

"GDP per capita in the U.S. over the last 19 years has grown more slowly than GDP per capita in the other advanced industrialized nations"

At the end of the process John Young found that he still didn't have a very good statement of what the problem was. He had a lot of solutions in search of a problem,

So a number of academics from Stanford and Berkeley got together and came up with a working definition of national competitiveness. It has become the standard definition, and this is the one I will use now. I will then discuss some signs that suggest the U.S. position on national competitiveness is something about which we should be concerned.

The definition of competitiveness we devised in 1982 had two parts:

1. The ability of a nation to have its goods and services meet the test of international competition—i. e., compete in world markets.
2. The ability of a nation, while it's competing in world markets, simultaneously to provide real increases in real living standards for its citizens on a sustainable basis.

Keeping that definition in mind, if we look back on the past decade since that report came out, we can see signs of weakness in the U.S. position.

Inability to Balance Trade

The first danger sign is the accumulation of very large trade imbalances. We accumulated over a trillion dollars' worth of trade imbalances during the 1980s. During our recent export boom, we had a situation where our exports were growing rapidly and we were growing slowly at home, and our imports were growing slowly. We got our trade imbalance down significantly—we got it down to about \$70 billion last year—but it looks like it's going to be going up again.

If you look at the numbers through the third quarter of this year, we're already at \$68 billion, and the fourth quarter is

obviously going to bring in substantial additions to that number.

The point is, we made some improvement because we slowed down our growth rate, the rest of the world increased its growth rate, and we exported more and didn't import as much, but we weren't able to come to a position of trade balance. And now, if we start growing more rapidly than the rest of the world, as some indicators suggest we will, then we may in fact see a rising trade imbalance problem.

Declining Standard of Living

Another sign of weakness is that the standard of living—the GDP per capita in the United States, the broadest definition of our living standard—actually declined in 1991 and 1990.

Of course, those were recessionary years, but if you look at historical data, GDP per capita in the U.S. over the last 19 years has grown more slowly than GDP per capita in the other advanced industrial nations.

Moreover, if you look decade by decade—if you look at GDP per capita growth rates in the United States going from the '50s to the '60s to the '70s to the '80s—you see a downward trend. Our growth rate is clearly decelerating.

These figures become more disturbing when you look at indicators such as wages and family incomes. Consider wages, for example. The most recent economic report of the President, prepared by my predecessor, Michael Boskin, stated that in 1972 average real weekly earnings in the U.S. were \$315; in October of 1992, they were \$255. Thus, there has been a 20-year period in which we've had a decline in real average weekly earnings of nearly 20 percent. This means that during the '80s, a period

when we had a boom, average real weekly earnings were declining.

Look at the figures another way: Average real median family income decreased in 1991. That is more than a recessionary, short-term situation, because that figure has been virtually unchanged from 1978. For 13 years we have had no growth in median real family income. And that is despite the fact that many families now have more hours of work because they have two earners rather than one.

The other thing I want to mention about this is that there has been growing inequality. I'll cite only one statistic here, the one I find the most compelling and the one that worries me the most: *Eighteen percent of fulltime workers cannot earn enough income to support a family of four above the poverty level.*

Thus, if you look at the trade situation, and you look at our declining standard of living situation, you can see there are some problems we need to address to improve our national competitiveness.

Determinants of Competitiveness

When we worked on competitiveness a decade ago, we tried to think about what determined that national ability: What are the fundamental underlying determinants of national competitiveness? The way to address this question is to think a little bit about how companies compete.

Companies can compete in two major ways. They can compete on price—i.e., by offering products at a relatively low price, compared with other companies—or they can compete on Technology—i.e., by improving the quality of a product or by introducing an entirely new product. Let's look at each of these in turn.

Competing on Price

If you think in terms of a company, there are two fundamental determinants of price—the cost of or the prices that you pay your inputs and their productivity.

How much does it cost you to hire a worker, and how productive is the worker? How much does it cost for you to purchase or lease a piece of equipment, and how productive is the piece of equipment

Let's examine the labor cost issue, because that's where our standard of living is tied in. If you look at our competitive position on the basis of price for wages, you might say we have improved, but we've improved because our wage growth has been so anemic. Our wage growth has been negative, in real terms, for many of our workers.

