THE SEVEN SECRETS OF GERMANY

Economic Resilience in an Era of Global Turbulence

DAVID B. AUDRETSCH | ERIK E. LEHMANN

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This book is dedicated to our children – Hannah, Christopher, James, and Alexander

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Preface

WHEN WE MET up in Jena in November 2003, Germany was at the depths of economic stagnation, worrisome unemployment, growing self-doubt, and angst that was on the verge of entering its second decade. Ever since the euphoria triggered by the fall of the Berlin Wall on November 9, 1989, and the subsequent reunification on October 3, 1990, economic growth had stalled, leading Germans on both sides of the once-divided country to wonder what exactly they had accomplished. In the west, resentment of the *Solidaritätszuschlag*, or solidarity tax, grew. In the east, *Ostologie*, or a new nostalgia for the quality of life under the stable and predictable communist regime, resonated, especially with the older generation.

Our mandate came from Professor Dr. Peter Gruss, who as president of the Max Planck Society tasked us with creating and directing the newly established Division on Entrepreneurship, Growth and Public Policy of the Max Planck Institute of Economics, which was located in Jena. When colleagues asked why we did not come up with a German title for our new division, the answer was as striking as it was disturbing. There was no word for entrepreneurship in German. The closest concept, *Unternehmertum*, typically refers to a high-level manager of a company.

In a country that did not seem to have a place for entrepreneurs, where would we ever find talented, but also highly trained and motivated, scholars to embark on a research agenda identifying how Germany and other countries could best ignite the creative and innovative spirit of entrepreneurship? Staring at the corridor of empty offices that cold, dark November day, it was hard to imagine that such young scholars might actually exist.

But find them we did. Thanks to the generosity and professionalism of the Max Planck Society and its stellar world-class reputation in both the natural sciences and the social sciences, they found us. The three-hour train ride from Berlin or Frankfurt did not deter an inspired and determined group of young scholars from joining us from destinations as diverse and heterogeneous as China, Japan, Italy, Spain, Germany, Sweden, the United States, India, the Netherlands, Canada, Australia, Colombia, and Portugal. These young scholars spanning a broad spectrum of scholarly and national backgrounds descended upon Jena and coalesced to tackle not only what exactly influences the extent of entrepreneurship and innovation, but also how exactly those twin forces could best be harnessed to promote society in general and *Wohlstand*, or economic prosperity, in particular.

We are of course grateful to all of these young scholars for all that we learned from their intellectual endeavors as well as from their inspiration, spirit, and optimism. Some of the most important ideas contained in this book have their origins in the long and heated discussions and debates with our young colleagues back in Jena.

Jena was not the beginning of our work leading to this book. David came to Berlin in 1985, where he served first as research fellow and later as acting director and research professor until 1997 at the Wissenschaftszentrum Berlin für Sozialforschung (Social Science Research Center Berlin). This provided an extraordinary opportunity to observe and even participate in Germany's transition from a country divided by the Berlin Wall and Cold War, to a reunified and autonomous country, and finally to a leading economic engine of Europe in the context of a globalized economy.

While we met during this time, we did not begin working together until Erik spent a year at the Institute of Development Strategies at Indiana University in 2002 to complete his habilitation. Our growing research collaboration gained momentum as we assumed the director and assistant director positions of the Max Planck Institute of Economics in 2003 and continued even as Erik accepted the appointment as professor of business economics at the University of Augsburg in 2005. In fact, the work of our research team at the Max Planck Institute of Economics led to the discovery that Germany was rapidly becoming an entrepreneurially driven economy, which was documented and explained in our book with our friend and colleague Max Keilbach, *Entrepreneurship and Economic Growth*, published by Oxford University Press in 2006.

Our research identifying what seemed to be working and not working in Germany extended beyond David's departure from the Max Planck Institute of Economics in 2009, and increasingly pointed to a number of key elements that, when taken together, seemed to provide Germany with an economic resilience in an era of global turbulence. The purpose of this book is to share what we and our colleagues at the Max Planck Institute of Economics learned about the high degree of economic resilience exhibited by Germany and why and how this might be insightful and instructive for other countries and contexts.

