

**THE FUTURE OF U.S.
MANUFACTURING: AUTO
ASSEMBLERS AND SUPPLIERS**

HEARING

BEFORE THE

**JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES**

ONE HUNDRED SECOND CONGRESS

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THE FUTURE OF U.S. MANUFACTURING: AUTO ASSEMBLERS AND SUPPLIERS

TUESDAY, DECEMBER 10, 1991

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, DC.

The Committee met, pursuant to notice, at 2 p.m., in room SD-628, Dirksen Senate Office Building, Honorable Jeff Bingaman (member of the Committee) presiding.

Present: Senator Bingaman.

Also present: Dorothy Robyn.

OPENING STATEMENT OF JEFF BINGAMAN, MEMBER

SENATOR BINGAMAN. The hearing will come to order.

The purpose of the hearing is to examine the economic prospects of the American automobile industry. This is the first of a series of hearings that the Joint Economic Committee is planning to hold in the coming months on competitive problems facing key manufacturing industries, including aerospace, software, computers and telecommunications, in addition to the automobile industry.

It is appropriate that we begin with automobiles, for the auto industry has a particular place in our history. There's a recent history of the industry entitled "Changing Alliances" from the Harvard Business School Press, wherein they make the statement about the auto industry.

It is an American original, an enterprise of enormous power and scale, where the issues of economy and politics are cast on a giant screen. The names of American heroes are deeply entwined with the history of this industry: Henry Ford, Alfred Sloan, Walter Chrysler, Walter Ruther, names we take for granted today as products: Chevrolet, Olds, Buick, Champion, Firestone, and more, bear testimony to the genius of the entrepreneurs who invented this industry.

The auto industry continues to cast a very large shadow in this country. It is still our largest manufacturing sector, employing roughly a million Americans. Autos are a major end user for other products, accounting for 40 percent of U.S. consumption of machine tools, nearly 20 percent of semiconductors and aluminum and almost one tenth of all consumer spending goes for automobiles.

Enormous problems of the industry are captured by some other statistics. I'll cite just three of those. One is that U.S. parts suppliers go bankrupt every 16 hours. A second statistic is that pre-tax losses for the North American operations of Ford and GM and Chrysler total \$12 billion for the first three quarters of 1991. General Motors alone is estimated to lose about \$7 billion this year in North America.

And finally, the auto industry accounted for fully half of our \$100 billion merchandise trade deficit in 1990. A recent *Washington Post* editorial entitled "Meltdown in Motor City" said it well: "This Time, America's Big Three Automakers may be Headed for the Scrap Heap."

In my view, the Federal Government should not be a mere innocent bystander to this on-going crisis. As the auto industry continues to reel from the one-two punch of foreign competition and prolonged recession, one cannot help but wonder whether anyone in Washington is paying attention. As U.S. automakers struggle to adopt new approaches to management and organization, recognizing that the traditional ones no longer work, one wonders whether anyone in Washington has recognized that our traditional approach to economic and industry policy has failed just as badly.

We're fortunate today to have four experts on the auto industry to help us examine both the problems in the industry and the Federal Government's policies affecting the industry. I'll start on the left and go across here, indicating who we have at the witness table.

James Womack is the Principal Research Scientist at MIT's Japan Program, and lead author of *The Machine that Changed the World*, which is based on MIT's five-year study of the international automobile industry. The book has sold about 70,000 copies, many of them in Detroit, and it's been favorably reviewed by many here in Washington as well.

Candace Howes is an Assistant Professor of Economics at Notre Dame University, conducts research focused on foreign investment in the auto industry. Professor Howes was formerly the auto industry analyst with United Autoworkers.

Ronald Boltz is with the Chrysler Corporation, where he's Vice President of Product Strategy and Regulatory Affairs. He also leads the team responsible for the development of Chrysler's small cars.

William Raftery is the head of Raftery Consulting in Englewood Cliffs, New Jersey. He was the former President of the Motor and Equipment Manufacturers Association, which is a position that he held for 30 years.

Thank you all very much for being here. I have had a chance to briefly look over your testimony, but I hope you will take a little while to go through your comments. After all of you have completed your statements, we'll have a few questions.

Why don't we start with Mr. Womack? Thank you, please proceed.

**STATEMENT OF JAMES P. WOMACK, AUTHOR,
THE MACHINE THAT CHANGED THE WORLD**

MR. WOMACK. Thank you. I have a statement for the record.

What I will do is give some thoughts. For those trying to follow along, they are not necessarily in the order of the statement, .

