

GLOBAL TRADE AND CONFLICTING NATIONAL INTERESTS
 BY RALPH E. GOMORY AND WILLIAM J. BAUMOL.
 CAMBRIDGE, MASS.: MASSACHUSETTS INSTITUTE
 OF TECHNOLOGY PRESS, 2000.

In 1994, William Baumol gave a series of lectures at the London School of Economics that became the basis of a book titled *Global Trade and Conflicting National Interests* (2000) by Baumol and his coauthor Ralph Gomory.¹ In recent years, globalization has resulted in increased fears regarding the potential harm of free trade. Allegedly, changes in technology and the reduction of institutional barriers have led to a more level playing field in the area of international trade and some have argued that these changes indicate that free trade is not the optimal government trade policy.

The classical case for free trade, Ricardo's law of association, is based on the assumption of the immobility of capital across political borders. The question is: in a world of capital mobility, does the case for free trade fail? Gomory and Baumol construct a model of international trade based on the assumption of capital mobility that leads them to the conclusion that some form of protection or other government intervention may be preferable to free trade. Their work is a revision of the infant industries argument. According to Gomory and Baumol, "the well known and venerable 'infant industry' argument . . . applies with special force to our retainable industry model" (p. 25; emphasis added).

This book provides the basis for some anti-free trade arguments. For instance, Paul Craig Roberts asserts that Gomory and Baumol "explode the free trade assumption that free trade always produces mutual gains" (Roberts 2004b), and that the book will help economists "catch up with their discipline" (Roberts 2004a). In a presentation at the 2004 Austrian Scholars Conference, Roberts emphasized how the Gomory and Baumol book has influenced his views. According to Roberts, he would have defended the classic case for free trade before being confronted with Gomory and Baumol's work (Roberts 2004c). Roberts also challenged his audience to study this book. This review takes up that challenge.

Others who fear globalization have also been influenced by Gomory and Baumol. Ron and Anil Hira note Gomory and Baumol's work in their book *Outsourcing America: What's Behind Our National Crisis And How We Can Reclaim American*

¹Ralph E. Gomory is an applied mathematician and currently is the president of the Alfred P. Sloan Foundation, a research sponsoring foundation. William J. Baumol has published over 500 articles in various fields of economics. For more on Baumol's background, see his interview in the *Journal of Economic Perspectives* (Krueger 2001). Gomory and Baumol also published several companion articles to this book (see for example, Gomory and Baumol 2004).

Jobs. John Cassidy, in *The New Yorker*, calls it a “heretical but fascinating book. . . . Unlike many economists, who tend to rely on make-believe models, Gomory and Baumol tried to be realistic” (Cassidy 2004). Eamonn Fingleton, author of *Unsustainable: How Economic Dogma is Destroying American Prosperity*, in an article in *The American Prospect* claims that Gomory and Baumol have “mounted a powerful challenge to the orthodoxy’s utopian take on international trade” (Fingleton 2004). Jay Bhattacharjee, in the *Financial Express*, calls the book “a powerful attack on orthodox international trade theory” (Bhattacharjee 2002).

Given the response to the book, although the book is six years old, it seems appropriate to consider Gomory and Baumol’s specific arguments.

RETAINABLE INDUSTRIES

Gomory and Baumol note that in a world of capital mobility and economies of scale, once capital is established in a country it tends to remain in that country. In other words, once an industry is captured by a country that industry is “retainable.” This retainability is the key issue in Gomory and Baumol’s explanation of the welfare implications of international trade. Once an industry is developed in a country, new competitors have difficulty entering that market since they cannot take advantage of scale economies. It also tends to be unprofitable to move an established industry to another location. Industries are retainable in the sense that it’s difficult for one country to attract an industry that is already established in another country.² The location of the industry in its infancy is therefore vitally important.

Since industries are retainable, once most of the world’s industries are located in a country those industries would tend to stay in that country. In other words, trade could lead to an equilibrium situation where a country is highly developed. Absent government intervention, as more industries locate in a given country, this tends to drive wages up. However, this does not drive any industries out of the country. The retainability of the industries overrides the higher wage costs. However, it’s also possible that in equilibrium only a few industries are located in a country. A country could have almost no industries, again absent government intervention, or it could have most of the world’s industries and both of these possibilities are potential equilibria. The critical point is that markets generate multiple equilibria.

Again, consider the adjustments that occur as industries compete for increasingly scarce labor in a developing country. Will higher wages prevent a country from having the vast majority of the industries? No. According to Gomory and Baumol high wages are coupled with high productivity, because of capital accumulation, in one nation and low wages are coupled with lower productivity in the other country. So trade leads to multiple equilibria that “can be sustained by market forces” (p. 23).

