Entry and Productivity Growth: Evidence From Microlevel Panel Data

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Abstract
How does entry affect productivity growth of incumbents? In this paper we exploit policy reforms in the United Kingdom that changed entry conditions by opening up the U.K. economy during the 1980s and panel data on British establishments to shed light on this question. We show that more entry, measured by a higher share of industry employment in foreign firms, has led to faster total factor productivity growth of domestic incumbent firms and thus to faster aggregate productivity growth. (JEL: L5, L10, O31, O4)

1. Introduction

The entry and exit of firms is widely thought to be a major driver of productivity growth. New firms can be an important way for new products and new production methods to be introduced into markets and can drive out poor performers. The entry of new firms can also spur incumbent firms to improve productivity, in an attempt to escape entry. This latter effect has only recently received more attention in the empirical literature considering productivity growth in developed countries.[1]

One strand of empirical literature this paper relates to has focused on the impact of entry and exit through changing the composition of firms operating in

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1. A notable earlier exception is Olley and Pakes (1996), who did not find support for significant within plant growth in productivity as a result of the deregulation in the U.S. telecommunication equipment industry involving substantial entry and exit.

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an industry.[2] These papers report accounting decompositions of the overall change in productivity growth, attributing shares to incumbents, entrants, and exitors. The findings suggest that a substantial share of productivity growth comes from growth within incumbent firms. Much of this incumbent growth could be due to the impact of entry. A different literature we relate to asks about the effects of entry liberalization and whether these are desirable. On the one hand, advocates of entry and trade liberalization have argued that, by increasing the size of markets and by fostering product market competition, liberalization enhances growth.[3] Others have instead argued that liberalization can be detrimental to growth, by inhibiting infant industries and learning-by-doing.[4] The empirical literature looking at trade liberalization has found mixed results for developing countries. For example, Aghion, Burgess, Redding, and Zilibotti (2003), or ABRZ, find positive effects of liberalization on economic performance across manufacturing sectors and states in India over the last decade. Aitken and Harrison (1999) provide no support for such an effect on domestic plant productivity using plant-level data for Venezuela. Pavnick (2002) finds that plant productivity in import-competing manufacturing sectors increases by three to ten percent more than in nontraded-goods sectors after the Chilean trade liberalization during the 1970s.

In this paper we derive empirical predictions from a multisector Schumpeterian growth model with entry at the technological frontier, in which the various sectors of the economy differ with respect to their initial state of technological development, measured by their distance to the technological frontier. A higher entry threat can be shown to encourage innovation in sectors that are initially close to the technological frontier, whereas it may discourage innovation in sectors that are initially far below the technological frontier. The intuition for these two effects is as follows. In the former case, firms close to the frontier know they can escape entry by innovating. Therefore, a higher threat of entry will result in more intensive innovation activities aimed at escaping that threat. In the latter case, firms far below the frontier have no hope to win against a potential entrant, and therefore the only effect of an increased entry threat is to reduce the firms' expected payoff from investing in R&D. Productivity growth by incumbent firms will be affected by entry threat through its effect on innovation incentives and the average rate of productivity among incumbent firms can be shown to increase in entry threat.

To explore the latter issue we exploit rich microlevel panel data on British establishments in 166 four-digit manufacturing industries during the time period

2. See Disney, Haskel, and Heden (2003) and Foster, Haltiwanger, and Krizan (2001).

3. See, for example, Collier and Dollar (2001), Dollar and Kraay (2001, 2002), Frankel and Romer (1999), and Sachs and Warner (1995).

4. See Acemoglu, Aghion, and Zilibotti (2003), Banerjee and Newman (2003), Hausman and Rodrik (2002), Krugman (1981), Stiglitz (1996, 2002), and Young (1991).

