

Books Reviewed

Carl Davidson and Steven J. Matusz. *International Trade and Labor Markets: Theory, Evidence, and Policy Implications*. Kalamazoo, Michigan: W.E. Upjohn Institute, 2004, 145 pp., \$40.

There is ongoing debate in academic circles and in the popular press on the welfare impacts of increasing international integration of markets for goods, factors, and technology. There are two groups with seemingly opposing positions. The first group is represented by academic economists who advocate increased global economic integration of world markets and contend that market liberalization is potentially beneficial in the aggregate and should have an overall positive impact on the economies of both developed and developing countries. In contrast, the second group, represented by labor groups and several political entities, oppose economic integration and argue that international economic integration would result in job destruction in the domestic labor markets.

In their book *International Trade and Labor Markets*, Davidson and Matusz argue that the traditional models of international trade are inadequate in explaining the effects of globalization on labor markets because of their underlying assumption of full employment. The authors note that both the Heckscher–Ohlin and the Ricardo–Viner models “... assume away any impact that trade could have on employment by assuming that all factors are fully employed at all times” (p. 3). Thus, the basic trade models ignore the popular labor concerns about potential job losses as a result of increased imports and outsourcing. The main goal of the authors is to extend the basic trade model of international trade to explicitly allow for cases of short-run and long-run unemployment. They hope that such an endeavor would help to reconcile the conflicting views on the impact of international economic integration on employment.

The book consists of five chapters. The first chapter contains introductory remarks with emphasis on the key issues and the contribution of the authors’ work. Chapter 2 contains

a brief review of the existing literature. In my opinion, this may be the best part of the book as it serves as a good introduction to the subject for technically savvy nonspecialists in trade and labor issues. The first part of the chapter explores some “theories” advocated by nonacademic populist writers who mainly argue that trade with developing countries would lead to job loss in developed countries. However, the bulk of this chapter is devoted to reviewing and highlighting the two main alternative conceptual frameworks used in many of the existing empirical analysis of the trade–employment nexus.

The first conceptual framework is the labor market approach, which is popular with labor economists. Among other applications, this modeling framework is the basis for several empirical studies of the impact of skilled-biased technical progress on relative wages. The second conceptual framework is the general equilibrium approach, which is popular with trade economists. In contrast to the labor market approach, the latter modeling framework is favored by the authors because it is more comprehensive in its coverage and it allows for more complex interactions among various factors and industries in the economy. Despite its strengths, the main weakness of the general equilibrium trade modeling framework lies in its unrealistic and restrictive assumption of full employment. The assumption of full employment fails to reflect the reality of unemployment and job destruction.

Chapter 3 contains the main contribution of the authors to the literature on the relationship between trade and labor markets. It represents the heart of the book. In this chapter, the authors propose an extension of the general equilibrium models of trade that explicitly account for unemployment. They relax the assumption of full employment by assuming instead that labor markets do not fully adjust to international trade shocks. In this section of the book, the populist concern about potential job destruction is incorporated into a standard general equilibrium model. Specifically, Davidson and Matusz extend the search theory approach to

unemployment. The key variable in the search theory model is labor market turnover rates. The authors contend that their model specification is particularly useful, because it allows for empirical verification of their predictions and also allows for comparisons with existing models.

In their proposed modeling framework, Davidson and Matusz demonstrated the linkages between labor market structures, trade patterns, and income distribution. They claim that while many have studied the impact of trade on income distribution (relative wages), the linkage between labor market turnover rates and international trade patterns has yet to receive much attention in the literature. Although the authors' work in this chapter is an important contribution to the current debate on this issue, their analysis is too brief and appears to lack general applicability. Instead of referring the readers to previously published articles by the book's authors, it would have been more worthwhile to use the current book as a forum to further extend their previous work and make it more accessible to a more general audience.

