SUCCESS IN AGRICULTURAL TRANSFORMATION

Lifting and keeping millions out of poverty requires that smallholder agriculture be productive and profitable in the developing world. Do we know how to make this happen? Researchers and practitioners debate how best to do so. The prevailing methodology, which claims causality from measures of statistical significance, is inductive and yields contradictory results. In this book, instead of correlations, Isabelle Tsakok looks for patterns common to cases of successful agricultural transformation and then tests them against other cases. She hypothesizes that five conditions are necessary to achieve success. She concludes that government investment in and delivery of public goods and services sustained over decades is essential to meeting these conditions and thus successfully transforming poverty-ridden agricultures. No amount of foreign aid can substitute for such sustained government commitment. The single most important threat to government commitment is subservience to the rich and powerful minority.

Isabelle Tsakok has worked on issues of economic development, particularly for agriculture and rural areas, for more than 25 years, primarily as a staff member at the World Bank and, since retirement, off and on as a consultant. Her professional activities focus on the policy and institutional and incentive environments for agriculture, agro-business, and rural development in open, market-oriented, and transition economies. Dr. Tsakok has been involved in agricultural policy analysis, program and project formulation and evaluation, and research and training activities throughout the developing world, primarily in Africa, Asia, the Middle East, and Latin America. She is the author of *Agricultural Price Policy: A Practitioner's Guide to Partial-Equilibrium Analysis* (1990), a manual widely used by development practitioners. Dr. Tsakok also developed the policy simulation game "Exaction" with Professor Graham Chapman (1982–83), then at Cambridge University. She received her Ph.D. in economics from Harvard University.

Success in Agricultural Transformation

What It Means and What Makes It Happen

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In Memory of Bruce L. Gardner (1942–2008)

Mentor and friend: Simply the best

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Preface

I wrote this book because Bruce Gardner wanted me to write it. I kept telling him that I was tired of writing World Bank reports that nobody reads and that governments consider a nuisance. I finally agreed to write the book, provided that he agreed to write it with me. He did, but tragically passed away on March 14, 2008, well before we finished writing. Despite this immeasurable loss, this book is truly a joint product.

The book grew out of discussions Bruce and I had had since September 2001. Soon after I retired from the World Bank in July 2001, I went to see Bruce with one burning question: Why is it that our operations at the Bank to develop smallholder agriculture fail so often? We put in so much effort; we consult the people on the ground as well as their governments; we draw on the best experts. Seemingly, we come on the development scene with tremendous intellectual and financial advantages. But despite these, more often than not, we fail. Why is it that so often our recommendations on how to develop agriculture and reduce rural poverty don't work?

Bruce Gardner said he did not know the answer. We need to do research, he said. I listened in disbelief. I was convinced he would know, since like the entire profession, I regarded him highly – he had written so extensively and had real-world experience working with governments. He was without any doubt an expert's expert. And so began nearly seven wonderful years of working together, digging into this messy subject called promoting agricultural development and reducing rural poverty.

Our very different backgrounds added to the intensity of the research. Bruce was from one of the most powerful countries today, the United States of America, whereas I was from the tiny island of Mauritius, which most educated people have never heard of. He was from a farm family. I was from a Chinese refugee family whose ancestors had long fled the farm. He was an academic. I was a development practitioner. The work was exciting, as we had no sacred cows to protect, no deadlines to meet, and no bosses to please. We tried to meet once every month, although we were often not able to do so in view of Bruce's very busy schedule and my periodic World Bank missions. We called our research *What Works: Why and Why Not?*

I had gone to Bruce because he had impressed me earlier. I first met him when he gave an oral presentation of his review of the World Bank report I task-managed on Morocco rural development (1996–97). Completing this report was a bittersweet experience for the team. Bitter, because the government of the Kingdom of Morocco objected to the report as being much too critical and as its title emphasized the inconvenient fact that there were two Moroccos: the rural and poor – the forgotten half – and the urban and favored half. In its wisdom, Bank managers of the region decided not to publish the report. But the experience was also sweet, because the report was praised as a model by the office of then-Bank president James D. Wolfensohn. From that experience, I was reminded again that politics is definitely in command at the World Bank. At the end of Bruce's presentation, I remember thinking to myself that I would like to work with this person some day, as I found his review both insightful and balanced – and it had none of the nastiness that unfortunately mars too many reviews. So I called him when I was about to retire. By the end of our first meeting, I was delighted when he said he wanted to work with me on a subject we both loved, searching for the answers to my question.