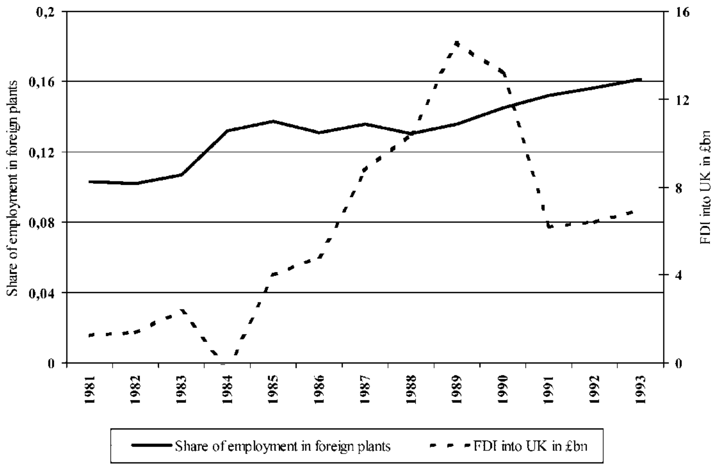

FIGURE 1. Foreign direct investment (FDI) and share of foreign firm employment, 1981–1993. Source: Authors' calculations using ONS data and other data sources. All statistical results remain Crown Copyright.

1980 to 1993. To be consistent with the theoretical framework we use information on foreign entry, since entrants from abroad are most likely to be technologically advanced. We use cross-industry and time series variation in U.K. product market regulation that is triggered by the introduction of the E.U. Single Market Program (SMP) at the end of the 1980s and variation in the technological situation abroad to control for the potential endogeneity of entry. Taking endogeneity issues into account is important since entrants may have information about future growth developments and may decide upon entry accordingly. The introduction of the SMP affects industries differentially and does so in the second half of the 1980s, which allows us to identify the entry effect from other factors. Around the implementation of the SMP foreign entry increased in the United Kingdom, as shown in Figure 1. The estimation results indicate that more foreign entry measured by a higher share of industry employment in foreign firms has led to faster total factor productivity growth of domestic incumbent firms and thus to faster aggregate productivity growth. Our interpretation of the results is that at least a part of the impact of entry is to spur on growth in incumbents by increasing the incentives of those close to the technological frontier to escape entry by innovating.

The paper is organized as follows. Section 2 sketches a theoretical framework that links entry threat to industrial performance. Section 3 reports empirical findings of the impact of foreign entry on productivity of domestic incumbents using U.K. microlevel panel data. Section 4 briefly concludes.

2. Theoretical Framework

The following model is a reduced-form version of the growth model with entry in Aghion, Blundell, Griffith, Howitt, and Prantl (2003), or ABGHP. This itself builds on the discrete-time version of the Schumpeterian growth model in Acemoglu, Aghion, and Zilibotti (2003) and on ABRZ.

2.1. A Simple Multisector Schumpeterian Growth Model

All agents live for one period. In each period t a final good (henceforth the numeraire) is produced by a competitive sector using a continuum of intermediate inputs, according to the technology:

$$y_t = \int_0^1 (A_t(\nu))^{1-\alpha} x_t(\nu)^\alpha \, d\nu.$$

$x_t(\nu)$ is the quantity of the intermediate input produced in sector ν at date t, $A_t(\nu)$ is a productivity parameter that measures the quality of the intermediate input ν in producing the final good, and $\alpha \in (0, 1)$. The final good can be used either for consumption, or as input in the process of producing intermediate goods, or for investments in innovation.

In each intermediate sector ν only one firm (a monopolist) is active in each period. Thus the variable ν refers to both an intermediate sector, and to the intermediate firm which is active in that sector. As any other agent in the economy, intermediate producers live for one period only and property rights over intermediate firms are transmitted within dynasties. Intermediate firms use labor and capital in form of the final good as inputs. As shown in Acemoglu, Aghion, and Zilibotti (2003), the equilibrium profit for each intermediate firm will take the form:

$$\pi_t(\nu) = \delta A_t(\nu), \tag{1}$$

where

$$\delta = \left(\frac{1}{\alpha} - 1\right)\left(\frac{1}{\alpha^2}\right)^{-\frac{1}{1-\alpha}}.$$

2.2. Technology and Entry

Let $\bar{A}_t$ denote the new frontier productivity at date t and assume that

$$\bar{A}_t = \gamma \bar{A}_{t-1}$$

with $\gamma > 1$.

At date t an intermediate firm can either be close to the frontier, with productivity level $A_{t-1}(\nu) = \bar{A}_{t-1}$ (type-1 sector ν), far below the frontier, with productivity level $A_{t-1}(\nu) = \bar{A}_{t-2}$ (type-2 sector ν), or very far below the frontier, with productivity level $A_{t-1}(\nu) = \bar{A}_{t-3}$ (type-3 sector ν).

