Introduction

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This volume has been shaped by three major elements: the rapid globalization that occurred in the first decade of the twenty-first century; research on the role institutions have played in economic development during the past few decades; and the spread of entrepreneurial activity around the world following the collapse of communism at the end of the twentieth century. While previous research on entrepreneurship has been centered almost exclusively on the US or at best limited to the developed countries, current entrepreneurship research is examining a large number of emerging economies around the world, as increased entrepreneurial activity there has given rise to questions of measurement and policy.

The research focus of this book has been shaped by the knowledge spillover theory of entrepreneurship (KSTE), as suggested in my 2008 book, *Entrepreneurship, Growth and Public Policy: Prelude to a Knowledge Spillover Theory of Entrepreneurship*. Economic theorists have historically given a good deal of attention to the idea that opportunities are objective, whereas the perception of opportunities is subjective. This is stated most clearly in F.A. Hayek, who states that the empirical content of economics relates to an adjustment toward equilibrium. This process involves the acquisition and communication of knowledge. Joseph A. Schumpeter views the economic function of the entrepreneur differently. Schumpeter believes that, as the prime mover in economic development, the entrepreneur’s function is to innovate or carry out new combinations of factors of production.

This leads to the question of where opportunities come from. While the roots of opportunity remain unexplained in the entrepreneurship literature – it is tempting to argue that they simply come out of thin air – two generations of scholars have spent the better part of 50 years trying to understand the relationship between entrepreneurship, product development, and technological innovation. Today we know that technology opportunities are endogenously created by organizations’ investments in producing new knowledge. New growth theory, as formalized by Paul Romer, assumes that firms exist exogenously and pursue new economic knowledge to gain input into the process of generating endogenous growth.

New knowledge not only contributes to technological change, it also gives rise to new opportunities through knowledge spillover, thus creating opportunities for new knowledge to be used by third-party firms, which are often new ventures. Entrepreneurial activity, therefore, involves not merely the arbitrage of existing opportunities but also the exploitation by agents of new opportunities created but not appropriated by incumbent organizations.

This suggests that a theory is needed to bridge the gap between the subjective literature on individual entrepreneurs and the objective literature on the sources of opportunities. This would shift the unit of analysis from the organization creating new knowledge endogenously to the economic agents who have taken advantage of knowledge spillover. This theory should work from two approaches. First, it should build on the early work of Schumpeter, who recognized the importance of the entrepreneur in exploiting opportunities but ignored the source of these opportunities. Second, it should integrate Romer’s model of the importance
of endogenous technical change, which ignored the entrepreneur. This combination of Romerian and Schumpeterian insight frames the early Schumpeter in a new light by answering two key questions: ‘Where do entrepreneurial opportunities come from?’ and ‘Why is knowledge spillover important in entrepreneurship theory?’

Economics has not yet fully embraced entrepreneurship, and this collection begins to fill that gap by offering what can be viewed as an economic interpretation of entrepreneurship. We build on early Schumpeter, also incorporating Baumol, Leibenstein, and North, who focus on high-growth firms, incentives, and institutions, respectively.

The organization of this book follows that of my 2006 book, *Entrepreneurship, Geography, and American Economic Growth*, in which coauthor Catherine Armington and I discuss the topologies of entrepreneurship: individuals, firms, economies, and societies. The papers in this volume contribute to all four units of analysis. Each unit includes some aspect of globalization, as well as the institutional context. The four units are not perfectly balanced, as some are more complete than others, but they all interconnect and are woven together to some extent along the lines of globalization, institutions, and incentives. The papers build on both previous and ongoing research, with a strong focus on entrepreneurship theory, careful empirical work, and relevant public policy.

The first two units of analysis carefully examine the individuals who recognize opportunity and act on it, as well as the formal and informal firms they start, whereas the last two units address the economy and society, which have not yet been carefully examined by the entrepreneurship research community; for example, what does entrepreneurship look like at the city or country level? Cities have been researched extensively as a unit of analysis, with particular focus on knowledge spillover, clusters, and technology transfer, but the same cannot be said for the country or for the broader society. While some have written about the entrepreneurial society with a focus primarily on the economy, a solid understanding of entrepreneurship as a social process has been lacking. The papers in this volume extend the frontiers of our vision in multiple directions, and in the process provide a much better understanding of exactly what entrepreneurship is, how it works, what contributions entrepreneurs make, and how to promote entrepreneurship more effectively.

The book is divided into six sections. The first two sections address the role the individual plays in entrepreneurship (Incentives and the Many Faces of Entrepreneurship) and the firms they start (The Knowledge Spillover Theory of Entrepreneurship). These are followed by two sections on the economy, one that focuses on knowledge and knowledge spillover at the city level (Cities, Knowledge, and Entrepreneurship), the other on institutions and incentives at the country level (Countries, Institutions, and Entrepreneurship). This somewhat artificial division makes sense for large countries in particular. The fifth section looks at how a society embraces or rejects entrepreneurship at the individual, firm, and country levels, and how they create opportunity for future generations (The Entrepreneurial Society). The final section (Institutions, Incentives, and Public Policy) focuses on public policy, with particular emphasis on the entrepreneurial ecosystem, broadly defined as the institutions, incentives, and agents that produce radical innovations or high-impact businesses.

**Part I  Incentives and the many faces of entrepreneurship**
Since Schumpeter’s theory was first published, the view that entrepreneurship is a driver of economic development has been a central tenet of entrepreneurship theory and policy.
However, despite this view, which is almost considered gospel, entrepreneurial activities actually fall into three main categories: productive, unproductive, and destructive. William Baumol laid out the main argument for this in 1990. This allocation of entrepreneurial talent depends on the incentives institutions provide to agents. While entrepreneurship has existed in most countries throughout recorded history, it was not until the eighteenth century in Holland and England that institutions and incentives were aligned in a way that encouraged talented individuals to undertake productive activities, as so commonly occurs in the early twenty-first century.

The four papers in this section address this issue by developing a theory of destructive entrepreneurship that explores the allocation of talent, examines entrepreneurship’s social and economic contributions, and uses the Global Entrepreneurship Index (GEI) to extend the issue of creating social value to Africa.

The opening paper, ‘A Model of Destructive Entrepreneurship: Insight for Conflict and Postconflict Recovery’, posits a model of destructive entrepreneurship in conflict and post-conflict societies. The paper presents the first model of destructive entrepreneurship, defining it as ‘wealth destroying’ rather than ‘wealth creating’, and presents the mechanism through which entrepreneurial talent acts in this way. The paper also offers three key propositions on the nature and behavior of destructive entrepreneurship: (1) as institutions in developed countries decay, entrepreneurship shifts from productive activities to unproductive activities; (2) as institutions in developing countries grow stronger, activities shift from destructive to unproductive activities; and (3) in the countries where institutions are already considerably stronger, there is more productive entrepreneurship and more economic growth.