From the very start, we decided to look for patterns in cases of success. These patterns would provide a clue as to what was going on and thus serve as a guide in our search for the essential missing links in cases of failure. Understanding the wellsprings and contribution of agricultural development is an old quest. So as not to be deluged by the voluminous literature grappling with similar issues of agricultural development, we wanted to reformulate alternative views in such a way that we could assess the conditions under which they hold up and where they break down and why.

We started our research with three clear cases of success: England in the 18th and 19th centuries; Japan under the Meiji rule (1868–1912) and after WWII; and the United States in the 19th and 20th centuries. Analyzing these and other developing countries such as the Republic of Korea and Taiwan, China, we identified a pattern upon which we developed a testable hypothesis. That was in March 2002. I was happy we had identified a pattern but wondered whether we should go on, because the conditions we identified were "obvious." I was hesitant about stopping, however, since we still did not know how good the

answer to our question was. We had not yet tested our hypothesis by looking at the experience of other countries. It was at that point that Bruce urged that we continue and even write a book together.

Bruce wrote in an email to me on March 7, 2002: "It is obvious that those things ought to make a difference, but it is far from obvious that those are the main things and that other things that people have suggested are less important or unimportant. Showing convincingly that your factors really are key, and not other factors, and that a country needs all five, would be an enormous contribution."

How could we show that countries need all five conditions? Specifically, how could we test our hypothesis? Thus began the second stage of our research. We first needed a methodology that did not have the pitfalls of the current econometric approach. As all agricultural economists know, Bruce was a highly accomplished econometrician. Yet he became dissatisfied with econometrics as a tool for settling policy controversies. In 2007 he argued that "[a] natural way to try to assess agriculture as a cause of growth is through econometric investigation of cross-sectional data for a panel of countries, or possibly regions within a country. However this approach is fraught with difficulties that have so far precluded definitive findings. Most notably, the criteria of statistical significance have not provided answers as durable as the confidence intervals on estimated coefficients would lead one to expect." He therefore categorically rejected the idea that the econometric approach was capable of establishing causality (Tsakok and Gardner, 2007: 1145).[1] Already in 2002, in a review of the state of agricultural economics, he wrote: "What is striking though is how seldom econometric studies have been decisive in determining the state of scholarly opinion and in contrast how much of the work that these chapters discuss derives from ideas, inferences, models and observations that have not been confirmed, refuted, or even seriously confronted with statistical data … and it is striking after reading the chapters … that descriptive analysis really doesn't have much less to offer than the large investments in more formally worked-out analyses have achieved" (Gardner and Rausser, eds., 2002: 2241, 2243).

[1] Isabelle Tsakok and Bruce Gardner, "Agriculture in Economic Development: Primary Engine of Growth or Chicken and Egg?" *American Journal of Agricultural Economics* 89 (Number 5, 2007): 1145–51.

Instead of trying to confirm hypotheses, we would test them by looking for evidence that might refute them. Thus, as we stated in our book proposal (December 2006) to Cambridge University Press, "Our approach is directed more centrally at refutation of key hypotheses (following the Popperian idea that outcomes inconsistent with a hypothesis constitute more powerful evidence against the hypothesis than positive statistical correlations can generate in favor of the hypothesis)."

While at the London School of Economics and Political Science, I had the good fortune to attend the Popper seminars on scientific method, the methodology of social sciences, and the open society and its enemies. Popper's lectures were always packed, intellectual confrontation always intense. Every lecture was a debate. I found the debates on the irrefutability of Marxism and the problem of induction particularly pertinent to what was going on at that time. That was the period of weekly anti–Vietnam War demonstrations and of university student takeovers of buildings. The Marxists were particularly vocal. Popper demolished their claims by showing that they found confirming evidence of class struggle and the impending collapse of capitalism everywhere. Popper (1963: 37) called it their "soothsaying practice."[2] No evidence could ever refute their claims. The irrefutability of their claims, which they considered to be a strength of their position, was in fact their weakness. Moreover, they generalized from single events that always "proved" their point about the demise of the entire capitalist system.