As you mentioned, we have been thinking about the car industry at MIT for a very long time. Indeed, Alfred Sloan, was our great gift to Detroit. For a long time, MIT thought we had done enough: We gave you Sloan, what more do you need?

At the end of the 1970s, a number of us at MIT realized that something strange was happening to our largest manufacturing industry. We thought it was not just a strong dollar; we thought it was not just the wrong mix of products; we thought it was not just the recession of 1980-81. We thought something fundamental had happened.

We have spent the last 12 years looking at that on a global basis, and our conclusion is that indeed something has happened.

There has been a historic transformation in manufacturing, a shift from one way of doing things, known to the world as mass production, invented in this country, and, I believe, the secret of our economic success for a long time.

We believe that has been replaced by a very different system. We called it lean production; others have other names. You might think of it as the best—and I emphasize that term—the best of the Japanese practices, because there are some that do not add value and we don't have any interest in copying.

This new system really has three differences—easy to see—with the old system of mass production. It has a different philosophy; it has a different method of organization, and it uses different specific techniques. I've written a 350 page book that tries to explain all that. We can't really do that here.

Let me just say that the differences are quite profound, and I invite those who have not had an opportunity to look at the record and evidence that we put forth to make appropriate judgments.

Today, you've asked to get some sense of where the American car industry stands now. I, of course, want to frame that in terms of where this industry stands on the path from mass production where it was born, to lean production, where I believe it must wind up if it's going to survive.

So, let me do that by looking at five key functions, five key things that a car company has to do, and just tell you how we're doing in those things.

The first is run factories. This is the focus of the media. If you went inside the average American's head, looking for the predominant image of Detroit, it's probably a final assembly plant where people are

working along a production line. And the predominant view in the country is that we're pretty lousy at that.

The truth is that we have made remarkable progress in the 1980s, that the best American operations are now better than Japanese's average practice. Worst operations are still not competitive, but the tendency is clearly toward converging with Japanese practice.

We're helped along by the fact that the transplant Japanese facilities in the States duplicate Japanese practice in Japan. That is an example that one cannot ignore; it's there every day. You can't forget about it; it keeps your mind focused.

We've done very, very well in fixing up our production systems at the factory level. Where we have not done well at all is in the other elements of the system, and without success in these other elements, a good factory, if not literally worthless, at least is not viable; it cannot survive on its own.

Our worst problem is product development. We have proved to be terrible at managing professionals. This is not the common view of what's wrong with American industry. In our project, we looked very carefully at the process of product development; how we need to switch from functional sclerosis, where everyone's career and mindset is up a functional "chimney", to horizontal group work. It's very difficult for us to do. After all, what is the metric to judge each individual's accomplishment? We need that; it's very hard to do in a true group setting.

Let me say, though, in the last two years, the American companies have taken a new go at it. Chrysler, and we have the evidence right here with us, has fundamentally redone its product development process. Eighteen months ago, Ford switched over to a team system. GM has made a modest reorganization of its Chevy/Pontiac/Canada Division to get onto a platform basis the way the BOC division was reorganized some years ago.

So, we wait. We wait, holding our breath, because the evidence that our product development system is not working is out in the marketplace where the American companies simply can't get Americans to open their wallets and pay good money for a car.

Now, you try to explain this to the media—I get a lot of calls—and I notice that the keyboard goes silent when I try to explain that part of the American industry's problem is that Americans don't think it's worth paying good money for American products. Sounds like a conspiracy against the consumer, but the reality of succeeding in business is that you need both low production cost and high selling prices.

We have been pushing steadily on production cost; we haven't gotten very far in terms of reclaiming the top of each market segment. You need to do that in order to survive.

We now will wait. The Chrysler LH, to me, is the real test of whether this country can do first-class product development. We're a

year and a bit more away. I'll have a little more to say about Chrysler at the end.

A third key activity after the production system and product development: How do you organize your supply chain? An incredibly boring sounding topic, which not one American in a thousand has thought about—but an absolute key to world-class manufacturing—if you can't organize your supply chain; no matter how good you are at the top of the pyramid, you're not going to be very good as a whole.

We've been terrible. Indeed, what happened in the 1980s is an attempt to push the logic of the mass production supply chain to its ultimate extreme: Squeeze down the suppliers, transfer your cost from you to them; become more demanding, but without any help, just saying, "You're doing it wrong," without being able to say why.

So, we've had a very difficult problem there. Recently, this whole country has become aware, in a negative way, I fear, of these so-called keiretsu—the Japanese supply chains. They've landed on the ground out in the Midwest—an enormous shock to Americans used to a very different system.

