



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

378.7446
I58
D-551

Development Discussion Papers



Harvard Institute
for International Development

HARVARD UNIVERSITY



Waite Library
Applied Economics - U of M
1994 Buford Ave - 232 ClaOff
St Paul MN 55108-6040 USA

378.7446
I58
D-551

Development Discussion Papers

TRADE LIBERALIZATION AND INCOME DISTRIBUTION

Donald R. Davis

Development Discussion Paper No. 551

September 1996



Harvard Institute
for International Development

HARVARD UNIVERSITY



Waite Library
Applied Economics - U of M
1994 Buford Ave - 232 ClaOff
St Paul MN 55108-6040 USA

378.7446
I58
D-551

**TRADE LIBERALIZATION
AND INCOME DISTRIBUTION**

Donald R. Davis

Development Discussion Paper No. 551

September 1996

Harvard Institute for International Development
Harvard University
One Eliot Street
Cambridge, Massachusetts 02138
617-495-2161
Fax: 617-495-0527
<http://www.hiid.harvard.edu>

I am grateful to Donald Robbins for stimulating conversations, and to Carolyn Evans for excellent research assistance. I am also grateful for the support for this project from the Harvard Institute for International Development.

TRADE LIBERALIZATION AND INCOME DISTRIBUTION

ABSTRACT

Empirical work relating trade liberalization and income distribution has identified an important anomaly. The Stolper-Samuelson theorem predicts that trade liberalization will shift income toward a country's abundant factor. For developing countries, this suggests liberalization will principally benefit the abundant unskilled labor. Yet extensive empirical studies have identified many cases with a contrary result. This paper develops a simple theoretical explanation for this anomaly. It shows that countries which are labor abundant in a global sense may see wages decline with liberalization if they are capital abundant in a local sense. The current absence of empirical work that would allow us to identify the relevant local abundance implies that virtually all assertions regarding anticipated distributional consequences of trade liberalization are without foundation. There may likewise be important implications for industrialized countries that border developing countries undertaking trade liberalization, particularly in regard to the incentives for migration.

JEL Codes: F11, F13, O15, O19.

Donald R. Davis is an Associate Professor of Economics at Harvard University. His principal areas of research interest concern the fundamental causes of international trade as well as the employment and distributional consequences of such trade. He is a Faculty Research Fellow of the National Bureau of Economic Research and an Associate of the Center for International Affairs at Harvard. He is working with the Harvard Institute for International Development on a project on the "globalization" of the world economy.

Office phone: (617) 496-6416
Office fax: (617) 495-7730
e-mail: ddavis@fas.harvard.edu

1 Introduction

Trade liberalization by developing countries has held forth two promises. The first is that it will raise aggregate income. A growing body of research indicates that this promise has been fulfilled.¹ The second promise is that the internal distributional consequences of liberalization will be benign. The foundation for this promise is the celebrated Stolper-Samuelson theorem. In simple terms, it says that trade liberalization will benefit a country's relatively abundant factor.² And most developing countries, when compared to the global economy, are relatively abundant in unskilled labor.³

Yet the empirical evidence for this second promise is at best mixed. A ten-country NBER study coordinated by Krueger (1978) and Bhagwati (1978) considered the issue. The latter summarized the results as follows:

The functional distribution of income, while it can be strongly related to foreign trade regimes in theoretical analysis (e.g. the familiar Stolper-Samuelson theorem), does not appear to show anything like a strong and predictable relationship in the Project studies. [p. 198]

Similar results are reported in a nineteen-country World Bank study coordinated by Choksi, Michaely, and Papageorgiu (1991). Having noted theoretical reasons that one might anticipate improvements in the distribution of income, they conclude:

These are all *a priori* arguments. What does the evidence show? Unfortunately, it is mixed and fragmentary. In some cases . . . the income distribution worsened during the course of liberalization. In roughly as many others, . . . the reforms improved the income distribution. But in most cases it is hard to be sure. [p. 55]

Results at odds with the Stolper-Samuelson suggestion appear in the important work of Robbins (1996), whose study of seven countries in Latin America and East Asia showed that in almost all cases the relative skilled to unskilled wage *rose* after trade liberalization.⁴ Given the influence of the Stolper-Samuelson perspective, these results qualify as an important anomaly.

¹ See Sachs and Warner (1995), and Edwards (1993).

² Outstanding reviews of the extensive literature inspired by Stolper and Samuelson (1941) appear in various contributions to Deardoff and Stern (1994).

³ In Section 3 below we consider the case of more than two factors.

⁴ A more complete summary of the World Bank study appears in Michaely, Papageorgiu, and Choksi (1991). Similar conclusions were reached by Bourguignon and Morrisson (1991). For the impact of the recent Mexican liberalization on relative skilled to unskilled wages, see Feenstra and Hanson (1995), Feliciano (1996), and Cragg and Epelbaum (1996). Johnston (1995) suggests, based on her study of Colombia, that some previous studies may have relied excessively on data for urban areas.