We would like to express our gratitude to a number of colleagues who have contributed to this book, either directly or indirectly. First and foremost, we would like to express our

deep thanks to our colleagues at the Max Planck Institute of Economics as well as the broader community of scholars who participated and devoted their ideas, inspiration, energy and efforts to taking a fresh perspective on what factors and forces influence the *Wohlstand* of a country or place. We are grateful to the careful and meticulous help and support of Chemain Nanney, Aileen Richardson, and Sara Cockerham of the Institute of Development Strategies at Indiana University and Cornelia Noglinski of the Department of Business and Economics at Augsburg University at virtually every stage of this manuscript. Their effort and contributions to this book are invaluable and greatly appreciated. We would also like to thank several owners and managers from traditional Mittelstand companies for their valuable inputs, in particular Alexander Starnecker, Manfred Starnecker and David R. Eisenbeiss.

Finally, we are particularly grateful to Scott Parris, who is the executive editor of economics and finance at Oxford University Press and Cathryn Vaulman, who serves as his assistant editor, for their determined support of this book. We very much appreciate their enthusiasm, encouragement, and commitment to high-quality scholarship and publications, along with their care, effort, and wisdom in guiding the writing process from inception to initial drafts and finally to publication.

THE SEVEN SECRETS OF GERMANY

1 Introduction

WHY GERMANY? SIMPLY look to its neighbors. Europe has been suffering its worst and most prolonged economic crisis since World War II. Growth has been stagnant throughout the continent, as unemployment ratchets ever higher. Unemployment in the euro zone is well into double digits. Countries like Spain and Greece have suffered unemployment rates exceeding 20 percent and youth unemployment rates of over 50 percent. While the economic disaster in Greece may have grabbed the most headlines, *The Atlantic* points out that "Spain Is Beyond Doomed."[1] In France, Portugal, and Italy it is barely better as sluggish growth and troubling rates of unemployment trigger political and social instability. The former secretary of the Treasury, Larry Summers, warns that "Europe is at risk of secular stagnation," leading the *New York Times* to the alarming conclusion that "Europe is facing a fresh downturn, with few new ideas on the table for reigniting growth and deepening political divisions of the austerity policies that many blame for worsening the malaise."[2]

And this is not just happening in Europe. Organization for Economic Cooperation and Development (OECD) countries outside of Europe, including the United States, have also struggled in the wake of the Great Recession, the worst economic calamity since World War II.

But not Germany. While much of Europe has suffered from either putrid or no economic growth and rising unemployment, Germany has enjoyed a second *Wirtschaftswunder*, or economic miracle. As of 2014, growth in Germany had been robust enough to drive unemployment to less than 6 percent, while the country enjoys record levels of

employment and the lowest levels of unemployment in decades. The crisis in the euro zone wiped out some 3.8 million jobs between 2007 and 2014, but Germany never faltered in continuing to create new jobs.[3] In some Länder, or states, such as Bavaria and Baden-Württemberg, unemployment has virtually disappeared, with unemployment rates approaching just 3 percent.[4] Exports are also at record levels, as Germany has emerged as the export leader, not just in Europe, but in the world.[5] In July 2014, Germany reached a new monthly record with exports exceeding 101 billion euros, which represented an 8.5 percent increase from the previous year and a 4.7 percent increase from the previous month.[6]

Just as the economic crisis in the rest of Europe spooked financial markets, driving interest rates on ten-year government bonds in some countries, such as Greece, Spain, and Italy, to nearly double digits, those same markets recognize the fundamental economic strength of Germany. Interest rates in Germany have been driven down to remarkably low levels, approaching less than 1 percent.[7] The market knows what everyone else also knows—in a sea of economic despondence and despair, the German economy is a welcome island of dynamism, optimism, and success.

While this is not the first Wirtschaftswunder experienced by Germany, what makes this current economic miracle all the more remarkable is that the country has bucked the trend exhibited by most of its neighbors on the continent, indeed throughout the OECD. In the first, and original, Wirtschaftswunder of the 1950s and early 1960s, all of Europe, in fact, the entire developed world, enjoyed a surge in economic growth and diminished unemployment, almost to the point of wiping out unemployment, as all boats were lifted by the rising tide of postwar economic growth. This economic euphoria was even more prevalent in Germany. In May 1945, Hitler was dead and National Socialism had been defeated. After months of allied bombing and door-to-door combat and bombardments, little remained of the once majestic medieval cities and architecture along with the mighty plants and factories that had fueled two world wars. Germany had been reduced to ashes.

