# Potential Gains from Trade in Dirty Industries: Revisiting Lawrence Summers' Memo

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Lawrence Summers has a long history of controversial statements. Well before his comments in 2005 as then-president of Harvard University about the underrepresentation of women on faculties for mathematics and science, Summers was the chief economist at the World Bank. In that position, he penned a memo to his colleagues in 1991 that was leaked to the public, drawing heated criticism.[1] In 1999, when President Bill Clinton nominated Summers as Secretary of the Treasury, the controversy over Summers' memo was revived during his Senate confirmation hearings. Hundreds of articles were posted on the Internet at that time attempting to sway public opinion against Summers.

The controversy remains alive. Debate continues over the effect that free trade or globalization has on developing nations and on the environment, with the prevailing attitude that some trade must be prohibited. Most developed nations therefore abide by the 1994 Basel Convention, which bans exports of toxic wastes to developing countries, but the continuing shift of pollution-intensive production to poor countries effectively exports toxics to them.[2]

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[1] *Boston Globe* writers suggested in March 2001, as others apparently had previously, that the memo was actually written by another economist, Lant Pritchett, but it was signed and circulated at the World Bank under Summers' name (Healy and Donnelly 2001).

[2] For example, the U.S. share of net imports in petroleum consumed increased from 34.8 percent in 1973 to 60.3 percent in 2005 (USEIA 2006). Also, the water pollution due to offshore extraction in the Caspian Sea is a leading environmental controversy in Kazakhstan,

As the World Bank's chief economist, Summers ostensibly worked to promote policies designed to "reduce global poverty,"[3] and his memo was supposed to advance the development of that policy. However, scanning dozens of sites addressing the World Bank memo, we could not find one defending Summers. Rather than try to understand his position, the sites tried to smear his reputation and perpetuate the misunderstandings that have long motivated criticism of free trade and economic development policies.

The statement in Summers' memo that is most often mocked is: "I think the economic logic behind dumping a load of toxic waste in the lowest-wage country is impeccable and we should face up to that." He continues: "I've always thought that under-populated countries in Africa are vastly *under* polluted." Critics consistently characterize this position to mean that he and the World Bank favored dumping toxic wastes on poor people without their consent. Without an understanding of how gains accrue even to trades in toxic wastes, or how economic progress occurs, his comments certainly sound heartless.

Defending Summers therefore requires a better explanation as to how these trades can result in gains to both richer and poorer nations. Although Summers' memo has been widely misinterpreted, his premise is valid and yet virtually undefended before the public by economists. Economic growth resulting from comparative advantage is impeccable evidence of gains from trade in all industries, including dirty industries, which arise from differences in values among various populations and their evaluation of risks.

## Potential Gains from Trade: A Marginal Analysis

The "impeccable" logic to which Summers refers is the principle of comparative advantage applied to the handling of toxic wastes and to movements of polluting industries among countries. The principle suggests that a nation should export a good that it can produce more cheaply (at a lower opportunity cost in terms of forgone production of other goods or services) than other nations in exchange for goods it finds more costly to produce. The potential gains from trade are implied by well-documented facts about differences in standards of living between developed nations and developing ones such as in Africa, to which Summers specifically refers. The key to Summers'

which is growing in per capita income by 10 percent a year largely on the strength of oil exports.

[3] The World Bank states on its Web site that "its challenge is the world's challenge to reduce global poverty" (World Bank Group 2007a).

comment lies in the opportunity costs and forgone earnings of people of various economies. They respond differently to similar possibilities. As Summers explains, the relative consequences of hazardous waste for health in various economies depend on differences in opportunity costs among people. Summers' use of forgone earnings to measure these costs has misled those unfamiliar with the comparative advantage principle. We reserve comment on that for later. For now, note the fallacy of assuming that the rich person's perception of opportunity cost must also hold for a poor person. To understand how their perspectives may differ, ask: "If I were near starving, would I be willing to accept a job with higher earnings that increases the risk to my health from pollution?" We can answer this question by examining differences in fundamental measures of well-being such as health and life expectancy.