This paper develops a simple theoretical explanation for this empirical anomaly.⁵ It takes as a central premise that the wide divergence in relative factor endowments precludes factor price equalization (FPE) for the world as a whole. Once accepted, this forces a radical revision in the conventional way of interpreting the Stolper-Samuelson result. Relative factor abundance of a country continues to be central to predicting the Stolper-Samuelson consequences of trade liberalization. However the reference set against which one measures relative factor abundance is no longer the global economy. Instead, factor abundance matters only relative to a smaller set of countries with similar endowment proportions.⁶ A country can be very labor abundant when considered within the context of the global economy. However, if it is capital abundant relative to the countries within its reference set, the distributional consequences will be precisely opposite to those one would anticipate with a more conventional interpretation of Stolper-Samuelson.

Nor are the consequences of these observations limited to the developing world. Recent discussions of trade liberalization agreements between industrialized and developing countries, as in NAFTA, have focused on their potential impact on migration. In the simplest form, this has involved the following logic: If wages for the unskilled rise in the developing country, then migration will decline; trade liberalization will raise wages for the unskilled; therefore trade liberalization will help to stem migration. The model developed in this paper makes clear that the

⁵ There are alternative theoretical paths one could pursue to obtain apparently anti-Stolper-Samuelson results. These include considering factor intensity reversals, the Metzler paradox, higher dimensions of factors, and Deardorff's (1986) woeful FIRLESS FIRWOES. See Bhagwati (1959) and Ethier (1984). Feenstra and Hanson (1995) develop a clever approach to explain the distributional impact of outsourcing on Mexico. It relies on capital movements to raise the size of Mexico relative to the US, hence to shift the marginal good to be more skill intensive. This shifts the structure of relative demand for skill upward in both countries. It does not consider the issue of which competitive margins are relevant, as in the present paper. The attraction of the account developed here is its simplicity and the relevance of its key assumption.

⁶ As will be developed below, the relevant reference set is composed of those countries within the same "cone of diversification." They have similar endowment proportions and produce the same range of goods. Under free trade, and with identical constant returns to scale technologies, there will be FPE among members of the same cone, but not between cones. See Dixit and Norman (1980). This type of model was key to the theoretical approach of Krueger (1977). It has also been used by Bhagwati (1984), who made it the centerpiece of his explanation for the Kravis, Heston, and Summers (1982) observation that services are cheaper in poor countries. Leamer (1987) uses such a model to identify differing "paths of development." Leamer and Levinsohn (1995) have urged empirical researchers to investigate the multi-cone model more closely, especially when (as in the present case) the problem of interest concerns both developing and developed countries.

premise that liberalization will raise wages for the unskilled in the developing country is open to question, and so correspondingly is the conclusion that migration will decline.⁷

2 The Model

Consider a Heckscher-Ohlin world with many countries, three goods, and two factors. Both goods and factor markets are perfectly competitive. Technologies are constant returns to scale. For simplicity, assume they employ fixed coefficients. The two factors of production are capital and labor, and are available within each country in fixed supply.⁸ The three goods are X, Y and Z, in decreasing order of capital intensity, as reflected by $k_x > k_y > k_z$. Each country is small relative to the world economy, so may treat international goods prices as fixed independently of its trade policy choices.

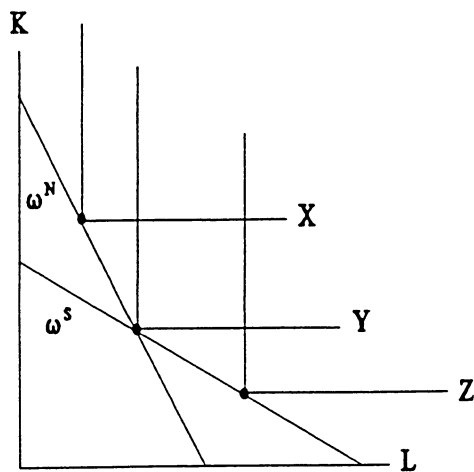


Figure 1 Heckscher-Ohlin Without FPE

⁷ Indeed the available empirical work on Mexico's liberalization suggests that the unskilled wage has fallen sharply relative to skilled wages, even prior to the foreign exchange crisis. See Feliciano (1996). The lessons of the present paper are relevant to this experience, since the sharpest change in Mexico's trade policy was its autonomous liberalization prior to the NAFTA agreement.

⁸ Recent discussions have focused on redistribution between skilled and unskilled labor. One can simply substitute "skill" for "capital" to make this relevant for these discussions. Alternatively, if capital is internationally mobile with an interest rate determined in the larger world economy, it would be straightforward to describe a three-factor model in which observations of the skilled to unskilled wage corresponded very strongly with the results described here for a two factor model. See the discussion in Wood (1994).