Industry locations may be sustained by market forces, but, and this is the main problem with the authors’ argument, they are not determined by market forces. The authors do not recognize that industry locations are determined by the decisions of

²Gomory and Baumol’s concept of retainable industries parallels Ludwig von Mises’s explanation of the convertibility of capital (Mises 1998, pp. 499-502). For Mises, capital, to a degree, is inconvertible, thus industries are in a sense retainable. However, in the Gomory and Baumol model, capital is highly inconvertible so industries are retainable to a high degree.

market participants. In their model, there is no equilibrating of supply and demand, no drive for profits, and investors do not consider wage differentials in various countries when deciding where to locate an industry. Instead, historical accident leads to the location of the industries. Let me emphasize this. The location of the industries and therefore the resulting national income is determined by historical accident. The equilibria are “the result of the vagaries of historical accident” (p. 7), and they are “arrived at, whether deliberately or by the purest accident of historical events” (p. 7). It’s not purposeful action, but “history [that] brings a country to a prosperous position” (p. 53). Industry locations are determined by the “wheel of fortune” (p. 21). Although the equilibria are accidentally determined, they can be affected by “deliberate government action intended to foster the home industry” (p. 8).

MULTIPLE EQUILIBRIA

In the retainable industries model, because of scale economies, each industry is located solely in a single country. If only a portion of an industry was located in a country, then that industry could not take advantage of these scale economies.³ Also, each country must have at least one industry. Other than that there are no limits to the number of possible equilibria. Therefore, for two countries, if the number of industries is N , then the number of equilibria is $2^N - 2$. The two exceptions are the cases when a country has no industry or when a country has all of the world’s industries. In this model, there are two countries and ten industries, therefore there are 1,022 equilibria.

As the number of industries increases, the number of equilibria grows exponentially. If we assume that there are 20 industries and two countries, then there are over 1 million equilibria and if we assume that there are 100 industries, then free trade could lead to over 1.26×10^{30} potential equilibria and trade could lead to any of these outcomes.

To recap, industries locate in a country because of historical accident. If five industries are located in a country because of historical events, those industries are retainable and this is an equilibrium situation. Four more industries could accidentally locate in this country, driving wages up. However, those industries are retainable and the country is then in equilibrium with nine industries. Investors are not considering input costs or the demand for their product and they apparently are not attempting to maximize their profits when making their investment decisions. Another problem with this retainable industries model is that the potential equilibria that may occur in the absence of intervention are also the same possible equilibria that may occur with any level of government interference. If five particular industries are located in a country, then that country has a given national income regardless of the amount of government intervention in those industries. Intervention has no effect on a country’s national income other than attracting industries to the country. High taxes, heavy regulatory burdens, and government created inflation have seemingly no effect on a country’s welfare.

Some of these potential equilibria are favorable, from one country’s point of view, and some are not. And, importantly, since historical accident is the determining factor,

³Gomory and Baumol lift this assumption later in their work and assume that industries have constant returns to scale. The relaxation of this assumption has no substantive effect on their conclusions (pp. 43-53.)

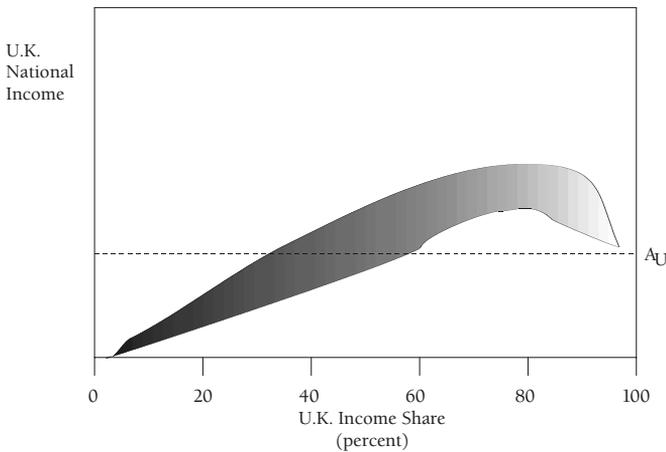
there is “little in the market mechanism that leads it to favor the good or even to avoid the bad. Its choice among them is, so to speak, fraught with happenstance. And once the wheel of fortune has picked a particular equilibrium, society only extracts itself slowly from that state of affairs” (p. 21).