Before they produce and generate profits, firms can innovate to increase their productivity. Each innovation increases the firm's productivity by a factor γ. For an innovation to be successful with probability z a type-j intermediate firm with $j \in \{1, 2\}$ at date t must invest

$$c_t(z) = (1/2)cz^2 A_{t-j}(\nu).$$

However, as a result of knowledge spillovers, type-3 firms are automatically upgraded by one step, so they do not need to invest in innovation.

Intermediate firms are subject to an entry threat from foreign producers that are at date t assumed to operate with the end-of-period frontier productivity, $\bar{A}_t$. Let p denote the probability that an entrant shows up.[5] Reducing entry costs corresponds to an increase in p.

If the foreign firm manages to enter and competes with a local firm which has a lower productivity, it takes over the market and becomes the new incumbent firm in the sector. If it competes with a local firm which has the same productivity, however, Bertrand competition drives the profits of both the local and the foreign firm to zero. Now, suppose that potential entrants observe the postinnovation technology of the incumbent firm before deciding whether or not to enter. Then the foreign firm will find it profitable to enter only if the local firm has a postinnovation productivity level below the frontier productivity level $\bar{A}_t$. However, the foreign firm will never enter in period t if the local firm has achieved the frontier. Therefore, the probability of actual entry in any intermediate sector ν, is equal to zero if the local firm ν was initially close to the frontier and has successfully innovated, and it is equal to p otherwise.

2.3. *Equilibrium Innovation Investments*

Using (1), together with the innovation technology described above, we can analyze the innovation decisions by those intermediate firms that are close to the frontier and by those far below the frontier. Firms that are initially far below the frontier at date t choose their investment so as to maximize expected profits net of R&D costs, namely:

$$\max_z \{\delta[z(1-p)\bar{A}_{t-1} + (1-z)(1-p)\bar{A}_{t-2}] - (1/2)cz^2\bar{A}_{t-2}\},$$

5. In ABGHP (2003) we endogeneize this probability by making entry depend upon the realization of a random entry cost that must be incurred by a potential entrant at the beginning of the period. Then, the probabilities p_1 and p_2 of entry in type-1 and type-2 sectors will differ in general, although they become arbitrarily close to each other when δ/c tends to 0.

so that by the first-order condition:

$$z_2 = \frac{\delta}{c}(1-p)(\gamma-1). \tag{2}$$

Firms that are initially close to the frontier choose their investment so as to:

$$\max_z \{\delta[z\bar{A}_t + (1-z)(1-p)\bar{A}_{t-1}] - (1/2)cz^2\bar{A}_{t-1}\}$$

so that:

$$z_1 = \frac{\delta}{c}(\gamma - 1 + p). \tag{3}$$

Straightforward differentiation of equilibrium innovation intensities with respect to p, yields:

$$\frac{\partial z_1}{\partial p} = \delta/c > 0;$$

$$\frac{\partial z_2}{\partial p} = -\delta(\gamma-1)/c < 0.$$

In other words, increasing the threat of foreign entry (e.g., through decreasing entry costs by deregulating) encourages innovation in advanced firms and discourages it in backward firms. The intuition for these comparative statics is immediate. The higher the threat of entry, the more instrumental innovations will be in helping incumbent firms already close to the technological frontier to retain the local market. However, firms that are already far behind the frontier have no chance to win over a potential entrant. Thus, in that case, a higher threat of entry will only lower the expected net gain from innovation, thereby reducing ex ante incentives to invest in innovation. Productivity growth by incumbent firms that are either close to the frontier or far from it will be affected by entry threat through its effect on innovation incentives.

2.4. Average Productivity Growth

Finally, one can derive the steady-state fractions of type-j sectors, q_j, using the steady-state flow equations:

$$p(1-q_1) = (1-p)(1-z_1)q_1, \tag{4}$$

$$(1-p)(1-z_1)q_1 = pq_2 + (1-p)(1-z_2)q_2,$$

$$(1-p)(1-z_2)q_2 = pq_3,$$

where

$$q_1 + q_2 + q_3 = 1,$$

and the right-hand sides of (4) refer to the net flows of sectors into type-j, whereas the right-hand sides refer to the net flows out of type-j.