But by 1946, the eminent British newspaper *The Times* characterized the unexpected rapid recovery that was well underway as the *Wirtschaftswunder*, or economic miracle—a term that has stuck to this day.[8] The miracle was the rebirth of a Germany that was not just recovering but booming.[9] Germany was vigorously rising from the ashes of defeat from two world wars. And what a miracle it was! Industrial production, which was the locomotive for economic growth during that era, grew by an astounding 25.0 percent in 1950 and 18.1 percent the following year. These stunningly high rates of growth continued throughout the remainder of the decade, so that by 1960 industrial production had increased by more than two and half times. The German Wirtschaftswunder fueled a corresponding rise in gross domestic product (GDP) by two-thirds, while employment rose from 13.8 million in 1950 to 19.8 million in 1960. Over 10 percent of the workforce was unemployed at the beginning of the decade, but by its end, the unemployment rate had been reduced to a microscopic 1.2 percent.[10] Unemployment was virtually wiped out by the Wirtschaftswunder.

Although the growth rates, levels of employment, and drop in unemployment may not have been quite as spectacular elsewhere in Europe and throughout the OECD as compared to Germany during those heady years following World War II, they were still impressive, certainly by today's standards. After all, this is generally considered to be a "golden age" for American economic growth and performance. The US unemployment rate reached a remarkable 2.9 percent in 1953, and in only one year of that decade did unemployment exceed 5.5 percent. Similarly, in the United Kingdom, the unemployment rate barely rose above 2 percent during that same decade. In fact, the rate of unemployment averaged around 2 percent, not just in countries like France and Italy, but for all of Western Europe.

Thus, while Germany may have enjoyed its postwar Wirtschaftswunder, so, too, did the rest of the developed world. What is different, and even more striking about contemporary Germany, is that its economic performance is not simply being lifted, perhaps a little more, by the same rising tide that is lifting economic performance everywhere in the developed world. Rather, in its astounding economic performance, Germany is swimming against a current, or perhaps seen through the eyes of some of its European neighbors, a tidal wave of economic despair and angst. More amazingly, it is doing so while much or even most of Europe is bogged down in economic gloom and despair; yet economic confidence and optimism reign supreme in Germany.

However, things were not always so rosy for Germany. First there was *Stunde Null*, or hour zero, as those fortunate enough to have survived the horrors of the Third Reich began to clear away the rubble of what remained from the devastation of World War II to make a fresh start. Then there was the deepening economic stagnation and pessimism accompanying the upward ratcheting of unemployment following reunification in the 1990s. As the unemployment rate entered into double digits and economic growth stalled at the end of the last century, the German outlook was indeed gloomy.

Germany was falling behind. The per capita GDP of France pulled sharply ahead of Germany by the end of the century, and perhaps even more alarming, Italy's almost reached parity with Germany. *The Economist* branded Germany as "The Sick Man of Europe."[11] Germans wondered, "Are We Still in the Champions League?"

When exactly Germany's Wirtschaftswunder stopped being a *Wunder* is subject to considerable debate. But there was no doubt that what the president of the influential Kiel Institute for the World Economy, Herbert Giersch, and his two colleagues, Karl-Heinz Paqué and Holger Schmieding, characterized as *The Fading Miracle* had indeed taken place.[12] Much of the public sentiment, policy and business leaders, and even scholars attributed the demise of the Wirtschaftswunder to the fall of the Berlin Wall on November 9, 1989, and German reunification on October 3, 1990. Right before the Berlin Wall fell, (West) German growth had been a vigorous 6 percent in 1987 and 5 percent in 1988. But by 1993, growth had stalled and the economy actually shrank by 1 percent. Growth rates remained negligible, never rising above 2 percent, for the remainder of the decade. Meanwhile, unemployment continued to skyrocket. While the unemployment rate was

around 7 percent as the Berlin Wall fell, it subsequently jumped to alarmingly high levels of double digits, climbing to well over 12 percent by the middle of the decade. The army of unemployed workers seemed to grow relentlessly, rising from around two and half million at the time of German reunification, to nearly five million people toward the end of the decade. The miracle had indeed faded.