An important assumption is that cross-country endowment differences are too strong for the world trading system to replicate the equilibrium of a fully integrated world economy in the sense of Dixit and Norman (1980). Accordingly, factor prices are not equalized for the world as a whole. The capital abundant countries will have the higher wage to rental ratio, $\omega^N > \omega^S$. This framework is depicted in the well-known Lerner diagram in Figure 1.

We assume that for all countries c , the endowment ratio $k^c \in (k_Z, k_X)$, and $k^c \neq k_Y$, so that all countries have diversified production. We will refer to the set of countries for which $k^c \in (k_Y, k_X)$ as the North, and that for which $k^c \in (k_Z, k_Y)$ as the South. These endowment differences lead countries of the North to produce only the goods X and Y, and countries of the South to produce goods Y and Z.⁹ That is, the world has two cones of diversification. The endowments of a particular country may be represented as a point within the cone that defines its region [see Figure 2].

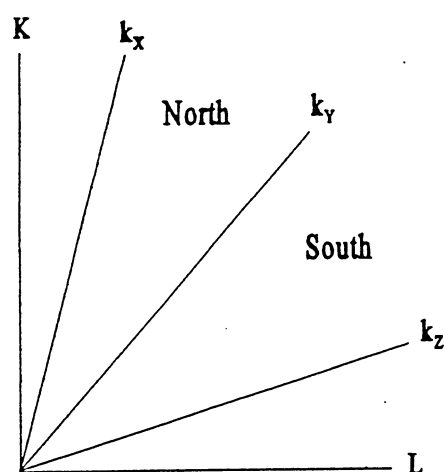


Figure 2 Diversification Cones

At this point we must consider a distinction that will prove crucial to our analysis of the distributional effects of trade liberalization. Each North country is more capital abundant than any South country. Thus we may sensibly call the North countries the capital abundant countries, and the South the labor abundant countries, in a *global* sense. However, it turns out that this global sense of factor abundance is not relevant for predicting the Stolper-Samuelson effects of trade

⁹ Wood (1994) and Leamer (1996) raised the issue of “non-competing” goods in their discussion of the rising skill premium in the United States and United Kingdom. Here X is a non-competing good for the North, as is Z for the South. Y is a competing good for each. The fact that there is a good produced in common is not essential for the results here. The emphasis in each of the papers noted above to the importance of non-competing goods is consistent with the type of multi-cone, no-FPE model developed here.

liberalization. Instead, what is crucial is the *local* factor abundance, i.e. within the country's cone of diversification. We will make this more precise by considering the case of the South.

All countries of the South produce the same set of goods, Y and Z. However their trade patterns vary depending on their relative factor abundance within the cone. These break down into three cases, depicted in Figure 3.¹⁰ All countries of the South must import X, since it is not produced there. The most capital abundant of the South countries are those in region A. They produce a great deal of Y and very little Z. Accordingly, exports of Y are used to finance not only imports of X, but also of Z. The least capital abundant countries are those in region A', a designation chosen to emphasize that the export patterns of A and A' are complementary.¹¹ Those in A' produce a great deal of Z, but very little Y. Accordingly, exports of Z are used to finance not only imports of X, but also of Y. Those at an intermediate level of capital abundance, in region M, satisfy their own needs for both Y and Z, and so export both in exchange for X.

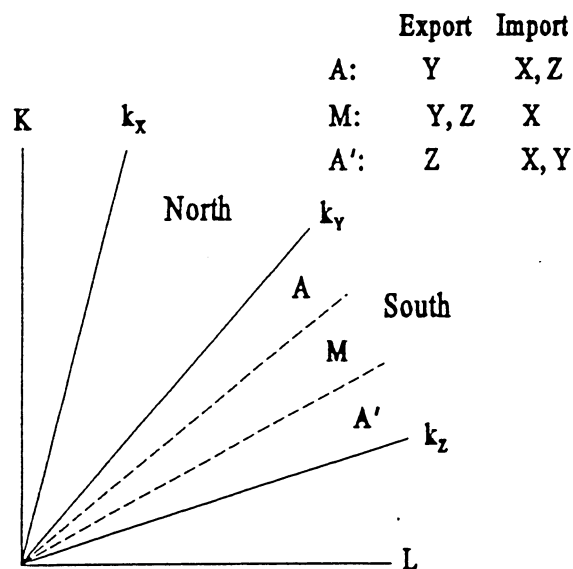


Figure 3 Varied Trade Patterns of the South

We consider now the effects of trade liberalization for three countries representative of the three regions of the South identified in Figure 3. Assume that each initially has in place a uniform

¹⁰ This tripartite division invites the appellation "Neapolitan" cones. In higher dimensions of factors, as seen below, this feature is preserved in cross section.