Some equilibria are in fact bad for all countries. Why do market forces not prevent equilibria with poor welfare properties? Why do entrepreneurs not take advantage of the profit opportunity presented by locating an industry in another country? In practice, entrepreneurs are not aware of these “distant opportunities” nor do they know how to acquire these gains. Also, these gains require large risky investments. High risk and sparse information leads them to conclude that market forces will not capture welfare enhancing gains (pp. 95-97). Gomory and Baumol also note that this information problem also pertains to government officials, but this does not lead them to discount the efficacy of government intervention.

DISTRIBUTION OF THE EQUILIBRIA

The next step is to calculate these possible equilibria. Again, for a two country, ten industry world, there are 1022 possible equilibria. The actual calculations of these equilibria are not fully explained; however, we are assured that they use “mathematical programming,” “computer programs,” and “linear programming” (pp. 86-98), and even some of the graphs are “computer-generated” (p. 120).

Figure 1
National Income of the U.K.



Consider the distribution of equilibria of a single country, in Gomory and Baumol’s model the first country is the United Kingdom. The shaded areas on the diagram (see figure 1) represent the potential equilibrium situations. The vertical axis represents the country’s national income and the horizontal axis represents the country’s share of the world income. To the left side of the diagram, the country has few industries. There is little capital available and the country’s national income is low because output is very low. A rightward move along the diagram indicates that this country’s share of the world income is increasing because more industries are located in the U.K. As the country’s share of world industries increases, up to a point, its national

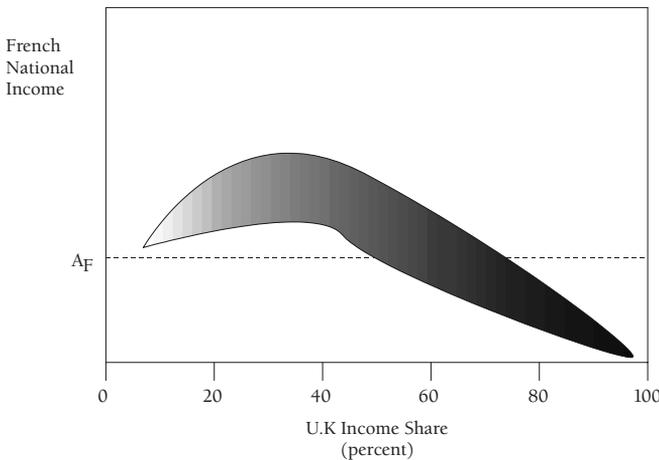
income increases. However, when most of the world’s industries are located in this country; the worldwide inefficient distribution of capital results in a low level of world income. This country has the lion’s share of the available capital, world output, and world income, but its national income is low because world output and income is low. In the middle of the diagram, “each economy [can] specialize in the production of those goods that it is best suited to produce” (p. 30). Therefore, national income is higher. Note that the country can improve its economic standing by producing goods that it is “best suited to produce” and yet market adjustments have nothing to do with the amount of capital inflows into a country. This diagram demonstrates that this country maximizes its national income when many industries are retained, but if it has too many retainable industries, then national income decreases.

One might wonder whether or not this model takes into account the gains to domestic investors from investing in other countries. If capital flows out of a country, Gomory and Baumol assure us that the gains from these investments are included in these national income estimations.

Gomory and Baumol argue that the far right side of the diagram represents the country’s national income in autarky. The U.K., at this point, has all of the world’s industries so it has no trading partners. This is their conception of autarky. Note that this autarkical situation is economically preferable to many of the potential equilibria. All of the equilibria below the A_U line are free trade situations that generate lower national incomes than does autarky. The autarkical outcome is not the highest possible national income, but autarky generates a higher national income than many of the potential free trade equilibria.

Here, the authors have developed an internally contradictory sense of autarky. The U.K. is in autarky when all of the industries are located in that country. Similarly, the U.K.’s trading partner, France is in autarky when it has all of the world’s industries. When that occurs France is producing everything and therefore no international trade occurs. Note that the two autarkical situations are exclusive. When the U.K. is in autarky, France is not, and vice versa.