The second paper, ‘The Good, the Bad, and the Talented: Entrepreneurial Talent and Selfish Behavior’, addresses experimental economics. Since the 1990s, it has been recognized that entrepreneurial talent allocated into activities with the highest private returns will not necessarily yield the highest social returns. Moreover, it has long been acknowledged in experimental economics that agents do vary in their degree of selfishness, and some depart from pure self-interest. This paper links entrepreneurial behavior to altruism and suggests that social entrepreneurship reflects moderating behavior in the entrepreneurial sector. It finds that distinguishing between creative talent and business talent explains systematic differences in selfish behavior. More specifically, those who lean toward the creative are often willing to forgo private payoffs if it means avoiding negative consequences for others, whereas those more oriented toward business are not.

The third paper in this section, ‘The Social Value of Productive Entrepreneurship’, builds on the previous paper by giving structure and clarity to the concept of social entrepreneurship within the context of charity and philanthropy; we return to this topic in Part V. Defining social entrepreneurship as activity that creates both social and economic value, the paper discusses productive, unproductive, and destructive entrepreneurship in terms of social value. Comparative case studies on Microsoft and the Grameen Bank illustrate these issues. Although they are the result of very different motivations, both of these highly innovative ventures have created significant economic and social value.

In the final paper in the first section, ‘Entrepreneurship in Africa through the Eyes of GEDI’, we use the GEDI methodology to shed light on entrepreneurship, globalization, and the war-torn countries in Africa. Several new indices, including the Index of Economic Freedom, the Index of Doing Business, and the Global Competitiveness Index, have been
created since the 1990s to measure progress in modernizing the business climate in developed and developing countries alike. These indicators, however, focus largely on ameliorating the burdens faced by existing businesses. While these efforts are needed to improve economic incentives and create employment opportunities, they do not foster the economic essence of development: entrepreneurship. Entrepreneurship and entrepreneurship policy are not merely about small businesses, and at times they are not about business at all but about creating an environment in which people perceive entrepreneurial opportunities that can improve their lives and are empowered to act on their vision. This paper is the first to examine the development of private enterprise in Africa.

Part II  The knowledge spillover theory of entrepreneurship

What currently existing theories explain productive entrepreneurship? The framework of opportunity recognition is helpful, but it does not fully explain how the process takes place. There also is no well-developed theory of the entrepreneurial process in the literature – for example, how new firms innovate when they have neither research and development (R&D) capacity nor the necessary financial resources. The KSTE integrates the individual, the firm, and the economy into a single unified framework to understand the entrepreneurial process. The history of the theory dates back to Schumpeter in the late 1940s, and its intellectual background is presented in my 2010 book, *The Knowledge Spillover Theory of Entrepreneurship*. The predecessor of what is presented in this volume appears in my previous volume, *Entrepreneurship, Growth and Public Policy: Prelude to a Knowledge Spillover Theory of Entrepreneurship*.

Modern development of the KSTE has its roots in the search over the last 25 years for a better understanding of innovation. It was further fueled by Romer’s endogenous growth theory, and the importance of knowledge spillover and its role as a regional phenomenon further supported this effort. The results presented here are the product of several decades of cooperation among myself, David Audretsch, Bo Carlsson, and Pontus Braunerhjelm (Chapter 5, hereafter Ács et al.). The results also represent cooperation among several research institutions, including the Royal Institute of Technology, the Max Planck Institute of Economics, George Mason University, and several others. These institutions brought in a team of scholars to flush out different aspects of the theory, its empirical implications, and its policy prescriptions.

This section contains seven papers published between 2009 and 2013. The first three papers, written by Ács et al., lay out the history, justification for, and model of the KSTE. Plummer and Ács (Chapter 8) expanded the model to include local competition, and it was further expanded to include absorptive capacity (Chapter 9, Qian and Ács). The final two papers, which are by Ács and Sanders, present a model of knowledge spillover entrepreneurship in an endogenous growth model and expand it to include intellectual property.

The first paper in this section, ‘Knowledge Creation, Entrepreneurship, and Economic Growth: A Historical Review’, explores the relationship between knowledge creation, entrepreneurship, and economic growth in the US over the last 150 years. Distinguishing between general knowledge and economically useful knowledge, it examines the changes over time in the locus and content of new knowledge creation. The paper also explores the practical orientation of US academic R&D and the close exchange of research between academia and industry, and introduces the concept of the knowledge filter, which acts as a
barrier to the commercialization of research. The knowledge filter consists of organizational barriers, university policies, university faculty members’, and administrators’ attitudes toward the commercialization of research, and the lack of incentives to pursue commercialization. Similar filters exist in the business world, which explains the difficulty business organizations face in converting research into intellectual property and in commercializing new products.

The second paper, ‘The Missing Link: Knowledge Diffusion and Entrepreneurship in Endogenous Growth’, builds on the knowledge filter and examines the missing link in endogenous growth theory. The primary breakthrough contributed by new growth theory is the recognition that investment in knowledge and human capital endogenously generate economic growth through the spillover of knowledge. However, endogenous growth theory does not explain how or why spillover occurs. This paper presents a model to show that growth depends on the accumulation of knowledge and its diffusion through both incumbents and entrepreneurial activity. It suggests further that entrepreneurs are a missing link in the conversion of new knowledge into economically relevant knowledge. The model was tested from 1981 to 2002 with a panel of OECD countries, and the results indicated that policies that facilitate entrepreneurship are an important tool in diffusing knowledge and promoting economic growth.

While contemporary entrepreneurship theories generally focus on recognizing opportunities and deciding to exploit them, the KSTE treats exogenous opportunities as endogenous. The third paper in this section, ‘The Knowledge Spillover Theory of Entrepreneurship’, advances the microeconomic foundation of endogenous growth theory by developing a KSTE. Knowledge created endogenously results in knowledge spillover, which allows entrepreneurs to identify and exploit opportunities by relaxing two central assumptions of growth theory: (1) that all knowledge is economic knowledge, and (2) that knowledge spillover is automatic. The endogenous growth framework offers no insight into what role, if any, entrepreneurial activity plays in the intra-temporal spillover of tacit knowledge. While the new growth theory enhances our understanding of the growth process, the essence of the Schumpeterian entrepreneur is missing. As a result, endogenous growth models fail to incorporate a crucial element in the process of economic growth – the role played by third-party firms, which are often entrepreneurial startups, in exploiting knowledge spillover. The theory makes two predictions: first, that an increase in the stock of knowledge will have a positive effect on the level of entrepreneurship, and second, that the more efficiently incumbents exploit knowledge flows, the less the effect new knowledge will have on entrepreneurship.