In chapter 4, Davidson and Matusz applied the newly proposed theoretical framework to empirical testing using U.S. trade and manufacturing industries data. This is perhaps the weakest section of an otherwise excellent book. Although the authors claim that their empirical results are strong, they are not so convincing. One main weakness of this section of the book is its sparseness in details. It lacks a comprehensive presentation and discussion of data issues and alternative empirical specifications and their implications for accurate inference. As noted by the authors themselves, "the statistical analysis presented above is provocative, but it is not a rigorous test of our models of turnover and trade. The models suggest that a more proper test of theory requires a cross-country comparison of inter-sectoral differences in turnover" (p. 88). Although the authors briefly report a small test comparing the United States and Canada, the model specification and the methodology employed needs further improvements. The value of the book as a reference would have been improved if the section on empirical testing of the theories were expanded.

The book concludes with chapter 5, where the authors focus on the extension of the models in chapter 3 to policy analysis. This section of the book provides an excellent first attempt

at analyzing the welfare effect of trade liberalization on jobs and income distribution. The stated purpose of this chapter is the examination of the alternative compensation schemes for those who incurred welfare losses because of trade openness. The chapter developed a search model where workers can seek two types of jobs: high-tech and low-tech jobs. Relative to low-tech jobs, the high-tech jobs have higher transaction and search costs but have low turnover and pay relatively higher wages. In contrast, low-tech jobs have low transaction costs with higher turnover and lower wages. The model used for policy analysis initially assumed that the low-tech sector was protected by a tariff. The question addressed by the authors is that of how the removal of tariffs (trade liberalization) affects the workers.

Davidson and Matusz note that the harmful effect of trade liberalization would depend on whether the worker falls in either the category of "stayers" or "movers." The stayers are workers who experience a decline in real wages but chose to remain in the low-tech sector in the postliberalization period because they could not acquire the new training needed for obtaining new jobs in the high-tech sector. In contrast, the movers observe an increase in real wages after switching from low-tech to high-tech jobs, but the new wages does not fully compensate them for the cost incurred from acquiring new skills and searching for new jobs. The authors' policy analysis found that the best way to compensate the stayers is with a *temporary employment subsidy*, while the "movers" can be best compensated with a *targeted wage subsidy*. They also found that these policy prescriptions do not necessarily depend on labor market structures.

Overall, this book offers useful insights into the current state of the debate on the impact of trade liberalization on labor markets. To a lesser extent, the authors also provide new empirical evidence in support of the conceptual analytical approach proposed in the book. Although the empirical testing section of the book is not fully developed and could be further expanded, this volume is recommended for applied economists and other social scientists with keen interest in recent developments in the welfare effects of international economic integration on domestic labor markets. The last section of the book on policy analysis can also provide practitioners and policy makers with new insights into the best policies to

use in compensating workers harmed by trade liberalization.

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Kaiser, H.M., J.M. Alston, J.M. Crespi, and R. J. Sexton, eds. *The Economics of Commodity Promotion Programs: Lessons from California*. New York: Peter Lang Publishing, 2005, 428 pp.

Commodity promotion programs are one of the few issues in agricultural economics that have attracted attention beyond the professional border. Why? First, both federal and state commodity promotion programs are ubiquitous. Second, federal law requires that the national programs be evaluated, in terms of benefits and costs, at least once every five years. These evaluations are obviously of interest to producers, program managers, and policy makers. Third, and more important, over the last decade the mandatory participation requirement stemming from the free-rider problem has been frequently challenged in court with a few of these cases making it to the Supreme Court. So to say this book is timely would be a gross understatement. Why California? California is the number one agricultural state in the country and as indicated in the preface about 50% of the value of California agricultural production is subject to some type of promotion program.

This book consists of seventeen chapters by twenty-five of the most prominent people working in this area. The book is divided into four parts: an introduction (three chapters), promotion case studies (nine chapters), other case studies (four chapters), and a conclusions chapter. The goal of the book is stated in the preface.

Our overall aim is to help inform the ongoing debate by bringing together and making sense of the findings from California case studies. Our goal has been to make the findings accessible to a broad audience of *noneconomists* and *economists* [emphasis added] alike. The book provides a critique of economists' methodology for examining benefits and costs of mandatory programs and lays a foundation for improving future economic analyses (p. xvi).

Given the book is targeting two mutually exclusive audiences, the review targets these two audiences as well.