¹¹ Whenever we speak of two countries as having complementary export patterns, we always mean relative to the set of goods produced within the cone. Such pairs of countries with complementary trade patterns will figure prominently in our discussion in Section 3 below of the case of more than two factors.

ad valorem tariff at rate τ on all imports.¹² Consider first the case of a representative country α from South region A. The determination of factor returns can be examined in a diagram taken from Mussa (1979), and appears as Figure 4.

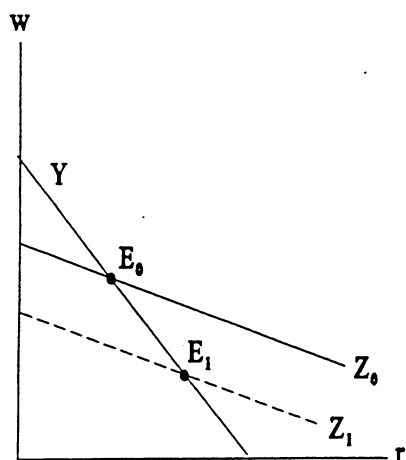


Figure 4 Trade Liberalization in a Locally Capital Abundant Country of the South

In the case of Leontief technologies, the zero profit frontiers are linear in factor price space. An important insight for our results comes from the fact that Figure 4 does not feature the zero profit frontier for the good X. We could place it in this space, but since country α (as all countries of the South) does not produce X, the corresponding zero profit frontier plays no role in the determination of factor prices. As a result, the elimination of protection on X which lowers the domestic price of X in country α likewise has no influence on local factor prices. However, the fact that protection is eliminated on Z, lowering its domestic price, leads the corresponding zero profit frontier to shift in. The exportable Y remains at the fixed world price, so experiences no shift in the zero profit frontier. The equilibrium of country α shifts from E_0 to E_1 in Figure 4.

Trade liberalization in country α has lowered wages and raised rentals. This occurs in spite of the fact that it is capital poor and labor rich in the global sense (since it is a member of the South). The crucial element is that it is capital abundant in the local sense, i.e. within its own cone. It is also important to realize that not a word has been said about the volume of trade between country α and its various trading partners. The reason is that the volume of trade plays no role in the determination of factor prices, hence the purely distributional consequences of

¹² We assume that the country's tariff is at a level that leaves the qualitative pattern of exports and imports unchanged from that under a regime of free trade.

liberalization.¹³ Thus our results here would not be affected even if a large majority of the trade of this country is with the North.¹⁴

It is straightforward to replicate this experiment for countries of the South in regions M and A'. In the case of a country from region A', we will get the more conventional result that trade liberalization will raise wages and lower rentals. Yet this occurs for an unconventional reason. Trade liberalization raises wages for a country in region A' because it is labor abundant within the cone of the South, not because of its labor abundance relative to the North. Finally, in region M, income distribution is entirely unaffected by the removal of protection, since the zero profit frontiers for the two exportables do not shift.

Using these results, we can depict the impact of trade liberalization on the wage to rental ratio for the various regions within both the North and the South. This appears as Figure 5.

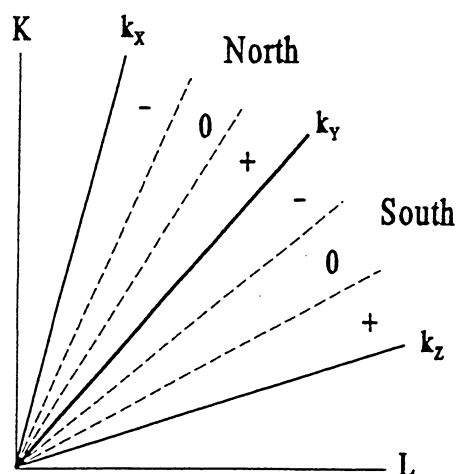


Figure 5 Impact of Trade Liberalization on the Wage to Rental Ratio

An interesting comparison emerges with respect to the most labor abundant countries of the North and the most capital abundant countries of the South. They share a common trade

¹³ As pointed out by Bhagwati (1959), an analysis of distributional effects should also take into account the manner in which government tariff revenues are distributed. We abstract from this by assuming that government revenues are distributed to factors in proportion to their share of market income. In this case, and with endowments fixed, the wage to rental ratio is sufficient to describe the distributional shares.

¹⁴ Of course, changes in trade volumes will matter a great deal for the overall welfare consequences of the liberalization. For small movements in the tariff, these effects are given by the classic formula $dV = -m dp^* + t dm$. The first term is zero because of the small country assumption, leaving only aggregate gains from the rise in trade volume with liberalization.

pattern, exporting Y for imports of X and Z. Nevertheless autonomous trade liberalization has exactly opposite consequences for the two. Yet more curiously, it raises wages for the country of the North, and depresses them in the South, in spite of the fact that the North countries we are examining are more capital abundant than the South countries. The reason, again, is that this direct (global) comparison of factor abundance is irrelevant for the Stolper-Samuelson effects of trade liberalization. What is crucial is the local factor abundance, relative to one's own cone, and correspondingly the product mix relevant in determining local factor prices.