The fourth paper in this section, ‘Localized Competition in the Knowledge Spillover Theory of Entrepreneurship’, expands the KSTE to include localized competition. While the model predicts that the relationship between new knowledge and entrepreneurial activity will depend on incumbents’ commercialization efficiency, this paper extends the theory to contend that localized competition impedes entrepreneurial activity by reducing the incentive to exploit new knowledge in startups, as the level of potential competition might impede the exploitation of a newly discovered opportunity. The core premise is that localized competition for new opportunities weights the entrepreneur’s decision to exploit it by influencing their profit, the cost of resources, and the expected wage. If other local agents move to exploit the same opportunity, the competition could reduce the entrepreneur’s profit to the point where there is no longer any incentive to act. However, we find that a region’s population density negatively moderates the effect incumbents have on entrepreneurial activity.
The fifth paper in this section, ‘An Absorptive Capacity Theory of Knowledge Spillover Entrepreneurship’, continues to improve our understanding of knowledge spillover by adding a new concept to the theory. It argues that entrepreneurship that exploits knowledge spillover depends not only on new knowledge but, more importantly, on absorptive capacity, which allows the entrepreneur to understand new knowledge, recognize its value, and commercialize it by creating a new firm. We introduce entrepreneurial absorptive capacity as a critical factor that affects an entrepreneur’s process of transmitting knowledge. The paper extends the idea of absorptive capacity from established firms to individuals.

The last two papers in this section develop theoretical models that incorporate the KSTE into endogenous growth models. In ‘Knowledge Spillover Entrepreneurship in an Endogenous Growth Model’, Mark Sanders and I build on the previous papers by presenting a model that separates entrepreneurship from profit-motivated corporate R&D aimed at improving existing production processes. The model embeds the core idea of the KSTE in established knowledge-based growth models by enriching their knowledge structure. Generating knowledge and commercialization are two separate and costly activities, both of which need to be properly rewarded if the private sector is to engage in them. We fully specify and endogenize a more general knowledge spillover process within a dynamic general equilibrium framework, thereby reintroducing the idea of the missing link to endogenous growth models.

The final paper in this section, ‘Patents, Knowledge Spillovers, and Entrepreneurship’, expands this analysis to intellectual property. It develops an endogenous growth model that distinguishes between inventors and innovators. This distinction implies that stronger protection of intellectual property rights has an inverted U-shape effect on economic growth. Protecting intellectual property rights allocates part of the rents of commercial exploitation to the inventor, which otherwise would accrue to the entrepreneur. In endogenous growth models that call for strengthening patent protection, intellectual property drives economic growth, which means that protecting that property is considered key to growth. However, extending intellectual property protection too far will result in less growth if it means that entrepreneurs are not compensated.

**Part III Cities, knowledge, and entrepreneurship**

When the analysis of entrepreneurship shifts from agents and firms to economies, a new framework is needed. An analysis focused on the economy of the city, for example, is supported by the extensive available literature on cities, regions, and geography. While much of this literature does not deal with entrepreneurship explicitly, many concerns, such as the growth of the regional economy and the institutions in it (the knowledge filter), can be handled within the existing framework.

Another issue is that knowledge spillover occurs more often at the local level than within industries or countries. This makes the study of entrepreneurship interesting at the city level, where knowledge spillover and regional science/geography converge. The papers in this section are influenced by the KSTE and by the role knowledge spillover in general plays at the regional level. The key concept in this case is knowledge, specifically how new knowledge leads to the formation of new firms in cities.

The starting point in this section is the regional dimension of entrepreneurship, where two issues loom large. First, the interplay between regional entrepreneurship and regional economic development has not been theoretically grounded in either the new growth theory or
the new economic geography. Second, the empirical studies that address this issue have all focused on regional differences within a single country. Therefore, most cross-country comparisons do not have data that enable comparisons of entrepreneurship activities across world cities, thus little is known about this area of interest.

The first paper in this section, ‘Entrepreneurship in World Cities’, aims to fill this gap. It sets out a framework that encompasses the cognitive process between entrepreneurial perceptions and entrepreneurial activities at the individual level, and then demonstrates how the urban environment impacts this process. The paper uses Global Entrepreneurship Monitor (GEM) data from 2001–2006 to study variations in entrepreneurial perceptions and entrepreneurial behavior across 35 world cities. The selection of cities is restricted by the sample size used in the GEM project, which required at least 1,000 observations in each urban area. Of the 35 cities included in this study, 30 are ranked in the top 100 of the Globalization and World Cities Research Network dataset on network connectivity among world cities.

The alpha cities (cities that are vastly more integrated into the world economy than others) are Frankfurt, London, Los Angeles, Milan, New York, Paris, and Tokyo; the beta world cities are Brussels, Madrid, Sydney, and Toronto. The paper then measures total early stage entrepreneurial activity (TEA) in specific world cities, as well as perceived opportunities, capabilities, and job growth; the analysis is dominated by entrepreneurship’s links to the creative class. This paper finds that the world cities tend to be more entrepreneurial than the rest of their countries, which is consistent with agglomeration (more people living in a smaller space) and externality theory (getting something for nothing).

The second paper in this section, ‘Born Local: Toward a Theory of New Venture’s Choice of Internationalization’, shifts the lens from an empirical analysis to a specific theory of new ventures creation and a method of internationalization. While the KSTE does offer a theory of new venture creation, it does not explain the internationalization of new ventures. This paper fills that gap, but its primary purpose is to emphasize that firms are born locally and that they take advantage of local knowledge and/or knowledge spillover, as well as agglomeration and externalities, to assemble the resources they need to grow, and ultimately to expand internationally. This builds on the KSTE, which states that opportunities are created systematically and endogenously through purposeful investment in new knowledge. However, this paper refocuses the unit of analysis from the firm to the individual who has gained new knowledge; it also focuses on the cognitive context.

New ventures have two modes of internationalizing: one is a direct path, as described in much of the extant literature, and the other is an intermediated path, by which new ventures and multinational firms create symbiotic relationships in order to expand internationally. We suggest that the greater the number of value-chain activities and the greater the number of countries involved, the more likely it is that a new venture will pursue the intermediated mode of internationalization, including hierarchical and strategic avenues.

The third paper in this section, ‘Regional Systems of Entrepreneurship: The Nexus of Human Capital, Knowledge and New Firm Formation’, builds on the first two papers by developing a regional model of entrepreneurship. Expanding on existing theories of geography, regional systems, and the KSTE, the paper develops an integrative framework for understanding the relationship between economic geography and entrepreneurship by focusing on human capital, knowledge, and new venture creation. The paper develops and tests a three-phase structural model for regional systems of entrepreneurship that is built on the absorptive
capacity theory of knowledge spillover entrepreneurship (see previous section). This theory identifies new knowledge as one source of entrepreneurial opportunity, whereas human capital is the major source of entrepreneurial absorptive capacity and thus a critical driving force for knowledge-based entrepreneurial activity. The paper uses a structural equation modeling approach to path analysis to test the model with 305 cities for the year 2000.

