo studies. If the medical researcher knows which patients got the placebo and which ones got the real medicine, it might skew his evaluations of those patients. The researcher might upgrade the health of sickly patients who got the real medicine and downgrade the status of robust patients who got the placebo. The worry is not that the researcher will cheat, although cheating is possible in science as in the rest of life. The worry is that unconscious bias will skew the researcher's judgment. An extensive literature supports this fear with solid evidence (Risinger et al. 2002: 12-24). The pioneer and leading expert on observer effects Robert Rosenthal has drawn

⁴This figure is something of a classic image, frequently used. Unfortunately, I do not know who first devised it. I first encountered it in Risinger et al. (2002).

the implication that researchers should “keep the processes of data collection and analysis as blind as possible for as long as possible” (Rosenthal 1978: 1007).

I am an advocate of such masking, which has been labeled “sequential unmasking” in the forensic science literature (Krane et al. 2008). I think we may say somewhat loosely, however, that masking is a psychological solution, not an economic solution. Masking attempts to minimize bias by minimizing the role of potentially biasing information. The economic point of view suggests a complementary, but radically different strategy: Let one bias be a check to another. Let us have a system of checks and balances with regard to biases. Again, this strategy conforms to some of our ordinary habits of living. As I noted above, in ordinary life we insist on hearing both sides of the story. As Milgrom and Roberts (1986) have shown in the context of a civil trial, when two experts have opposing interests, they are driven to reveal all information that might be relevant to a neutral decision maker. A piece of information matters if it bolsters the case for the one side and hurts the other side. It will therefore always be in the interest of one side or the other to expose such a bit of information. Thus, when experts go head-to-head, all the relevant information comes out. The competition between experts drives them to reveal more than any one expert acting alone would have chosen to reveal. In the production of truth, then, as in the production of ordinary commodities, monopolists tend to reduce output below the competitive level. In this section I have noted that experts seek to maximize utility, that expert cognition is limited and erring, and that incentive skew errors. For the purpose of distinguishing entrepreneurs and experts, we should probably pay more attention to the second item on our list, the limits of expert cognition.

4. Theory is Hard

As we have seen, the expert is supposed to have expertise about some domain. He is paid as an expert for his opinion in that domain. The forensic scientist is paid for his opinions on fingerprints, not elections. The political consultant is paid for his opinions on elections, not fingerprints. To have such opinions, the expert needs a theory of his domain. This need for a theory creates a set of limits to expertise that do not necessarily bind entrepreneurs.

It may be hard or even impossible for the expert to have a theory of his domain if that domain is sufficiently complex. The mathematical theory of “algorithmic information theory” has shown that complexity may prevent us from

having the sort of simple description of events that we tend to call “theory.” A theory allows us to compress the data of some domain by picking out the patterns in those data. When theory is possible, the picked out patterns can be described concisely. When no “compression” of this sort is possible, theory is either impossible or, at best, useless. A good theory is like a good map; it occupies less space than the territory it describes.

Chaitin, da Costa, and Doria (2011: 45) say, “[A] theory must be a compression of the data, and the greater the compression, the better the theory. Explanations are compressions, comprehension is compression!” To predict, explain, or even merely identify a sufficiently complex system may require a description so lengthy that no simplification of the original system is achieved; no compression is possible. The behavior of a sufficiently complex system (one at the top of a “Wolfram-Chomsky hierarchy”) cannot be predicted ahead of time (Wolfram 1984, Markose 2005, Koppl 2010). We can do no better than watch it unfold.

Velupillai (2007) has provided striking proof of the limits of theory in a valuable paper on “The Impossibility of an Effective Theory of Policy in a Complex Economy.” He argues that, in the informal summary of Salzano and Colander (2007), “ultimately there is an undecidability of policy in a complex economy” (p. xvii). More precisely, he shows that “an *effective* theory of economic policy is impossible for such an economy” (p. 273). Velupillai is very careful to give “effective” a precise mathematical meaning (2007: 273, n.1). Rosser (1939: 56) expressed the basic idea as meaning, “essentially that an effective method of solving a certain set of problems exists if one can build a machine which will then solve any problem of the set with no human intervention beyond inserting the question and (later) reading the answer.” Thus, Velupillai (2007) has shown that if the economy is complex, then you cannot program a computer to predict the specific outcome of a policy.⁵

Velupillai’s argument seems to have led him to an appreciation of Nobel laureate F. A. Hayek’s “lifelong skepticism on the scope for policy in economies that emerge and form spontaneous orders” (Velupillai 2007: 288). Hayek characterized the entrepreneurial market process as a “discovery process.” The economic problem is not so much how to allocate given resources optimally as how to figure out what the “givens” really are.

⁵ He carefully specifies “complex economy” to imply “a dynamical system capable of *computation universality* (2007: 280).

The economic theory of the Austrian school provides an important example of the failure of theory or compression: socialism. In the old comprehensive socialism, it was imagined that all economic affairs would be coordinated and directed by a central planning board, a panel of experts. To do their job, these experts would need a theory of the economy. They would need, in other words, a description of the economy that would allow them to identify the appropriate use for each bit of social wealth. The experts and not the anarchy of markets would decide what outputs to produce and how to produce and distribute them. The many decisions required to direct the economy in this way require a description of it so detailed as to be, perhaps, genuinely impossible.

The “Austrian” thesis on the impossibility of rational economic planning under socialism has received a mathematical restatement by Tsuji, da Costa, and Doria (1998). They show that it may be mathematically impossible to compute equilibria in finite games. As da Costa and Doria (2005: 38-39) say in their restatement of the argument, the “determination of equilibrium prices in a competitive market” is “formally equivalent” to “determining equilibrium in finite non-cooperative Nash games,” and will sometimes be, therefore, formally impossible. “So, the main argument in favor of a planned economy clearly breaks down.” Yet they report, “the equilibrium point of the market is eventually reached while we cannot in general compute it beforehand.”

Markets may be able to reach non-computable results because markets do not need to know what they are doing ahead of time. A more or less unhampered market economy is not a person or a planning entity of any sort. It is a blind process that unfolds in unpredictable ways. Each participant in the system makes his or her own plans, some of which succeed and some of which fail. But none of them has or needs a theory of the whole, let alone a theory that would reliably predict in detail future states of the system. How different the position of the planner or policy maker! The planner or policy maker must have a theory of the whole system that reliably predicts future states of the system in sufficient detail to justify the policy in the first place. Velupillai (2007) and Tsuji, da Costa, and Doria (1998) have shown that such a theory can be beyond the reach of logic itself

even if we make the fanciful assumption that planners and policy makers are free of all the usual vices and follies of other humans.⁶

The impossibility of rational economic planning under (comprehensive) socialism is but one example of the difficulties of formulating an expert theory.⁷ Economics provides other examples. To give but one, our theory of markets allowed us to say that airline deregulation would lower costs and increase the volume of air travel. But it did not let us predict the hub-and-spoke system that emerged because of deregulation (Smith 2003: 472).

5. We Need Entrepreneurs

The mathematical results I discussed in the last section show, I think, just how fragile theory is. Theory is hard. For this very reason we need entrepreneurs. If the entrepreneurial market economy is complex in Velupillai's sense, then it defies prediction. It cannot be simulated on any computer or bank of computers. We cannot have the results of the process, therefore, without the process.

The economist or management professor who would attempt to predict the economy ahead of time imagines himself in a position like that of Edgar Allan Poe's detective Dupin, who could read the inner thoughts of his friend based only on powerful logic and a few external clues. In Poe's "The Murders in the Rue Morgue," Dupin and the story's unnamed narrator are strolling together in silent thought one evening. Dupin suddenly says, "He is a very little fellow, that's true, and would do better for the Théâtre des Variétés." Dupin's friend is aston-

⁶ I am neglecting the theoretical possibility of "hypercomputation," which one might hope could get us around some of the computability problems I refer to. Opinions differ on whether hypercomputation is even theoretically possible (da Costa and Doria 2009, Cockshott et al. 2008). In any event, it is not a current reality. Moreover, Wolpert (2001) shows that computability problems would arise even in a world with hypercomputers.

⁷ I need to add the qualifier "comprehensive," because the word "socialism" is so elastic. The "Austrian" argument on socialist calculation applies unambiguously to the sort of comprehensive socialism that would plan economic life in relative detail. I agree with the "Austrian" thesis that the imagined middle ground of "market socialism" is also unlikely to generate the kind of outcomes its advocates have imagined. But in the US today the term "socialism" is sometimes used promiscuously. For example, Representative Michele Bachman has called America's recently enacted healthcare program (sometimes derided as "Obamacare") the "crown jewel of socialism" (http://www.cbsnews.com/8301-503544_162-20028978-503544.html). And yet one of the 20th century's most important enemies of socialism, the Austrian economist F. A. Hayek, said in his most famous anti-socialist work "in the case of sickness and accident," among others, "the case for the state's helping to organize a comprehensive system of social insurance is very strong" (1944, locations 3603-3607).

ished because he had at that very moment been thinking just what Dupin said. Dupin assures his astonished friend that it was all very logical. Earlier in the evening, Dupin's friend was almost knocked down by a fruiterer, and twisted his ankle slightly on some paving stones piled up nearby. Thus, when they arrive at a properly paved stretch of road, the friend mutters with satisfaction something about "stereotomy," the artful stone cutting of the pavement. "I knew that you could not say to yourself 'stereotomy,'" Dupin explains, "without being brought to think of atomies, and thus of the theories of Epicurus," which would clearly have led the friend to reflect on Greek theories of cosmogony. These reflections, Dupin continues, would inevitably lead his friend to cast his eyes to the night sky where Orion's belt was prominently in view. Through several more steps, equally improbable, Dupin is finally led to the conclusion that his friend is reflecting on the modest stature of the aspiring actor Chantilly, who, as anyone would have reflected, would do well to shift his ambitions toward the Théâtre des Variétés.

In Poe's story, the friend is superfluous. His thoughts are transparent to Dupin and thus redundant. Dupin's model of his friend is perfect and complete, making his friend's real thoughts useless to him. When policy makers pretend they can foresee which sectors are best for entrepreneurial ventures or even which ventures should be funded, they imagine themselves to be Dupins for whom their friends the entrepreneurs are useless and redundant. (Koppl 2008 and Parker 2007 provide examples.) College professors sometimes put themselves in a similar position. While the literature on "entrepreneurship policy" is varied, some contributors to it seem to exaggerate the human ability to outguess the market process. They overreach.⁸ Why would we need entrepreneurs if we could plan, predict, and control the economy in the way dreamed of by some professors?

Our foray into the mathematics of computability shows, however, that we cannot reliably predict the economy or which entrepreneurial ventures will succeed in the way Dupin could predict the thoughts of his friend. But then entrepreneurs are not redundant. We need entrepreneurs for the entrepreneurial market process. We cannot get the results of the entrepreneurial process by any other means. Even if we could somehow simulate the economy, the simulation would "predict" the state of the economy only after the economy got there (Koppl

⁸ Audretsch, Grilo, and Thurik (2007a: 9-10) might be an example of mild overreaching, though notable for the prominence of the scholars involved. Hart (2003) and Audretsch, Grilo and Thurik (2007b) contain clearer examples of such overreaching.

& Rosser 2002, Wolpert 2001). No guidance is provided by a map as big as the territory.

Entrepreneurs can generate their good results only if they are entrepreneurs and not experts, that is, only if we pay them for their goods and not their opinions. Given the ubiquity of non-computability and the fragility of theory, we need the trial-and-error process of market competition to achieve the sort of outcomes we have observed in economies with a complex division of labor. Each entrepreneur makes his cognitive contribution to the process; no entrepreneur is redundant in the system. That entrepreneurs are not experts is a feature of the market system, not a flaw.