Explanations for the demise of the Wirtschaftswunder were many and varied. The team of scholars led by Herbert Giersch pointed to the dual rise of labor unit costs and the value of the currency on international exchange markets.[13] According to the careful and meticulous analyses of Giersch, Paqué, and Schmieding, the economic growth miracle had been fueled largely by a growth in labor unit costs that remained less than the overall growth of productivity. Combined with low currency value of the Deutschmark, German goods became highly competitive in international markets, triggering an explosion of exports.[14] However, as the standard of living and wages began to rise faster than productivity growth, German competitiveness began to sag. By 1994, the mean manufacturing employee compensation, which includes social insurance and other employee benefits, was considerably higher in Germany, at $25.71 per hour, than in the United States, where it was only $16.73, or in Japan, at $19.01.[15]

Germany, perhaps even more than other countries, had anticipated that the end of the Cold War, triggered by the fall of the Berlin Wall, would usher in a welcome peace dividend. Resources previously allocated toward fighting the Cold War and preserving the viability of a country under constant threat from its one-time enemies on the other side of the eastern borders could now be diverted away from financing national security and instead be invested for productive purposes.

But the widely anticipated economic boom accruing from the peace dividend never materialized. The Wirtschaftswunder had succeeded because of German competitiveness vis-à-vis the Western Allies. However, along with the end of the Cold War came new competition from a different direction—from the East, in both Europe and Asia. For example, the daily earning of labor in 1992, just after the country was reunified, was only $6.14 in Poland, $6.45 in the Czech Republic, $1.53 in China, $2.46 in India, and $1.25 in Sri Lanka, in comparison to $78.34 in the European Union.[16]

Labor cost differentials can, of course, be offset through productivity increases and through the substitution of technology for labor. Germany, like every country, was being subjected to competition in the new globalized economy. However, unlike any other country at that time, Germany had just absorbed 18 million people who worked at substantially lower levels of productivity.[17] Estimates of East German productivity relative to that in West Germany ranged between 40 and 70 percent.[18] This drag on productivity precisely at a time when the country was exposed to new global competition had a drastic impact on competitiveness.

The twin forces of globalization and reunification seemed to be impacting Germany more severely than other countries. However, economic decline was not the only response to the new era of globalization. When policy and business leaders looked to the other

side of the Atlantic, they saw a United States that was prospering during the decade of the 1990s.[19] It wasn't that America had avoided plant closings and downsizings. Mass layoffs were prevalent in the news media at that time. Still, economic growth ratcheted to ever-higher levels toward the end of the century, and unemployment virtually disappeared.

The two sides of the Atlantic were clearly on divergent trajectories. At the beginning of the decade, in 1991, per capita GDP was only $2,000 higher in the United States than in Germany. A decade later, this gap in the standard of living had exploded to $12,000. Germany was clearly going in the wrong direction.[20] But how had America managed to go in the right direction?

The answer lies in the shifting source of competitive advantage. If large plants and factories, or what the economists term as physical capital, drove economic prosperity in the post–World War II era, globalization shifted the comparative advantage in capital-intensive industries to the lower-cost countries of Asia and Eastern and Central Europe.[21] The world, of course, still had a huge demand for such products, but with globalization, the geography of competitive production shifted away from the high-cost countries of North America and Western Europe to the new entrants in the global economy in Asia and Eastern and Central Europe. This was the decade when the high technology and innovative industries in the United States, such as personal computers, software, and semiconductors, exploded, driving up economic performance and driving down levels of unemployment. New companies, such as Apple and Microsoft, spearheaded by bold entrepreneurs like Steve Jobs and Bill Gates were leading the way to unprecedented American prosperity and wealth through innovation and entrepreneurship.[22]

The view from the other side of the Atlantic, in Germany, was bleak. Joschka Fischer, a member of the Green Party, who would subsequently serve as minister of foreign affairs under Chancellor Gerhard Schröder, lamented in 1995 that "a company like Microsoft would never have a chance in Germany."[23]

But it wasn't just the newly founded entrepreneurial companies that proved to be so elusive to Germany. It was also the capacity for those new start-ups to grow into global competitors, such as Intel, Microsoft, and Apple, leading the dean of the Sloan School of Management at MIT, Lester Thurow, to highlight Germany's vulnerability, pointing out that it "is falling behind because it doesn't build the new big firms of the future."[24]

Thurow was not alone in his concern. One of the leading weekly magazines in Germany, *Der Spiegel*, warned, "Global structural change has had an impact on the German economy that only a short time ago would have been unimaginable. Many of its products, such as automobiles, machinery, chemicals, and steel, are no longer competitive in global markets. And in the industries of the future, like biotechnology and electronics, German companies are barely participating."[25]