The lay audience of noneconomists will find the book very useful, especially the first three chapters. Chapter 1, by the editors, provides the basic framework for analyzing the economics and returns associated with promotion programs. It emphasizes the importance of distinguishing between marginal and average return measures and *ex ante* versus *ex post* analysis. Chapter 2 provides a very nice summary of the state marketing programs of California, focusing on the institutional structure of these programs, the instruments used by these programs, and the expenditures for different activities by program for 2003/2004. Chapter 3 provides a comprehensive historical and contextual account of the legal issues that have arisen related to generic promotion programs. Given the numerous legal challenges these programs have faced, this is probably one of the more important chapters in the book and warrants closer consideration.

Regarding chapter 3, the author Crespi states

This chapter attempts to dispel two myths about these programs: (1) that generic advertising is just an anachronistic holdover from a Depression-era act of Congress, and (2) that arguments in the many litigation cases have come about solely because of a minority of curmudgeonly free-riders, free market extremists, or unbridled lawyers. Whether either side of the battle realizes it or not, both the marketing programs and the legal issues surrounding them grew out of *a process* [emphasis added]—a long, evolutionary process of economics, legislation, and litigation—that has been obscured behind the invective (p. 41).

Crespi's successfully dispels the first myth (pp. 41–48). I am less convinced by his argument for dispelling the second myth (pp. 50–54). As the quote indicates, Crespi gives the impression that the *process* is a cause rather than an instrument for achieving some outcome. Because the argument against the second myth is at its heart an issue of litigation strategy, I consulted a litigation lawyer friend to get an expert opinion. As she explained, there can be "alternative causes of action," meaning a plaintiff can have multiple arguments for filing a lawsuit. The successful legal strategy will more likely place more emphasis on the arguments that

are backed by supporting precedents than arguments that are not. With this in mind, while most of the recent legal assaults on generic promotion programs have pursued a first amendment argument to avoid participating (paying) in generic programs, I believe this is driven more by successful precedents than being a primary cause, which as an economist I tend to think is money.

For the lay audience, the focus of the remainder of the book, with the exception of chapters 12 and 17, is on calculating the returns to various commodities of various promotion programs. Chapters 4 through 11 calculate returns to various promotion programs in table grapes, eggs, dried plums, avocados, almonds, walnuts, raisins, and strawberries. Chapters 13 through 16 will prove especially interesting as they consider calculating returns to some nonconventional aspects of promotion: nutrition education in grade schools for milk (chapter 13), positive versus negative publicity related to food-borne disease (chapter 14), research in new uses for whey (chapter 15), and food safety regulations for pistachios (chapter 16). The book is a resounding success in demonstrating to a lay audience how economists can use mathematical and statistical tools to calculate a rate of return for just about any type of market altering program.

The audience of professional economists will not find the book as useful as the lay audience. The book is mainly a compilation of abbreviated versions of reports and journal articles that already have been published. Understandably, this abbreviation helps in reaching more of the lay audience, but I believe it will come at the expense of losing many in the professional audience. Overall, there is simply not enough discussion of the details of the science involved to satisfy the audience of economists interested in the science. This is not a blanket indictment as there are a few noteworthy chapters that are worthy of consideration in terms of the science and are self-contained (chapters 5, 7, and especially chapter 11).

As indicated, one of the stated goals of the book is that “[t]he book provides a critique of economists’ methodology for examining benefits and costs of mandatory programs and lays a foundation for improving future economic analyses” (p. xvi). The only chapters that really do this are chapter 12 (Kinnucan and Zheng [KZ]) and chapter 17. Chapter 12 seems somewhat out of place in that while it could have focused on the studies conducted in this book related to California, it in-