Using a Taylor approximation, one can show:[6]

PROPOSITION 1. *The average rate of productivity growth among incumbent firms*:

$$G = (\gamma - 1)(q_1 z_1 + q_2 z_2 + q_3)$$

is increasing in entry threat p for δ/c sufficiently small.

In particular, for plausible values of the R&D cost parameter c, which we obtain when we calibrate the model to generate observed levels of R&D intensity and of productivity growth rates at the firm level, an increased threat of entry has a positive effect on the average rate of productivity growth among incumbent firms. This is the prediction we confront with empirical evidence in the following section.

3. Empirical Analysis

For the empirical analysis we use microlevel panel data on total factor productivity growth of British establishments in 166 four-digit industries in the manufacturing sector between 1980 and 1993. The data is taken from the Annual Respondents Database (ARD) that contains the microdata underlying the Annual Census of Production. It is collected by the Office for National Statistics (ONS) under the 1947 Statistics of Trade Act and response is mandatory. Detailed information on inputs and outputs, the industry classification and basic ownership data is available for a random stratified sample of establishments.[7] Data on employment, industry classification, and ownership is available for the underlying population of British production plants and is used here for constructing the entry measure.

3.1. Estimated Equations and Measures

In the empirical analysis we focus on an equation of the form:

$$Y_{ijt} = \alpha + \beta E_{jt} + \eta_i + t_t + \varepsilon_{ijt} \tag{5}$$

6. See ABGHP.

7. See Barnes and Martin (2002), Griffith (2001), and Oulton (1997) for details. About 70% of all establishments are single plants; all others represent groups of plants operating within the same four-digit industry and owned by the same firm.

where i indexes incumbent firms, j indexes four-digit industries, t indexes years, Y denotes incumbent firm performance measured by total factor productivity (TFP) growth, and E is a measure of entry.

We calculate growth in TFP using a superlative index (Caves, Christensen, and Diewert 1982a, 1982b). Actual entry is measured by the change of the share of four-digit industry employment that is in foreign plants.[8] What we know about FDI and foreign plant employment for the time period under investigation suggests that the variation of this measure is strongly driven by entry of new foreign plants or entry of foreign producers via takeover. However, it also picks up employment changes due to expansions, contractions, and exits of plants under foreign ownership. We focus on foreign entry since this accords most directly with the theory where we assume that entrants enter at the technological frontier.

To instrument actual entry we use cross-industry and time series variation in U.K. product market regulation that is triggered by the introduction of the E.U. Single Market Program (SMP). In particular, we use indicators of three-digit industries that were ex ante expected to be strongly or moderately affected during the EU SMP implementation between 1988 and 1992 or after its implementation from 1993 onwards.[9] In addition we use the U.S. research and development intensity measured on the two-digit industry level to capture the technological situation in the United States where many entrants into the United Kingdom originate.

Our reduced form equation for entry is:

$$E_{jt} = Z'_{jt}\Pi + \eta_i + t_t + v_{ijt}, \tag{6}$$

with

$$E[v_{ijt}|Z_{jt}, \eta_i, t_t] = 0 \tag{7}$$

where Z_{jt} denotes the instruments.

We control for different permanent levels of TFP growth across establishments and common macroshocks by including establishment-specific fixed effects η_i and time dummies t_t. However, these may not be sufficient to remove all spurious correlation between entry and TFP growth. In particular, relative changes in the foreign entry measure across industries may be indirectly caused by shocks to TFP growth. Our approach to remove such correlations is to use variables on U.K. product market policies and on the U.S. technological situation as excluded instruments that determine changes in the share of industry employment in foreign firms but have no direct effect on the growth of TFP in incumbent British establishments.

The estimation sample consists of 32,339 observations on 3,827 domestic

8. We use the data on the plant population underlying the ARD to construct this measure.

9. See Griffith (2001) and Mayes and Hart (1994).

incumbent establishments. Incumbents are defined as having at least 100 employees in one year between 1980 and 1993 and as surviving for at least four years. This group of firms is most closely aligned with the type of incumbent considered in the theoretical analysis.