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Explaining the Rise of Institutions: Toward a Kirznerian Theory of Repeated Games

Peter Nencka^{*1}

1. Introduction

In the last 20 years, economists following pioneers such as Douglass North and Oliver Williamson have begun to pay attention to the critical role institutions play in economic growth. Daron Acemoglu, who won the John Bates Clark Medal in 2005, in part for his empirical work on institutions, asserts the “main determinants of cross-country variations in per-capita income are differences in economic institutions” (Acemoglu *et al.* 2004: 1). But what exactly are institutions? Douglass North’s (1990: 2) definition is a good starting point: Institutions “are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction.” They provide the structure agents need to engage in successful social interactions. Institutions come in many types—both the formal, codified structure of law and the informal, self-enforced structure of cultural and moral norms. As Sautet (2008) notes, when formal institutions are in conflict with the underlying informal norms and culture of a people, the formal rules will be too costly to enforce. Further, bad institutions lead to a perversion of the otherwise socially beneficial entrepreneur. There is a robust and well-developed literature on the stifling role bad institutions have on market

* Peter Nencka is a 2011 graduate from the Department of Economics at Beloit College.

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entrepreneurs; see, for example, Kirzner (1979) and Baumol (1990). Comparatively little has been written on the role entrepreneurial activity itself plays in the formation of institutions, particularly informal institutions. My purpose here is to present one such approach as an extension of Ken Binmore's discussion of the evolution of social contracts, infusing his theory with an Austrian focus on entrepreneurship.

In Section 2 I describe Binmore's (2007) game theoretic account of the rise of institutions. While pointing to the theoretic clarity of the stability and efficiency conditions in his model, I also discuss shortcomings of his choice of an equilibrium selection device. Section 3 introduces the idea of an Austrian ideological entrepreneur drawing on the sketch offered in Storr (2009). I argue that Storr's conception of an ideological entrepreneur plays a critical role in explaining institutional change, but that his theory can be buttressed by drawing on the literature in evolutionary game theory as represented by Binmore (2007), Ostrom (1990), and others. Section 4 attempts to bridge the gap between the game theoretic and Austrian concepts of institutional evolution by incorporating a version of Storr's ideological entrepreneur into Binmore's model. I argue that the resulting model does not contradict the spirit of either of its components and provides a better explanatory fit than both. Section 5 concludes, outlines next steps, and offers a response to one possible methodological objection.

2. Binmore's Natural Justice and Institutional Change

At first glance, it might be thought that an account of institutional change reduces to a claim about political change. While the study of government institutions clearly holds important insights for the student of development economics, the formation and stability of those government and legal institutions themselves are a function of underlying social norms. A robust set of formal institutions, such as those that define liberal democracy, cannot survive unless the underlying social norms and customs are supportive.² Binmore calls these basic, self-enforcing norms a society's social contract. In this he builds off of the philosophic tradition

² For instance, liberal democracy cannot merely be exported to other cultures without the risk of full-scale rejection. See Coyne (2007) for an economic analysis of the pitfalls of this type of nation-building.

that grounds the legitimacy of an institution in its ability to secure agreement from all its participants in both real and imagined scenarios.

Laws and government practices are relevant to this discussion only inasmuch as they are actually followed. The force of the state does not overwhelm social contracts; it is in fact justified by the contract. As Binmore (2007: 3) notes, “Popes, presidents, kings, judges, or the police are not exempt from the social contract of the society in which they officiate. Far from enforcing the social contract, they derive what power they have from a social convention which says that ordinary citizens should accept their direction.” Binmore’s theory in *Natural Justice* is an attempt to characterize the evolution of these basic social norms. In his argument, a social contract must satisfy three requirements: stability, efficiency, and fairness. The first two follow from a straightforward game theoretic account, the final from a questionable appeal to a naturalized version of John Rawls’ theory of justice (Rawls, 1971). Before turning to a critique of Binmore’s theory of justice, I summarize the game theoretic tools needed to understand the bulk of his position.

Game theory is built around a simple idea: interdependence. Economic agents often act strategically, varying their actions in accordance with their rational deliberations on the possible actions of other agents. Modeling this interdependence is the purview of game theory. In traditional economic theory, the focus is different—firms and individuals maximize profits and utility relative to given price and income constraints. In models of perfect competition, firms don’t have to worry about what other firms are doing, since all firms are price-takers. But as F.A. Hayek (1948) and others have argued, there appears to be very little competition in perfect competition. Game theory is one attempt to restore a study of the market process as we perceive it in real life: full of bargains, negotiations, and strategy. For example, consider the following prisoner’s dilemma, the most well-known concept in game theory:

Two people are arrested on suspicion of plotting to rob a famous art gallery. The detectives investigating the case need a confession from at least one of the criminals, so they offer the thieves a deal: If one confesses and other does not, the confessor receives one year in jail and the other thief receives five years. If they both confess, they both serve three years. But if neither confesses, the authorities have only circumstantial evidence, and the thieves can be released after two years.

Suppose each player is interrogated separately and simultaneously. We can formalize our story in a payoff matrix of possible strategies (with Player 1's payoffs listed first) as:

	P2 Confess	P2 Silent
P1 Confess	3 years, 3 years	1 year, 5 years
P1 Silent	5 years, 1 year	2 years, 2 years

Clearly, if the prisoners were allowed to talk and set up an enforceable contract, they would agree that both would be silent—the lower right cell is the socially optimal position (from the perspective of the prisoners). But supposing their decisions are made simultaneously and without contact with one another, each now has the incentive to confess. Supposing that P1 thinks that P2 will remain silent, P1 has an incentive to confess, reducing his sentence from two years to one year, thereby moving from the lower right cell to the upper right cell. Supposing that P1 thinks that P2 will confess, P1 still has the incentive to confess in order to avoid the five-year sentence he would receive if he were to remain silent. No matter what P1 expects P2 will do, it is always in P1's interest to confess. P2 faces exactly the same incentives, and thus, will also always confess.

The argument above shows that Confess, Confess is a Nash Equilibrium, or the dominant outcome, of the prisoner's dilemma, which from the players' perspective, is sub-optimal. When players confess, they are making the best possible response to their opponent's possible strategies and have no incentive to unilaterally change their behavior, and thus, social cooperation toward the prisoners' optimal outcome is impossible.

The dynamics of our prisoner's dilemma can be positive if our goal is to incarcerate criminals, but they can represent a vexing problem in a context in which social cooperation is needed. We can imagine everyday scenarios in which similar dilemmas crop up. Friends forming a study group might find that while it would be in the interest of the group if everyone worked diligently; each individual has an incentive to shirk and free-ride on the effort of others. So it may turn out that

everyone shirks. Or consider fishermen deciding if they should continue to overfish a limited resource. If they all agree to refrain from overfishing, they will all be better off, as the stock of fish increases. Yet each fisherman has an individual incentive to overfish in the short term, hoping the others will refrain. But in pursuing their individual interest, the fishermen systematically overfish and all are worse off in the long run.

Originally, collective action problems such as these raised serious doubts about the prospect of widespread human cooperation.³ So-called “tragedy of the commons” situations appeared to be everywhere! Yet both empirical and theoretical results have challenged this original assumption. Ostrom (1990) provides compelling case studies of non-government solutions to collective action problems that lead to sustained cooperation. Behavioral economists, such as Fehr and Schmidt (1999) recommend overhauling traditional decision theory to include “other-regarding preferences” to help explain cooperation observed in lab and field studies. But such a move is potentially problematic, in that it isn’t so much a solution as it is an ad hoc stopgap. Further, such a theoretical move may not be needed. While remaining within a traditional rational choice framework, game theory nonetheless can shed light on why cooperation can persist over time, and even while accepting the fact that cooperation in the one-shot game violates the traditional notion of rationality.

2.1 The folk theorem for repeated games

Recall the story of our prisoners but now relax the assumption that the game is played just once. In fact, assume they need to decide whether to confess or stay silent an indefinite number of times. (If it helps the intuition, suppose they are degenerate criminals and immediately after getting released from jail they try the same crime again and get caught over and over.)⁴

The one-shot prisoner’s dilemma is thus turned into a repeated game. In a repeated game we can speak about *meta-strategies*, that is, rules that players use

³ Hardin (1968) popularized the term “tragedy of the commons” and set off a lively debate on the possibility we would never be able to overcome these coordination problems.

⁴ Most formulations of the folk theorem require the games be played infinitely. The theorem does not work if the players know when the last game is because they would defect in that game and then reason backwards, defecting in all other games. While infinitely repeated games do not exist in the real world, if people have no knowledge of when the game might end they will tend to act as if the game is infinite—hence the indefinite assumption.

to guide their actions from game to game. Suppose both players adopt what is known as the grim trigger meta-strategy: If you stay silent in game n , I will stay silent in game $n+1$, but if you confess in game n , I will confess in every game m , where $m > n$. In other words, if you cooperate, I will cooperate back for at least the next game. But if you defect and confess (or shirk in the group project or overfish), I will punish you by confessing for every game from then on.

With a meta-strategy in play, a repeated game can result in cooperation, i.e., a Nash Equilibrium of Silent, Silent.⁵ Suppose that in Round 1 both players remain silent. To show this is a Nash Equilibrium, we ask whether either of the players has an incentive to unilaterally defect and confess in the next round. If the players continue to remain silent, each would receive $2+2+2+2+2+2+2+2+2 \dots$ years in jail. But suppose P1 decides to deviate and confess in the third round. Then as punishment, P2 would confess starting in the fourth round. In turn, P1 would punish player P2 for the fourth round confession in every subsequent round. So P1's jail time would now be $2+2+1$ (the round in which he confessed) + $3 + 3 + 3 + 3 + 3 \dots$, clearly less preferable than the original cooperative strategy.⁶ Thus neither player has an incentive to deviate from cooperating with the other. Unlike the one-shot prisoner's dilemma, cooperation is a viable strategy in the repeated version of the game without abandoning rational decision theory. In general, note that the worst off P1 can possibly be (assuming he is playing rationally) is modeled by his payoff above—his best response to P2's worst punishment. Why could P1 not be any worst off? By asserting he is rational, we have assumed he will always make the best response to P2's strategy. Knowing this, P2 will select an optimal punishment, in this case defecting, that minimizes the value of P1's best response. Game theorists call this the minimax condition. The folk theorem shows that any outcome above minimax condition for both players is a stable Nash equilibrium as long as agents care about their future stream of payoffs. If they are at a payoff higher than their minimax condition, they have no incentive to unilaterally defect because they know they could be worse off when punished.

⁵ In general, there might be a wide range of meta-strategies, which can lead to cooperation in indefinitely repeated games, such as a strategy in which one only punishes an opponent for one turn following defection. For a general proof that characterizes the conditions meta-strategies must follow: see Ratliff (1996).

⁶ Mathematically, both sums approach infinity and thus, in some sense, are equal. But human decision makers have finite lives and thus the differences in payoff streams will be meaningful. Some game theorists avoid the mathematical problem by focusing on average payoffs in repeated games or by redefining utility functions to eliminate the infinite sum.

The folk theorem shows that repeated interaction can foster cooperation and repeated interaction is exactly what characterizes life in a cosmopolitan society. The folk theorem provides a way to judge whether a particular public policy or institution is feasible: does the benefit it provides to those cooperating outweigh the utility those agents could get from defecting and playing their best response to the punishments such defecting entails? If so, we have a self-enforcing institution that *requires no government or threat of external force to maintain*. For Binmore, the folk theorem provides the set of feasible institutions that could be selected without social cooperation falling apart; hence he calls it his “stability criterion.” His “efficiency criteria” follows quickly from similar reasoning: social contracts must not only be stable within a community, they need to be competitive with other communities. To illustrate, consider one of Binmore’s favorite examples: the driving game (Binmore, 2007: 60). Drivers in a community need to choose whether they will drive on the left or the right. There are three Nash equilibria in this repeated game: 1) everyone drives on the right, 2) everyone drives on the left, 3) everyone flips a coin every time they drive—if it is heads they drive on the right, tails they drive on the left. To see that this last game is a Nash equilibrium, note that if one player is flipping a coin, the other player gains nothing from changing his strategy from coin flipping since he will still get hit 50% of the time no matter what he does. Hence if we start at a coin-flipping state, neither player has an incentive to switch strategies, the definition of Nash equilibria (Binmore, *ibid.*).