My argument would be that the fact is that the problem is how poorly we run our supply chains rather than how well they run theirs, and most of the attempts to degrade theirs are not going to do anything to improve ours. So, it's a fundamental problem; we're still looking for an answer.

In terms of customer relations, the fourth element of what a company must do to succeed. The American selling system, I think, is a catastrophe. It is mass production thinking at its extreme—when you get to \$49.00 overselling, where you go in to buy the car, and they can't remember who you are after the ink dries on the check.

We've all had that experience. It is simply a given now in manufacturing that consumer loyalty on the American side is a thing of the past—maximize your short-term gain and get on with it.

I'm hoping we're going to see some experimentation now. I've just been visiting Saturn, looking at their distribution efforts—very interesting efforts to fundamentally innovate and rethink the distribution chain. We're not far enough along to know, but that kind of innovation we need across the board.

Finally, the global strategy question. This, again, is one that seems to be of almost no interest to those who talk to the newspapers about what's wrong with the industry. I've been trying to explain for many years that if the American companies do not have a credible, on-the-ground deterrent inside Japan, they are not going to have a long-term future.

This does not involve selling a few novelty items from the U.S. into Japan, but, rather, actually owning part of the system. I don't know just why—I can think of many reasons, at least hypothetically—but there has been a real reluctance to tackle the heart of the problem. Why

doesn't, for example, GM just buy Isuzu and demand to be admitted to the Daichi-Kangyo group, or Ford take position in the Sumitomo group by buying Mazda.

That is a truly aggressive action, of course. There could be an earthquake on the Japanese side. What's happening right now, though, is that the strong Japanese companies are making staggering profits in Japan, and that money reappears to hurt our team all over the earth, in every country. You're not going to file a dumping suit against a subsidized factory.

So, therefore, it's a fundamental issue. We don't have a global strategy. Very hard to explain, I think, in this town, where the entire focus is on what are you doing to make jobs right here. To do that, you have to do some things around the world. We're not doing it.

The bottom line. Let me say that when we finished our book, which was in the spring of 1990—there's a paragraph on page 253, in fact, let me just quote:

We believe that the period through 1992 will prove the most tense. If GM and Chrysler fail to go through a creative crisis, one that breaks the logjam of old ideas and narrow interest and opens the path to lean production, and if the economy slumps badly during this period, we have great concerns about the outcome.

I'm here today because things aren't working out. My own assessment is simply this: The combination of this very, very long, deep slump in demand, the green pressures—which are building up, and which directly impact the fortunes of the American companies—and the persistent, dogged, keep-on-keeping-on-ness of the Japanese, mean that when you put all that together that the home team is not going to make it without some help from somewhere. I say that very reluctantly. I had hoped it wouldn't worked out this way.

Two years ago, I was more hopeful about the pace of improvement on the home team. For a while, I had high hopes for Ford until I discovered that they really were not very good at product development, or supply chain management or global strategy. They've done okay in the factory, but that's not enough.

So, therefore, I think we have a very deep, serious problem here, which gets me to my final point, the inevitable what-is-to-be-done problem. Let me just give a five-point agenda that is really very simple; something, I'm sure, can be knocked off early in the next term. I'm warning you, this is actually going to be pretty tough.

Point number one. I think that what we have to do is to basically grasp the nettle on the trade deficit issue. It's not going to go away. I had hoped it would because I thought the home team would play a better game.

I think most people here don't understand that the inherent nature of lean production is that it is extremely loyal to its employees and to its supply chain, and it simply does not migrate or relocate easily in

response to factor cost changes. You can do what you will with the yen; we're seeing a 30 billion dollar across-the-Pacific trade surplus, Japan to the United States, that I now think will continue indefinitely.

Macroeconomically, it's supportable; it's being financed—don't know just how, but it is. The real problem is a political one. As the home team gets in deeper and deeper trouble, this enormous imbalance becomes less and less tolerable.

What is happening up the street is that a patchwork campaign is being concocted about how to deal with this, which I think just doesn't deal with the real issue. What I think we will see is a dumping suit here and a dumping suit there, an IRS tax investigation of transfer pricing; a redefinition of trucks to put more and more things under the chicken war category, and so on. But it doesn't really deal with the real issue, which is that we have a long-term persistent imbalance that factor costs alone will not fix.

I would suggest that some sort of a trade balancing requirement is probably what we're going to end up with in the long term. It might be better just to figure it out and get it out of the way.

Let me say that the transition period has to be a very long one, that if you were to say to those on the Japanese side, "you really have to get this deficit down to a very small level—we're talking about a 15, 20-year process—but you need to start right away, because the home team is going to have to have some sort of cushion," or we're going to have some very deep trouble very shortly here.