Theory can never emerge from facts by a logical or mathematical algorithm, Popper (1953/1974: 102) argued. "There is neither a psychological nor a logical induction. Only the falsity of a theory can be inferred from empirical evidence and this inference is purely a deductive one."[3] Little did I realize then that these hotly contested points would prove so valuable in later years in my work as a development practitioner.

Popper had, however, never made clear how new, testable social science theories would look. And economists had not followed his advice

[2] Sir Karl Popper, 1963. *Conjectures and Refutations: The Growth of Scientific Knowledge*. London: Routledge and Kegan Paul.

[3] Sir Karl Popper, 1953, 1974. "The Problem of Induction." Reprinted in David Miller, ed., 1983. *A Pocket Popper*: 101–17. Fontana Paperbacks.

and looked for testable hypotheses. Instead they had looked for correlations, and confirmation of those correlations. The result has been a mass of conflicting correlation data, from which not much could be concluded – the situation Bruce lamented. William Berkson (1989), a student of Popper, suggested to me that instead of looking for testable singular predictions of events, I look for patterns that could be tested across different times and societies.[4] So this is the Popperian methodology I adopted. And Bruce was convinced that, given the poor results of normal approaches, it was worth trying.

Once we had decided on the methodology, we reformulated prevailing views on the primary importance of agriculture in the transformation of entire economies, putting them in testable form. Then we looked for cases that might refute them. We also formulated our own hypotheses so as to make them testable. For each of the five conditions, we first had to satisfy ourselves that their existence or non-existence could be ascertained in the real world of available data. Once we were satisfied that sufficient data existed for our purpose, the research then consisted primarily of developing case studies that could potentially refute positions taken or turn out to be consistent with them. Following Popper, positions or hypotheses that could stand up to testing and not be refuted would be accepted as established (until their possible refutation some day). No hypotheses can be proved; rather, the best we can do is to have testable hypotheses that withstand attempted refutation by empirical data.

Except for the case of the United States, I did most of the actual research and writing, and produced a dozen or so research notes. We discussed these in depth every time we met. And only when we were both satisfied with each note did we move on to the next. After several years of such collaboration, Bruce felt we had the building blocks for a book and decided that we should write a book proposal.

We believe our answers can and should be improved upon. If Bruce and I had had more time to work together, we would have devised further tests of our hypotheses, combining both case studies and econometrics. The goal of the next step of our research would have been twofold. The first would have been the challenge of strengthening and refining our hypotheses, so that they could explain more facts of

[4] William Berkson, "Testability in the Social Sciences," *Phil. Soc. Sci.* 19 (1989) 157–71.

economic development. The second challenge would have been methodological – to test the scope and limits of Popper's methodology of social sciences.

As I said in the beginning of this preface, I would not have written this book without Bruce Gardner. However, I had to complete it without him. I wanted to complete it despite the inevitable pain of not having Bruce to work with, because by the time we started work on the proposal, I totally agreed with Bruce, who felt strongly that we had an important message. The message is that much of smallholder agriculture remains mired in low productivity and poverty primarily because of bad governments. The five conditions cannot be created and maintained without good government. It is not just a matter of transparency and low levels of corruption; not just a matter of creating these conditions until the next election. Not one government, but a long succession of governments, has to be committed. Decades of investment in public goods and services, and their proper operation and maintenance, are required for successful agricultural transformation. Successful agricultural transformation requires a shared vision and a long-term approach.

I write this preface with sadness and joy – sadness because Bruce is no longer with us and joy because he would have been so happy that the first stage of our joint work is seeing the light of day.