But even though there are three Nash equilibria in this repeated driving game, we do not want to claim that all three are on equal evolutionary footing. The coin-flipping strategy is stable *inside* a community, in the sense that neither player acting alone has an incentive to defect. Yet compared to a community in which people do not crash 50% of the time, the coin-flipping social contract is clearly unattractive. The relative inefficiency of the coin-flipping social contract predicts it will not last: either people will move to a better community or simply die off. Driving on the right or on the left are both stable, efficient equilibria in Binmore’s terminology. Coin-flipping is stable, yet not efficient. So far, we have seen that a selected social contract must be both a Nash Equilibrium (as characterized by the folk theorem) and competitive. Yet as the driving game shows, these two conditions do not predict what social contract is ultimately selected—there can be potentially limitless stable and competitive equilibria.

When dealing with moral matters, Binmore argues that we choose between these efficient and competitive equilibria by deploying an evolved sense of fair-

ness that roughly corresponds to a naturalized version of John Rawls' theory of justice. In short, he argues, we have developed a heightened sense of empathy—one that allows us to make interpersonal comparisons of utility by “imagining ourselves in the shoes of others” (Binmore 1998: 56). It is this sense of fairness that eventually leads to the selection of one efficient equilibrium over another. While Binmore's first two conditions for a plausible social contract—stability and efficiency—merely show what forms of cooperation are *possible*, his theory of fairness represents an attempt to formally model what structures and institutions are actually *chosen*.

But even granting that Binmore's first two arguments establish the set of feasible, efficient outcomes, his theory of fairness does not provide the needed selection mechanism—both because his naturalized Rawls demands too much and explains too little. It posits the evolution of a relatively homogenous conception of fairness; yet the concept of fairness varies across and even within cultures. Binmore argues that our sense of fairness developed as an evolutionary byproduct of repeated games our ancestors confronted when trying to solve simple coordination problems. This appears problematic, since even the most basic fairness norms that govern family life differ widely from one culture to the next. The familial culture in Japan, for instance, is structured much differently than most of the world and it appears clear that these differing notions of fairness within a family can affect a society's political conception of fairness. Modern philosophers even have a difficult time deciding *what* resource conceptions of equality are meant to address (Sen 1979). Even more problematic is the conflict between desert and equality. Should a universal healthcare system provide free help for everyone, even those (like freeform climbers) who willingly risk their lives knowing the risk? Or should equality-promoting institutions only focus on helping those who are less fortunate through no fault of their own? Different societies have come up with different answers to these questions, challenging Binmore's notion of a generic evolved Rawlsian fairness. The empathetic mindset characterized by the Rawlsian system is certainly a part of our evolved morality but it would be too optimistic to think it is the primary equilibrium-selecting device.

To recap, Binmore's notions of both the feasible and efficient institutions is theoretically clear and useful. These conditions lead to important practical and theoretical results. Further, his theory provides ample check against those who seek to produce 'utopian' social change. We are limited by the incentives facing agents and the constant potential gains from social defection. But unlike early scholars

who thought that such an atomistic decision theory framework was doomed to lead to strife and insurmountable collective action problems, Binmore's development of the folk theorem for repeated games gives a strong theoretical framework for the empirical fact that people manage to overcome serious coordination problems without outside enforcement. Yet, as Binmore recognizes, the folk theorem and its game theoretic derivatives are not enough for a full theory of institutional development—they merely delineate the set of all feasible and competitive social contracts. They do not provide a means of selecting between them. Binmore's own solution to this selection problem—the evolution of fairness norms—relies too narrowly on the Rawlsian interpretation to provide a comprehensive explanation of how specific institutional arrangements are chosen. A different equilibrium selection device appears to be required.

3. Storr and the Ideological Entrepreneur

Having examined both the analytical successes and potential problems with Binmore's model, the challenge is to retain the formal game theoretic constraints used by Binmore while replacing his particular theory of equilibrium selection with a broader approach. One potentially promising way to approach this challenge is through the lens of Virgil Storr's ideological entrepreneur. Storr (2009) presents his entrepreneur as a friendly challenge to Douglass North's theory of institutions, particularly a tension he identifies between North's theory of institutional path dependence and his brief discussion of the role ideological entrepreneurs have in setting the baseline for formal institutional cooperation. North argues that past institutional arrangements have a direct, and in many cases potentially insurmountable, effect on current societal norms. As Storr notes, North's theory of path-dependence is, "not simply a claim that the past affects the choices ... in the present[,] it is a description of how the dead hands of the past reach up from the grave to constrain and direct the living" (ibid.: 110). But, as Storr observes, swift institutional change is not only possible, it occurs frequently throughout human history. He writes at length about particular positive institutional changes in the Bahamas that happened over the course of a few short years.⁷ The horrifying institutional change that swept through Nazi Germany offers another example (ibid.). Swift changes in the formal institutional structure require at the same time a rapid shift in the underlying ideological climate, without which new formal institutions

⁷ Also see Storr 2004.

will not be supported by the informal social contract. Swift changes such as these cannot be accounted for in a heavily path-dependent world—they represent a movement away from the status quo due to deliberate human action and purpose. Storr argues that human action directed at shaping the ideological beliefs of fellow citizens is broadly similar to the key role the Kirznerian market entrepreneur plays in the Austrian economic theory of the market process.

Having motivated the need for an Austrian entrepreneur, Storr gives a sketch of what both a Schumpeterian and Kirznerian ideological entrepreneur would look like in a theoretical model. Unlike North's brief discussion of ideological entrepreneurship, an Austrian ideological entrepreneur would not be a neo-classical maximizer of a given choice set inherited from the past. These new dynamic, creative, and perceptive entrepreneurs would seek ideological "profit" by capturing the populace's demand for new ideas—they would be alert to opportunities for "institutional arbitrage." Further, they would merge and combine existing ideologies in order to compete more efficiently in the ideological marketplace—they would be "creative destroyers" of existing ideology (*ibid.*).

Storr's theory and use of an Austrian ideological entrepreneurship is an excellent first step toward answering the question of how institutional change unfolds. But it raises as many questions as it answers. While there do appear to be cases of rapid institutional change, there also appear to be many situations in which, presumably, ideological "profit" could be made, yet no change has occurred. For every story of swift institutional change there are many institutions, both good and bad, that persist despite all efforts to the contrary. North's path-dependence thesis seems to outweigh any claims of institutional entrepreneurship in these situations. A fuller theory of Austrian ideological entrepreneurship needs to identify not only what functions and roles an ideological entrepreneur fills in the story of institutional development, but model his constraints. Clearly such constraints will be more complicated than the ones faced by market entrepreneurs. When judging the result of the market entrepreneur, we have the useful metric of monetary profit to determine the inter-subjective value the community attributes to a good. No such immediate feedback is available in the case of the ideological entrepreneur—thus we have no way of modeling when such a figure's actions will lead to a socially beneficial outcome, a regressive outcome, or have no effect. We need a better theory of constraints to explain why in some cases Austrian ideological entrepreneurship can help spur institutional development, and in others cases, North's path-dependence rules the day.

In some ways then, an Austrian theory of ideological entrepreneurship has the opposite challenge that Binmore's game theoretic account of the development of institutions faces. While Binmore has a robust method of modeling the necessary and sufficient conditions for stable and efficient social contracts, I have argued his particular equilibrium selection device is underdetermined. On the other hand, a Kirznerian theory of 'social-contract' entrepreneurship provides a good explanation of the mechanism by which actors have incentive to push for change and how that change is actualized. Yet as I have argued, it is unclear why we see rapid institutional change in some cases and what appears to be complete path dependency in others. Clearly, ideological entrepreneurs can, and in some cases do, break path dependency, thus leading to not only a change in informal institutions but the formal institutions which they support. The question is why this does not happen all the time.

We can deploy the efficiency and stability criteria presented in Section 2 to make some progress towards this goal. Ideological entrepreneurship in the Austrian sense is always occurring, but it will only have an effect on the populace at large if it is both presented in a favorable environment and appeals to a possible and plausible future outcome. In these situations the Austrian ideological entrepreneur will provide a good explanation of the development of informal, and thus indirectly, formal institutions. But in cases in which the ideological entrepreneur attempts to challenge a long-held institutional belief without a sufficiently compelling and plausible alternative, North's path-dependence correctly predicts that the choices of the past strictly constrain the institutional choices of the present. We can characterize the possibility of a given ideological entrepreneur being successful on two fronts:

(1) In general, an ideological entrepreneur who is acting in a period of relative instability has an advantage over the reformer who is trying to change a relatively stable institution. To put this insight in game theoretic terms, a stable situation is one in which no player has an incentive to defect from cooperation. The fact that situations are often not stable (in the Nash equilibrium sense) allows for the possibility of ideological entrepreneurship to be effective in fostering institutional change. But we can certainly imagine scenarios in which institutional arrangements are stable, e.g., a convention of driving on the left side of the road. In these cases, it will be very difficult for an ideological entrepreneur to enact change. All institutional change has a cost—and if no one has an incentive to defect from

the current institutional environment, it will be very difficult to persuade others to adopt a new institutional arrangement.

(2) The choice-set available to an ideological entrepreneur may not be limited strictly by the past as North's path-dependence suggests, but nor is the choice set open. Ideological alertness and innovation can only be profitable if it coheres with a given mindset of the population—ideological entrepreneurs do not invent a completely new way of looking at the world, they specifically target and enhance certain given beliefs and goals that already exist in the populace (Lavoie and Chamlee-Wright 2000). Coherence between a socio-cultural context and an ideological innovation reduces the cost of ideological reform while allowing agents to see how the alternative future promoted by the ideological entrepreneur might be stable, i.e., one in which no one has an incentive to unilaterally defect from cooperation. The game theoretic tools described in Section 1 provides the ideal toolkit for describing and analyzing a set of feasible equilibrium states—the efficient equilibria predicted by the folk theorem in repeated games.

4. A Possible Austrian Objection to the Folk Theorem

According to Kelly (2009), a primary motivation for the development of game theory was a reaction to Austrian ideas. Oskar Morgenstern, co-author of the foundational *Theory of Games and Economic Behavior*, (Morgenstern and von Neumann, 1944) was a student and follower of Mises. The only economics class John Nash ever took was from an Austrian professor. In his interview after his Nobel address he noted “by coincidence I was influenced by an Austrian economist which may have been a very good influence” (Nobelprize.org, 1994) But while the founders of game theory were certainly influenced by Austrian ideals, the methodological status of game theory within Austrian economics is unclear.

On the one hand, one might imagine the repeated game models suggested by the folk theorem might interest Austrians. These models establish the self-sustaining properties of evolved social institutions that depend on the incentives facing individual actors, not external enforcement. But as noted in the previous section, folk theorems do not rest upon Kirznerian alertness or Schumpeterian innovation; rather, they rest upon meta-strategies and conventional rules of social engagement. Further, there is no drive towards a particular equilibrium, just a calculation of whether a given situation is stable or not. But the interesting part of studying an economy is asking *how* social cooperation is achieved, not merely stating whether such states are stable.

As Boettke *et al.* (2003: 7) observe, when theorists rely completely on the folk theorem, “it is far from clear [the actors] would be able to obtain an equilibrium given the constant introduction of new knowledge and technology.” Further, they argue that there is something problematic about the non-universality of equilibria predicted by the folk theorem, being that “they happen to hold at a particular time and place ... not necessar[ily] hold[ing] in all cases with similar circumstances” (*ibid.*: 7). Such a multitude of equilibria leads to what they term “formalistic historicism,” in which economic analysis is aimed at retroactively justifying any particular states of the world rather than producing universal propositions. In short, they argue that because of the nature of game theoretic assumptions and the multiplicity of equilibria, folk theoretic analysis can fail to explain the dynamic *action* of man. This critique is by no means endemic within the Austrian community, and it is certainly possible that some who consider themselves Austrians may not find this a convincing critique. But given that the criticism strikes at the heart of what many would argue is the central aim of economic inquiry, it deserves a response.