3 Generalizations

Thus far we have worked with a highly simplified two-factor model. Yet empirical research often invites an extension of the list of factors to include land and other resources, as well as to distinguish between qualities of labor. Thus it is important to know how our results generalize when we include more factors of production.¹⁵

There are two principal results whose robustness we would like to confirm. One is that a country's factor abundance relative to the global economy is irrelevant for predicting the distributional consequences of liberalization -- instead one needs to know the abundance within that country's production cone. This is a subtle problem, since with more than two factors we no longer have a scalar ordering of relative abundance.¹⁶ Nonetheless, the essential point from the two factor case is robust. All and only those countries strictly within a specific cone share a common set of zero profit conditions under free trade. And the pattern of exports and imports of these goods, hence the relative price movements to be expected under liberalization, depends on the composition of a country's endowments *within* the cone. Moreover, since as we show below, members of a single cone can have precisely opposite distributional consequences of liberalization, it is clearly impossible for any ordering across different cones to provide interesting contrasts regarding qualitative changes in factor returns.

The second result whose robustness we want to check concerns the *structure* of the distributional consequences of liberalization within a cone. In the two factor case, there is a region

¹⁵ It is well known that when one moves to higher dimensions the one-to-one mapping between the price of a specific good and the qualitative impact on a particular factor is preserved only under special conditions [see the excellent discussion in Ethier (1984)]. However, as evidenced by the brilliant paper of Leamer (1987), it is possible to move beyond the two factor setting and relate these links between goods prices and factor returns to interesting features of economic structure. Leamer's paper likewise illustrates that adding more factors poses no problem for the existence of the cones of diversification which are the premise of the present study

¹⁶ It would be straightforward in Leamer's (1987) three factor framework to provide an example in which one country had both more capital *and* more land per worker than a country in another cone, but in which trade liberalization raises wages in the former and lowers them in the latter. The key, of course, would be their endowments -- so export pattern -- within their respective cones. This corresponds to the comparison of the locally labor abundant North country with the locally capital abundant South country in Section 2 above.

of endowments in which all locally produced goods are exported, so that trade liberalization has no distributional consequences. In addition, there is a pair of regions with complementary trade patterns, for whom the distributional consequences of liberalization are precisely reversed.

When we move to cases with more factors, the essential structure is very similar. There remains a single region in which liberalization has no distributional consequences. The one significant change is that now there is more than one set of paired regions.¹⁷ One observation serves as the foundation for this assertion. Within the cone, and under balanced trade, there exist regions of endowments that support every combination of exports of the goods that define the cone. This always includes the case in which all locally produced goods are exported. Beyond this, the regions break down into pairs, with export patterns that are complementary relative to the set of locally produced goods. Since our experiment concerns small countries reducing a uniform ad valorem tariff, there will be no relative price changes within export- and import-competing goods respectively, so each can be aggregated. It is clear then that trade liberalization by countries in paired regions is affecting only a single relative price of locally produced goods. And because their export patterns are complementary, liberalization moves this price in opposite directions. Thus, whatever the distributional consequences of trade liberalization of a country in one region, we know that for a country in the paired region they will be precisely reversed.