stead focuses on other national studies. The critique of KZ is narrowly focused on two issues: comparability of benefit–cost measures and demand model specification issues. KZ correctly point out that one has to be very careful in comparing benefit–cost estimates across studies and they offer two “standardized” benefit–cost measures that are designed to be comparable across studies. Including their standardized measures in a study is a good idea but given they are normative, static, and deterministic measures on the basis of a very simple theoretical framework that does not consider uncertainty in demand or supply parameter estimates and likely do not include all relevant constraints in the decision process, I am not sure how useful they actually are as standardized measures. On pages 272–79, KZ provide a critique based on *demand* model specification issues that unfortunately reveals some fundamental misunderstanding of econometrics and is misplaced. The KZ emphasis on the demand model specification issue is based on their belief that “[t]he key scientific question to address in promotion evaluations is whether one can reject the null hypothesis that promotion has no effect on market demand” (KZ, p. 261). This was once thought to be the key scientific question but we now know the key scientific questions is whether one can reject the null hypothesis that promotion has no effect on industry profit. Rejecting or failing to reject the demand effect does not imply the same inference on the profit effect. There are numerous other issues that KZ do not point out that could be critiqued: with the exception of Balatgas and Sumner (chapter 15), there is a complete lack of citing the relevant applied welfare literature or the collective goods literature, there are internal consistency problems (such as estimation results based on perfectly elastic supply [exogenous price] used in conceptual and simulation models that are based on upward sloping supply [endogenous price]), and partial systems estimation procedures that are highly subjective and provide very limited information on the quality of the entire empirical analysis, except for demand, are the norm.

The conclusion chapter 17 provides a nice summary of the book and emphasizes the importance of reporting average benefit–cost measures and taking into the account of the producers’ incidence of the program cost in calculating these measures. Both of these are very good methodological points. In this concluding chapter the editors state

The information provided by our work can be enhanced by investing in making estimates of aggregate benefit–cost ratios more meaningful (by measuring appropriate concepts and reporting them clearly and consistently), more precise (by obtaining more and better data and by using the best methods), and more credible (by increasing professional scrutiny and criticism of the estimates) (p. 412).

This is certainly an accurate statement but an economist interested in a detailed discussion of *how* to make estimates “more meaningful, more precise, and more credible” will have to look elsewhere.

This is a very good book for a lay audience and economists interested in the topic but not the details of the science. My suggestion is buy the book and do not pay too much attention to the lofty claims in the preface about providing a critique of methods and laying foundations for improving future economic analyses.

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McCann, James C. *Maize and Grace: Africa's Encounter with a New World Crop, 1500–2000*. Cambridge, MA: Harvard University Press, 2005, 304 pp., \$27.95.

Maize, known as corn in the United States, is the domesticated form of a strain of teosinte, a wild grass occurring naturally in isolated patches in central Mexico. Maize has a split personality. It may appear in some times and places as a vegetable crop in the garden, and at others as grain in the field. Maize, meaning literally “that which sustains life” in Aztec and Mayan languages, is widely cultivated throughout the world with the United States producing almost half of the world’s harvest. In 2004, worldwide production was over 721 million metric tons surpassing both wheat (627 mmt) and rice (605 mmt). While maize is used primarily as a livestock fodder in the United States as well as much of the world, 95% of maize produced in Africa is consumed directly by humans. Among the twenty-two countries in the world where maize comprises the majority of the diet, sixteen are in Africa. For example, in Zambia, maize consumption accounts for 58% of total calories in the national diet. Similarly, maize occupies 90% of cultivated land and represents 54% of Malawians’ total caloric intake.

As a field crop produced primarily to feed livestock and chicken, maize may appear to be a far cry from being considered a “grace” to humanity as the title of the book, *Maize and Grace*, might suggest. However, considering the distinctive character it plays in human diets, it is not difficult to perceive maize as a blessing or grace. James McCann has chosen an ambitious task and has done it well. He set out to tell the remarkable saga of maize’s ascension as a major *dramatis persona* in Africa’s food supply over the past half millennium. As a historian, McCann has brought a different perspective to the importance of maize in the evolution of African agricultural systems. According to McCann, maize’s historical trajectory in Africa represents the constant interplay of changes in social, economic, political, and environmental forces. The book provides a narrative of Africa’s engagement with maize and the chronology of how maize has risen to its current dominance in Africa’s farms and rural economies. It explores the central theme of whether or not all African societies that welcomed maize become the beneficiaries of maize’s grace.