The *Wall Street Journal* looked at Germany and reached a similar conclusion: "If you look at the chip industry, it's a disaster. And the computer industry has been for many years. Energy technology as such is a disaster."[26] One of the leading politicians of Germany, Lothar Späth, who had served as minister president of the *Bundesland*, or state,

of Baden-Württemberg, teamed up with the chairman of McKinsey & Co. Germany, Herbert A. Henzler, in their best-selling book,[27] *Countdown für Deutschland: Start in die neue Zeit?* (*Countdown for Germany: Start in the New Era?*) to warn that Germany's "greatest structural crisis in the postwar period has been the result of missing the boat on cutting edge technologies."[28] Hans-Werner Sinn, one of Germany's leading economists, who serves as president of the influential IFO Institute in Munich, put it even more bluntly in the title of his best-selling book, *Can Germany Still Be Saved*?[29]

Fast-forwarding to today, all this seems distant in a long-forgotten past, as if it were from a different era. Germany has emerged as *the* bright spot in an economically distressed Europe, and even among leading developed countries. As Jochen Bittner, political editor for the prestigious weekly newspaper *Die Zeit*, explains, "My country has made a remarkable journey from being labeled the 'sick man of Europe' just 10 years ago. Since then, it managed to bring down unemployment by almost half. In the past five years our economy has grown by 8 percent—a fantastic rate for such a developed country. And only last month, the federal government announced that it aimed to implement a budget with zero new debt in 2015. All this has been achieved despite a worldwide financial crisis and the near-collapse of the euro."[30]

Germany has managed not only to transform and upgrade its economic performance, but has done so precisely during an era when most of its neighbors on the continent, and even other partners in the developed world, are struggling against economic stagnation and despair. For example, as the *New York Times* warns, "France, which has in modern times been Germany's indispensable partner in European crisis management, is now in near revolt."[31] Invoking the great Russian novelist Leo Tolstoy, the *New York Times* observes, "Unhappy economies, it turns out, are all unhappy in the same way."[32]

But not Germany. How did Germany not only turn around its economy, from being the sick man of Europe and perhaps being downgraded out of the Champions League of high-performing developed economies in Europe and elsewhere?

The purpose of this book is to answer that very question. We do so by highlighting seven particular areas, or dimensions, of Germany that seem to be unique and distinct from not just its European neighbors, but from any other country in the world. And they matter. We refer to them as "secrets," not so much because they are actually unknown or unarticulated in Germany, or even elsewhere, but for three other reasons. First, because until only very recently, the country was considered the sick man of Europe, Germany has not been a place to look for uncovering and deciphering any secrets concerning economic success. A minor literature has emerged responding to, and reflecting, a long era of German economic despair, not to mention a timidity reflecting a political and social hangover, natural remnants from the devastation wrought by National Socialism and two world wars.[33]

The second reason is that, when taken and considered together, these secrets constitute a much more holistic, integrated, and even structured and organized economic approach to generating a strong economic performance, or what is referred to in Germany as *Ordnungspolitik*, than exists in most other countries.

The third reason is that the striking turnaround in Germany's economic performance offers an important role model for countries in Europe and elsewhere, suggesting that there is a considerably more optimistic alternative to resignation accepting the inevitability of economic decline in the era of globalization. This book shows how Germany was able to accomplish a "jolt through society", as former Bundespräsident Roman Herzog called for in his famous "Berlin Speech" in April 1997. He boldly challenged Germany to overcome its well-known and deeply rooted angst, for Germans to become more self-sufficient instead of always relying on the state and the government to provide solutions, and to proactively harness the opportunities afforded by a globalized world. In particular, Bundespräsident Herzog called for the emergence of an innovative and courageous society, which places a premium not just on flexibility and mobility but also on solidarity with others, in order to play a responsible role and make a positive contribution to society.[34]

That Germany has been able to carve out success and resilience where some of its neighbors in Europe and partners in the OECD have not has caught the attention of influential thought leaders in policy and business. For example, Charles Wessner, the former director of the Board of Science, Technology and Economic Policy (STEP) at the National Research Council of the National Academies of Science and Engineering, responds to the seemingly inevitable continued erosion of manufacturing in the developed countries by pointing out that "one thing is clear. Countries that lose their manufacturing base risk losing their ability to innovate. Against the background of an economic environment which has seen the erosion and offshoring of traditional industries in the face of global competition, the German model, or some parts of it, warrants careful consideration. Above all, we have to pay attention to other countries' policies and programs and learn from them."[35]