While it is certainly true that the folk theorem merely states static possible states of the world, it would be unwise to dismiss the theory on methodological grounds alone. Combined with the right tools, it provides a positive compliment to Austrian ideas. The traditional Austrian conception of entrepreneurship is constraint-less, in the sense that a potential entrepreneur’s alertness to opportunities is not bounded by society. For market entrepreneurship, this assumption is not problematic since the *ex-post* fruits of successful entrepreneurship are directly observable in the profits and losses. No such clear signal exists for ideological entrepreneurship. A market entrepreneur exits if his venture fails but since ideological entrepreneurship happens outside the traditional market, we cannot rely on traditional economic wisdom to predict when a given act of ideological entrepreneurship will fail or succeed. There might be many ways to surmount this problem, but an appeal to the folk theorem and the robust collection of results tangent to the folk theorem in game theory provides a promising approach. The Austrian critique of the folk theorem assumes that most of its users are content to model formal conditions of cooperation without doing the dirty work and examining which human action actually produces cooperation. While that was true of many game theorists in the past, the current multidisciplinary program that uses the folk theorem and game theory more generally to study the evolution of norms has explicitly incorporated theories of action that defuse these critiques. Binmore’s

Rawlsian move is one flawed example. Replacing these problematic theories of action with ideological entrepreneurship strengthens both theories: Game theorists get a plausible selection mechanism and Austrian ideological entrepreneurship theories get a ready-made theory of constraints and feasibility conditions.

5. Conclusion

In this paper I have laid the groundwork for a theory exploring how entrepreneurs shape institutions. I focused on the construction of informal institutions—what I call social contracts or ideologies—on the assumption that before we understand what causes the development of particular formal institutions, we need to understand how the informal institutions that underlie them develop and change. I considered two theories, broadly similar in scope and goals yet methodologically very different, that attempt to explain how informal institutions develop: the game theoretic model of social contract evolution presented by Binmore, and the Austrian ideological entrepreneur as presented by Storr. Each theory was found to be promising but incomplete, and I have argued that a hybrid theory that combines the best features of each would provide a promising theoretical springboard for other scholars interested in the development of cooperative institutions.

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Are Current Economic Activities Undermining Future Prosperity?

Randall G. Holcombe*

1. Introduction

The Industrial Revolution, which has brought remarkable economic progress, began in the mid-1700s, so is less than three centuries old. While that is barely a blink of the eye in the whole of human history, everyone living today was born well after the Industrial Revolution began. For the young, it is particularly easy to take for granted the remarkable prosperity that two and a half centuries of economic progress has brought. After all, they have known nothing else their whole lives. Even the oldest of the Earth's inhabitants were born after (some) people were already driving automobiles, when cities had electricity service, after the invention of the airplane, and after the first skyscrapers had been built. Although they have witnessed substantial increases in prosperity over their lifetimes, it still might be easy to take the economic progress that brought it about for granted, because economic progress has continued and even accelerated throughout their lifetimes. The ready acceptance of this prosperity sometimes comes with a feeling of guilt. Citizens of developed economies have a much higher standard of living than those in less developed economies, and there is the perception that this high standard of living comes at the expense of those in less fortunate circumstances, and that it is being paid for by an unsustainable use of resources that will leave future generations with a lower standard of living than those in developed economies enjoy today. The question this essay asks is whether

* Randall Holcombe is the DeVoe Moore Professor of Economics at Florida State University.

these perceptions are accurate. Are current economic activities undermining future prosperity?

To answer that question one needs to understand the cause of current prosperity, and the cause of the past economic progress that has brought the current population its high standard of living. An examination of this question shows that prosperity is produced by entrepreneurship and innovation, and it is only through entrepreneurship that people have been able to productively use many of the resources that have been on Earth for thousands of years. We are, indeed, in danger of having our current economic activities undermine future prosperity, not because of the current use of resources, but because we are putting into place economic policies that threaten to undermine the incentives to entrepreneurship and innovation that generate economic progress.

2. Resource Use: The Commonly-Viewed Threat to Future Prosperity

The commonly-held view that future prosperity is threatened by current resource use goes back at least to Malthus's (1798) *Essay on Population*, in which he argued that population tends to grow faster than the resources available to support that population, so most of mankind was doomed to live at a subsistence level of existence. More than two centuries later it is obvious that Malthus's dismal prediction did not hold up for much of mankind—those people living in capitalist economies—but his dismal thesis lives on, and there has been a continual outpouring of analysis concluding that the current level of prosperity is the result of an unsustainable use of resources, and that present consumption is undermining the prosperity of future generations. Erlich's (1968) warning of unsustainable population growth is explicitly Malthusian in its analysis. Meadows et al. (1972), a highly-publicized book subtitled *A Report for THE CLUB OF ROME'S Project on the Predicament of Mankind*, predicted a dramatic decrease in the world's standard of living, and the world's population, in the twenty-first century, as a result of an overuse of resources. Albert Gore (1992, 2007) has been a highly visible proponent of the viewpoint that resource use today is compromising the well-being of future generations. More recently, Diamond (2005) warns of an impending collapse in the world's standard of living because of resource overuse.

Counterarguments have been offered by many writers, such as Simon (1981) and Lomborg (2001). The line of reasoning taken here will be to begin by look-

ing at what has caused the remarkable progress and prosperity that the developed world has experienced since the beginning of the Industrial Revolution, with an eye toward analyzing whether the factors that have produced the current prosperity are likely to remain in place to allow economic progress to continue.

3. Progress Is New

The first thing to note is that the economic progress that the current generation takes for granted is a relatively new phenomenon, dating back only to the mid-1700s. Life in 1750 was not much different from life in 1650. Life in 1650 was not much different from life in 1550. Life in 1550 was not much different from life in 550. Prior to the Industrial Revolution, people would not have been able to perceive any economic progress in their lifetimes. Certainly the economic circumstances of particular individuals could get better or worse, but people's lifestyles, the goods and services they consumed, the types of work they did, the way they traveled, the housing in which they lived, and their overall standards of living were much the same in 1550 as they had been a thousand years before. Someone living in 550 could wake up in 1550 and see an economic world that would be largely familiar. The same could not be said of someone living in 1900 and transported to 2000. The actual progress is remarkable, but even the concept of progress is only a few hundred years old.

This is not to say there was no progress before the Industrial Revolution; only that it was slow enough that it would not have been apparent in one person's lifetime, and that therefore people did not recognize the concept of progress. Indeed, when one looks at the remarkable accomplishments of the civilizations in ancient Rome, or in China around the same time, those societies had advanced well beyond primitive existence. But at that point, economic progress stalled, and was only revived as the Industrial Revolution began. The reason is that those civilizations of ancient Rome and China were at the limits of economic development in a top-down hierarchical system of economic organization. One can talk about all the innovations that came as a result of industrialization, but the big innovation that led to the Industrial Revolution was the development of a decentralized market economy.

As Mokyr (1990) and Landes (1998) note, nations that have adopted a capitalist economy and market institutions have prospered, while those that have not, have not. One would be hard-pressed to find an exception. In the unfortunate

but dramatic natural experiments after World War II when Germany and Korea were divided into two countries, one with a market economy and the other with a centrally-planned economy, the market economies thrived while the centrally-planned economies lagged behind. In the mid-twentieth century, India and China were among the poorest countries of the world, and after moving toward market institutions, have among the world's fastest rates of economic growth at the beginning of the twenty-first century.

At the beginning of the twenty-first century the idea that economic progress is directly linked to capitalist institutions would seem to be both indisputable and generally known. Still, an issue is what specific factors link capitalism with prosperity. In the midst of prosperity and progress, fewer people reflect on how recent economic progress is, or why the world went through more than a millenium during which there was almost none. The economy of ancient Rome exhibited slow, steady economic progress through military conquest and slave labor. One must marvel at their advances in construction, government, and law, while realizing that especially with regard to material advances, it was the availability of resources that came through conquest, combined with slave labor, that produced the roads, the public works, and the infrastructure. The peak of the Roman empire represented the limits of the prosperity that could be produced by this type of economic organization. The Industrial Revolution ushered in economic progress because it brought with it a form of economic organization that rewarded innovation and entrepreneurship.

4. Entrepreneurship: The Cause of Economic Progress

Resources have value as inputs into production processes only to the extent that individuals are able to find ways to employ them to enhance value. In 1800, if someone's land had oil seeping out of it, it would damage the value of the land because the seepage would make the land unsuitable for farming and most other uses. A century later that nuisance was transformed into an asset because entrepreneurs found a use for that oil. Economic analysis of growth tends not to take account of the entrepreneurship it takes to make this kind of transformation. In the early twenty-first century mainstream economic growth theory primarily falls into two camps. One is based on general equilibrium growth models, in which growth is depicted in a formal manner within a production function framework. Output, Q , is a function, f , of inputs, typically represented as capital, K , and labor,

L, or $Q=f(K,L)$. Institutional economics represents a second camp and finds that economic growth occurs as a result of institutions that are conducive to growth.

This second camp is consistent with the story told here, in that capitalist institutions result in economic progress. Yet it is incomplete in that it looks at the institutional environment that generates growth without considering the process that institutional environment fosters. One can say that if a particular environment exists, then growth will occur, but that institutional analysis does not explain why that growth occurs. The short answer is that particular institutional environments foster entrepreneurship, and entrepreneurship is the cause of economic progress.

Economists talk about economic growth, meaning growth in real income, but even using that terminology obscures the process. Prosperity is the result of economic progress, and growth is but a subset of economic progress. Consider how much better off people are today than they were 30 years ago, or 50 years ago, or 100 years ago. One reason is that people have higher incomes, so they can consume more than they were able to in the past. But more significantly, goods and services available for consumption have increased, so people not only consume more today than people did in the past, they consume different things. Today people can cross a continent in jet aircraft in a matter of hours. A century ago people would have crossed a continent in days, in a train. Two centuries ago a cross-country trip in horse-drawn transportation would have taken months, or years. People cook their food in microwave ovens while they talk on their mobile phones with internet connections, living in air conditioned comfort. In the United States, per capita income was about seven times higher at the end of the century than at the beginning, but people did not eat seven times as much as a century earlier, they did not take seven times as many train trips, own seven times as many horses, or send seven times as many telegraph messages. They do not own seven times as many stoves, but the stoves they do own are better because of stove design. Microwave ovens allow food to be cooked quicker and more conveniently than wood or coal stoves. Phones are no longer wired into the walls of buildings, and also serve as maps, music players, and multiple other functions. People write on computers rather than on manual typewriters, or by hand. One component of economic progress is income growth, but a more significant component is the availability of a wider range of consumption opportunities, many of which could not have been imagined a century earlier, or in many cases even a few decades earlier.

Economic growth—growth in income—could not have occurred at the pace it did without that other aspect of progress: the availability of new goods and services. People would not have the demand for seven times as much of the goods and services they would have been consuming a century ago, so income growth would have stalled had it not been for the new goods and services that the market economy made available to consumers. Income growth can only occur along with the progress that brings with it enhanced consumption opportunities in the form of new goods and services. Those new goods and services are the result of entrepreneurship. To understand growth, one must first understand progress, because growth will be minimal without a broader economic progress to support growth.

Consider the production function framework within which neoclassical growth theory is framed, where $Q=f(K,L)$. Within this theory, the inputs into the production process, K and L , are given, as is the production function, f . Producers then choose the optimal combinations of K and L in their businesses to maximize profit as they produce their output. Output can increase if the quantities of inputs increase or if the production function changes so that more output can be produced with the same amounts of inputs. An increase in inputs, K , and L , can occur through investment that adds to K , or taking a broad view of L , increases in human capital, following Lucas (1988). The production function is often operationalized as embodying technological change, so technological advance can result in a new production function g such that $Q'=g(K,L) > Q=f(K,L)$, where the inputs are the same in both cases.