Although we have become more price competitive because we've had lower wages, that doesn't translate to national competitiveness. If we compete on the basis of lower wages, we're not going to get that other half of the competitiveness equation, the part about rising living standards.

Thus, competing on wages is not an effective national competitiveness strategy. It will work for an individual company, and it can work for a nation in terms of selling more goods and services, but it cannot work for a nation in terms of generating rising living standards for its population.

Business Week last year noted that the U.S. ranked at the bottom of 12 industrial countries in terms of the increase in manufacturing wages that had been realized over the 1980s, and the *Business Week* editorial concluded, "The U.S. is more competitive." I would argue that the U.S. was more price competitive as a result of this, but it wasn't more competitive in terms of being able to generate rising wages for its population.

"Eighteen percent of fulltime U.S. workers cannot earn enough income to support a family of four above the poverty level"

If you don't want to compete on wages, on living standards, and you want to compete on price, then you're going to have to go to the other part of the cost equation, which is productivity, and that's why economists generally agree that the most fundamental determinant of long-run competitiveness is productivity growth.

If you want your competitiveness to grow over time, it depends very much on how fast your productivity grows. There is widespread agreement that, although we're not sure precisely why, the U.S. has had an overall slowdown in productivity growth since the 1970s, and it has had the lowest productivity growth of the G-7 nations for a substantial period of this time. Overall, our productivity growth has been below 1 percent for the last 20 years.

That brings us to the next question. If we could accept the notion that productivity growth is the most important determinant of national competitiveness as I have defined it, and if you look at the evidence that our productivity lead is diminishing because our productivity growth is falling behind that of our competitors, then the policy challenge becomes, What do we do about productivity growth?

This question generates lots of controversy, but one of the things economists agree on is that capital per worker is the most fundamental, easily measured determinant of productivity growth. For example, between 1959 and 1973, capital per worker in American private business increased 2 percent annually, and productivity increased 2.8 percent annually. Between 1974 and 1991, capital per worker only grew at 0.6 percent annually, and productivity grew at slightly less than 1 percent annually.

Right away you can see the correlation. If we don't supply our workers with modern capital and equipment, with

advanced technology, then they will be less productive, and over a long period of time we will not be able to support high growth in real wages.

This of course brings us to the issue of investment, because the way we get capital growing relative to labor, the way we supply our workers with the most modern technology, is to invest in plant and equipment, and that is an area where we have really fallen short for quite a long time.

According to the Private Sector Council on Competitiveness (which was started by John Young as the private sector continuation of his public sector effort in 1982), for more than 20 years the U.S. has been investing a smaller percentage of its gross domestic product in plant and equipment than the average of the other advanced industrial nations: and during the last three years it has invested less than every single one of the other advanced industrial nations; and in 1991, American investment in plant and equipment hit a 14-year low.

In addition, if we examine net national investment—i. e., above and beyond what needs to be invested simply to take account of depreciation—then the percentage of net national investment in GNP in the U.S. was lower in the 1980s than it was in the '70s, and that was lower than it was in the '60s.

As this is a declining trend of net national investment out of GDP, we should not be surprised to find that the growth of net, nonresidential capital stock—i.e., what we really are adding to the productive capacity of the economy—has been slowing down since the mid-'60s.

Let me comment on public investment, because one of the things that will be an important part of the Clinton administration is the importance of public investment as well as private investment.

In real terms, we spend only half now of what we spent on public investment relative to GNP in the 1950s and the '60s. What is invested in infrastructure, in education, in civilian research and development programs, etc., is in real terms a lower percentage of our GNP than was invested decades ago.

Again, international comparisons are important. The level of public investment relative to GNP is one and a half times greater in Germany, and three times greater in Japan, than it is in the United States.

Our commitment of resources to public investment, as a percentage of GNP, has been trending down over time. The rates of Japan, Germany, and some of the other European nations have been trending up.

There is a lot of controversy about the exact number to use to measure the rate of return to public investment. The overall conclusions of several recent studies suggest that public investment can be complementary to private investment, and actually can help realize the returns to private investment, and that public investment has a positive contribution to make to the economy.

In considering competitiveness from the point of view of productivity and investment, and then the role of private and public investment, where do we come out in terms of various policy areas?