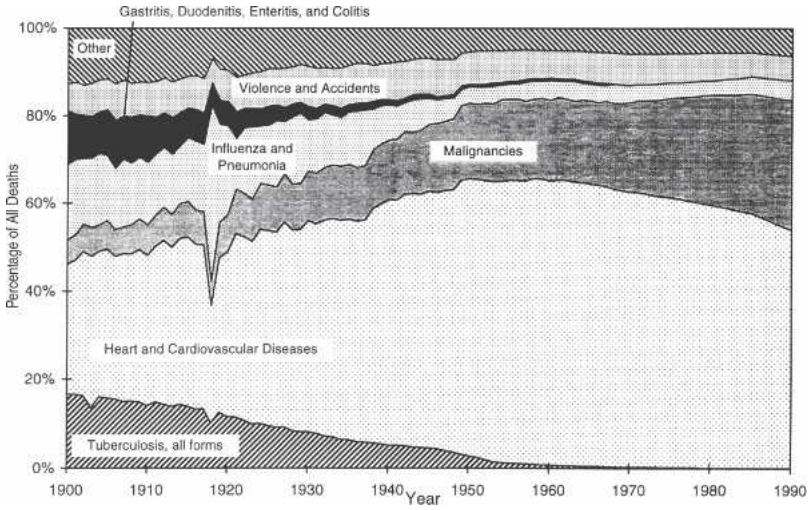
In the United States,[4] malignant cancers have caused an increasing share of deaths from 6 percent in 1900 to nearly 18 percent in 1950 and nearly 30 percent in 2000 (Figure 1; Simon 1996: 238). Over the same period, life expectancy at birth has increased from 50 years to between 65 and 75 years (Lomborg 2001: 52). Income measured as real GDP per capita has increased from $11,100 (1996$) in 1950 to $32,600 in 2000.[5] During this period, developed countries made great strides in reducing death from malnutrition, poor hygiene, and environmental diseases associated with poverty, such as cholera. At the same time, rising death rates from cancer have caused people with greater life expectancies to become more sensitive to causes of these cancers, which may include pollution. Because of their higher incomes, people in developed countries can afford, and are willing to pay, a higher price to dispose of these pollutants in a way that reduces risk to themselves. Also, being affluent, they can easily forgo further increases in income that industries generating these wastes might offer. The economic way of stating this relationship is that citizens of the developed world have a high opportunity cost in increases of pollution.

In the developing world, the situation is different. GDP per capita from 1950 to 2000 was about one-sixth that of the developed countries (Lomborg 2001: 71). Life expectancy in 1950 was only 40 years

[4] Trends in Western Europe and Japan have been similar to those in the United States and therefore statistics available for the United States are used to be representative of the developed nations.

[5] Figures on U.S. GDP per capita are from the U.S. Census Bureau and the *Statistical Abstract of the United States*, 2001.

FIGURE 1
TRENDS IN THE LEADING CAUSES OF DEATH IN THE UNITED STATES



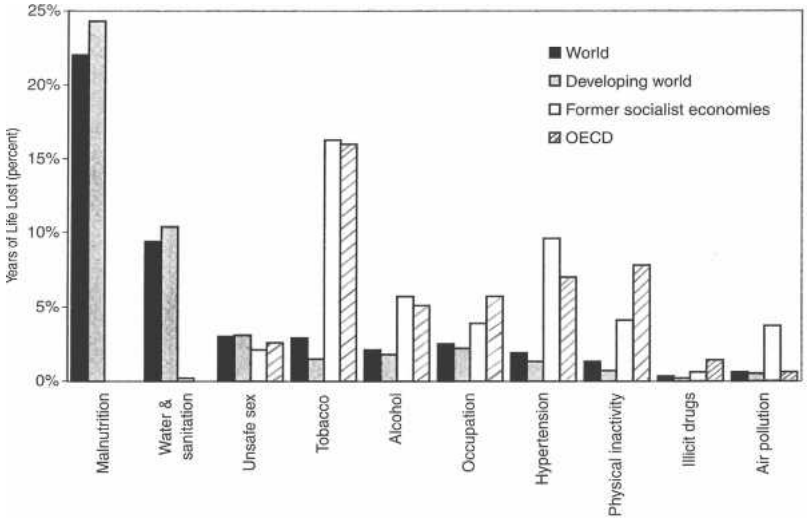

SOURCE: Simon (1996: 238).