It is important to emphasize that this book is in no way claiming that Germany has discovered a panacea neutralizing the inevitable economic slowdowns, downturns, and full-blown recessions wrought by the business cycle. Scholars and thought leaders in policy and business who should have known better had already deluded themselves into proclaiming "the end of the business cycle" during what the Nobel Prize–winning economist Joseph S. Stiglitz termed "the world's most prosperous decade" of "the roaring nineties" in the United States.[36] Germany, like all developed countries, continues to be subjected to the business cycle as it is integrated into the larger European and global economies.

What this book does suggest, however, is that there are three key differences exhibited by Germany in this young century. The first is the stunning and widely unpredicted and unanticipated resurgence from being Europe's sick man to ranking among the continent's most prosperous nations and serving as the unquestioned locomotive for economic prosperity. The second is a remarkable degree of economic buoyance, which while not immunizing the country against economic downturns and exogenous shocks enables Germany to rebound with considerable resilience.

The third is the unexpected emergence of a remarkable entrepreneurial society. This shift to an entrepreneurial society is reflected by educated and *weltoffen*, or globally

aware, young Germans, who have triggered a wave of unexpected dynamism, flexibility and mobility, and ultimately underlies the impressive surge in the German economic performance.

Everything comes to an end. So too it was with America's soaring economic ascension during Stiglitz's "roaring nineties." But even after the euphoria was long past, key lessons, insights, and takeaways about the fundamental forces driving economic prosperity and success were not lost on scholars and thought leaders in policy and business. In particular, what most of the world, including the Americans themselves, had learned by the end of that decade that they did not understand in any fundamental way at its beginning, was the crucial role played by knowledge and ideas along with entrepreneurship as a key to transforming that knowledge and ideas into innovation, growth, employment, and competitiveness in a rapidly globalizing economy.

In its widely heralded proclamation at the turn of the century, the European Council of Lisbon proclaimed both knowledge and entrepreneurship to be the cornerstones to ensuring sustained economic prosperity in Europe. By the time that the president of the European Union, Romano Prodi, echoed the Lisbon mandate in 2002, confirming, "Our lacunae in the field of entrepreneurship need to be taken seriously because there is mounting evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy,"[37] no one needed convincing any more about the primacy of what would become known as the *entrepreneurial society*.[38]

At the beginning of the 1990s, almost no one would have pointed to knowledge and entrepreneurship as the key ingredients fueling economic growth, employment, and competiveness. By the end of that decade, it would have been difficult to find someone who did not think that they matter.

Driving downtown from the airport in Riyadh, one sees a large placard with the greeting "Welcome to the Kingdom of Saudi Arabia—The Knowledge Society." Even an underground ocean of oil pales in value in comparison to the riches buried in knowledge and ideas.[39]

The lessons from the America of the 1990s were not lost upon President Barack Obama, who emphasized the key role that innovation and entrepreneurship needed to play to reignite economic growth and prosperity in his proposed plan, *A Strategy for American Innovation: Securing Our Economic Growth and Prosperity*.[40] Similarly, in his 2011 State of the Union Address to the US Congress, President Obama emphasized that "America's economic growth and competitiveness depend on its people's capacity to innovate. We can create the jobs and industries of the future by doing what America does best – investing in the creativity and imagination of our people. To win the future, the U.S. must out-innovate, out-educate, and out-build the rest of the world. We have to make America the best place on earth to do business."[41]

Just as Stiglitz's "roaring nineties" in the United States came to an end, so too will the impressive German second Wirtschaftswunder. This too shall pass. But just as the lessons about the key fundamental forces driving the impressive American prosperity of

that decade were not lost on policymakers and business leaders all around the world, what we characterize in this book as the *seven secrets of Germany* will also serve as a useful starting point for thinking about and deciphering the fundamental forces contributing to economic resilience for a particular country in a particular context.

Thanks to the breathtaking American economic dynamism over the last decade of the previous century, the policy mantra for this century has become knowledge and entrepreneurship. Thus, that is exactly the way we will start our exploration and analysis of Germany, with a focus on the singular role of German small business and entrepreneurship in chapter 2 and the particular role of knowledge in Germany in chapter 3.