The book is organized into nine chapters. The first two chapters present a comprehensive summary of the history, biology, ecology, uses, nutritional value, and economic, cultural, and social significance of maize in Africa’s food supply. Chapter 1 starts with maize’s long journey from an exotic plant introduced from the New World after 1,500 to its rapid adaptation that engulfed Africa and made it by far the most important staple food to Africans. In Chapter 2, McCann picks up the historical narrative in greater detail and explains how maize transformed into a monocrop grain staple on a continental scale from its initial adoption as a vegetable niche crop at the village level. Genetic and phenotypic evidence and linguistic evidence are used to provide intriguing glimpses into the movement and adoption of maize from West Africa to eastern and southern Africa.

The penetration of maize into the Old World took place in many cultural, economic, political, and ecological settings. The complexity of factors influencing the adoption of maize, from local ecology, farming systems, cultural conditions, and national economies to aesthetic sensibilities of African consumers, cannot possibly be explained with a single, consistent narrative of historical development. Instead, McCann offers a series of vignettes in chapters 3–4 to explain the various circumstances in which maize emerged as a major food source

in the Old World. The case of maize's contribution to the kingdom of Asante's historical prosperity and hegemonic growth in West Africa, the recent introduction of quality protein maize (QPM) in Ghana as well as Nigerian farmers' aesthetic preferences in maize varieties of different color and type are presented in chapter 3.

Maize arrived in both northeast Italy and Ethiopia in the sixteenth century. Although not an African country, the response of northeast Italy's Venetian Republic to maize as a potential food source presents an interesting comparison and a sharp contrast to the reaction of peasant farmers of the Christian kingdom located in the northern highlands of Ethiopia in northeast Africa. The Venetians adopted the new crop almost immediately while it took a three-hundred-year delay for maize to be fully accepted in Ethiopia. Chapter 4 focuses on the comparison of how these two agrarian systems responded to the effects of maize as a new food source based on their conceptions of property, the peasant households' role in the social system, the relation of the state to rural production, and the links between the patterns of agrarian life in the past and the twentieth century.

The remaining chapters 5–8 continue with the narrative of revealing stories of maize's adaption to African societies in various themes and settings. In the first four centuries of its encounter with the crop, Africa had been a repository of maize's genetic diversity with colored maize ranging from crimson to blue to colorful mosaics of red, blue, yellow, and orange, either on different ears or all mixed on a single ear. Chapter 5 tells the story of how the process of industrialization and urbanization, growing dependence on commercial and export markets, and the price incentive and demand for uniformity in quality and appearance had set in motion inexorable national trends that shifted Africa's maize production to an almost complete homogeneity of American white dent types by the end of the twentieth century.

In 1949, a mysterious and virulent fungus new to the Old World was first discovered and reported in Sierra Leone. The brownish red fungus, called American rust, was later identified as a variant of fungus *Puccinia polysora*, a type of rust never before reported outside the Americas. American rust brought devastating crop losses that posed a grave threat to the food supply in Africa. However, it vanished as quickly and mysteriously by 1953. Chapter 6

details the outbreak of American rust in Africa and the response of the international scientific community to the short-lived crisis. McCann uses the episode of American rust to present a well-balanced understanding of the nature of science, political ecology, and the globalization of power at the beginning of the multilateral postcolonial world in the 1950s.

In chapter 7, the narrative turns to the success story of investment in agricultural research that led to the release of the almost miraculous high-yield maize variety named SR-52 in 1960. The SR-52 was a "single-cross" hybrid maize that required early planting and a long growing season to maturity. SR-52 rewarded farmers who could afford intensive farm management practices, namely, large-scale commercial white farms. After its release in 1960, SR-52 raised yields on African commercial farms by more than 300% over the previous decade and spread across central Africa like a firestorm. McCann interweaves the development and adoption of SR-52 in Southern Rhodesia (Zimbabwe, after 1980), Zambia, Malawi, and Kenya with each country's distinctive but overlapping historical experiences of the genetics of maize, politics, science, climate, and rural economies.