Within this production function approach there is minimal room for entrepreneurship. Perhaps research and development can create a more advanced production function, but this leaves unanswered the question about how research and development finds its way into the production function. The answer is that entrepreneurs see the R&D results as a potential profit opportunity. The inventions produced by R&D do not automatically produce innovations in the goods and services that are available to consumers. The intermediate step that connects invention to innovation is entrepreneurship, as Schumpeter (1934) noted. The production function approach to understanding growth leaves out entrepreneurship: its fundamental cause. Consider this a bit further by looking at each individual component that makes up the production function.

How does growth actually occur? As already argued, increases in real incomes of the amount actually observed since the beginning of the Industrial Revolution could not have occurred without economic progress that changed the type

of output being produced. Thus, by looking at growth as an increase in Q , that framework leaves out qualitative changes in the components of Q . Start by looking at the nature of output itself. In the neoclassical framework that underlies the production function approach to growth theory, competitive equilibrium is the benchmark for economic efficiency, and a competitive equilibrium assumes that firms in an industry produce homogeneous products. In other words, the characteristics of Q are assumed given and the same across firms. In reality, this is never the case. Sellers always try to differentiate their products to attract buyers from competitors. Even goods as apparently homogeneous as gasoline are advertised by their sellers as better in some dimensions, who display their brand names with the hopes of attracting customers to a better product. Industries that are very competitive, such as fast foods, clearly have differentiated products.

The reason firms differentiate their products is hidden within any intermediate microeconomic theory book, although that reason is never clearly articulated to readers. The typical book presents a chapter on competitive markets, in which firms produce homogeneous products and arrive at an equilibrium in which all firms just earn normal products. This is the best these firms can do, in the long run, anyway, and is the nature of competition, from the standpoint of microeconomics. As Pindyk and Rubinfeld (2005: 283) note, “The idea of an eventual zero-profit long-run equilibrium should not discourage the manager—it should be seen in a positive light, because it reflects the opportunity cost to earn a competitive rate of return.” Discussing the competitive model, Besanko and Breutigam (2005: 335) argue, “Free entry will eventually drive economic profit to zero. This is one of the most important ideas in microeconomics.”

Skip a few chapters ahead and these same microeconomics textbooks explain how firms with monopoly power can earn above-normal profit as long as they can retain their monopoly power. Reading the two chapters together reveals a non-sequitur: On the one hand, the profit-maximizing strategy for competitive firms results in zero economic profit in the long run, while on the other, firms with monopoly power earn above-normal profit. Read the two chapters together and it becomes apparent that the profit-maximizing strategy for the competitive firm is not to accept zero economic profit, but is to try to gain some monopoly power. How do competitive firms do this? By differentiating their products.

Homogeneous products in the competitive model is an assumption, not a conclusion that is derived from the model. If firms in an industry produce homogeneous products, then following Marshall (1890) the output of the individual

firms can be summed to find the industry output. If output is not homogeneous, well, you can't add apples and oranges. But this convenience in modeling should not obscure the fact that in the real world product differentiation is a competitive strategy, and the assumption of homogeneous products obscures one of the most significant competitive mechanisms in a market economy.

Product differentiation is the engine of economic progress, as Holcombe (2009) notes. Firms do not differentiate their products to make them different, they differentiate them to make them better, and to attract customers from competing sellers. How does product differentiation occur? As Kirzner (1973) notes, entrepreneurs spot profit opportunities that can result from improving their products, and differentiating them from what others are producing. Entrepreneurship leads to new and improved products, which drives economic progress. Thus, any theory of economic progress must be based on a heterogeneous and continually evolving market basket of goods and services, not a homogeneous Q in a production function.

Likewise, improved production processes enable producers to produce more output from a given set of inputs. One can observe this in examples as wide-ranging as Henry Ford's adaptation of assembly line production to automobiles, and the remarkable increase in the computing power of semiconductors that has occurred since the invention of the transistor. This was depicted above as $Q'=g(K,L) > Q=f(K,L)$, but where do producers get this new production function g ? Entrepreneurs must recognize that profit opportunity and be willing to act on it. Any explanation of economic progress must not only account for improved production processes, but must also be able to explain how they come to be adopted. Entrepreneurship is the answer.

One can look at factors of production in the same way. Capital and labor are not homogeneous, and entrepreneurs are always looking for ways to combine them such that they can lower cost and increase productivity. Sometimes, as Lucas (1988) notes, this means enhancing the human capital of heterogeneous labor inputs. Other times it means adjusting the production process such that labor with less human capital can be more productive. One example is the evolution of cash register technology. Decades ago cashiers had to key in prices by hand, and while the cash register would add up the total purchases, cashiers had to figure out how much change was due from the money a customer tendered. Now, not only do cash registers automatically calculate the change due, scanning cash registers eliminate the need for cashiers to key in prices, which eliminates a source of error.

In this case, cashiers can be more productive with less human capital than a few decades ago.

Progress occurs because when one looks at the production function, $Q=f(K,L)$, every component is subject to change, and entrepreneurial innovation in the characteristics of factors of production, production processes, and the characteristics of output, is what produces economic progress. Economic growth would come to a standstill, as it did from 500-1500 AD, without the innovations of broader economic progress, and economic progress is the result of entrepreneurship.

5. Prosperity: Past, Present, and Future

The discussion to this point has been on the growing prosperity enjoyed by that segment of the world that adopted capitalist institutions, which started the Industrial Revolution and led to the remarkable growth in material well-being, culminating in the remarkable standard of living people in countries with market institutions enjoy today, coupled with a continuing economic progress that is easy to take for granted, because it is all people in today's world have ever known. That progress continues to march ahead so that people take it for granted that the goods and services they consume today will be superseded by improved goods, and different goods. The cause of the growing prosperity of the past which has led to the high standard of living in the present is entrepreneurship.

While it is true that this prosperity is not uniformly shared around the globe, as Mokyr (1990) and Landes (1998) have noted, those nations that have adopted capitalist institutions have thrived, while those that have not remain poor. Any discussions about resource constraints standing in the way of prosperity must be tempered with the observation that there is little correlation between the countries that are resource-rich and those in which their citizens enjoy prosperity. Where entrepreneurship is rewarded and allowed to thrive, prosperity is the result. Looking toward the future, then, what are the prospects for continued economic progress?

To answer, one should look at the cause of past economic progress, and entrepreneurship is the cause. The Industrial Revolution did not begin in the 1700s because the Earth's resource base increased. Advances in science and technology went hand-in-hand with industrial development, but those advances were as much the result of economic progress as the cause. Schumpeter (1934) makes

the distinction between invention and innovation, and perceptively notes that inventions—the development of new technologies, goods, and processes—do not increase people’s standards of living until they are brought to market by innovators. The market innovation is what creates economic progress, and when there is profit in innovation, it encourages invention that can lead to innovation. The wireless computer mouse could not have been developed without the graphical user interface, and the graphical user interface was available to consumers only because of the development of the personal computer, which was only made possible by the invention of the integrated circuit, which was an innovation that could only have occurred after the production of the transistor. Innovation is the result of entrepreneurship, and entrepreneurship opens the door to more innovation.

Looking to the future, economic progress will continue for those who follow as long as economies remain entrepreneurial. The basic resources that industrial economies have been using since the start of the Industrial Revolution were not created in the 1700s—they were available all along. What changed was the ability to use those resources to enhance human well-being, and that ability was generated through entrepreneurial innovation. As long as that entrepreneurial innovation continues, economic progress will continue. Future prosperity depends on future entrepreneurship.

6. Current Economic Activities and Future Prosperity

Having identified entrepreneurship as the cause of prosperity, it is now possible to address the question in the title of this paper, and ask whether current economic activities are undermining future prosperity. Future prosperity depends on maintaining an innovative and entrepreneurial economy, so the question reduces to understanding whether current economic activities are undermining entrepreneurship. In an insightful article, followed up by a book, Baumol (1990, 1994) argues that entrepreneurial activity is roughly constant across societies, but that in some institutional contexts entrepreneurial activities are channeled in productive directions whereas in other institutional contexts entrepreneurial individuals engage in unproductive or destructive activities.

If entrepreneurship, following Kirzner (1973) is the observation of unexploited profit opportunities, in some societies most profit opportunities will consist of market activities in which individuals find a better product to deliver to customers, or a better way of producing and delivering an existing good or ser-

vice. In this environment, entrepreneurship means undertaking activities for the mutual benefit of the entrepreneur and the entrepreneur's suppliers, employees, and customers. The result is that the general welfare is enhanced by the wealth-generating activities of the entrepreneur. However, if a society's institutions are designed such that the way people prosper is to place themselves in situations where they can transfer resources from others to themselves, entrepreneurial individuals will be looking for profit opportunities that result in destructive activities. In a lawless society entrepreneurial individuals might find greater profit opportunities through theft than through production—which would leave producers vulnerable to those who specialize in theft. In a society that is characterized by substantial government transfers, subsidies to business, and regulatory barriers to productive activity, entrepreneurial individuals might find greater profit opportunities in trying to secure government transfers rather than engage in productive activities, as Krueger (1974) noted. Under a certain set of institutions, the best profit opportunities are predatory—transferring wealth from other people—rather than producing wealth.

The question of whether current economic activities are undermining future prosperity is thus best seen as the question of whether current economic activities support productive entrepreneurship, or whether they channel people's entrepreneurial instincts toward unproductive or destructive activities. Institutions that undermine productive entrepreneurship will undermine future prosperity.

7. Entrepreneurship and Risk

Entrepreneurship always carries with it a degree of risk, because one can never be sure whether resources invested in an entrepreneurial venture will pay off. People tend to think of entrepreneurs as people like Henry Ford, Steve Jobs, and Bill Gates: people whose entrepreneurial actions did pay off. The common view is that they are businesspeople who inevitably make money. There are many more people, however, who thought they had a good idea and invested resources into it, but ended up being wrong, and for one reason or another, ended up generating losses rather than profits. Henry Ford was successful in the automobile industry, but many others failed in that same industry. Steve Jobs was successful in the computer industry, but many others failed in that same industry. Focusing on successful entrepreneurs tends to overlook the implications of the riskiness inherent in entrepreneurial activities.

The risks involved in theft are obvious, either as a result of government punishment or more direct action on the part of the victim. Rent-seeking runs the risk that resources devoted to it may not generate the rents. Similarly, engaging in productive entrepreneurship runs the risk of a loss. Entrepreneurs always must weigh the risks against the potential returns. If institutions tilt the balance against productive activity by lowering the potential returns, entrepreneurs will be less willing to take those risks. If institutions tilt the balance toward making government transfers easier to obtain, a straightforward implication is that some entrepreneurs will turn their attention more toward competing for government transfers, and away from productive activities. Businesses will lobby for tax breaks, trade restrictions on foreign competitors, and regulatory barriers that favor their businesses over rivals, rather than looking for innovative new products and improved production methods.

One cannot draw the conclusion that business is on the whole profitable, and therefore economic progress will continue. One reason is that some business profits do in fact come from rent-seeking and destructive entrepreneurship, so when institutions allow predatory entrepreneurship, profits are not necessarily an indicator of productive activity. Another reason is that if the business environment becomes sufficiently uncertain, firms will be reluctant to commit resources at present toward projects whose profits appear less certain. Productive entrepreneurship requires institutions that assure entrepreneurs that if they engage in productive activities, they will be able to keep the profits from those activities. The prospect of a small profit may not be sufficient to ensure entrepreneurial innovation when one recognizes that uncertainty about that profit means entrepreneurs must always balance the profits they hope to make against the risk of losses if they have miscalculated.

8. The Institutional Foundations for Entrepreneurship

Entrepreneurship-friendly institutions are institutions that support productive activity and market exchange, as Harper (1998) notes. Gwartney and Lawson (2004) provide a good guideline to market-friendly institutions in their Economic Freedom of the World (EFW) index, which quantifies the degree to which countries around the world support economic freedom. They identify the institutions of economic freedom as protection of property rights, rule of law, low taxes and government spending, minimal regulatory constraints on economic activity,

freedom of trade, and a stable monetary system. The institutions Gwartney and Lawson identify in their EFW index provide a good starting point for considering whether the institutional structure supports productive entrepreneurship.