3.2. Empirical Results

Table 1 presents regression results using the sample as described previously and weighting each observation by the inverse of the establishment's sampling probability times its size (as measured by employment). We first regress TFP growth rates at the establishment level on the industry level measure of foreign entry, controlling for common macro shocks and unobserved four-digit industry characteristics. We see that the impact of foreign entry on incumbents' TFP growth is positive and statistically significant in this OLS regression. This result is in line with the expectation derived in Proposition 1 of the theoretical analysis. In column 2 of Table 1 we use establishment-specific fixed effects to control for permanent differences in the level of TFP growth across establishments that are correlated with entry—for example, the possibility that entry drives out firms with constantly low growth rates and thus raises aggregate productivity growth simply due to this type of selection effect. In this regression the positive effect of foreign entry on incumbents' TFP growth remains remarkably stable and statistically significant.

TABLE 1. The effect of foreign entry on total factor productivity growth of domestic incumbents

Dependent variable: growth of total factor productivity$_{ijt}$				
Independent variables	OLS	OLS	IV	IV
Change(foreign plant employment)$_{jt}$	0.0857** (0.0397)	0.0840* (0.0430)	0.3814*** (0.1444)	0.3823** (0.1752)
Year indicators	Yes	Yes	Yes	Yes
4-digit industry indicators	Yes		Yes	
Establishment fixed effects		Yes		Yes
Test results				
Exogeneity of change(foreign plant employment)$_{jt}$, t-statistic			−2.12**	−1.72*
Overidentifying restrictions, χ^2-Statistic (# restrictions)			29.42(30)	32.40(30)
Significance of policy indicators and U.S. R&D intensity in 1st-stage regression, F-statistic			4.71(31)***	18.71(31)***
#(observations)	32,339	32,339	32,339	32,339

Notes: OLS regression results with robust standard errors in brackets are displayed. Standard errors are clustered on the 4-digit industry level. Observations are weighted by the inverse of their sampling weight times their employment. The sample consists of 32,339 observations on 3,827 domestic incumbent establishments between 1981 and 1993.
*** (**, *) indicate significance at the 1%, (5%, 10%) significance level.
Source: Authors' calculations using ONS data and other data sources. All statistical results remain Crown Copyright.

As described previously, one of our main concerns is the potential endogeneity of the actual foreign entry measure. We use instruments indicating three-digit industries that were ex ante expected to be affected by the EU SMP and the U.S. research and development intensity. *F*-tests, shown at the bottom of Table 1, indicate that this set of instruments is jointly significant in the reduced form regressions. The tests of overidentifying restrictions indicate no rejection of overidentification in the 2SLS regressions. When instrumenting we find confirmation for a positive foreign entry effect on incumbents' TFP growth. The coefficient increases in magnitude, which indicates a negative endogeneity bias. The entry effect is economically significant. For example, consider the estimates in Column 3 and the descriptive statistics in Table A in the Appendix: increasing the change in the share of four-digit industry employment in foreign firms with a mean of 0.0044 (i.e., about 0.5 percentage points) in our sample by one standard deviation (i.e., by 0.0336) would result in a rise of the average growth rate of incumbents' TFP by 1.3 percentage points. The final column in Table 1 shows similar 2SLS estimation results when using establishment-specific fixed effects.

4. Conclusion

In this paper we have used microlevel panel data to show that foreign entry into the United Kingdom has led to faster total factor productivity growth in domestic incumbent firms and thus to faster aggregate productivity growth. This result is robust to using information on the E.U. Single Market Program as a major policy reform and information on the technological situation abroad to control for endogeneity of foreign entry. Our identification strategy was to use the cross-industry and time series variation in these instrumental variables to identify the entry effect from other factors.

Our interpretation of the presented results is that entry spurs growth in incumbents by inducing those close to the technological frontier to innovate in order to escape entry. However, there are alternative interpretations. For example, the aggregate total factor productivity growth effect may be driven by a selection effect. Entrants may drive incumbents with poor growth performance out of the market. The fact that our results are robust to allowing for each individual establishment to have a different permanent level of total factor productivity growth that may be correlated with entry, suggests that this second interpretation does not explain all of the variation. Another interpretation is that entrants demonstrate new methods and goods to incumbents, and thus their superior methods spillover to domestic firms. In ongoing work, ABGHP (2003), we investigate the relevance of the different mechanisms by also looking directly at innovation output. We can show that entry substantially affects incumbents' innovative activity.