It is certainly no secret that small firms and entrepreneurship are among the most important keys to a dynamic and innovative economy, so that *small is beautiful*, as the title of chapter 2 states. The difference in Germany is not that there are lots of small and medium-sized enterprises (SMEs). Rather, the qualitative and sufficiently significant difference, which underlies the secret, actually merits a particular German name distinguishing SMEs from their counterparts in other countries—the Mittelstand. There is certainly no paucity of examples highlighting the high-flying and breathtaking technology-based start-ups, particularly in information technologies and increasingly in the life sciences. But the main point of chapter 2 is that the German Mittelstand represents a kind of main street entrepreneurship, in that it is deeply embedded in local communities. Mittelstand companies are also governed differently. They tend to be family-owned businesses that take full advantage of strong linkages and ties to their communities, enabling them to access both highly skilled labor through the local apprentice programs along with key financial resources through local financial institutions. Not only is their governance different but they also exhibit a decidedly different economic performance—a better economic performance—than do their counterparts in other countries. A subset of the Mittelstand companies has performed so well that the business consultant Hermann Simon famously refers to them as *hidden champions*, in that they dominate their product niches in global markets.[42]

Germany has long been known as the *Land der Dichter und Denker*, or the country of poets and thinkers, reflecting a reverence for science, ideas, and art that is centuries old. How does this Old World country measure up in terms of the key institutions and mechanisms used to produce knowledge, such as universities and education? Not especially well when compared to its European neighbors and OECD trading partners, a fact that presents a curious paradox. Despite its unspectacular performance of higher education, Germany is able to generate highly skilled workers and high levels of human capital. The resolution to the paradox is the focus of chapter 3, "Poets and Thinkers," and lies in a rich array of key institutions, ranging from the apprentice and training system that creates skilled labor, to world-class research institutes.

As it became clear in the 1990s that knowledge and ideas were powerful economic forces, it seemed that the newly emerging Internet with its World Wide Web would render geographic location and proximity superfluous. Knowing the price of gold on

Wall Street or the value of stocks in Tokyo no longer required spatial proximity. As *The Economist* famously proclaimed in 1995, "The death of distance as a determinant of the cost of communications will probably be the single most important economic force shaping society in the first half of the next century."[43]

It took the giant of a scholar, Maryann P. Feldman, who is the Heninger Distinguished Professor of public policy at the University of North Carolina, Chapel Hill, meticulously building upon her Ph.D. thesis in her book *The Geography of Innovation,*[44] to explain that, like Mark Twain's famous demise, the death of distance may have been greatly exaggerated. Paul Romer, professor of economics at the University of California, Berkeley, had revolutionized thinking in the scholarly field of macroeconomics by showing that knowledge not only drives economic growth, but is particularly potent because of its propensity to spill over from the firm or organization where it is created for use by individuals and other firms.[45] But once knowledge and ideas spill over from the company or organization where they are created, why should they remain geographically localized? That is, why should knowledge and ideas stop spilling over just because they reach the border of a city, state, region, or country?

It took Feldman's important theory of localization to complement the theory of knowledge spillovers to fully explain and understand that rather than leading to the death of distance, globalization and the emergence of knowledge as the key factor of production were actually making location and local strategies more important, because the knowledge spillovers remain localized within close geographic proximity to their source. Feldman carefully and painstakingly developed a theory of localization that explained the key role played by face-to-face contact and human interactions in creating and transmitting new ideas and insights.

Chapter 4 of this book highlights the long tradition of people in Germany being deeply connected to their roots, or where they came from. While Americans have a history of mobility, Germans and their culture have a strong link to the place where a person is born. The title of chapter 4, "Roots and Wings," draws from the famous insight of Johann Wolfgang von Goethe celebrating the preeminence of roots in grounding a person. Perhaps even more important is the legal and institutional basis in Germany that provides for a greater degree of decision-making autonomy at the decentralized state and local levels than in many other countries. While this degree of decentralized decision-making and governance has been a part of Germany for decades, Feldman's important ideas about the role of geography and place in economics and innovation implies that just as location has become more important in the global era, so too has the German competitive advantage emanating from strong and autonomous decision-making and governance at the state and local levels.

The second part of the title of chapter 4—the wings—refers to the other aspect of Goethe's famous penetrating insight, which is the capacity to move beyond these invaluable, but also inevitably constraining and restrictive, roots. Germany has managed to do exactly that in nurturing and developing numerous capacities, institutions, and policies