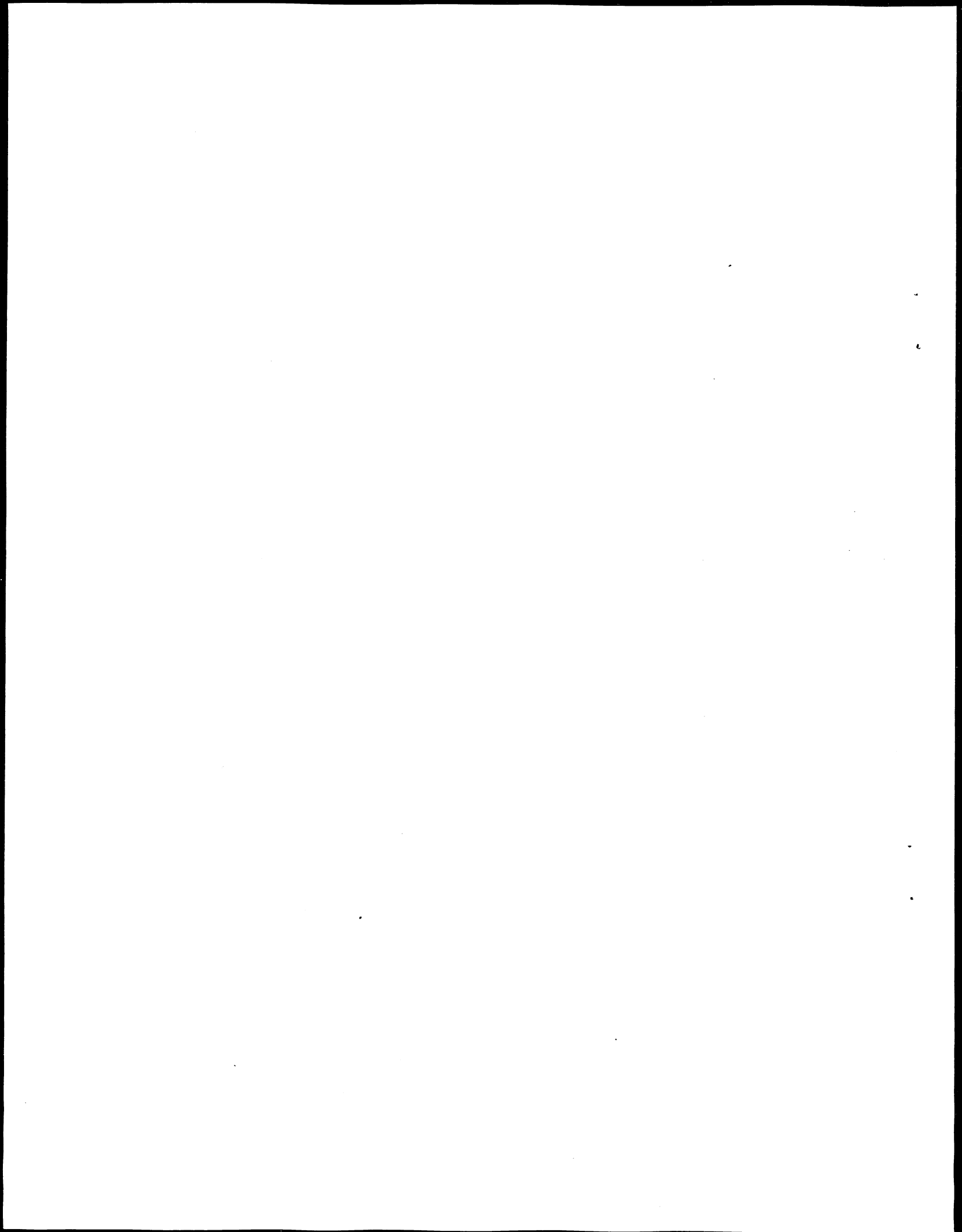
4 Conclusion

This paper has developed a simple model to consider the impact of trade liberalization on income distribution. Its one departure from conventional theory is to assume that relative endowment differences in the world are too large to allow for factor price equalization. And it has demonstrated that once this premise is allowed, it is necessary to make a radical revision in the conventional view of the impact of trade liberalization on income distribution.

It is conventional to argue that if a country is labor abundant relative to the global economy, then trade liberalization will redistribute income toward labor. However in our framework, such a conclusion is without foundation. The relevant factor abundance comparison is not to the global economy, but relative to the cone within which one produces. Thus a country that is very labor abundant relative to the global economy, but capital abundant relative to its own cone, will find that trade liberalization reduces wages. Parallel results emerge in a model with a larger number of productive factors.

As Leamer and Levinsohn (1995) point out, there is currently no empirical work identifying international production cones. In our framework, it follows that virtually all assertions with respect to the anticipated distributional consequences of trade liberalization are without foundation. We hope that this theoretical result will stimulate empirical work to identify these cones, and so to identify the expected distributional effects of trade liberalization.

¹⁷ For example, in the three factor world there will be three sets of paired regions in a cone, as well as a single region in which all goods are exported.