The fourth paper, ‘The Regional Application of the Global Entrepreneurship and Development Index (GEDI): The Case of Spain’, expands this analysis of cities and countries to a broader global context (also see Part I on Africa). It constructs a regional application of the GEDI that captures the contextual features of entrepreneurship across regions. We use institutional and survey data to identify weaknesses in the incentive structures that affect regional development. The entrepreneurial disparities among regions are analyzed at the country and regional levels using a penalty-for-bottleneck methodology, which allows policy action to be coordinated at the national and regional levels. The paper finds that the GEDI (also see Part VI) is a valuable tool for understanding differences across the regions of Spain.

The next three papers explore interrelated topics in regional analysis: high-impact firms, declining regions in the knowledge economy, and firm survival. All three papers are based on US data and use the US as the unit of analysis. The first paper (Chapter 16), ‘Employment Effects of Business Dynamics: Mice, Gazelles and Elephants’, is part of a larger discussion on the role high-impact firms play in the economy (see Part VI). The research in this paper was motivated by the question of which regions will grow the fastest and what type of firms will create the most employment. The research builds on work by David Birch in the 1970s, which identified size as an important determinant of regional employment growth.

This paper looks at 320 metropolitan statistical areas (MSAs) and uses data from the US Census prepared for the Small Business Administration on the entry of new establishments, and it presents two important findings. First, establishments with fewer than 20 employees have no impact on the level of employment after six years. Establishments with more than 500 employees on average actually lose employment during their first six years, and they regain the initial level only after six years. In this analysis, all gains in employment are made by establishments that have more than 20 and fewer than 500 employees. The cohort included about 26,424 firms and 24,143 secondary establishments in 2002–2003, which accounted for 4 percent of firms and 20 percent of establishments, respectively. Second, most of these high-impact firms were in a relatively few MSAs. Forty percent of these firms are located in only 20 MSAs; 4.2 percent are in Los Angeles, followed by 3.2 percent in both Chicago and New York City, and 2.4 percent in Washington, DC. These findings suggest that strong forces are driving the economies of these MSAs.

The question that follows from the previous chapter is why some regions do poorly and what role, if any, entrepreneurship should play in the success of cities. The next paper in this section (Chapter 17), ‘Penetrating the Knowledge Filter in “Rust Belt” Economies’, uses the KSTE and the knowledge filter concept introduced above to introduce both new ventures and incumbent firms as a mechanism to penetrate the knowledge filter. Remember that the knowledge filter represents a set of institutions that make it difficult to initiate new business activities. While this analysis has been carried out previously in growing regions (Colorado and California), it has not yet been carried out in declining regions.17 This analysis also uses a spatial autoregressive model to test the results with census data for the period 1990–2000. The results suggest that new firms are more proficient than older firms at penetrating the knowledge
filter in declining and growing regions alike. These results are consistent with a paper in the next section that looks at a sample of emerging market economies.

The final paper in this section, ‘The Determinants of New-Firm Survival across Regional Economies: The Role of Human Capital Stock and Knowledge Spillover’, examines new-firm survival across 331 regions. This is an important issue, as the new-firm survival rate across regions varies significantly. This study was conducted using multiple years of annual data on every US private-sector business that has employees. It tracked 11 million establishments that existed at some time from 1989 to 1998. This database was constructed by the US Census Bureau from the micro-data underlying the aggregate data published annually in the Census Bureau’s County Business Patterns. It facilitated the tracking of establishments over time, even when they changed ownership and identification numbers. The results showed that nearly two-thirds of the new firms survived at least three years. Controlling for human capital, the new firm survival rate is negatively related to service-sector specialization and positively related to industry intensity, suggesting that city size and diversity may be important determinants of new firm survival.

Part IV Countries, institutions, and entrepreneurship

While cities offer several ways to think about entrepreneurship, countries do not. Agents, firms, and cities do not aggregate into a neat package that addresses entrepreneurial ecosystem at the country level. However, there is an extensive literature on institutions at the country level that may in fact influence entrepreneurship.18 This is a complex issue, and some system is needed to address it competently (see Part VI).19 The six papers in this section examine four main topics across 60 countries: high-impact firms, intellectual property, internationalization, and innovation that focuses on institutions and incentives at the country level. The first paper in this section discusses the unit of analysis, whereas the final paper examines the question of what entrepreneurship data really show.

The first paper in this part, ‘Globalization: Countries, Cities and Multinationals’, sets the stage for how to think about the size of countries, the size of cities, and the size of multinational firms in today’s globalized world. For example, does size matter, and if so, where? In earlier eras, the importance of agglomeration was represented by a fairly simple relationship between the scale of a city and the scale of a country or empire. In earlier times, city size and country size were synonymous, as large, powerful countries had large cities. During the interwar years of the twentieth century, this relationship began to evolve into the much more complex relationship that exists today. In the modern era, globalization and the role of multinational companies have become critical to the global connectivity of a city or region, and cities and regions in turn increasingly drive national economies. In fact, in industrialized countries today, the size of a city is less important than its level of global connectivity (see above), whereas the size of a city is still critical in newly industrializing countries. As such, the relationship between firms, cities, and countries has been largely reversed, thereby casting doubt on various institutional economic theories about the optimal size of a country.

The second paper, ‘Exploring Country-Level Institutional Arrangements on the Rate and Type of Entrepreneurial Activity’, uses GEM data from 63 countries for 2007–2008 to introduce a novel multidimensional measure of the entrepreneurial environment that reveals how differences in institutional arrangements influence both the rate and type of entrepreneurial activity in a given country. Drawing from institutional theory, the measure examines the
regulatory, normative, and cognitive dimensions of entrepreneurial activity and introduces a new conductive dimension that measures a country’s ability to support high-impact entrepreneurship. The findings suggest that different institutional arrangements are associated with variance in both the rate and type of entrepreneurial activity across countries. For example, the regulatory environment matters little in the formation of innovative high-impact new ventures. However, an institutional environment that offers new opportunities created by knowledge spillover and sufficient capital is critical to high-impact entrepreneurship, and is consistent with the KSTE.