Perhaps the most important institutions that provide a foundation for entrepreneurship are protection of property rights and rule of law. Without clearly defined and protected property rights, any wealth entrepreneurs generate is subject to appropriation by someone else. This simultaneously reduces the incentive for productive entrepreneurship—why produce something if there is a good chance it will be taken from you?—and increases the incentive for destructive entrepreneurship, because it becomes relatively easier to appropriate the property of someone else than to produce wealth. On this count, western democracies fare relatively well. Property rights do tend to be secure and ownership rights are well-defined.

Rule of law means that everyone is treated the same under the law. When this is the case, the legal system provides a level playing field for entrepreneurial activity. When it is not, and the legal system favors some over others, this creates the incentive for entrepreneurial individuals to work toward obtaining favored status under the law, so that they can use legal advantages to enhance their wealth. This also removes some incentive for productive entrepreneurship, while creating the incentive for destructive entrepreneurship. Western democracies fare relatively well on this count too.

Low taxes and government expenditures mean that individuals who earn their incomes by engaging in productive activities get to keep most of what they earn. When taxes and government spending is high, this simultaneously reduces the return to productive entrepreneurship, because the government takes a share, and increases the return to destructive entrepreneurship. Higher levels of government spending give entrepreneurs an incentive to engage in rent-seeking activities to compete for a share of government spending. The growth of government throughout the world in the twentieth century has worked against productive entrepreneurship on this count, and government growth shows few signs of abating in the twenty-first century. Rent-seeking—destructive entrepreneurship—has become more profitable, while productive entrepreneurship has become less.

Similarly, regulatory constraints on economic activity have grown, which lowers the profitability of productive entrepreneurship and encourages destructive entrepreneurship. Firms can find it profitable to seek regulatory protection

from their competitors, sheltering their current businesses from competition and lessening the need to take the risks of productive entrepreneurship.

Freedom of trade is always threatened by the potential for protectionist policies, driven by firms who want to be sheltered by government policies against competitors. The good news is that the benefits of free trade are generally recognized, and there does not appear to be a long-run trend toward increased protectionism. The final institution noted in the EFW index is monetary stability, and the past several decades have seen a dramatic increase in monetary stability worldwide. After substantial inflation in developed economies around the world in the 1970s, inflation has come down and policymakers understand the benefits of a stable monetary policy. Hyperinflation—once common in less-developed economies—is rare. Freedom of trade and monetary stability are two areas that appear to be working in support of productive entrepreneurship.

The major threat to productive entrepreneurship in wealthy economies is government growth—both regulatory growth and expenditure growth. High taxes and regulatory barriers reduce the returns to productive activity. Entrepreneurs who might take risks if they could keep the profits, or if they were not prohibited from risk-taking by regulation, will not take the same risks when the government takes a substantial share of any returns from risk-taking. Through the tax system, the government shares in a firm's profits, but any losses are borne entirely by the risk-takers. Meanwhile, higher government expenditures and increased regulation makes rent-seeking more profitable. Firms compete for a share of government revenues, and push for regulations that give them advantages over other firms and protection from competitors.

The balance is shifting because of government growth, so that productive entrepreneurship is becoming less attractive relative to destructive entrepreneurship. This is why future prosperity is being undermined by current economic activity.

9. Conclusion

Ever since the publication of Malthus's (1798) *Essay on Population*, people have expressed the fear that current economic activities are undermining future prosperity. Malthus's concern, and the concern of those who have followed him, was that people were using up resources at an unsustainable rate. During Malthus's time, when poverty was widespread, he foresaw a future in which people remained in poverty, pushed to a subsistence level of existence because of resource

constraints. The two centuries since have seen an increase in standards of living that would have been unimaginable to even the most farsighted of Malthus's contemporaries, but Malthus's concerns continue in current policy debates. That same Malthusian argument that unsustainable resource use will lead to economic collapse is as current at the beginning of the twenty-first century as it was at the end of the eighteenth.

An evaluation of this argument must begin by understanding the cause of the remarkable economic progress that has occurred since the beginning of the Industrial Revolution. Malthus thought that there were barely enough resources to support the world's population in his time, but the world's population has increased from less than one billion in 1800 to nearly seven billion people in 2010. No new resources have been bestowed upon the planet since Malthus's time, but people have learned how to make better use of the resources that are here, so the standard of living of the population seven times as large today is substantially higher than the much smaller population when Malthus lived. Diamond (2005: 509) notes that "... many times in the past the gloom-and-doom predictions of fearmongering environmentalists have proved wrong..." but argues that, as with the boy who cried wolf, there are good reasons to take these gloom-and-doom predictions seriously today.

One must look at the history of the past 250 years and think that the economic progress that has occurred since the Industrial Revolution has not been related to the availability of resources, because no new resources were created, but rather to the increases in creativity and innovation that led to better use of available resources. That innovation was driven by entrepreneurship, and the growth in entrepreneurship paralleled the development of market institutions, as the historical evidence shows (Mokyr 1990; Landes 1998). The future of economic progress hinges on maintaining the capitalist institutions that foster entrepreneurship: the same factor that has been responsible for the economic progress of the past.

The importance of entrepreneurship is underrecognized because it is too easy to take for granted the continual march of economic progress that everyone on Earth today has seen throughout their lifetimes. Taking economic progress for granted, it is easy to argue that income inequality requires substantial redistribution programs to produce social justice, and that corporations need to be regulated so that they are not able to use their economic power to take advantage of the general population. The market economy itself is often characterized as a system run on greed, where some people are able to use their wealth to under-

take activities that work against the public interest. The policies that follow from this line of reasoning undermine the market institutions that are necessary for the entrepreneurship that has produced the current level of prosperity, and that will continue generating economic progress, as long as those market institutions remain in place.

Those market institutions and the entrepreneurship they engender are threatened by economic policies that emphasize redistribution over production, that argue for increasing the size of the government sector of the economy relative to the market sector, and that advocate regulatory control over people's economic decisions. If public policy continues to move in this direction, as it has for a century, then yes, current economic activities will undermine future prosperity.

In the 1940s Friedrich Hayek (1944) saw changes undermining market institutions as the road to serfdom, and Joseph Schumpeter (1943) expressed the concern that those who reaped the greatest benefit from capitalism were unwilling to stand up and defend it, so it was in danger of being undermined by democratic institutions. The threats Hayek and Schumpeter perceived remain alive in the twenty-first century. Prosperity is generated by ideas, innovation, and entrepreneurship. If the Malthusians turn out to be correct, it will not be because people have depleted the Earth's resources, but because, not recognizing the true causes of prosperity and progress, economic policies will have undermined their foundations.

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Entrepreneurial Volatility: A Cross Country Study

José Ernesto Amorós, Oscar Cristi, and Maria Minniti*¹

1. Introduction

Recent studies have documented the contribution of entrepreneurial activity to economic growth (Audretsh and Keilbach 2004, Baumol 1990). Within this context, some scholars have suggested that entrepreneurial activity has a positive effect on economic growth only in high-income countries (van Stel, Carree and Thurik 2005; Wennekers et al. 2005). Others have remarked that the relationship between entrepreneurship rates and economic growth changes over time and depends on the level of economic development (Carree et al. 2007, Hessels, van Gelderen and Thurik 2008). If entrepreneurship does vary significantly with economic development, its aggregate level may be subject to a cyclical behaviour, and its volatility may have an important effect on the economic activity of a country.

Kirzner (1973, 1997) defines entrepreneurship as the alertness to new opportunities. Entrepreneurs are alert; this is their characteristic feature. In addition, Kirzner posits, entrepreneurship is seizing an opportunity by taking innovative ac-

* Ernesto Amorós is professor and director of the Global Entrepreneurship Research Center at Universidad del Desarrollo in Santiago, Chile, and coordinator and chief researcher of the GEM Chilean Team. Oscar Cristi is professor and research fellow at the Business Research Center of the Universidad del Desarrollo in Santiago, Chile. Maria Minniti is professor and Bobby B. Lyle Endowed Chair of Entrepreneurship at the Cox School of Business at Southern Methodist University. Dr. Minniti is field editor of economics for the Journal of Business Venturing, and associate editor for Small Business Economics and the International Small Business Journal.

¹ We thank GEM Consortium and the GEM Project Coordination Team for allowing use of the data. All errors are ours.

tions. Entrepreneurs innovate; this is what they do. If the opportunity discovered is a real one, the entrepreneur will act on it. Thus, the alertness and exploitation of opportunities constitute entrepreneurship, whatever the underlying motivations may be (Koppl and Minniti 2009). Much empirical literature on entrepreneurship, however, distinguishes between alternative forms of entrepreneurship based on their underlying motivations. A broad and widely accepted distinction is that between “opportunity” and “necessity” driven entrepreneurship.

Opportunity entrepreneurship describes the actions of individuals who respond to perceived expected profit although they have access to alternative sources of income. Necessity entrepreneurship, on the other hand, describes the actions of individuals who start businesses because they lack alternative source of income generating employment. This accepted distinction is justified by the fact that empirical research needs to operationalize the concept of entrepreneurship and that this is normally done by equating entrepreneurship to self-employment. This is, of course, rather reductive and constraining. Nonetheless, it is practically useful. Furthermore, self-employment in itself is certainly a meritorious expression of entrepreneurship. It is puzzling, however, that most empirical research then focuses exclusively on opportunity entrepreneurship, on the mistaken belief that necessity-driven entrepreneurship is negligibly associated with growth. In fact, many studies acknowledge that entrepreneurial activity results from opportunities (Bosma et al. 2008; Feldman and Bolino 2000; Hessels, van Gelderen and Thurik 2008), but downplay the fact that necessity-driven entrepreneurship is quite significant, especially in low and middle-income countries (Acs and Amorós 2008; Minniti and Levesque 2010). Importantly, in some of these countries, necessity-motivated entrepreneurship results from an institutional context that causes lower productivity and investment, and higher unemployment rates (Caballero 2006).

Following a small but growing stream of recent literature, we embrace Kirzner’s broad view of entrepreneurship and argue that necessity-driven entrepreneurship is at least as important as opportunity driven entrepreneurship and that, as a result, should be taken seriously into account in studies aimed at understanding the linkages between entrepreneurial activity and economic growth. Furthermore, we argue that necessity driven entrepreneurship, because of its nature, is more vulnerable to changes in government behavior and therefore more subject to exogenous fluctuations. That is, we suggest that the study of necessity-driven entrepreneurship may be particularly useful in understanding the opportunity costs of exogenous shocks to the economic system caused by changes in govern-

ment behavior. Specifically, we show that ad hoc changes in government behavior are associated with significant volatility in necessity entrepreneurship and, as a result, that necessity-driven entrepreneurship does matter for aggregate economic activity.²

We complement and expand existing literature by showing that, in addition to innovation and churning at the firm level, entrepreneurial volatility can be caused by the behavior of governments and that this may be particularly important for necessity-driven entrepreneurs. Our argument is an extension of Baumol's (1990) argument that the allocation of entrepreneurship in the economy is influenced by the structure of rewards in a country. Baumol (1990, 899) states: "entrepreneurial behavior changes direction from one economy to another in a manner that corresponds to the variations in the rules of the game." Clearly, government behavior alters the set of incentives individuals face when making decisions. Entrepreneurial volatility is also likely to be associated particularly to necessity-driven entrepreneurship since this is the type of entrepreneurial activity more influenced by the business cycle.

To develop our argument we test for the existence of heterogeneity on the volatility of aggregate necessity-driven entrepreneurship across countries and whether government efficiency, regulation quality, and government size affect that volatility. We hypothesize that higher government efficiency, as well as higher predictability and consistency of government regulation and smaller size of government are associated with lower volatility of necessity-based entrepreneurial activity. Entrepreneurial activity is proxied by data on new business creation due to necessity collected by the Global Entrepreneurship Monitor (GEM) project for 49 countries during the period 2001-2008. In other words, using a large sample we investigate whether the percentage of people who start businesses when they have no other employment options differs across countries, and whether unexpected changes in such percentages are associated with governments' size, efficiency, and consistency.