References

- Bhagwati, J. (1984) "Why are Services Cheaper in the Poor Countries," *Economic Journal* 94: 279-286.
- Bhagwati, J. (1978) *Anatomy and Consequences of Exchange Control Regimes*, Cambridge: Ballinger.
- Bhagwati, J. (1959). "Protection, Real Wages and Real Incomes" *Economic Journal*, 69, 733-748.
- Bourguignon, F. and C. Morrisson (1991) *External Trade and Income Distribution*, Paris: OECD.
- Choksi, A., M. Michaely, and D. Papageorgiu (1991) "The Design of Successful Trade Liberalization Policies," in A. Koves and P. Marer, eds., *Foreign Economic Liberalization*, Boulder, CO: Westview Pr.
- Cragg, M. and M. Epelbaum (1996) "The Premium for Skills in LDCs: Evidence From Mexico," mimeo, Columbia University and Centro de Investigacion Economica, ITAM.
- Deardorff, A. (1986) "FIRLESS FIRWOES: How Preferences can Interfere with the Theorems of International Trade," *Journal of International Economics*, 20, 131-142.
- Deardorff, A. and Stern, R., eds. (1994) *The Stolper-Samuelson Theorem: A Golden Jubilee*, Ann Arbor: U. Of Michigan.
- Dixit, Avinash K. and Norman, Victor F. (1980) *Theory of International Trade*, Cambridge: Cambridge University Press.
- Edwards, S. (1993) "Openness, Trade Liberalization, and Growth in Developing Countries," *Journal of Economic Literature*, 31:3, 1358-93.
- Ethier, W. (1984) "Higher Dimensional Issues in Trade Theory," in R. Jones and P. Kenen, eds. *The Handbook of International Economics*, vol. 1, New York: Elsevier.
- Feenstra, R. and Hanson, G. (1995) "Foreign Investment, Outsourcing and Relative Wages," forthcoming in *Political Economy of Trade Policy: Essays in Honor of Jagdish Bhagwati*, Cambridge: MIT Pr.
- Feliciano, Z. (1996) "Workers and Trade Liberalization: The Impact of Trade Reforms in Mexico on Wages and Employment," mimeo, Queens College.
- Johnston, L. (1995) "Trade Liberalization and Income Distribution" mimeo, Harvard University.
- Kravis, I., A. Heston, and R. Summers (1982) "The Share of Services in Economic Growth," in F.G. Adams and Bert Hickman, *Global Econometrics: Essays in Honor of Lawrence R. Klein*, Cambridge: MIT Pr.
- Krueger, A. (1978) *Liberalization Attempts and Consequences*, Cambridge: Ballinger.
- Krueger, A. (1977) *Growth, Distortions and Patterns of Trade Among Many Countries*, Princeton Studies in International Finance, No. 40, February.
- Leamer, Edward (1996) "In Search of Stolper-Samuelson Effects Between Trade and US Wages" mimeo, Yale and UCLA.
- Leamer, E. (1987) "Paths of Development in the Three-Factor, n-Good General Equilibrium Model," in *Journal of Political Economy*, 95:5, 961-99.
- Leamer, E. and Levinsohn, J. (1995) "International Trade Theory: The Evidence," in G. Grossman and K. Rogoff, eds. *The Handbook of International Economics*, vol. 3, New York: Elsevier.
- Michaely, M., D. Papageorgiu, and A. Choksi (1991) *Liberalizing Foreign Trade: Lessons of Experience in the Developing World*, vol. 7, Cambridge, MA: Basil Blackwell.

- Mussa, Michael A. (1979) "The Two-Sector Model in Terms of its Dual: A Geometric Exposition," *Journal of International Economics*, 9, No. 4, 513-526.
- Robbins, Donald (1996) "Trade, Trade Liberalization and Inequality in Latin America and East Asia -- Synthesis of Seven Country Studies," mimeo, *Harvard Institute for International Development*, March.
- Sachs, J. and A. Warner (1995) "Economic Reform and the Process of Global Integration," mimeo, Harvard University.
- Stolper, W. and P. Samuelson (1941) "Protection and Real Wages," *Review of Economic Studies*, November, IX, 58-73.
- Trefler, D. (1993) "International Factor Price Differences: Leontief was Right!" *Journal of Political Economy*, 101.
- Wood, A. (1994) *North-South Trade, Employment and Inequality: Changing Fortunes in a Skill-Driven World*, New York: Oxford.

HIID's most recent Development Discussion Papers (DDPs)