but increased to 63 years by 2000.[6] The low incomes and short life expectancies of people in developing countries are associated with causes of death that differ dramatically from those prevailing in developed countries. The leading causes of death, particularly of early death, in developing countries are malnutrition, unsafe drinking water, and poor sanitation and hygiene (Figure 2; Lomborg 2001: 335). Statistics for both developed and developing nations are compared in Table 1. Deaths due to pollution, malignancies, and other maladies associated with old age are nearly nonexistent, primarily because people in developing nations typically do not live long enough to be significantly exposed to such chronic risks. Of course, they are indeed exposed to pollutants. Many poor people around the world suffer from air pollution due to cooking on open fires in enclosed spaces.[7]

[6] In sub-Saharan Africa, life expectancy was even less, at 37 years in 1950 and rising to only 48 years in 2000.

[7] DiGregori (2002) pointed out to development experts that the newer and more efficient stoves that they were promoting in India produced more carcinogenic compounds than open fires. According to DiGregori, they replied: "Most of the users wouldn't live to an age for the probable increase in cancer to occur."

FIGURE 2
WORLD HEALTH ORGANIZATION ESTIMATES OF THE DISTRIBUTION OF YEARS OF LIFE LOST AROUND THE WORLD




SOURCE: Lomborg (2001: 325).

(DeGregori 2002: 129–130) However, with a few noted exceptions such as Union Carbide's disastrous leak at its insecticide plant in Bhopal, India in 1984, there is little evidence that hazardous wastes, which are often chronic carcinogens, contribute to death rates in developing countries as much as do more acute illnesses such as malnutrition, malaria and cholera.[8] One might conclude that people in developing countries would rationally accept increased exposure to hazardous pollutants in exchange for opportunities to increase their productivity—and, hence, their incomes—as well as average life expectancy at birth. Rising incomes could radically increase their years of life by eliminating hunger and by providing resources with which to sanitize drinking water. In other words, citizens of developing nations have a low opportunity cost in hazardous wastes, since the effects of these wastes do not now comprise their primary health problem.

[8] A recurring complaint in criticisms of Summers' memo is that exporting hazardous wastes to developing nations would obviously shorten the lives of poorer people. Statistical evidence suggests that these effects are highly unlikely given the current risks they face.

TABLE 1

Summary of Key Statistics of Developed and Developing Nations

| | United States and OECD Represent Developed Nations | | African Nations Represent Lesser Developed Nations | |
|---|---|---|---|---|
| | 1950 | 2000 | 1950 | 2000 |
| GDP in 1996$ | $11,100 | $32,600 | $1,900 | $5,500 |
| Life expectancy | 65 years | 75 years | 37 years | 48 years |
| Malignancy deaths | 18% | 30% | n.a. | n.a. |
| Leading causes of death or loss of years of life | Heart and Cardiovascular Diseases, Malignancies, Violence, and Accidents | | Malnutrition, Environmental-borne Diseases, Poor Sanitation and Hygiene | |

Sources: Lomborg (2001: 325); Simon (1996: 238, 320); U.S. Census Bureau; and *Statistical Abstract of the United States*, 1999.

The differences in opportunity costs measured in average life expectancy at birth create significant potential gains from trade, because the cost differences arise from sharply differing risks. Because their citizens can expect long lives, developed nations enact laws and incur high costs to limit exposure to hazardous materials based on increased risks or even on unsubstantiated fears. These nations can afford such laws. But imposing the same standard of risk on developing nations can raise production and regulatory costs, reduce potential income, and perpetuate the loss of life from malnutrition and other immediate causes of death.