My second point is that it's absolutely essential that the home team be given the opportunity to fail, but fail slowly. The nature of politics is that they can't fail quickly, but the nature of a high standard of living for this country is that those who do not perform in the long run must be given the opportunity to exit.

That means we have to maintain open investment for the Japanese. It means something else though, and this is much harder for Americans, I think, to understand. The Japanese have to have the freedom to come here and behave like Japanese rather than like us. We basically have failed in manufacturing, and they have won because they fundamentally have reorganized their system.

For example, the keiretsu supply chain is now being portrayed as a deep evil. It may simply be an organizational necessity. It would not be right or fair to say to the Japanese, "You must come here and invest, but you must do product development the way we do it; you must organize your supply chain the way we do it; you must run your distribution system the way we do it." They might as well stay home. If they come and act like us, then you just get excess capacity in the worst sense.

Third point: We are now confronting the green issue. I have followed the CAFE debate with some interest and marveled at the simple unwillingness to acknowledge that if we must do something about

greenness—for example, carbon dioxide—and I believe we must—we have to find some way to pay for it, because there is a perfect correlation between the profitability of the product in Detroit and its size.

Big products make money; little products lose money. Any effort to amend CAFE in a way that reduces the ability to sell big products is the death knell of the home team, and that's just simple financial reality.

Now, that doesn't mean to do nothing. I myself am an eco-alarmist—I think we need to do a lot in a hurry. But somebody has to pay for it, and you have to place that right up front. Otherwise, it's all a charade.

Fourth point—getting to the end here and this will sound truly impossible, but at least we should think about it—the notion of lean production and the notion of a deep business cycle are totally incompatible. The lean system can vary its mix very rapidly and effectively to adjust to different types of demands.

What it cannot do is deal with a two-to-one peak-to-base demand ratio, which we've had in this country historically. You cannot, in down time, simply tell your highly-skilled people and your highly-skilled suppliers, "go away and come back when we need you." That destroys the social basis of the system.

So, therefore, we've not done enough thinking about how to damp the cycle. It is interesting that in Japan—the country that has the most fully elaborated lean system—there is effectively no business cycle in manufacturing. I think that's not an accident; I think that's a conscious decision.

And then finally—this last point at the end—let me just contrast two companies. One is Chrysler and the other is Subaru. Most Americans don't realize that Subaru has been bankrupt. They failed miserably with their product strategy. According to our audits, their production system was not good in Japanese terms. It was better than American average, but very poor in relation to Toyota.

That company is now being revitalized with a new management team sent in from Nissan Diesel, with tons of money sent over from the Industrial Bank of Japan, and with lots of guidance and contracts to do contract assembly from Nissan. Subaru, I guarantee, will be stronger two years from now than it has ever been.

Chrysler—the home team. Chrysler, in the last two years, against all my expectations, has become a remarkably competent company. Their problem is that they, right now, have zero altitude and zero air speed. We have a very competent airplane that doesn't have any energy.

And it doesn't have any energy because it doesn't have any friends. The reaction of the banking system is, "How do we get away from this thing?" What you learn in American banking, I think, is how to find the exit at the right time. It is inconceivable that a competent company in Japan would simply be allowed to sink or swim.

We do that all the time. You held a hearing in the last week or two on the Douglas Aircraft situation—a similar type of activity. It's unthinkable in Japan that something of that nature would be allowed simply to disappear, drift offshore.

So, we need some alliances in a new way to rethink our industrial finance system. As we all know, the banking reform debate this year was a sad commentary on our ability to think about our financial system. I would predict that in the very near future, we're going to have to think some very fundamental thoughts about that. Those thoughts are vital to the long-term success of American companies.

I will stop there and will be happy to take questions later.

[The prepared statement of Mr. Womack, together with an attachment, follows:]

PREPARED STATEMENT OF JAMES P. WOMACK

I am James P. Womack, Principal Research Scientist, Japan Program, Massachusetts Institute of Technology. I was formerly research director of MIT's International Motor Vehicle Program and co-author of the book summarizing the Program's findings, *The Machine That Changed The World* (New York: Rawson/Macmillan, 1990 (hardcover) and New York: Harper-Collins, 1991 (paperback).)

The plot line of *The Machine That Changed The World* is very simple: The leading Japanese companies have perfected a new method of manufacture. We call it lean production. The American companies pursuing mass production strategies are not competitive. The great challenge for the 1990s is to "get lean". The alternatives are either elimination from the industry or a bleak future as "lame duck" wards of the government through various forms of market and investment protection.