² We acknowledge and agree that the distinction between opportunity and necessity entrepreneurship is rather unclear and arbitrary. Nonetheless, following existing literature, we adopt it and use it in this paper because it allows us to show that entrepreneurial volatility is associated to government behavior even, and perhaps more so, for those people who have no employment alternative.

2. Literature Review

The relationship between entrepreneurship and economic activity is complex, and modeling it is not easy because of the many factors affecting simultaneously both entrepreneurial activity and economic growth (Wennekers and Thurik, 1999). Some scholars, like Carree et al., (2007) and Hessels et al. (2008), have argued that the relationship between business ownership rates and economic growth changes over time and may depend on the level of economic development. Others, instead, have argued that the competitive impact, and consequently the contribution of the entrepreneurial efforts to economic growth, differ not only among countries (Carree et al., 2007), but also among regions within countries (Audretsch and Keilbach, 2004; Belso-Martínez, 2005).

Clearly, to determine the direction of causality between entrepreneurial activities and economic growth at the country level is particularly difficult. While some studies emphasize the effect of entrepreneurial activity on national economic growth, others focus on the effect of economic growth on entrepreneurship rates.³ When causality is reversed and the effect of economic development on entrepreneurial activity is considered, Carree et al. (2002) have found that the relationship between the level of per capita income and the rate of self-employment (or business ownership) in 23 OECD countries may be approximated by a U-shaped curve, meaning that the relative number of new businesses created in a country decreases as higher per capita incomes are considered up to a point beyond which further increases in per capita income are associated with increasing startup rates. The intuition behind these findings is that in relatively poor countries starting a business provides a way to earn a living. Thus, a large number of people are involved in startups. As countries get richer, however, more people find work in manufacturing and services and tend to choose those jobs over starting their own businesses, as the former are perceived as being a more stable source of income. This trend is reversed in richer countries where people prefer again to start their own businesses rather than work for others in the hope of higher earnings or to enjoy more autonomy and decision making power over their labor. Wennekers et al. (2005) confirmed Carree's original findings of a U-shaped relationship

³ Carree et al., (2002, 2007) are among the few works to have developed a simultaneous equations model for economic growth and entrepreneurship rate able to account for the existence of lags and two-way causality. In other words, they are the only ones to have studied how economic growth and entrepreneurship influence each other and how long it takes for a change in one to translate into a change in the other.

between entrepreneurship rates and level of economic development, measured by income per capita and various socio-demographic variables. Acs and Amorós (2008) and Amorós and Cristi (2008) replicated the study by Wennekers et al., (2005) using longitudinal data for Latin American countries and also found evidence of a U-shaped relationship.

Overall, general agreement now exists that the percentage of population involved in entrepreneurial activities is higher in developing regions or countries (Acs and Amorós, 2008), and that the characteristics of entrepreneurship vary depending on per capita GDP and level of development (Minniti and Levesque 2010).

Although many studies have shown that most entrepreneurial activity results from opportunities (Feldman and Bolino 2000; Carter et al., 2003; Bosma et al., 2008), necessity-driven entrepreneurship is nonetheless significant, especially in many developing countries.⁴ Many of these entrepreneurs operate in the informal sector and are survival entrepreneurs (Naudé, 2007). They are usually self-employed or, in some cases, have a very small number of employees (Banerjee and Duflo, 2007). The intuition is that entrepreneurs with low levels of education, resources, and social capital, generally are involved in low productivity activities. Consequently, their impact on economic growth is expected to be low.

Overall, much of the existing literature suggests that higher rates of opportunity-driven entrepreneurship lead to higher rates of growth than necessity-driven entrepreneurship (Acs et al., 2005; Acs and Varga, 2005). Even if that is true, we argue that necessity entrepreneurs are not necessarily less successful or less important. These entrepreneurs do mobilize resources and contribute to economic activity even though they may not have a substantial impact on per capita GDP. In some cases, they may prevent poverty from getting increasingly worse and, under certain circumstances, provide a base for future social mobility (Grosh and Somolekae, 1996; Sandy 2004). Especially, in developing countries, necessity-driven entrepreneurs may play the role of building blocks for more productive activities in the future as their businesses provide sufficient resources to improve the human capital of future generations.

Necessity-driven entrepreneurship is also important, we posit, because of its vulnerability to the behavior of governments. Until now, research on entrepre-

⁴ We note that necessity and opportunity motives, as well as innovations, exist only within a specific context (Minniti et al. 2006). On this point, see also footnote 2.

neurial volatility has been limited to firm or industry performance. Comin and Philippon (2005), for example, have studied firm-level volatility and its relationship to external and internal business factors, whereas Imbs and Wacziarg (2004) and Koren and Tenreyro (2004) have studied the linkage between volatility and industrial diversification. At the aggregate level, instead, research has focused exclusively on the average level of entrepreneurial activity and neglected the empirical analyses of its volatility and how the latter differs among countries.

The lack of research on countries' entrepreneurial volatility contrasts with the wealth of literature existing on the volatility of economic growth (Acemoglu et al. 2003; Aghion and Banerjee 2005; Easterly, Islam and Stiglitz, J. 2001), and on the variability of business entry and exit rates within countries (Davis et al. 2006; Reynolds 1999). With this paper we contribute to existing literature by analyzing the cross-country differences in the volatility of aggregate early-stage entrepreneurial activity driven by necessity and the relationship between that volatility and county specific variables. Using a sample of 49 countries participating in the Global Entrepreneurship Monitor (GEM) Project, our results suggest that countries with more predictable and consistent tax policies and government regulation, exhibit lower volatility and that this has implications for the long run growth of the economy.

3. Data and Variables

Data used in this paper come from four different sources. Measures of necessity-driven entrepreneurial activity (NEC) at the country level come from representative population surveys conducted annually by the Global Entrepreneurship Monitor (GEM) project. GEM NEC data are for 49 countries over the period 2001-2008.⁵ GEM data allow us to estimate the rate of necessity-driven early-stage entrepreneurial activity in each country. That is, the percentage of adult population (people between 18-64 years old) actively involved in starting a new business because of the lack of alternative employment opportunities. GEM data are exceptionally well suited for our purpose. By looking at cross-country differences in the early-stage entrepreneurship rather than at differences in established ownership rates, we avoid confounding entry and survival effects. Also, when field data were available, previous studies had to rely on noticeably smaller samples.

⁵ Reynolds et al. (2005) and Minniti et al. (2006, introduction and appendix) provide details on GEM data and methodology.

GEM data, on the other hand, allow us to compare entrepreneurial propensity and government characteristics across a large number of heterogeneous countries.

The multifaceted nature and complexity of governmental policy and programs across countries makes it difficult to measure how government influences entrepreneurial activity (Valliere 2010). We use World Bank's governance indicators and the Heritage Foundation's Index of Economic Freedom since they provide consistent and comprehensive measures for our period of interest.⁶

Since 1999, the World Bank's Project on Governance constructs the *Worldwide Governance Indicators* (WGI) which includes aggregate and individual governance indicators for 212 countries and territories (Kaufmann, Kraay and Mastruzzi 2008). The WGI covers several dimensions of governance. Among them, the two more directly related to entrepreneurial activities are government effectiveness and regulatory quality.

Government effectiveness (*GovEff*) measures the perceptions of the quality of public services, the quality of civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Regulatory quality (*RegQua*) measures the perceptions of the ability of the government to formulate and implement sound policies and regulations that allow and promote private sector development. Both variables have a theoretical range from -2.5 to 2.5.

Government Size (*GovSiz*) is taken from The Index of Economic Freedom, an annual report produced by The Wall Street Journal and The Heritage Foundation that tracks economic freedom around the world. The Index covers 10 freedoms—from property rights to entrepreneurship—in 183 countries. Government size is measured as a function of the percentage of GDP used for government expenditure with large governments receiving low scores. The Index methodology uses a scale from 0 to 100, where 100 indicates the highest degrees of freedom. Government size is relevant to new business creation because, as the Index of Economic Freedom document states (Miller and Holmes 2009, p. 13) “a government's insulation from market discipline leads to inefficiency, bureaucracy, and lowered productivity. Government expenditures necessarily compete with private

⁶ For complete information about the Index and the methodology used in its construction see: <http://www.heritage.org/Index/Default.aspx>

agents and interfere in market prices by over stimulating demand and potentially diverting resources through a crowding-out effect.”

The list of the 49 countries in our sample and a description of the variables with descriptive statistics are presented in the Appendix.

4. Estimation Approach

We model necessity-driven entrepreneurship (NEC) as:

$$NEC_{it} = f(X_{it}, \alpha) + h(Z_{it}, \beta) \mu_{it} \quad (1)$$

where NEC_{it} is necessity-driven entrepreneurship in country i at time t , f and h denote general functions, X_{it} is a vector of non-stochastic variables representing GDP per capita, Z_{it} is a vector of non-stochastic variables representing a set of country specific variables summarizing government behavior, α and β are unknown vectors of parameters governing the relationship between NEC and X and Z , and μ_{it} is a random disturbance independently and identically distributed with 0 mean and a constant variance σ^2 .

Our empirical approach to estimating the unknown vector of parameters α and β consists in replacing X_{it} with GDP per capita so that equation (1) can be rewritten as:

$$NEC_{it} = f(GDP_{it}, \alpha) + \varepsilon_{it} \quad (2)$$

where ε_{it} is a random disturbance independently distributed with 0 mean ($E[\varepsilon_{it}] = 0$) and of the form:

$$\varepsilon_{it} = h(Z_{it}, \beta) \mu_{it} \quad (3)$$

Moreover, we assume that the function $f(GDP_{it}, \alpha)$ takes a non linear form such that equation (2) becomes:

$$NEC_{it} = \alpha_0 GDP_{it}^{\alpha_1} + \varepsilon_{it} \quad (4)$$

The advantage of this specification is that it allows for both an increasing or decreasing relationship between NEC and GDP depending on the sign of α_1 . If $\alpha_1 < 0$ we have a decreasing relationship between those variables, whereas, if $\alpha_1 > 0$ NEC increases with GDP, and at an increasing rate if $\alpha_1 > 1$, and at a decreasing rate if $0 < \alpha_1 < 1$.

We also assume a non linear form for the function h although, in this case, we use logarithms to transform that function into one that is linear in its parameters. Given this transformation and replacing Z_{it} with the variables under study we obtain:

$$\ln \varepsilon_{it} = \beta_0 + \beta_1 \ln (\text{GovEff}) + \beta_2 \ln (\text{RegQua}) + \beta_3 \ln (\text{GovSiz}) + \bar{\mu}_{it} \quad (5)$$

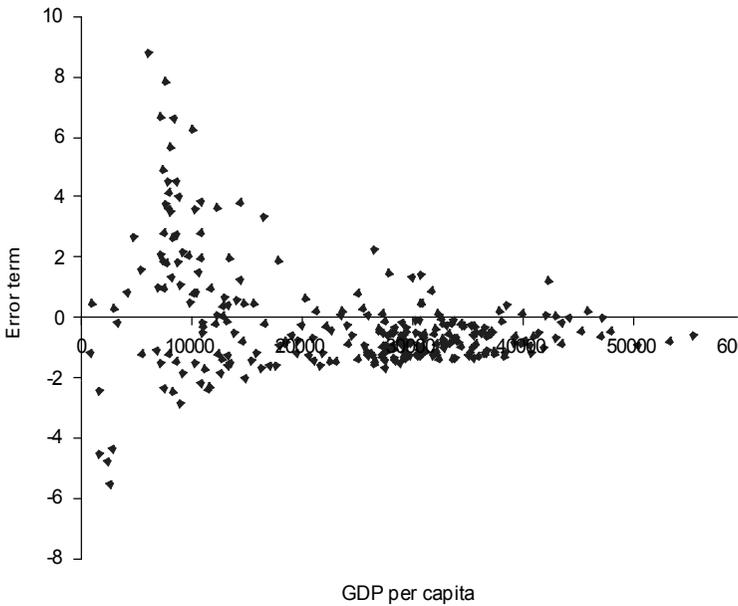
In equation (5), the additions of the constant β_0 , where $\beta_0 = E [1n \mu_{it}]$, and of the error term $\bar{\mu}$, where $\bar{\mu} = 1n \mu_{it} - E[1n \mu_{it}]$, ensure that the error term $\bar{\mu}$ has 0 mean.