Given differences in opportunity costs among national populations, we might expect developing nations to export pollution-intensive industries (dirty industries) to other developing nations where the opportunity cost of that pollution is lower and the need for income is greater.[9] Although there is little evidence that such patterns of trade are pervasive in general (Lucas, Wheeler, and Hettige 1992), those opposed to globalization have targeted it, partly by promoting the Basel Convention Treaty.

## Critics and Misunderstandings

Summers claimed that his statements were misunderstood and that he had intended them as a "sardonic counterpoint, an effort to sharpen the analysis" (*New York Times* 1992, Weisskopf 1992). Despite Summers' intentions, critics have not used his comments to sharpen analysis.[10] Their errors fall into three categories.

The first general error is an accusation that "anything goes" in free markets. Critics ignore the fact that the judgments of others can arise

[9] Many analysts associate pollution intensity with the increasing capital intensity of industrialization. Since many international trade models focus on capital and labor intensity for understanding the movement of industries and trade, it should be pointed out that pollution intensity is not limited to capital-intensive methods. The method employed in the ship decommissioning industry in Bangladesh exemplifies a labor-intensive increase in toxic substance exposure in a developing nation. Also, as mentioned above, some pollution-intensive industries that are both land- and capital-intensive such as oil extraction are moving to developing nations. But these industries may not be as capital-intensive as would be required in developed nations because of differences in employment expectations.

[10] Summers apologized for any misconceptions his memorandum may have generated, and the World Bank disavowed the memo (*New York Times* 1992, Weisskopf 1992). The Summers controversy resembles the one kindled by the election-year remark of N. Gregory Mankiw, President George W. Bush's then-chairman of the Council of Economic Advisers, that outsourcing is just a new form of trade (Andrews 2004). Many economists recognize the gains inherent in the import of labor services, but the comment proved politically costly.

from different perspectives. As we have seen, the poor and the rich do not face the same risks to health. These differing perspectives can lead to mutually beneficial trade. Critics seem to view trade through the Marxist perspective of exploitation. Many comments about Summers' memo assume that the developed nations of the Organization for Economic Cooperation and Development (OECD) will use developing nations, especially those in Africa, as dumping grounds for their toxic wastes *without compensation*. The Basel Action Network states that "without the Basel Ban [a treaty banning exports of hazardous waste from rich nations to poor], poorer global communities would be transformed via the 'impeccable logic' of the free market into 'toxic colonies of the rich and most wasteful nations'" (Basel Action Network 1999). Economists subsume this proposition under the "pollution haven" hypothesis, which suggests that less developed countries would become the likely locations for polluting industry because they offer lax environmental laws in order to attract firms (Low and Yeats 1992). If uncompensated dumping were actually the case, then of course gains from trade would not result. Dumping of toxic wastes without compensation for subsequent losses of property is not mutual trade. But in reality, the price negotiated in the trade might compensate the poor nation for use of its land as dumps, perhaps by creating jobs through investments in dirty industries, which would increase income.

The proposition that trade in hazardous wastes may produce mutual benefits for the traders, does assume that property rights are well defined in the nation that imports wastes. Suppose that rights are poorly defined: the owner cannot use or dispose of his property as he wishes, or he cannot obtain satisfaction, for damages to his property, from the courts. Then the importer may import waste up to the point that the private marginal benefit (the payment for another ton of waste) equals the private marginal cost. At this point, the marginal benefit would fall short of the social marginal cost, implying that too much waste has been imported. It would be rational for the importing nation to locate the dump near its borders, so that it may pass on pollution damages to its neighbors. Chichilnisky (1994), who develops this argument generally for free trade, points out that the differences in property rights between nations may lead to inefficient trade in goods that use the environment as a factor of production. Nevertheless, the developed countries of the West often do not have well defined property rights with regard to environmental resources, and yet significant progress has been made in reducing pollution through regulations that reflect growing public concern. Even so, perhaps,

when property rights are attenuated, government policies of developing countries must reflect public choice for progress to be made. Unfortunately, many developing nations do not even meet this modest criterion.