Economic development and environmental change often brought about unintended and unexpected consequences involving new diseases that infect humans, plants, and livestock. A case in point is the outbreak of epidemic malaria in northwest Ethiopia in 1998. Just like American rust, the deadly epidemic was puzzling because it broke out suddenly in late summer 1998 but gradually dissipated by January 1999 and affected a region that had never known malaria before. Chapter 8 explores the hypothesis that links the 1998 malaria epidemic to the agroecological change of adopting the high-yield HB660 hybrid variety. McCann offers some compelling circumstantial evidence suggesting that a combination of coincidental factors resulted in an unwonted intensity and spatial distribution of the malaria outbreak in northwest Ethiopia. Finally, chapter 9 summarizes Africa's encounter with maize over the past 500 years transforming from a garden vegetable into the cornerstone of the African diet. McCann raises a number of emerging concerns now facing Africa and expresses with the importance of addressing social and economic issues ranging from food security and safety, health, and world trade to the future of genetically modified maize.

Maize and Grace is a fascinating book, and a joy to read. The book, based on painstaking research and historical data, provides a comprehensive account of how maize and humans have interacted since it was first introduced in Africa over half a millennium ago. It is eloquently written and loaded with a wealth of historical, social, cultural, botanical, ecological, and agricultural information and knowledge, as well as fresh, ingenious, and original insights. Professor McCann is to be commended and congratulated for his valuable scholarly contribution to agricultural literature. Can maize be Africa's "saving grace"? It is a question left for the reader to decide.

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Block, Richard N., Karen Roberts, and R. Oliver Clarke. *Labor Standards in the United States and Canada*. Upjohn. 2003. Available at: www.upjohninst.org

This six-chapter book compares labor standards in Canada and the United States, noting that the Free Trade Agreement that went into effect in 1989 generated far more debate in Canada than in the United States. Canadian concerns centered on "lower" U.S. labor standards and fears that freer trade would force Canada to lower its labor standards to compete, raising the broader question of how worker protections embodied in labor standards affect a country's economic performance.

The authors develop a database (www.upjohninst.org/blockroberts/index.html) that measures labor standards in Canada and the United States and conclude that "the conventional wisdom is correct—Canadian labor standards are indeed higher than U.S. labor standards" (p. 147), especially in unemployment insurance (UI) benefits, workers compensation, collective bargaining, and paid time off. There are no significant differences in equal opportunity standards, and the United States ranks higher on minimum wage, overtime pay, and occupational health and safety standards. Finally, there is more variation in labor standards in Canada than the United States because Canadian provinces have more authority to make labor laws, while in the United States federal standards set floors for state labor laws.

Labor standards are laws and regulations created and enforced by governments to protect workers—the authors define them as mandatory and universal norms that include sanctions for noncompliance (p. 35). The book focuses on ten labor standards that are promulgated and enforced at federal, state, or both levels of government: minimum wages, overtime, paid time off, UI, workers' compensation, collective bargaining, employment discrimination, unjust dismissal, occupational safety and health, and notice of large-scale layoffs/plant closings. Two important work-related benefits were excluded from the analysis—health care and social security—because they are handled differently in Canada and the United States.

The authors assign scores to labor standards based on coverage and protection, so that the maximum weight for any standard is ten, the score assigned if most unemployed workers are eligible for UI benefits and UI benefits are high. In two lengthy tables, the authors compute labor standards indices for ten labor standards in fifty U.S. states and twelve Canadian provinces and territories, generating a weighted average index of worker protection of sixty-five in Canada and fifty-two in the United States (p. 93). They provide the raw data and outline the weighting scheme to allow readers to use their own weighting scheme to make comparisons.

The authors emphasize that labor standards analysis can be very useful in examining whether countries with lower standards gain competitive advantages in trade, but they did perform such an analysis in the Canada–U.S. case. Other analyses using more countries with less reliable data have done so, and they generally conclude that higher labor standards do not impede the competitiveness of fast-growing developing countries, especially the exporters in East Asia.

A major problem in comparing labor standards across more countries is that there is no easily available and comparable metric. Some studies tabulate the number of core or fundamental ILO labor conventions a country ratifies, which has the effect of raising labor standards in many African countries that ratify ILO conventions. The United States ratifies few ILO conventions, but enforces federal and state laws so that average labor standards are undoubtedly higher in the United States than in many African countries. Some analyses find no relationship between ILO conventions

ratified and actual labor conditions, suggesting that it may be easy for some countries to ratify ILO conventions and ignore them.