Figure 2
National Income of France



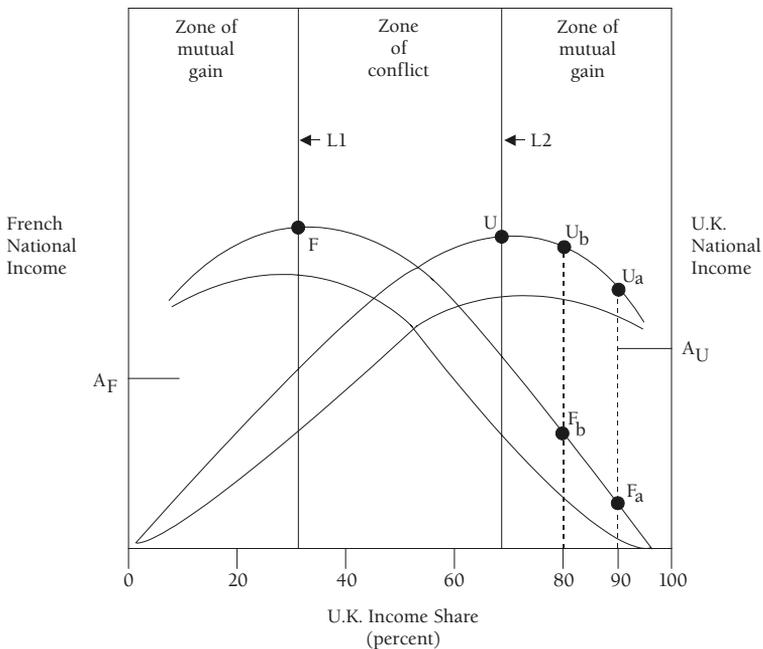
The second country, France, has potential equilibria that are essentially the mirror image of the U.K.’s possible equilibria (see figure 2). The difference in the diagrams is

that a leftward move along the diagram indicates that the French share of the world income is increasing. When France is highly undeveloped, its national income and share of world income are both very low. National income increases to a point as France has an increasing share of the world's industries. If most of the world's industries are located in France, however, then the French share of world income is greater but its national income decreases.

Now consider a diagram that simultaneously illustrates the potential equilibria for both countries (figure 3). In the zones of mutual gain the two countries' interests coincide. In these regions, if the undeveloped country begins to attract industries, this will help both countries. Also, if the undeveloped trading partner loses industries to the more developed country, then both countries' national incomes suffer. A highly developed country in this region would benefit by the development of its trading partner. This zone, according to Gomory and Baumol, demonstrates why the Marshall Plan was an enlightened act of self-interest. The U.S. was in this position after World War II and U.S. aid to Japan and Germany shifted industries out of the U.S. This industry shifting helped the U.S. economy because the countries were in a zone of mutual gain.

More important than the zones of mutual gain is the zone of conflict located in the middle of the diagram. An improvement in one country's position due to increased capital inflows, in this region, results in a reduction in national income for its trading partner. This area represents potential trade conflicts, and according to Gomory and Baumol this explains the trade rivalries between Japan and the U.S. Japan and the U.S. have been competing for capital and gains for one country result in losses to the other country.

Figure 3
National Income of Both Countries Compared



The classical case for free trade is based on the conclusion that trade generates benefits to all countries involved. However, according to this model, trade and the ensuing development of a country may impoverish that country's trading partners. Consider a developed country that is at its optimal national income and is trading with an undeveloped country. As the undeveloped country becomes more developed, this will harm the more prosperous country. This situation epitomizes the potential conflict of international trade and demonstrates, allegedly, the potential harm of globalization.

POLICY IMPLICATIONS

The retainable industries model implies that a country's national income level can either be left to historical accident or it can be affected by government policy. Suppose that a country is moving toward a trading situation that results in a lower national income. What can that country's government⁴ do about it? According to Gomory and Baumol, government aid may help a country retain industries and improve its national income. One key to correct policy is to recognize and favor retainable industries. In order to achieve this goal a country needs "a strong tradition of powerful government and an unambiguous history of industrial policy, plus a skilled and prestigious bureaucracy, able to carry out that policy" (p. 65). Note the circularity of Gomory and Baumol's reasoning. A country with a bureaucracy "able to carry out that policy" is able to successfully carry out the appropriate policy. A government with these traits could intervene in areas of international trade in a way that attracts industries to that country and that allows for the "preservation of retainable industries" (p. 68). Historically, some countries have been successful at this and some have failed. Japan, in their view, represents an example of appropriate industrial policy (p. 63).⁵ It's interesting that Gomory and Baumol conclude that industries that are retainable may need to be preserved. Apparently a retainable industry could possibly relocate to a different country, and it's up to the state to prevent this from happening. In addition to targeting specific industries, Gomory and Baumol propose government support of the general infrastructure such as roads and education in order to attract industries.

The authors emphasize that historically the U.S. government does not fit their model. The U.S. lacks a "dedicated bureaucracy" and these decisions are often based on political pressures. U.S. policymakers have tended to favor special interests. Because of these two factors, industrial policy similar to the Japanese model is "probably unworkable" in the U.S. (p. 65).