A second error in the criticism of Summers' economic logic lies in the intrinsic valuation of nature. These critics are exemplified by a position paper, "Larry Summers' War Against the Earth" (Vallette 1999). They believe that the environment has value regardless of human assessment.[11] They wish to protect that value by absolute restrictions on use of the environment, despite how the restrictions may affect people. The Basel ban on the export of toxic wastes by developed countries is an absolute restriction to protect the environment of less developed countries.[12] This ban is not likely to prove significant, since each signatory has an incentive to renege upon it and has only a weak incentive to enforce it through economic sanctions.[13] Still, the ban may close off opportunities for trade to poorer countries that could have stimulated economic growth. The view that the pristine environment has intrinsic value alleviates the need for any further judgment about the use of environmental resources. The way to protect them is to immediately stop new development, regardless of human costs. However, under this view, the poorest in poor countries will then suffer the most.

The third error committed by opponents of trade in dirty industries is that they ignore a fundamental fact: Poverty threatens the environment (Hollander 2003). By most measures, environmental degradation is worsening in less developed countries, through poor agricultural practices, lack of water sanitation, and tolerance of environmental diseases such as lung illnesses due to air pollution. Developed nations generally enjoy declining levels of pollution and continued economic growth. New technology, growing incomes, and greater concern about the environment have affected progress despite setbacks such as the goal of eliminating all water pollution by 1985 in the 1972 Water Pollution Control Act. For developing nations, improvement in the environment is a luxury that they can ill afford. They need food, shelter, and basic health care. Any process that creates greater

[11] An extreme statement of this position is the Gaia hypothesis, which views the Earth as an organism.

[12] The United States is the only OECD member to have refused to ratify the 1994 Basel agreement banning export of toxic waste (USEPA 2006).

[13] The only evident incentive for enforcement is to prevent rival nations from enjoying economic gains.

income will allow them to address these needs. Later, correcting environmental degradation will be within their means.

Economic growth correlates with economic freedom. According to the *2004 Index of Economic Freedom*, about 85 percent of African nations are rated as "mostly unfree" or worse (Miles, Feulner, and O'Grady 2004).[14] Growing evidence suggests that bad policies restricting economic freedom contribute greatly to reduced economic growth and therefore to persistent poverty (Cole 2003). Vega-Gordillo and Álvarez-Arce (2003) also report that greater economic freedom is not merely correlated with growth but is a cause of growth. Restricting international trade through protectionist policies has been common in economically less free nations, especially throughout the sub-Saharan region. Additionally, the source of international trade restrictions is often treaties proposed by Western nations imposing policies on poorer nations. Bans on trade in toxic wastes and dirty industries are an example and only block economic growth.

## Economic Progress through Trade

If the critics misunderstand Summers, then how should we instead envision economic progress through trade involving dirty industries? Now that the difference among nations in opportunity costs arising from exposure to pollutants has been demonstrated, the potential gains from trade can be understood. Markets are dynamic institutions. Trade leads to economic development by increasing real income and promoting new opportunities.

The potential gains from trade in hazardous wastes for richer countries stem from the reduction in disposal costs and health risks, while the potential gains for developing countries stem from increased incomes that induce higher savings rates and, thus, greater rates of capital accumulation. Savings and capital accumulation increase productivity, which further reduces poverty. The process is enhanced because trade between less developed countries and developed nations creates opportunities for foreign investment and for the exchange of cultural and technical ideas promoting technological progress that can avert common environmental hazards.

Of course, rising incomes and new technologies also create environmental hazards, as developed nations know. These hazards suggest an important link between income and the environment known as

[14] Of the 45 countries in continental Africa scored by the *2004 Index of Economic Freedom*, 32 ranked "mostly unfree," 2 ranked "repressed," and 4 had scoring suspended due to economic or political instability or both.

"the environmental Kuznets curve." The inverted U-shaped relationship between pollution and per capita income (as a measure of economic development) was first pointed out by Gene Grossman and Alan Krueger (1993). On the left-hand side of the curve, pollution and income rise simultaneously. Presumably, as a nation industrializes, it increases its rate of production and thus of pollution. Moreover, many pollutants are not exportable, because they are produced concurrently with the consumption that accompanies rising income (Lucas, Wheeler, and Hettige 1992).