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Evenson R.E. and V. Santaniello, eds. *The Regulation of Agricultural Biotechnology*. CABI Publishing, 2004, 290 pp., \$120.00.

Evenson and Santaniello provide a great public service in editing a collection of articles addressing the problems of regulatory inadequacy for agbiotech products. These articles in unison propose a direction for regulatory reform supported by all agents: consumers, firms, and political institutions. The objective is to achieve a regulatory structure that allows market movement away from increased hostility toward agbiotech products. Currently, individual country agbiotech regulations are not fully "harmonized" into a global regulatory system for agbiotech products. Their text is the blueprint for such a harmonized system.

The book is organized into six parts. Paarlberg et al., in the sole chapter in part 1, lay out the regulatory obstacles inhibiting the market penetration of agbiotech products. They note that with the current many conflicting interest groups, there is no surprise that the existing regulatory system and markets for agbiotech products remain in disarray. A globe prospective for a harmonized international regulatory system is then presented on the basis of "rules principally grounded in science."

Authors of the six chapters in part 2 discuss the current evolving regulatory systems. Included are regulations associated with international trade law, intellectual property rights, product labeling, and information asymmetries. Katz et al., in chapter 2, present a discussion on trade laws and food safety regulations with a comparative discussion of U.S. versus EU regulatory regimes. Intellectual property rights, addressed by Blakeney in chapter 3, are framed in terms of agbiotech regulation. The issue of developing countries' interest in free exchange and associated concern over privatization of agbiotech technology is investigated. The differing mandatory versus voluntary labeling regulations across countries is presented by Zepeda in Chapter 4. The lack of label harmony is presented in terms

of U.S. and EU polarized policy stances on labeling. Hobbs et al. in chapter 5, discuss evolving WTO/General Agreement on Tariffs and Trade rules impinging on agbiotech regulations. Trade restrictions under the guise of safety and risk issues are investigated in the framework of best available scientific information for determining risk. Conditions for resolution of political conflicts are outlined by Esposti and Sorrentino in chapter 6, highlighting the divergence between theory and practice. In the last chapter in part 2, chapter 7, Heumueller and Josling suggest avenues where the Technical Barriers to Trade Agreement measures can be made consistent with regulatory rules by countries or unions such as the EU.

As addressed in the five chapters representing part 3, regulatory systems can yield both incentives and impediments toward discoveries and innovation. In terms of investment in inventions under uncertainly, Krudsen and Scardizzo in chapter 8 examine the value of enhanced agbiotech discoveries from reduced uncertainty in regulation. In further consideration of this investment, Naseem and Oehmke in chapter 9 focus on public versus private funding of agbiotech research. On the basis of simultaneous game theory techniques, van Tongeren and Eaton in chapter 10 indicate that allowing differential regulatory standards can increase social welfare. The relationship of these intellectual property rights with biodiversity conservation is addressed by Janni in chapter 11. The question addressed is, can intellectual property rights provide incentives for bioprospecting and conservation programs. Binenbaum and Pardey in chapter 12 complete the investigation of intellectual property rights by discussing the implications of property right expansion in terms of partnerships, technology positioning, market segmentation, and contracting.

The four chapters in part 4 provide a framework for investigating agbiotech regulations' effect on market structure and associated product innovation. Weaver in chapter 13 discusses the question of patent-based incentives for research and development based on market structures. Mergers and acquisitions among agbiotech firms are empirically analyzed by Oehmke et al. in chapter 14. Results indicate the number of agbiotech firms will exhibit a cyclical pattern through time with level of firm incentives, and research and development moves counter-cyclical to this number of firms. Menrad and Reiss in chapter fifteen analyze

the EU agbiotech innovation system on the basis of eight research groups. In the last chapter in part 4, chapter 16, Klotz-Ingram et al. empirically analyze 15 primarily U.S. biotech firms in terms of innovative products. The number of patents obtained are related to financial characteristics, firm size, equity, earnings, and profit margins.