While our authors anticipate that industrial policy would tend to fail in the U.S., they conclude that U.S. government support for research coupled with our venture capital system would work in this country. Would research supported by the U.S. government generate knowledge that could flow overseas and lead to the development of foreign industries? Apparently capital is highly mobile in the retainable industries model

⁴Gomory and Baumol discuss this issue, but rarely mention the term "government" or the "state." In their explanation, generally a "country" simply takes action.

⁵Although the book was published in 2000, Baumol's LSE lectures occurred in 1994, which may explain the reference to Japan. Baumol might take a different view today, given Japan's economic performance in the last decade or more.

but knowledge is not. The authors also fail to explain why industrial policy in the U.S. would be ineffective due to political pressures but government funding of the research needed to retain the right industries would not be affected by such political pressures. If U.S. government officials are unable to implement appropriate industrial policies to entice the right combination of industries to locate in this country it seems that those same officials would find it difficult to channel tax dollars into the types of research that would lead to the development of those same industries. I find it interesting that Gomory and Baumol conclude that their model supports the government funding of research and Ralph Gomory is president of The Alfred P. Sloan Foundation, a foundation that provides tens of millions of dollars of research grants annually.

CONCLUSION

The model developed by Gomory and Baumol is fundamentally flawed. Their argument regarding multiple equilibria ignores market factors, their analysis is confused, and their conclusions are fallacious. The distribution of the potential equilibria is defective because it is based on their mistaken concept of multiple equilibria, so we should not rely on their conclusion that trade leads to conflicting national interests.

Furthermore, Gomory and Baumol's policy prescriptions are naïve. While they show some recognition of the political difficulties of implementing effective government policy, particularly regarding the issues of the scarcity of knowledge and the potential for agents of the state to be influenced by political forces, for the most part they dismiss these possibilities out of hand.

The problems of applying theories about intervention to down-to-earth issues prevent intervention from being effective. Some of these problems, in short, are issues about the incentives faced by elected officials and by bureaucrats that lead them to act against the general interest, such as the fact that government agents cannot use dispersed knowledge as effectively as market participants, and that given the absence of prices in most government decision making, officials face a calculation problem that cannot be overcome. Of course, Gomory and Baumol fail to recognize any of these complications.

Baumol was reluctant to undertake this project. When the book was first proposed he "objected that he had never worked on international trade theory or directly related subjects" (p. xiv). He should have followed his first instinct. In short, this work is a setback for those making the case against free trade.

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REFERENCES

- Bhattacharjee, Jay. 2002. "Guru of Economics Does an About-turn on Free Trade." *Financial Express* (October 19): http://www.financialexpress.com/fe_full_story.php?content_id=71807.
- Cassidy, John. 2004. "Winners and Losers: The Truth About Free Trade." *The New Yorker* (August 2): <http://flash.lakeheadu.ca/~kyu/E4111/Cassidy2004.pdf>.

- Fingleton, Eamonn. 2004. "Stop the World." *The American Prospect* (September 17): <http://www.prospect.org/web/page.wv?section=root&name=ViewWeb&articleId=8521>.
- Gomory, Ralph E., and William J. Baumol. 2000. *Global Trade and Conflicting National Interests*. Cambridge: Massachusetts Institute of Technology Press.
- . 2004. "Globalization: Prospects, Promise, and Problems." United National Congress: <http://sta.uwi.edu/salises/workshop/csme/paper/wbaumol.pdf>.
- Hira, Ron, and Anil Hira. 2005. *Outsourcing America: What's Behind Our National Crisis And How We Can Reclaim American Jobs*. AMACOM.
- Krueger, Alan B. 2001. "An Interview with William J. Baumol." *Journal of Economic Perspectives* 15, no. 3 (Summer): 211-31.
- Mises, Ludwig von. 1998. *Human Action: A Treatise on Economics*. Scholar's Edition. Auburn, Ala.: Ludwig von Mises Institute.
- Roberts, Paul Craig. 2004a. "The Missing Case for Free Trade." Newsmax.com (March 17): <http://newsmax.com/archives/articles/2004/3/17/91158.shtml>.
- . 2004b. "Where Did All the Jobs Go?" VDARE (February 15): http://www.vdare.com/roberts/where_jobs_go.htm.
- . 2004c. "Free Trade; The Current Debate." Presentation at the Austrian Scholars Conference (April 16): <http://www.mises.org/media.aspx?action=showname&ID=325>.