Equation (4) provides an estimator for α and for the error terms ε_{it} . The estimator for, ε_{it} , $\hat{\varepsilon}_{it}$, is then used to estimate the vector parameter β in equation (5). When doing this we use the log of the absolute value of $\hat{\varepsilon}_{it}$ as the dependent variable in order to ensure the estimated variance of NEC_{it} has a positive value.

Equation (4) is then estimated using pooled Nonlinear Least Squares (NLS).⁷ This provides a consistent estimator of α , $\hat{\alpha}$, and of the error term ε_{it} , $\hat{\varepsilon}_{it}$, under a broad range of conditions. However, since ε_{it} is a function of country specific variables, this estimation can be considered a heteroskedastic regression, i.e countries present differences on their volatilities. To investigate the latter, we plot $\hat{\varepsilon}_{it}$ against GDP in Figure 1. The Figure shows that the lower a country's GDP is, the greater the dispersion of $\hat{\varepsilon}_{it}$.

⁷ All estimations on this paper are performed by pooling all observations, which implies assuming that the vectors α and β are the same for each observation. We follow that approach because the length of the time series of some of the countries in the sample is too short to allow the use of a panel data estimation with, for example, fixed or random effect. Nonetheless, our estimation strategy allows for differences on the variances of each error term.

Figure 1—Dispersion of the estimated error terms of NEC ($\hat{\epsilon}_{it}$) versus GDP per capita



This result provides some support for our hypothesis that equation (4) can be considered a heteroskedastic regression and suggests that, indeed, the variance of ϵ_{it} depends on the country's institutional variables. A more rigorous test for this hypothesis is provided by the direct estimation of equation (5) and the analysis of the statistical significance of the vector of parameters β . If we reject the joint null hypothesis of a value equal to 0 for those parameters, we have evidence of heterogeneous entrepreneurial volatility among countries and of the effect of proposed institutional variables upon that volatility.

Estimation of equation (5), using the estimator of ϵ_{it} , $\hat{\epsilon}_{it}$, and pooled OLS, provides consistent estimates of β , say $\hat{\beta}$, under the same conditions for the consistent estimator of α in equation (4). With the estimates of β we can compute the variance of entrepreneurial activity across countries and across time. In doing this we assume without loss of generality that σ^2 is equal to 1.

5. Results

Parameter estimates for the conditional expected value and the variance of necessity-based entrepreneurship are shown in Table 1.

Table 1—Estimates of the parameters of the equations for the conditional expectation of NEC and its variance [Equations (6) and (7) respectively]

Model	Constant	GDP	LnGovq	R ²	N
Estimates of the expected value of NEC using NLS	815* (222)	-.604* (.031)		0.71	274
Estimates of the equation for the $\ln \varepsilon_{it} $ using OLS	10.15* (1.60)		-4.44* (.687)	0.17	209
Estimates of the expected value of NEC using weighted NLS regression	2210* (678)	-.735* (.034)		0.69	209

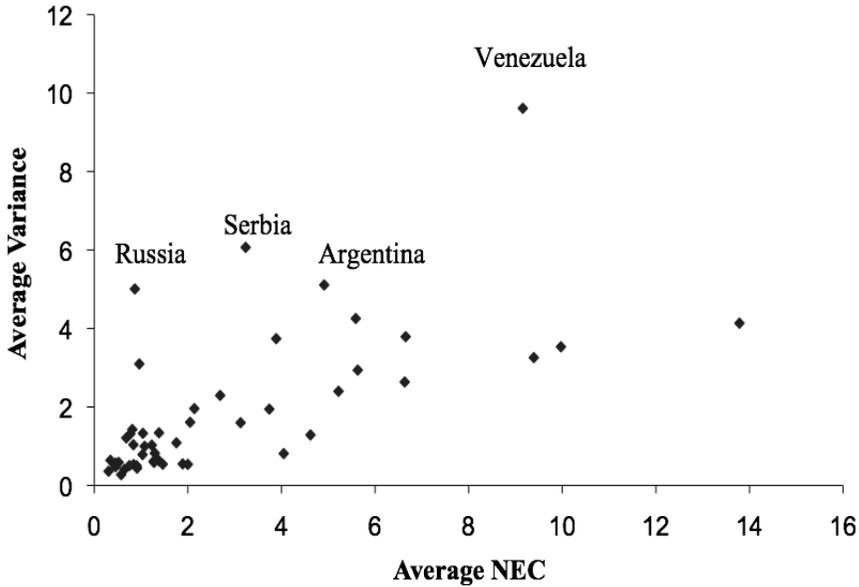
Numbers in parentheses are standard errors. * $p \leq 0.01$ significance level.

Estimates of equation (4), using OLS or NLS weighted regression that takes into account the heteroskedastic nature of the model and the effect of Z_{it} upon countries' entrepreneurial volatility, show that *GDP* has a negative effect on the conditional expected value of NEC following an L-shaped relationship. This result is consistent with Wennekers et al. (2005), Carree et al. (2007), Hesseles, van Gelderen and Thurik (2008) and Acs and Amorós (2008).

Results for the variance of *NEC*, equation (5), indicate that there is a serious problem of multicollinearity because *GovEff*, *RegQua*, and *GovSiz* are highly correlated. As a solution to this problem we use a principal component analysis (Hair et al. 1995) able to capture most of the variance of government variables and calculate a new variable describing overall Government Quality (*Govq*). Equation (5) is then estimated using *Govq* as control. Results from that estimation indicate that the parameter for *Govq* is negative and significant at the 1% level. The negative sign of this parameter indicates that *Govq* is a volatility-reducing factor. This

suggests that countries with higher government efficiency, better regulation quality and smaller government size should exhibit lower NEC volatility.

Figure 2—Entrepreneurial volatility 2001-2008 (all variance numbers are multiplied by 10^9)



In Fig.2 the variance was computed using $h^2(Z_{it}, \hat{\beta}) = [(Govq)^{\beta_1}]^2$ and the estimates reported in Table 1

Results also indicate that differences in volatility across country exist in our 49-country sample. This is illustrated in Figure 2 which depicts the countries' average levels of NEC and their estimated variance. Venezuela, Serbia, Argentina and Russia are the countries with higher levels of volatility, while Sweden, Denmark, Finland, Singapore, and Netherlands are the ones with the lowest volatility country. Table 2 shows summary results of the variances across countries.

Table 2. Summary of variance estimates (all variance numbers are multiplied by 10^9)

Mean variance	1.86
Median variance	1.14
Range	9.34
Lowest variance country	0.27 (Sweden)
Highest variance country	9.6(Venezuela)

Our results are consistent with Amorós, Cristi and Autio (2008) who suggest that the effect of government on entrepreneurial volatility is quite robust.

6. Conclusion

Using GEM data combined with several indicators of government behaviour, we have shown that the volatility of necessity-driven entrepreneurial activity differs among countries and that such volatility relates to government quality. We also find that volatility is higher in middle-and-low income countries as in the case of Venezuela, Serbia and Argentina.

Necessity-driven entrepreneurship is often the result of a situation in which a country's environment is not conducive to productive entrepreneurial opportunities. Moreover, necessity-driven entrepreneurs are penalized by regulatory constraints and, therefore are often forced to operate outside formal markets (Yamada 1996). This, contrary to what would be expected, makes them more vulnerable to arbitrary changes in government behaviour. Better institutions, such as private property rights and stable taxation policies, not only help improve the general business environment but also reduce the volatility of necessity-driven entrepreneurial activity which, in turn, contributes to the transition of countries to higher per capita income levels. In other words, even when people have no employment alternatives, the behaviour of government may influence them and prevent them from starting much needed businesses. In particular, when governments create environments that are unpredictable and unclear, risk and uncertainty increase and, as a result, people tend to be more cautious and take a "waiting" posture rather than a proactive one.

Only recently academics have begun appreciating the role that government behavior, and the institutions it creates, play in facilitating or constraining entrepreneurial efforts. In this paper we contribute to this discussion by exploring how government institutions influence entrepreneurial behavior and by discussing the potential linkage between the latter and economic growth. The intuition behind this connection is the realization that good institutions, such as private property rights, provide a framework that, by aligning incentives, influences the type and quantity of activity, removes uncertainty and makes the actions of others predictable (Boettke and Coyne 2007). In short, robust institutions serve to reduce the costs of action and facilitate the coordination of knowledge dispersed throughout society. Entrepreneurs, as all economic agents, do not act in a vacuum. Only by

understanding the role of institutions will scholars be able to understand various types of entrepreneurial behavior.

Because of the lack of understanding about entrepreneurial volatility, policy makers have focused on how to move from necessity-driven entrepreneurial activity towards opportunity-driven entrepreneurial activity but have made hardly any effort to produce conditions that stabilize the former and allow for the transition, if and when such a transition is desirable. Our results suggest that more attention needs to be paid to entrepreneurial volatility and its causes. Policies ensuring institutional transparency, predictable taxation, and secure property rights are more likely to channel people's entrepreneurial efforts toward productive entrepreneurship, whatever their motivations. As Koppl (2008) argues, only these policies do not require policymakers to compute specific outcomes in order to achieve their intended goal of promoting entrepreneurial ventures. Such policies create a reliable set of rules by which entrepreneurs can play. Aside from those, any additional type of policy introduces uncertainty and, as a result, increases volatility. Policymakers cannot predict outcomes or which entrepreneurs will be winners and which losers. Thus, policies that, for example, aim at supporting start-ups directly or some specific region or entrepreneurial group are very unlikely to succeed unless policymakers perform the mathematically impossible feat of predicting the future (Koppl and Minniti 2011).

Our study is admittedly exploratory and more work is needed in this area. Our cross country results show differences in entrepreneurial volatility across countries and relate them generically to differences in government behavior. However, our data do not have the depth necessary to explain what causes such differences and each country's specific outcome. A follow up analysis, for example, would call for detailed ethnographic studies in several of the countries in our sample. In spite of its limitations, we believe our paper provides important insight on an underappreciated phenomenon and suggests that studying the volatility of entrepreneurial activity may be important to better understand the delicate link between entrepreneurs, government behaviour and economic growth. We hope others will follow.

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APPENDIX

List of countries in the sample: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Colombia, Croatia, Denmark, Dominican Republic, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, India, Ireland, Israel, Italy, Jamaica, Japan, Korea, Latvia, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Romania, Russia, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Thailand, Uganda, United Arab Emirates, United Kingdom, United States, Uruguay and Venezuela.

Variable	Description	Source	Mean	Max.	Min.	SD.
<i>NEC</i>	% of adult population who are involved on Necessity-based entrepreneurial activity	GEM Adult Population Survey	2.22	14.40	0.09	2.54
<i>GDP</i>	Gross Domestic Product in USA dollars adjusted by purchase power parity	IMF Database v. October 2008	2088	55199	690	12370
<i>GovEff</i>	Government effectiveness	World Bank's Worldwide Governance Indicators (WGI)	0.94	2.41	-0.96	0.91
<i>RegQua</i>	Regulatory quality	World Bank's Worldwide Governance Indicators (WGI)	0.85	2.01	-1.56	0.78
<i>GovSiz</i>	Government Size	Wall Street J. and Heritage Foundation Index of Economic Freedom,	56.20	94.12	0.00	25.33
<i>Govq</i>	Government Quality	Variable constructed by principal component analysis.	0.14	2.94	-2.29	0.98