Part 5 is partitioned into five chapters assessing agbiotech regulatory costs and social welfare. The chapter authors address agbiotech regulations as second-best Pareto efficient mechanism designs that may or may not improve social welfare. Perrin and Fulginiti in chapter 17 investigate pricing strategies for agbiotech intellectual property rights. The identity preserved production and marketing, segregation, and traceability elements of regulations are discussed by Smyth and Phillips in chapter 18. The regulatory requirements and costs associated with these elements are investigated in terms of the resulting market premiums, risk management, and food safety concerns. Schmitz et al. in chapter 19 continue the investigation of identity-preserved production and marketing, segregation, and traceability elements of regulations. The possible social benefits from these elements of regulation are assessed using a graphical analysis. As a case study, Price et al. in chapter 20 investigate EU regulations and their impact on the U.S. soybean industry. Lin and Johnson in chapter 21 also present a case study of segregating nonbiotech from agbiotech products. Results indicate even though Japan is willing to pay a premium for nonbiotech products, this price premium does not cover the cost of segregation.

The final three chapters comprising part 6 deal with the economic impacts of agbiotech regulation. Three alternative scenarios are evaluated by Harmsen et al. in chapter 22: the naturalness scenario with consumers continued distrust of agbiotech products; health quality scenario with feasible agbiotech products containing some health attributes; and low-income scenario with reduced disposable real income. Demont and Tollens in chapter 23 analyze *ex ante* welfare impacts of an agbiotech introduction using a computable general equilibrium model. The introduction of transgenic herbicide-tolerant sugarbeets in the EU is modeled for determining estimates of the welfare effects on the EU, the United States, and the remaining world economy. In another computable general equilibrium model, Barkley in chapter 24 investigates biotech corn and soy-

beans in the United States, with and without EU import bans. Again, the welfare effects on consumers and producers are estimated.

The editors drew contributors predominantly from economists who are well-respected senior academics and agency researchers. As such, the chapters are all well-written with uniform editing yielding a consistent format and writing style across all chapters. However, not at all unusual in independently authored chapters, there are redundancy and repetition across chapters. As a reference source, where a reader may only read a subset of chapters or read them out of order, such redundancy is quite acceptable and possibly desirable. Use of links to other chapters would solve this redundancy, but again this is difficult with independently authored chapters. Surprisingly for economists, there are very little contradiction or different conclusions across the multiple authors. One notable exception is the introductory chapter's support of uniform standards. Whereas, differentiated standards are advocated in chapter 10.

Of course, a book review would not be complete without noting some minor weaknesses. In some chapters, the technical aspects of agbiotech analysis will appeal to investigators directly working in this area. For other readers, an understanding of these chapters will require some background reading prior to reading the chapters. Many of the chapters assume a certain level of knowledge along with limited or no development of the equations. Even for a reader familiar with the area, concentration on the implications of model results would have significantly improved the book's overall contribution. Such a concentration would have provided more of a balance across the chapters in contrast to the mix of technical and nontechnical chapters. Also, the extensive use of abbreviations and acronyms inhibits a reader not directly familiar with this area from readily comprehending a particular section. A glossary of abbreviations and acronyms would have greatly eased this frustration.

There are three elements that are missing from this text: economic theory, technology history, and product variation. A unifying economic theory of product development, adoption, and regulation would set a foundation for understanding the current agbiotech industry. After all, it is markets that will ultimately determine the success or failure of products, and economic theory makes markets visible. Similar to stock markets, agbiotech markets

do not like uncertainty. One of the major impediments for the development of agbiotech markets is product uncertainty which spawns regulation barriers. Providing an understanding of this product uncertainty with an economic theory of the agbiotech market would have greatly enriched the book's implications.

Further enrichment would flow with a conclusion chapter. Although the editors provide a very valuable introduction which nicely outlines the chapters, a conclusion chapter would have significantly improved the implications a reader can draw from reading this book. Such a chapter would have done more than the editor's introductory summary of the chapters.

Specifically, providing an outline of a harmonized global regulatory system for agbiotech products on the basis of all the previous chapters would make the whole greater than the sum of the parts.

Currently this book is the only major source for this important subject. The editors pull together all the various aspects of this exciting field into a central focus. There is no substitute. It should be required reading for anyone working in the area of agbiotech.

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