550. Donald R. Davis. "Does European Unemployment Prop Up American Wages?" September 1996. 18 pp.
549. Donald R. Davis. "Technology, Unemployment, and Relative Wages in a Global Economy." September 1996. 15pp.
548. Charles Goodhart and Chenggang Xu. "The Rise of China as an Economic Power." September 1996. 89pp.
547. Donald R. Snodgrass. "Education in East Asian Development: Some Issues and Cases." August 1996. 38 pp.
546. Michael Roemer and Chou Ji. "The Economic Development of Taiwan, 1980 to 1993 Macroeconomic Policy: Overzealous or Inflexible?" July 1996. 31 pp.
545. Jeffrey D. Sachs and Andrew M. Warner. "Sources of Slow Growth in African Economies." July 1996. 12 pp.
544. Jeffrey D. Sachs and Andrew M. Warner. "Achieving Rapid Growth in the Transition Economies of Central Europe." July 1996. 68 pp.
543. Michael Roemer. "Could Asian Policies Propel African Growth?" July 1996. 17 pp.
542. Jeffrey R. Vincent. "Resource Depletion and Economic Sustainability in Malaysia." July 1996. 29 pp.
541. Graham Glenday. "Basic World Tax Code: In Sub-Saharan Africa, Does it Fit The Bill?" May 1996. 16 pp. *Taxation Research Series No. 27.*
540. Ricardo Godoy, Jeffrey R. Franks, David Wilkie, Mario Alvarado, George Gray-Molina, Raul Roca, Jario Escóbar, and Marina Càardenas. "The effects of Economic Development on Neotropical Deforestation: Household and Village Evidence from Amerindians in Bolivia." May 1996. 41pp.
539. Ricardo Godoy, Jeffrey R. Franks and Mario Alvarado Claudio. "Adoption of Modern Agricultural Technologies by Lowland Amerindians in Bolivia: The Role of Household, Villages, Ethnicity, and Markets." May 1996. 28pp.
538. Charles I. Jones and John C. Williams. "Too Much of a Good Thing? The Economics of Investment in R & D." May 1996. 47pp. *Conference Paper Series.*
537. Klaus Deininger and Lyn Squire. "Measuring Income Inequality: A New Data-base." May 1996. 22pp. *Conference Paper Series.*
536. William Easterly and Ross Levine. "Africa's Growth Tragedy: Policies and Ethnic Divisions. May 1996. 33pp. *Conference Paper Series.*
535. Martin L. Weitzman. "Recombinant Growth." May 1996. 29pp. *Conference Paper Series.*
534. Francesco Caselli and Jaime Ventura. "A Representative Consumer Theory of Distribution." May 1996. 36pp. *Conference Paper Series.*
533. Michael Kremer. "A Mechanism for Encouraging Innovation." May 1996. 44pp. *Conference Paper Series.*
- 532a. Nirupam Bajpai and Jeffrey D. Sachs. "India's Economic Reforms: Some Lessons from East Asia." July 1996. 19 pp.
532. Nirupam Bajpai and Jeffrey D. Sachs. "India's Economic Reforms: The Steps Ahead." May 1996. 19 pp.
531. Abhijit V. Banerjee and Andrew F. Newman. "A Dual-Economy Model of Modernization and Development." May 1996. 32 pp.

HIID's most recent Development Discussion Papers (DDPs)

530. Nirupam Bajpai. "Economic Crisis, Structural Reforms and the Prospects of Growth in India." May 1996. 21 pp.
529. Steven Radelet. "Measuring the Real Exchange Rate and its Relationship to Exports: An Application to Indonesia." May 1996. 33 pp.
528. Nirupam Bajpai and Jeffrey D. Sachs. "Trends in Inter-State Inequalities of Income in India." May 1996. 28 pp.
527. Robert H. Bates. "Institutions as Investments." May 1996. 29 pp.
526. Robert H. Bates, Karen Ferree, A. J. Robinson, Smita Singh, and Anne Wren. "Toward the Systematic Study of Transitions" April 1996. 36 pp.
525. Andrew M. Warner. "Was Mexico's Exchange Rate Overvalued in 1994?" February 1996. 38 pp.
524. Jeffrey D. Sachs and Howard J. Shatz. "International Trade and Wage Inequality in the United States: Some New Results." February 1996. 68 pp.
523. Alain de Crombrughe, Zanny Minton-Beddoes, and Jefferey D. Sachs. "EU Membership for Central Europe: Commitments, Speed and Conditionality." February 1996. 26 pp.
522. Glenn P. Jenkins and Chun-Yan Kuo. "A VAT Revenue Simulation Model for Tax Reform in Developing Countries." December 1995. 26 pp. *Taxation Research Series No. 26.*
521. Robert E. Kennedy. "A Tale of Two Economies: Economic Restructuring in Post-Socialist Poland." December 1995. 37 pp.
520. John M. Cohen. "Ethnicity, Foreign Aid, and Economic Growth in Sub-Saharan Africa: The Case of Kenya." November 1995. 41 pp.
519. John M. Cohen. "'Ethnic Federalism' in Ethiopia." October 1995. 24 pp.
518. Tianlun Jian, Jeffrey D. Sachs, and Andrew M. Warner. "Trends in Regional Inequality in China." October 1995. 33 pp.
- 517a. Jeffrey D. Sachs and Andrew M. Warner. "Natural Resource Abundance and Economic Growth." (Revised version of 517) October 1995. 49 pp.
517. Jeffrey D. Sachs and Andrew M. Warner. "Natural Resource Abundance and Economic Growth." September 1995. 48 pp.
516. Malcolm F. McPherson. "The Sequencing of Economic Reforms: Lessons from Zambia." September 1995. 84 pp.
515. Thomas P. Tomich, Pauline E. Peters, and Anil B. Deolalikar. "Social Impact of Agricultural Policy Reform: Evidence from Rural Households in Southern Malawi." September 1995. 47 pp.
514. Robert H. Bates. "Democratic Transition in Africa: A First Report on an Empirical Project." July 1995. 33 pp.

A complete list of the Institute's publications and the abstracts of papers that have been published after January 1995 can be viewed on the World Wide Web, at <http://www.hiid.harvard.edu>

To order DDPs, contact the HIID Publications Office, at (617) 495-3287.