The third paper, ‘Intellectual Property Protection and the Formation of Entrepreneurial Growth Aspirations’, also used GEM data, but in this case the individual micro-level survey data. Nine years of GEM adult population survey data were combined to form an initial database of more than 902,000 interviews with adults aged 18–64 in 53 countries. This data was then combined with country-level data on intellectual property rights protection from the Index of Economic Freedom dataset. The paper applies real options logic to build and test a multilevel model that explicates the influence a country’s intellectual property protection regime has on individuals’ human and financial capital and entrepreneurial growth aspirations. The results suggest that the strength of the intellectual property regime negatively moderates the relationship between an individual’s education and growth aspirations, whereas it positively moderates the relationship between an individual’s household income and growth aspirations. Intellectual property protection thus encourages specialization among differently qualified entrepreneurs. These findings support claims that strategic entrepreneurial behaviors cannot be fully understood without considering the context in which those behaviors are observed.

Internationalization has been interpreted as an indicator of successful firm behavior. The fourth paper in this section, ‘Where Angels Fear to Tread: Internationalization of Emerging Country SMEs’, examines the internationalization of small and midsize enterprises (SMEs) in emerging countries. Based on institutional theory and risk perspectives, the paper examines how an entrepreneurial orientation of firms as determined by national cultural factors is related to the internationalization of SMEs in emerging and developing countries. The paper also suggests that institutional improvements can have a moderating effect on the relationship between culture and internationalization. It develops a unique measure of internationalization that includes a modified measure most suitable for emerging-market SMEs that engage in contractual modes of foreign business, such as licensing technology, and tests it on a sample of 7,212 SMEs in 36 developing countries for the years 2007–2008. It uses a multilevel linear hierarchical model that enables examination of both firm- and country-level effects. The paper finds that developed institutions support the internationalization of SMEs in countries with cultures that are considered more masculine and individualistic than others, such as the US and Australia.

The fifth paper, ‘Innovation and Social Capital: A Cross-Country Investigation’, examines innovation that occurred in a cross-section of countries in 2005. While innovation has been extensively studied both within and across countries, this paper explores the impact social capital has on innovation by constructing a more general measure of social capital, which consists of generalized and institutional trust, associational activities, and civic norms. The study tests the hypothesis that social capital has a positive impact on innovation at the national level. After controlling for research and development expenditures and human capital, it finds
a positive relationship between social capital and entrepreneurship; the strongest relationship is between associational activities and entrepreneurship. The implication is that we need to build strong social relationships in today’s networked economy.

The final paper in this section, ‘What Does “Entrepreneurship” Data Really Show?’, addresses data quality and comparability. International comparisons of data on entrepreneurship are a challenge in most areas, and the issue is complicated by the fact that many scholars do not even agree on a definition of entrepreneurship. This paper compares GEM data with the World Bank Group Entrepreneurship Survey dataset and finds that the magnitude of difference between datasets across countries is related to local institutional and environmental conditions for entrepreneurship.

**Part V The entrepreneurial society**

Although society plays such an important role in global entrepreneurship, the subjects in this section (capitalism, philanthropy, and democracy) are rarely, if ever, addressed. The following three papers recast the Schumpeterian framework of capitalism, socialism, and democracy as capitalism, philanthropy, and democracy, thus setting the stage for the twenty-first century, a time that finds billionaires occupying the center of that stage. Billionaires today are at the center of a great struggle for the future of mankind. While both Marx and Schumpeter identified the class struggle as the principal driving force of history, Marx saw the struggle as taking place between the ruler and the ruled, whereas Schumpeter saw it as a struggle between elites. We believe that in this case Schumpeter was on the right side of history. Today billionaires are shaping history.

**Capitalism, socialism, and democracy**

When I asked my publicist what makes bestsellers, she replied, ‘Four factors: how well known the author is, how interesting the subject matter is, the book’s scope and reach, and the “X” factor’. Applying these factors to Schumpeter’s 1942 classic, *Capitalism, Socialism and Democracy* (hereafter *CSD*), the author was very well known, the subject was interesting, the book had great depth, and, most importantly, the X factor turned out to be huge. *CSD* went on to become an international sensation for half a century.

So what was the X factor that catapulted *CSD* to the bestseller list almost a century ago? *CSD* fed into a growing global debate about economics, specifically the long-term evolution of capitalist society. As World War II raged in 1942 – the battles of Stalingrad and Midway, the carpet bombing of Axis cities – the world was concerned not so much with the battles as with what the world would look like after the bombs stopped falling.

Schumpeter provided a chilling and sober view of that great debate, posing and answering three questions. He first asked, ‘Can capitalism survive?’ and responded, ‘I do not think so’. He then asked, ‘Can socialism work?’ and replied, ‘Of course’. Finally, in response to his question, ‘Will socialism be democratic?’ he punted – that is, he was not sure if socialism would or would not be democratic. Schumpeter was in fact wrong on all three counts. Capitalism survived and flourished, while socialism failed, and it also turned out to be authoritarian rather than democratic.

In the twentieth century, some parts of the world lost patience with this enlightened ideal and embraced socialism and communism. Communism and its variants spread throughout much of the world, while capitalism, democracy, and philanthropy were rejected by leaders...
who nationalized capital and replaced the free market with central planning, in many cases exchanging democracy for totalitarianism. A new world order was put in place, and only a few countries stood against it. There was widespread sympathy for the communists, even in the US, especially during the Great Depression. By the end of the twentieth century, however, communism had collapsed. It simply could not keep pace with the economic output of its democratic capitalist competitors.

The fall of the Berlin Wall and Francis Fukuyama’s 1992 book, *The End of History and the Last Man*, drove the final nail into the coffin of CSD as an interpretation of the future. However, no new blueprint along the lines of CSD has emerged, not in this work by Fukuyama or in those by others who share this intellectual space. The removal of trade barriers and capital flows after 1990 continues to create efficient markets, and the results are what economists call a Zipf distribution: a few big winners and lots of losers, with economic opportunity tending to concentrate among a few and the losers becoming frustrated. To deal with this frustration, many in both the developed and the developing worlds have turned to religious fanaticism or some other realm for consolation. This was the subject of the final essay by the late Paul Samuelson.

**Capitalism, philanthropy, and democracy**

The fact that Schumpeter was so wrong is interesting, but it is more interesting to understand why he was wrong. To do so we need to look at the building blocks of modern society: capitalism, philanthropy, and democracy are in fact the fundamental pillars of modern civilization. Democracy goes back to the Greek city-state of Athens in the fifth century BC; capitalism dates from the seventeenth century; and philanthropy was first widely practiced in the nineteenth century, although it has been around much longer. But we need to define our terms a little better. By capitalism I do not mean monopoly capitalism or corporatism, but a society that promotes entrepreneurship and innovation with a focus on radical innovation. By philanthropy we mean that society understands and supports institutions that recycle capital so that private wealth creates public goods. Finally, by democracy we mean a pluralistic society in which the goal is to create opportunity for all through the pursuit of happiness.