Appendix

TABLE A.1. Descriptive statistics

Variable	Mean	Median	Standard deviation
Growth of total factor productivity$_{ijt}$	0.0015	0.0030	0.1287
Change(foreign plant employment)$_{jt}$	0.0044	0.0005	0.0336

Notes: The table displays descriptive statistics for the ARD sample with 32,339 observations on 3,827 domestic incumbent establishments. The change in foreign plant employment is measured at the four-digit industry level.
Source: Authors' calculations using ONS data. All statistical results remain Crown Copyright.

References

Acemoglu, Daron, Philippe Aghion, and Fabrizio Zilibotti (2003). "Distance to Frontier, Selection, and Economic Growth." Working paper, MIT, Harvard, and IIES.

Aghion, Philippe, Richard Blundell, Rachel Griffith, Peter Howitt, and Susanne Prantl (2003). "Innovate to Escape Entry: Theory and Micro-Evidence." Working paper, Harvard, UCL, and IFS.

Aghion, Philippe, Robin Burgess, Stephen Redding, and Fabrizio Zilibotti (2003). "The Unequal Effects of Liberalization: Theory and Evidence from India." Working paper, Harvard, LSE, and IIES.

Aitken, Brian J. and Ann E. Harrison (1999). "Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela." *American Economic Review*, 89, 605–618.

Banerjee, Abhijit and Andrew Newman (2003). "Inequality, Growth, and Trade Policy." Working paper, MIT.

Barnes, Matthew and Ralf Martin (2002). "Business Data Linking: An Introduction." *Economic Trends*, 581, 34–41.

Caves, Douglas W., Laurits R. Christensen, and Erwin W. Diewert (1982a). "The Economic Theory of Index Numbers and the Measurement of Input, Output, and Productivity." *Econometrica*, 50, 1393–1414.

Caves, Douglas W., Laurits R. Christensen, and Erwin W. Diewert (1982b). "Multilateral Comparisons of Output, Input, and Productivity Using Superlative Index Numbers." *Economic Journal*, 92, 73–86.

Collier, Paul and David Dollar (2001). *Globalization, Growth, and Poverty: Building an Inclusive World Economy*. Oxford University Press and World Bank.

Disney, Richard, Jonathan Haskel, and Ylva Heden (2003). "Restructuring and Productivity Growth in UK Manufacturing." *Economic Journal*, 113, 666–694.

Dollar, David and Aart Kraay (2001). "Trade, Growth, and Poverty." World Bank Research Working Paper 2615.

Dollar, David and Aart Kraay (2002). "Growth is Good for the Poor." *Journal of Economic Growth*, 7, 195–225.

Foster, Lucia, Thomas Haltiwanger and C.J. Krizan (2001). "Aggregate Productivity Growth: Lessons from Microeconomic Evidence." In *New Developments in Productivity Analysis*, edited by Charles R. Hulten, Edwin R. Dean, and Michael J. Harper. (National Bureau of Economic Research Studies in Income and Wealth). University of Chicago Press.

Frankel, Jeffrey A. and David Romer (1999). "Does Trade Cause Growth?" *American Economic Review*, 89, 379–399.

Griffith, Rachel (2001). "Product Market Competition, Efficiency, and Agency Costs: An Empirical Analysis." Institute for Fiscal Studies Working Paper W01/12.

Hausman, Ricardo and Dani Rodrik (2002). "Economic Development as Self-Discovery." NBER Working Paper 8952.
Krugman, Paul (1981). "Trade, Accumulation, and Uneven Development." *Journal of Development Economics,* 8, 149–161.
Mayes, David and Peter Hart (1994). *The Single Market Programme as a Stimulus to Change: Comparisons between Britain and Germany.* Cambridge University Press.
Olley, Steven G. and Ariel Pakes (1996). "The Dynamics of Productivity in the Telecommunications Equipment Industry." *Econometrica,* 64, 1263–1297.
Oulton, Nicholas (1997). "The ABI Respondents Database: A New Resource for Industrial Economics Research." *Economic Trends,* 528, 46–57.
Sachs, Jeffrey D. and Andrew Warner (1995). "Economic Reform and the Process of Global Integration." *Brookings Papers on Economic Activity,* 1995, 1–118.
Stiglitz, Joseph E. (1996). *Whither Socialism?* MIT Press.
Stiglitz, Joseph E. (2002). *Globalization and Its Discontents.* Norton.
Young, Alwyn (1991). "Learning by Doing and the Dynamic Effects of International Trade." *Quarterly Journal of Economics,* 106, 369–406.