Isabelle Tsakok
November 15, 2010

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I would not have been able to complete this book without the unwavering support of family and friends. My husband, William Berkson, never doubted that I could finish the book, even during the darkest days. I am grateful to the World Bank for making its wealth of data and analysis easily accessible. Particularly stimulating were discussions on the struggles for development with friends met at or still at the World Bank, and on China with Tang Zhong of Renmin University of China. As a visiting scholar at the Department of Agriculture and Resource Economics, University of Maryland, I was granted access by Lars Olson, chair of the department, to the University of Maryland's libraries while completing the book. I am deeply appreciative. Liesl Koch and Katherine Faulker continued to assist me even after the passing away of Bruce Gardner, when they had no obligation to assist. Their warm friendship and practical help mean everything to me. Liu Xiangping, then a doctoral candidate, was ever so forthcoming and clear in discussing methodological econometrics issues with me. The librarians at the Joint International Monetary Fund/World Bank library always did their best to give me the fullest access possible. Thank you, Sue Borlo, Rebecca West, Naseem Mohammed, and Chet Nunoo-Quarcoo. Juan Feng assisted me with the Excel charts despite her hectic schedule. Constantly busy Syviengxay Creger and Marie-Francoise How Yew Kin, longtime friends since we worked together on North Africa, were always so helpful. Last but certainly not least, I would like to thank Luis Constantino, World Bank sector manager, who made it possible for me to obtain more generous library access.

Summary

Without transforming its agriculture, no country with a major agriculture sector has been able to become a wealthy industrialized economy. What, then, has been the role of agriculture in the industrial transformation of economies? Despite a large area of consensus among researchers, many answers remain controversial.

Research during the earlier decades centered around the support of one or the other of two polar views using a combination of case studies and relatively simple one- or two-sector modeling of a nation's economy. The polar views are that investment in agriculture is essential to achieve industrialization and that agricultural development can be bypassed altogether. During later decades, the case for or against the critical importance of agricultural development has centered on econometric cross-country studies looking for correlations in the data that support one or the other of the polar views. The problem is that positive correlations can be found for both polar views. Evidently, a more complex mechanism is involved in successful development.

This book is the result not of the search for correlations, but of the effort to identify conditions that are common to all successful agricultural transformation. It tests these conditions by looking at experience worldwide. The five conditions that survive these tests are the following:

1. A stable framework of macroeconomic and political stability. The central and local governments are able to enforce peace and order.
2. An effective technology-transfer system. Research and extension messages reach the majority of farmers.
3. Access to lucrative markets. The majority of farmers face expanding markets of paying customers. To them, investing in agricultural and rural production is good business.
4. An ownership system, including a system of usufruct rights, that rewards individual initiative and toil. It is feasible for farm/rural families to gain monetarily from risk taking and hard work.

5. Employment-creating non-agricultural sectors. As agriculture becomes more productive, it must shed labor, which unless absorbed in non-farm jobs that pay as well as agriculture would simply constitute exporting farm poverty to other sectors.

While these may seem obvious as stated, what is not obvious is how some governments have been able to maintain them over decades. How governments have succeeded in maintaining them has varied from country to country. However, there is a common thread. Underlying all five conditions is *sustained government investment in and delivery of public goods and services over decades*.

The main policy implication, then, is that success in agricultural transformation requires decades of government investment in and delivery of public goods and services.[1] Such investment creates a stable environment within which market opportunities flourish and are accessible to all. And it enables generations of farmers, in particular the majority of smallholders, to invest in the productivity of their farms and profit from such investment. It also enables farm and rural households to diversify their risks and returns by including non-farm incomes and opportunities in their portfolio. In short, creating an environment to sustain agricultural transformation requires strong, development-minded, and competent governments to take charge.

This book does not advocate laissez-faire market orientation in which governments are weak and allow only the rich and powerful to access opportunities and gain. It does not advocate the other extreme either – government ownership of the factors of production and a monopoly over decision making – for agricultural growth requires decentralized, knowledgeable, resilient, and motivated decision makers to be in charge. The right- and left-wing diagnoses have both been simplistic and their policy prescriptions off the mark.

This book does, however, advocate a more egalitarian distribution of income and opportunity, for concentration of wealth and political power historically does undermine governments' ability to govern for the prosperity of all. Farmers, not governments, produce and sell. However, only governments can create the environment that enables

[1] The actual delivery can be operated by the private sector, but the government is responsible for its financing and making sure it operates efficiently (World Bank: *World Development Report*, 2004).

the majority to do so profitably. To achieve success in agricultural transformation, development-minded governments must be in the driver's seat – not foreign aid with its legion of experts or free markets serving only a minority of powerful elites. Sustained government investment over decades in public goods and services such as education, infrastructure, agricultural research and extension, and markets is the path to successful agricultural transformation.