The X factor is what catapulted Thomas Piketty’s *Capital in the Twenty-First Century* to the bestseller list. Like CSD, Piketty’s book fed into a growing debate about economics, specifically the long-term evolution of capitalism, inequality, the concentration of wealth, and the prospects for social stability. From this perspective, it is perhaps the first really important book on political economy in close to 100 years. According to Piketty, the main drivers of inequality are the tendency of returns on capital to exceed the rate of economic growth, where the rate historically is close to 5 percent and growth in OECD countries is below 2 percent. But the real X factor, I believe, was the policy prescription – a global tax on capital that was embraced by the left and lamented by the right. Let us look at this a little more carefully.

The real issue today is whether capitalism can be both economically and morally robust. To respond to the question, ‘How does inequality matter in terms of our economic well-being?’ we need to examine the laws of capitalism. Here we follow Piketty. The first fundamental law of capitalism, which links the stock of capital to the flow of income from capital, is $\alpha = r \times \beta$, where $\beta$ is the capital/income ratio, $r$ is the rate of return on capital, and $\alpha$ is the share of national income from capital. For example, if $\beta = 600$ percent and $r =$
5 percent, then $\alpha = r \times \beta = 30$ percent. Piketty examines this accounting identity over the past two centuries in great detail.

The second fundamental law of capitalism is $\beta = s/g$, where $s$ is the savings rate and $g$ is the growth rate. In the long run, the capital income ratio is related in a simple and transparent way to the savings rate $s$ and the growth rate of national income $g$. For example, if $s = 12$ percent and $g = 2$ percent, then $\beta = s/g = 0.12/0.02 = 600$ percent. Fundamentally, a country that saves a lot and grows a little will accumulate an enormous stock of capital relative to income. The law is asymptotic, meaning that it is only valid over the long run. The difference between the first law and the second is that the first is an accounting identity, whereas the second is the result of a dynamic process toward which an economy tends, given the savings rate $s$ and growth rate $g$. While the above analysis has been the subject of much debate, the main argument has missed the point.

Philanthropy matters in this debate because it offers an alternative solution to the Piketty conundrum without relying exclusively on a wealth tax or redistribution. So how does philanthropy resolve the conundrum? The answer to this riddle is rather simple. The growth rate of the economy $g$ should be increased so as to mitigate the difference between $r > g$ and reduce the share of income going to the owner of capital. Thinking of the two laws together maintains the dynamism of the system and partially solves the rising income inequality by increasing growth and reducing the share of capital income going to the wealthy. Like taxes, the focus here is on the capital/income ratio, but it focuses on the stock of capital (wealth) rather than the flow of income. Philanthropy does not affect the stock of capital and instead redirects the flow of income to activities that create opportunity. In other words, it turns a share of capital into moral capital, defined as the resources that sustain a moral community.

We would expect to find that moral capital has found its way into the universities, where opportunity is created for many. In the US, the top 1,000 schools are sitting on half a trillion dollars in university endowments; each has an average endowment of $500$ million, with land and buildings of equal value (see Table 1). The second source of moral capital is found in the foundations. The largest 100 foundations in the US have more than half a trillion dollars, with more than $30$ billion held by the Gates Foundation alone. Another half a trillion sits in smaller foundations. The third fund of moral capital is held by the churches, which hold close to two trillion dollars. A rough estimate is that the total moral capital held in the US is close to five trillion dollars, or 5 percent of the total capital stock – more than any other country in the world.

Philanthropy has long been a distinctive feature of American culture, but its crucial role in the economic well-being of the nation – and the world – has remained largely unexplored. Philanthropy deals with the question of what to do with capital and achieves three crucial outcomes: keep it, tax it, or give it away. Putting a portion of capital into a foundation that serves the public good helps to maintain the stock of capital and the capital/income ratio, and the income complements government efforts by flowing to a privately created public good. Philanthropy that focuses on education, science, and medicine, in particular, has a positive effect on long-term economic growth.

Many might ask how philanthropy can be a part of capitalism. As German sociologist, philosopher, and political economist Max Weber demonstrated, capitalism is a relatively orderly cultural system of institutions and incentives governed by the tractable logic of supply and demand.
Table 1  Largest 25 universities by total assets in the United States

<table>
<thead>
<tr>
<th>University</th>
<th>Total Assets ($Millions)</th>
<th>Real Assets ($Millions)</th>
<th>Endowment ($Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard University</td>
<td>74,210</td>
<td>5,793</td>
<td>30,435</td>
</tr>
<tr>
<td>Yale University</td>
<td>31,265</td>
<td>4,347</td>
<td>19,345</td>
</tr>
<tr>
<td>University of Texas System (15)</td>
<td>54,113</td>
<td>13,145</td>
<td>18,264</td>
</tr>
<tr>
<td>Princeton University*</td>
<td>18,743</td>
<td>8,622</td>
<td>18,200</td>
</tr>
<tr>
<td>Stanford University</td>
<td>37,988</td>
<td>5,995</td>
<td>17,036</td>
</tr>
<tr>
<td>MIT</td>
<td>16,769</td>
<td>2,496</td>
<td>10,150</td>
</tr>
<tr>
<td>University of Michigan</td>
<td>16,435</td>
<td>5,369</td>
<td>7,691</td>
</tr>
<tr>
<td>Columbia University</td>
<td>14,729</td>
<td>3,069</td>
<td>7,654</td>
</tr>
<tr>
<td>Texas A&amp;M University System</td>
<td>9,079</td>
<td>3,744</td>
<td>7,639</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>10,917</td>
<td>1,684</td>
<td>7,119</td>
</tr>
<tr>
<td>University of Pennsylvania</td>
<td>16,018</td>
<td>4,369</td>
<td>6,755</td>
</tr>
<tr>
<td>University of Chicago</td>
<td>12,525</td>
<td>3,733</td>
<td>6,571</td>
</tr>
<tr>
<td>University of Notre Dame</td>
<td>10,329</td>
<td>1,350</td>
<td>6,330</td>
</tr>
<tr>
<td>University of California System (10)</td>
<td>53,356</td>
<td>26,180</td>
<td>5,963</td>
</tr>
<tr>
<td>Emory and Henry College</td>
<td>11,456</td>
<td>2,777</td>
<td>5,816</td>
</tr>
<tr>
<td>Duke University</td>
<td>15,537</td>
<td>3,277</td>
<td>5,555</td>
</tr>
<tr>
<td>Washington University</td>
<td>9,807</td>
<td>1,902</td>
<td>5,226</td>
</tr>
<tr>
<td>Cornell University</td>
<td>11,506</td>
<td>3,544</td>
<td>4,947</td>
</tr>
<tr>
<td>University of Virginia</td>
<td>8,960</td>
<td>3,098</td>
<td>4,789</td>
</tr>
<tr>
<td>Rice University</td>
<td>6,687</td>
<td>1,183</td>
<td>4,419</td>
</tr>
<tr>
<td>University of Southern California</td>
<td>8,790</td>
<td>2,538</td>
<td>3,489</td>
</tr>
<tr>
<td>Dartmouth College</td>
<td>6,182</td>
<td>944</td>
<td>3,486</td>
</tr>
<tr>
<td>Vanderbilt University</td>
<td>7,606</td>
<td>1,781</td>
<td>3,399</td>
</tr>
<tr>
<td>New York University</td>
<td>12,259</td>
<td>5,482</td>
<td>2,755</td>
</tr>
<tr>
<td>Brown University</td>
<td>4,415</td>
<td>1,020</td>
<td>2,624</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>484,663</strong></td>
<td><strong>117,403</strong></td>
<td><strong>215,656</strong></td>
</tr>
</tbody>
</table>