However, once average income rises to some level, pollution concentrations then begin to fall. When annual incomes rise to roughly $5,000 to $8,000 per capita, then people are able to survive and thus may now focus on environmental problems that arose from their growing capacity to produce (Dasgupta, LaPlante, Wang, and Wheeler 2002). For example, air pollution in the major cities of the U.S. has declined steadily for at least 30 years as average incomes have increased (Simon 1996: 241–50). From 1982 to 1991, ambient concentrations of lead, which contribute to brain damage in children, dropped 89 percent in the U.S. through a program that allowed oil refineries to trade lead permits in order to reduce the cost of controlling the pollutant (Hahn 1989: 101–3).

We have seen that free trade boosts income in developing countries, increasing the demand for environmental quality as well as the means to provide it, but it also may increase pollution-intensive production in those countries. Overall, is free trade good for the environment? A theoretical model by Anweiler, Copeland, and Taylor (2001) allows them to test an underlying case of the "environmental Kuznets curve" with international data on sulfur dioxide emissions. Economic growth through trade increases the scale of operations, and thus of pollution, such that a 1 percent increase in income (GDP) increases pollution concentrations by 0.25 to 0.5 percent for an average nation across the income spectrum. However, the scale effect is more than offset by the fact that the same 1 percent increase in income promotes improvements in technique (cleaner production processes) that reduce pollution concentrations by 1.25 to 1.5 percent. They conclude that "free trade is good for the environment," largely because it increases income and thus the demand for environmental quality as well as the technical capacity to control pollution.

Throughout our analysis, we have assumed that corruption in the government of the developing country will not block the flow of compensation in some form, perhaps as public capital, down to residents. This assumption is tenuous. Corruption, as measured by

Transparency International, correlates strongly and negatively with per capita income.[15] (Transparency International 2006; World Bank Group 2007b) In the presence of corruption, trade in pollutants may prove inefficient because the corrupt leader has an incentive to pocket the gains from trade and to impose pollution costs on an area that is hostile to him in an effort to cripple or drive away the region's population and thus weaken its political influence. There is no guarantee that the benefits to the corrupt leader (or his followers) of the pocketed gains will exceed the losses suffered by the polluted population; and, in any event, a question of fairness is involved. Nevertheless, trade in polluting industries may create diffusions in technological change in the developing country that the dictator would find difficult to control. And, in any event, the solution to governments that extract gains and wealth at the expense of their citizens is not to ban trade but to promote political reform. The latter can be enhanced by access to international exchange.

## Conclusion

Larry Summers sparked controversy by advocating toxic "dumping" on underpopulated and underpolluted nations. Based on the differences in health and life expectancy between developed countries and less developed countries, there may be gains from trade in allowing markets in toxic wastes and in allowing dirty industries to migrate. But trades in these sectors today are limited. Transportation costs of hazardous materials are high. Moreover, many pollutants occur in richer nations because of local consumption; they cannot be gathered and exported. Nevertheless, when opportunities for trade in hazardous wastes and dirty industries exist, they should be allowed. Restrictions will only eliminate or reduce opportunities for economic growth, which less developed countries desperately need.

Critics have interpreted Summers to mean that the rich should be able to exploit the poor by dumping without compensation. But in truth, the purpose of allowing these trades is not to create a permanent toxic dump for the rich but to set in motion a dynamic process.

[15] A simple regression of Transparency International's 2006 Corruption Perceptions Index on GDP per capita for 2005 (purchasing power parity, in 2000 international dollars, provided by the World Bank's World Development Indicators Online) produces the equation Corruption = 2.3291 + .0002 Income, with t-statistics of 19.79 and 21.71, respectively, and $R^2$ = 0.77. Higher values of the Corruption Perceptions Index (on a scale of 0 to 10) correspond to "cleaner" environments. The equation suggests that an increase in real income per capita of $1,000 raises the cleanness index by 0.2 on average for the 153 nations in the sample.

Rising incomes in poorer countries can reduce malnutrition and may also generate saving, investment, and capital accumulation—the foundations not only of prosperity but also of environmental improvement.

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