The problems I'm talking about—the investment problem, the productivity problem, even the underinvestment in public investment areas—those problems were all identified in the last economic report of the President, which came out in mid-January.

I agree with the points made in that report. The first was that we have to work to improve the incentives for private investment in the U.S. We have unwittingly put into our tax system disin-

centives to invest, and we have to try to take out some of them.

Currently under discussion in the new administration is some form of investment tax credit, as well as some form of targeted capital gains relief to encourage the formation of new entrepreneurial business activities. We have to do something to encourage investment in the private sector.

We also need to change the composition of government spending. President Clinton is very committed to moving public spending to investment programs—to infrastructure programs, to civilian technology programs, to education programs, and to health programs that are so essential to the well-being of our workforce.

Then, finally, we have to tackle deficit reduction. There's a lot of discussion going on about deficit reduction, and I think it's important to emphasize that deficit reduction is not an end in itself, it's a means to an end. The reason we need to reduce the deficit is because the government deficit absorbs resources that could otherwise be used for private investment.

In 1991, for example, the federal deficit exceeded personal savings. We were generating a certain amount of personal savings in the U. S., but the federal deficit was taking more out of the national savings pool than we as individuals were putting in. The government deficit in that year—1991—absorbed about 22 percent of total private savings (i.e., personal and business savings combined).

If we can get the deficit down, we will be able to free up resources for private investors, and that's a very important part of productivity development, and thus national competitiveness development.

“We have unwittingly put into our tax system disincentives to invest, and we have to try to take out some of them”

"The U.S. position in many critical technologies is slipping—in some cases it's been lost altogether—and future trends are not encouraging)

Competing on Technology

If you'll recall, I mentioned above that the two main ways to compete are on price—which is either competing on wages or on productivity—or on technology.

Technology itself, of course, helps you compete on productivity. Capital per worker and productivity are correlated not just because you're giving workers more machinery to work with, but because you're giving them better machinery to work with.

We also can think about technology as having a direct effect on the ability to compete, and here we need to examine how we're doing in terms of supporting the input into technological development and diffusion. The input I discuss here is research and development spending.

As a percentage of GNP, the U.S. invests less in civilian R&D as a percentage of GDP than most of its major competitors. Indeed, we invest only half as much in civilian R&D, compared to GDP, as is the case in Japan and Germany.

Over the past 19 years, again according to the Private Sector Council on Competitiveness, the U.S. has had one of the slowest growths in civilian R&D spending of all of the advanced industrial countries. In the recession years—1990 and 1991—real R&D spending in the U.S. actually decreased.

Thus, we are underinvesting in civilian R&D. That's the first point. The second point, which is also well documented by a number of studies, is that the U.S. seems to lag in the commercialization of technologies.

We have not lost our lead in innovations, although our lead is diminished, but we do not seem to be able to commercialize as well. Firms in the rest of the world seem to do better.

This has led the Council on Competitiveness to a conclusion that was very

important in the formulation of a technology program during the Clinton campaign. The conclusion of the Council on Competitiveness is that the U.S. position in many critical technologies is slipping, in some cases it's been lost altogether, and future trends are not encouraging.

This conclusion was reached about a year ago in a very influential report, and there were a number of suggested public policy proposals made in that report. Many of them are being picked up in a variety of places.

Some of them, for example, have shown up in the Competitiveness Policy Council, a group headed by Fred Bergsten that was established by the 1988 trade bill. It's a bipartisan group with private interest group representatives, and they have laid out a technology strategy. Some of the proposals in the Nunn-Domenici plan for a competitive America are similar to the ones I'm about to suggest, as are some proposals from the Senate Economic Leadership Group and the House Science Committee.

I'm going to mention a few proposals that were outlined in what was for many people the most compelling document of the Clinton campaign: the technology policy document that came out at the end of September.

First of all, we must improve incentives for private investment in research and development. Here the most important issue is the need to make the R&D tax credit permanent.

We have a tax credit, one which has proven to have a beneficial effect on research and development spending by private companies. R&D spending by private companies has been shown to have a positive spillover effect on the nation. But R&D is a long-term activity, and we need a long-term tax credit situation so companies can make R&D decisions appropriately.