*Source: compiled by author, *Real assets land and buildings estimated.*

Whereas capitalism is governed by the market system and democracy by the political process, philanthropy to a large degree is governed by laws outside the market. Nevertheless, it reinforces democracy and capitalism and nourishes both by relying on the better side of human nature.
While philanthropy lacks a set of laws to explain its ebbs and flows, like royal patrons of the arts in centuries past, philanthropy is subject to the whims of the wealthy. Furthermore, philanthropy is largely ungoverned by economic principles and relatively free of the checks and balances of democracy. In short, philanthropy is governed by individual principles, such as altruism, whereas capitalism is governed by culture and institutions.

However, philanthropy does not interfere with the dynamics of capitalism. In fact, I have argued elsewhere that it is philanthropy as much as government and taxes that propels the basic machinery of capitalism. Therefore, along with well-functioning markets, property rights, contract law, and the like, philanthropy provides a vital nonmonetary institutional force that spurs economic growth by supporting technological innovation, promoting economic equality, and cultivating economic security.

In the twenty-first century, capitalism and democracy are flourishing in both expected and unexpected countries across the globe. However, much of the global community does not yet fully appreciate that these two forces cannot survive and prosper without philanthropy. While capitalism is a cultural phenomenon and democracy has institutional underpinnings, philanthropy is a natural force that has always existed in some form in all societies. The need to look after each other is part of humans’ moral DNA, and philanthropy is the glue that holds the other social processes – capitalism and democracy – together.

The first paper in this section, “Entrepreneurial Capitalism” in Capitalist Development: Toward a Synthesis of Capitalist Development and the “Economy as a Whole”, recasts the Theory of Economic Development as a synthesis of capitalism, development, and society as a whole. This paper interprets the founding of the US as the product of a shift in human character and social roles that led to the Declaration of Independence and the Revolutionary War, and, ultimately, to modern American civilization. The paper argues that a new character type, the agent, had unprecedented powers of discretion and self-reliance, yet also was bound to collective ends by emerging forms of institutional authority and internal restraint. This newly emerged agent was responsible for the entrepreneurship–philanthropy nexus through which much world development has occurred.

The second paper, ‘Defining Prosperity’, examines the subject of global prosperity from the perspective of the global financial crisis. It argues that the current crisis will pass, as such crises always do, and suggests that we think about the crisis calmly and carefully and ask critical questions: What exactly are we asking of our institutions? How did we come to care about economic growth in the first place? Capitalist growth succeeds because it creates wealth, which in turn generates economic opportunity through investments that seek the maximum private return. However, this paper argues that, without philanthropy, growth fueled by entrepreneurship in a capitalist economy will ultimately reach a dead end because of inequality.

The third paper, ‘The Great Seesaw of Civilization’, restates the arguments in my 2013 book, Why Philanthropy Matters: How the Wealthy Give, and What It Means for Our Economic Well-Being. In order to invigorate the capitalist system, wealth needs to be kept in rotation, like the planets around the sun. The paper argues that philanthropy invigorates capitalism in two ways. The first is that it targets universities, research, and other productive efforts that lay the groundwork for new cycles of innovation and enterprise. The second is that – like creative destruction – it provides a mechanism to dismantle the accumulated wealth tied to the past and reinvests it in ways that strengthen future entrepreneurial potential.
Therefore, when philanthropy is absent, wealth remains concentrated, rent-seeking flourishes, and innovation and entrepreneurship suffer. While philanthropy is rarely understood as an entity intertwined with capitalism, it has both emanated from and continually nurtured the capitalist system. It is a nearly invisible and clearly underappreciated force for progress in American capitalism.

Part VI Institutions, incentives, and public policy
In Chapter 7 of my 2006 book, *Entrepreneurship, Geography, and American Economic Growth*, Catherine Armington and I present a formulation of entrepreneurship policy. This formulation involves four broad and important categories of actors: the agent, the firm, the economy, and society. The first level is the individual agent, who needs to make the conscious choice to become a productive entrepreneur. Across society, it is usually the best and the brightest who become entrepreneurs because they have the best education and personal drive to change society. The second category, innovative high-impact firms, will be started by these entrepreneurs, who will use new knowledge and assemble the resources needed to grow their companies. Third is the economy, which must have the right institutions to create incentives for agents to become the productive entrepreneurs who start new firms and create economic growth. Finally, there is society, which is the ultimate beneficiary of the increased wealth that plays a central role in social progress and greater equity, as philanthropists use that wealth to create opportunity for others.

Table 2 presents the four facets of entrepreneurship policy, each of which has an appropriate policy counterpart in an entrepreneurial society. This formulation gives rise to a corresponding set of goals that are at the heart of an entrepreneurial society: more productive entrepreneurs, continuous innovation, faster economic growth, and more equal opportunity. One of the main goals is to have more agents deciding to engage in productive entrepreneurship, which raises the question of how many entrepreneurs an economy needs and who should become an entrepreneur. There are no easy answers. The three other goals are to have continuous innovation, to increase economic growth, and to achieve equal opportunity for all members of society. The third column of Table 2 shows the targets of each goal and the fourth column shows the instruments that can be used to achieve those goals.

The final section of this volume contains five papers that touch on some of the instruments that can help society achieve its entrepreneurial goals. These instruments are institutions, firm organization and strategy, immigrant entrepreneurs with high-tech skills, foreign direct investment (FDI), and the commercialization of technology. The first paper, ‘National Systems of Entrepreneurship: Measurement Issues and Policy Implications’, introduces the novel concept known as national systems of entrepreneurship (NSE) and provides an approach to characterizing these systems. NSE are fundamentally resource-allocation systems driven by the individual pursuit of opportunity through the creation of new ventures. This activity and its outcomes are regulated by country-specific institutional characteristics.

