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My comments today will focus on international comparisons and international economic competition. They are organized around a set of three myths about U.S. education—only three of many!

Myth 1: We can “fix” our schools without addressing the problems of poverty.

The fact is that we can't. The “achievement gap” based on family socioeconomic status is the most significant problem in all countries and accounts for about 75% of the variation in student performance among schools in the U.S.

Compounding the problem in the U.S. are large inequalities in school finance, largely to the disadvantage of poor communities.

When we compare U.S. education with education in other countries, we might want to keep in mind that the U.S. ranks high on two international competitions that perhaps we would prefer not to win: we have one of the largest income and wealth gaps between rich and poor when compared to other industrialized countries and, at the same time, our system of school finance is also one of the most unequal. Both have major consequences for educational achievement.

All countries face achievement gaps based on income—even Sweden with its social support systems and relatively flat income distribution. But Sweden's gap is less than ours and Germany's is larger. Germany tracks students into three separate types of schools starting in fifth grade, with the third track generally serving children of immigrants, who inevitably receive the lowest quality education in the bottom track.

Myth 2: International test-score comparisons are valid measures of the quality of education.

The fact is that test-score comparisons tell us little about the quality of education in any country.

The first problem is sampling. Despite the good intentions of sampling experts, we know that major differences remain across countries in the extent to which samples are representative. For example, there are inevitable differences in which schools and students are selected to participate. And, after the schools and students are selected, which choose to participate? Which regions of the country are included? How about vocational schools? To what extent are children from low-income

families in school—and tested? Children with disabilities? Language-minority children? The point is that the more selective the sample the higher will be the country's average score.

The second problem is poverty. We know that poverty plays a major role in educational achievement and that countries vary enormously in the level of poverty and the extent to which low-income children are even in school to be tested. The point here is that a country that has a relatively high level of child poverty, but also encourages low-income students to stay in school, will be at a disadvantage in the test-score comparisons.

While it is true that some countries might place more emphasis on, say, math than the U.S.—and, therefore, do better in the test-score comparisons—there is no evidence that high math scores are associated with advantageous trade balances. More on this issue in a moment.

The point I want to stress here is that it is virtually impossible to isolate the effects of any of these factors on countries' rankings and, therefore, unrealistic to attempt to infer the quality of education from the test-score comparisons. (See, for example, the analysis of TIMSS in *Science*.)

The difficulty of interpreting international test-score comparisons is also repeated in state comparisons and comparisons of schools within districts under No Child Left Behind. (See, for example, the state rankings on the SAT and on NAEP.)

Myth 3: International test-score comparisons are valid measures of a country's ability to compete in the global economy.

The fact that we can't interpret the international comparisons apparently has not deterred us from taking the next step and concluding that a country's ranking predicts its international competitiveness. There is at least a 50-year history of drawing that inference. After the launch of Sputnik, we were told that the Soviet Union was overtaking us in science and technology. Later, Japan was the country to fear because of its trade balance and its industrial management techniques. Now, we are most concerned about China and India, two countries with rapid growth, which have made large gains in technical fields.

I would like to pose a few questions, which I will leave for you to answer.

Did the U.S. lose the leather, textile, and steel industries because of our ranking on test-score comparisons? Did General Motors lose sales to Toyota in the U.S. market because of American students' math performance? And, at a more sophisticated level, are we losing out in high-tech innovation and information technology at Microsoft and Apple because the iPod is manufactured in China?

And, even if some of our software and innovation come from other countries, is it because our education system has produced insufficient numbers of quality scientists, mathematicians, and engineers? Is there evidence that there currently are shortages of degrees in these fields in the U.S.?

Is there a shortage of U.S. scientists, as some firms have reported, or is there a shortage at the wages the firms would prefer to pay? Are firms outsourcing jobs to China and India because Americans are not qualified for the jobs or because the firms can pay much lower wages to workers in these countries? Did Italy outsource the production of designer shoes to China because there are no skilled craftsmen left in Italy?

Is the under-representation of native-born U.S. students in some Ph.D. programs the result of our education system or a personal decision made by students to select other fields—and perhaps more highly paid fields like investment banking?

One more question—but this one requires some explanation first. China and India are currently perceived as our main economic competitors. Despite their impressive economic gains in recent years, however, poverty remains a major problem in China and an even greater one in India. The high poverty rates are reflected in education statistics. In China, less than half the age group is enrolled in upper-secondary school, while in India, less than a third is enrolled. (China and India do not participate in PISA, probably because of the large proportion of children who are no longer in school at age 15, the age the test is administered.) Both countries have huge gaps in wealth and in education resources available to rich and poor communities. But China has a population of 1.3 billion, and India, a population of 1.1 billion, compared to 300 million in the U.S. China and India, therefore, need to educate a much smaller proportion of their population to produce the same number of scientists, mathematicians, and engineers as the U.S. produces.

Complicating the issue is the fact that Americans can invest in industries throughout the world, as can citizens of other countries. U.S. and foreign firms can build factories abroad, hire workers in those countries, and then give the benefits of their profits—and of lower prices—to citizens of their own country. Workers can move from one country to another and go where the jobs are. None of us can predict with any certainty how this will all turn out. Now, to my question: given the complexity and uncertainties of the global context, do you believe that the potential problems in economic competitiveness would be substantially reduced if U.S. students answered a few more questions correctly on international comparisons?

A Japanese proverb puts it this way: “you can’t see the whole sky through a bamboo tube” (or through test-score comparisons).