The second issue on which there is a great deal of consensus is the need to increase the share of federal R&D funding for civilian technologies. Already we have had some decline in the share of federal R&D spending going to the military, from a peak of about two-thirds down to about 60 percent. But we really have to move more. Of the federal R&D dollars, a larger share should go to civilian programs, a smaller share should go to military programs.

That's not to deny that there have been important benefits from military R&D. If you will look at the history of the computer industry, or the history of the semiconductor industry, or the history of the commercial aircraft industry in the United States, you certainly see that in their infancy, in the days of their development into world leaders, military-funded R&D played a very critical role.

But as Eric Bloch has argued very effectively, the spillover effects of military R&D have become less important, and they are likely to become even less important in the future.

One reason for that is because for a number of technologies, the frontier is in the civilian market. The second reason is that we'd better not rely on military R&D budgets in a world of declining military budgets. And the third reason is the nature of the competition. It was okay for us to rely on military programs when we didn't have very serious competition. But if we rely on military R&D programs and our competitors rely on civilian R&D programs, we may find ourselves getting to the market a little more slowly than they.

We must figure out ways to increase the share of federal R&D funding that goes to civilian purposes. We need more federal R&D money for precompetitive research and development, stages where the gains are hard to capture by individ-

ual firms and where private R&D is likely to be inadequate. A recent report by the National Academy of Sciences drew a similar conclusion, noting that existing programs for channeling federal monies to generic, nonmilitary technologies are underfunded and uncoordinated. NAS added that the programs need to be insulated more from political influence.

Thus, we need a new approach, one with more coordination, more funding, and a better delivery mechanism. I assume I will be working on this quite actively in the administration with my counterparts in Commerce, in the Office of Science and Technology, and with members of Congress. I assume we'll also be trying to build on some of our successful programs.

We have had some success with the advanced technology program at NIST (National Institute for Standards & Technology). It's a small program, but it's widely viewed to be a fairly successful program. We've obviously had some successes with dual-use technology programs in DARPA (Defense Advanced Research Projects Agency). We've had some successes, although there is more controversy about this, with some of the CRADA (Cooperative Research and Development Agreement) programs at the national labs. And some of the FCCST (Federal Coordinating Council for Science and Technology) initiatives have been viewed to be quite successful.

Finally, let me comment on diffusion, because you can talk about our problem as one of not investing enough in civilian technology, and you can also talk about our problem as one of diffusion.

The Clinton administration has emphasized this point a lot, in the context of trying to work on expanding a national manufacturing extension service—building on the federal and state programs that are in place. Reviews of these programs conclude they have been relatively suc-

"The spillover effects of military R&D have become less important, and they are likely to become even less important in the future"

“Some of the policies and institutions that served us well in the old world need to be looked at again”

successful in diffusing technologies, in diffusing quality management practices, and in providing small firms with access to sophisticated testing facilities and training programs.

We also encourage diffusion by encouraging investment in general, because diffusion occurs when firms increase their rates of investment. When companies buy new technology, it gets diffused quickly.

The new administration is committed to complementing the civilian technology program with a very active training and education program. After all, we want to make our workers more productive by giving them modern equipment, but we also have to worry about the skills of our workforce. And we have to do something about the fact that we spend only 20 percent as much as other advanced industrial countries in training our workers.

Conclusion

Let me end with a couple of observations from my recent book about trade policy in high-technology industries. What I concluded was, although the trade problems are very thorny, the fate of our high-technology industrial base depends much less on the trade battles that we fight abroad than on the choices we make at home. We need to fight our trade battles in a serious and informed way, but we cannot hoodwink ourselves into believing that if we have a problem it's because of an unfair trading practice. If we have a problem we must first look to the home-grown causes of that problem.

The second general observation I made in this book is that in this tripolar competitive world in which we are no longer the economic superpower, and we are the only military superpower, some of the policies and institutions that served us well in the old world need to be looked at again. We need to change our own policies and change our own institutions because the nature of the challenges we face is different.

I conclude that book with the observation that it's fortunate for us, that the collapse of the Soviet Union provides an opportunity for us to reconsider our priorities, and to shift our resources from the military challenges of the past, which we ably met, to the economic challenges of the future, which I hope this new administration will help us meet.