NSE is driven by individuals, while institutions regulate who acts and the outcomes of individual action. Building on these principles, this paper uses the GEDI, an index-building methodology (see Parts I and IV), to characterize NSE. The distinctive features of the methodology are (1) a systemic approach, which allows interactions between NSE components; (2) the penalty-for-bottleneck feature, which identifies bottleneck factors that hold back system performance; and (3) contextualization, which recognizes that national entrepreneurship
Table 2  The four facets of entrepreneurship policy

<table>
<thead>
<tr>
<th>Levels</th>
<th>Goals</th>
<th>Targets</th>
<th>Instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agent</td>
<td>Productive entrepreneurs</td>
<td>Individuals (the best and the brightest)</td>
<td>• Create awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Entrepreneurial education</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Occupational choice</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Cultural support</td>
</tr>
<tr>
<td>Business-enabling</td>
<td>Continuous</td>
<td>New (high-impact) firm formation</td>
<td>• Finance</td>
</tr>
<tr>
<td>policies</td>
<td>innovation</td>
<td></td>
<td>• Firm organization and strategy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Technology commercialization</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Venture capital</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Intellectual property</td>
</tr>
<tr>
<td>Economy-supporting</td>
<td>Economic growth</td>
<td>Universities, government, and institutions</td>
<td>• R&amp;D</td>
</tr>
<tr>
<td>policies</td>
<td></td>
<td></td>
<td>• Human capital</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Connectivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Immigration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Foreign direct investment (FDI)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Institutions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Property rights</td>
</tr>
<tr>
<td>Social policies</td>
<td>Equal opportunity</td>
<td>Wealth</td>
<td>• Philanthropy (individual and mass)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Taxes (income and inheritance)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Social pressure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Legal structure</td>
</tr>
</tbody>
</table>

Source: Ács and Armington, 2006, Figure 7.2, p. 171

processes are always embedded in a given country’s institutional framework. The policy suggestion is that countries need to identify their bottlenecks and focus on correcting their weaknesses, both institutional and attitudinal.

The second paper, ‘High-Impact Firms: Gazelles Revisited’, focuses on the organization and strategy of high-impact firms. It uses the dynamic capitalism typology of Bruce A. Kirchhoff to analyze high-impact firms from 1994 to 2006. While the primary study period is 1998–2002, examining the four years before and after this period made it possible to investigate how high-impact firms are characterized before entering their growth period and what happens
to them after their high-growth stage. The paper finds that high-impact firms on average are not young or small, and that they move back and forth between the economic core and high-impact typology. The median age of a high-impact firm is 17 years; they come in all sizes and are found in most industries.

The process that initiates growth appears to be stochastic and endogenous, although the prospect of a firm maintaining its high impact appears to increase with its size and age, which indicates the importance of learning by doing. Policies thus should focus on improving firms’ organizational capabilities. The implications of this paper are problematic for government policy. While the goal is clear – more high-growth firms – it makes the question of what to target and what instrument to use problematic. If firms are not young or small and the process is stochastic, determining whom to help, if anyone, is a daunting task. Perhaps the answer can be found in the Chapter 20 by Stenholm, Ács, and Wuebker, which suggests that conducive policies work best for high-impact firms. However, none of these works directly or quickly.

The third paper in this section, ‘Could the Irish Miracle be Repeated in Hungary?’, examines foreign direct investment in Ireland and Hungary between 1970 and 2000. It is widely recognized that FDI plays an important role in economic development. However, its impact on entrepreneurial activity has not been well researched. This paper uses internationalization theory to explore how inward FDI impacts entrepreneurial activity. Using data from the GEM, it finds significant differences in entrepreneurial activity between Ireland and Hungary in terms of the type of people starting businesses and the opportunities pursued. This suggests that economic development policies should focus on increasing human capital, promoting enterprise development, and upgrading the quality of FDI. The paper suggests further that FDI is an important tool of national economic policy.

The fourth paper is titled ‘High-Tech Immigrant Entrepreneurship in the United States’. If high-impact firms are the goal, high-impact human capital is required. One source of that capital is immigration. Another source is American college graduates, who currently are in short supply. Using the same dataset as the second paper in this section, this paper reports the results of a national survey that estimated the rate of immigrant entrepreneurs in a representative sample of high-impact firms in high-technology industries in the US. About 16 percent of the companies in the sample had at least one immigrant entrepreneur among their founding teams; about 77 percent of those immigrant entrepreneurs were US citizens. Three multivariate analyses compared high-impact, high-tech firms with at least one immigrant on their founding teams with those that were founded by native-born immigrants alone. The analyses found that the two groups of firms are similar in terms of economic and technological performance, but it suggested that this area of economic policy deserves more attention.

‘Technology Commercialization on Campus: Twentieth Century Frameworks and Twenty-First Century Blind Spots’, the final paper in this section, looks at the commercialization of technology. Perhaps no topic has received more attention in the past 30 years than the commercialization of technology coming out of the nation’s universities and national laboratories. Major federal legislation, including the Bayh–Dole Act and the SBIR Program, are just two small pieces of this effort, which is best understood from a historical perspective that goes back to the founding of the country. This chapter uses an interpretive analysis to examine past and present developments in knowledge commercialization and provide policymakers with an alternative framework.
The model is based on historical precedent and the current economic realities in effectively commercializing knowledge in an entrepreneurial society. While traditional technology transfer takes an organization-centric approach, this paper proposes an individual-centric model of commercializing the technology from universities that is consistent with the KSTE. This move to an individual-centric model follows previous eras of change and innovation in higher education. The challenge for regional and university leadership is clear: find methods and models for unleashing knowledge across campus to solve local and regional challenges.

Summary
This volume has been shaped by three major elements: the rapid globalization that occurred in the first decade of the twenty-first century; research on the role institutions have played in economic development during the past few decades; and the spread of entrepreneurial activity around the world following the collapse of communism at the end of the twentieth century. The papers in this volume, which were written over the past decade, make an important contribution to our understanding of entrepreneurship at the individual, firm, economy, and society level. They extend the frontiers of our vision in multiple directions, and in the process help us gain a much better understanding of exactly what entrepreneurship is, how it works, what contributions entrepreneurs make, and how to promote entrepreneurship more effectively. I hope that both the scholars who contributed to this research and those who will build on it in the future will find this volume useful.

Notes
11. We leave out two aspects of this story in this volume, the cognitive question of how opportunities are recognized and the issue of how the decision to exploit is made. These topics have been extensively researched in the entrepreneurship literature.
14. Z.J. Ács (ed.), *The Knowledge Spillover Theory of Entrepreneurship*. Cheltenham, UK and