We reported that by the mid-1980s the leading Japanese firms had a competitive advantage, compared with average American practice, of the following dimensions (to produce a car of given specification using comparable production technology):

- * Half the hours of engineering to develop the product
- * Two thirds to half the product development time
- * Half the delivered defects as noted by customers
- * Half the factory space
- * A tenth or less of the in-process inventories
- * A quarter of the finished unit inventory (Japan only)
- * One quarter the life-of-the-product production volume
- * Four year versus ten year product production life
- * More rapid introduction of incremental technologies in the product
- * Half the hours of human effort in the factory

Note that this represents a substantial advantage on every competitive dimension. This is the mark of a revolution in manufacture which we argue is as significant as the previous jump from craft to mass production that was the great American contribution to world economic development in the early part of this century.

We trace the advantage of lean production to:

- (1) A new philosophy of manufacture:
 - The product is the heart of the enterprise
 - A perfect product is possible
 - Customers can have exactly what they want, without a large cost penalty
 - All buffers are waste and to be eliminated
 - Improvement is both possible and necessary through an incremental approach
 - Human resources are the most important asset of the lean enterprise, which has no unskilled workers
 - A career in a lean enterprise consists of solving more and more difficult problems in a multi-skilled group, not in proceeding up a functional "chimney".

—All relationships in manufacture are long term aiming toward "zero defections" -- employee/employer; assembler/supplier; assembler/distributor; producer/customer; producer/financier.

(2) New organizational techniques to manage five key activities:

- Product development
- Supply chain coordination
- Customer relations
- Production operations
- Coordination of the total lean enterprise

(3) Specific techniques:

- Just-in-time quality/inventory systems
- Simultaneous engineering
- Sophisticated supplier audits
- etc., etc. etc.

Finally, we argue that there is nothing inherent in lean production that prevents its adoption—indeed its improvement—in North America. The experience of the Japanese transplants in the 1980s and substantial success with this system in American-owned companies remove any questions that a transformation in manufacture on this continent is possible.

However, our optimism was guarded as we completed our work in the spring of 1990:

"We believe that the period through 1992 will prove the most tense. If GM and Chrysler fail to go through a creative crisis, one that breaks the logjam of old ideas and narrow interests and opens the path to lean production, and if the economy slumps badly during this period, we have great concerns about the outcome."

(The Machine That Changed the World, p.253)

That I am here today indicates that our concerns were not misplaced. GM and Chrysler have continued to struggle, Ford has had great difficulty proceeding along the path to leanness beyond its initial advances in factory operations, and the economy has indeed "slumped badly". What is to be done?

Let me begin by reviewing the problems in more detail. As I noted earlier, lean production requires a new approach to five key functions. I would like to assess the problems confronting the American automotive industry along each of these dimensions:

Product Development: Lean product development calls for breaking down the "functional sclerosis" of the mass production firm to create multi-skilled development teams able to keep the product foremost in mind in the development process. When this is done, but not before, a number of techniques such as simultaneous engineering provide big savings in time and effort.

All of the American firms have had great difficulty with this task and their failure is reflected most clearly in their selling prices for products within a given market segment. The Japanese usually get top dollar while the Americans often sell at the bottom of the

segment. For example, it has been estimated that Ford loses \$500 on each Escort it sells while Toyota and Honda make \$1000 on each Corolla and Civic produced in their North American transplants. Yet the production costs of these products are very nearly identical. The difference is a selling price \$1500 per car higher for the Toyota and the Honda. This in turn is based on consumer perceptions of the product—a direct output of the development process.

Recently Chrysler, Ford, and GM have reorganized their development systems and we await the new products (e. g., LH from Chrysler and the next Mustang from Ford) with the hope that the American firms have finally found the path to lean product development.

Supply Chain Coordination: A motor vehicle contains 10,000 or more discrete parts. Someone must make all of these parts. The American approach has been either to do it in-house (the GM approach) or to buy a large fraction of parts in the marketplace (the Chrysler approach). Neither approach seems to work as well as the group system of Japanese competitors like Toyota.

In the 1980s the American firms experimented with many variants on their traditional approaches but they mostly pushed further down the path of mass production. This has greatly angered their traditional suppliers, created an army of "homeless" suppliers pushed out of the Big Three, and often failed to provide any real benefit. Instead, costs have been shifted from higher to lower levels of the production system.

Customer Relations: Despite abundant evidence that the American approach to auto selling is both costly and ineffective, it has been very difficult to rethink the system. Unfortunately, the Japanese selling operations in the U.S., prior to their new luxury channels, were no better than previous American efforts so there has been no experimentation or example of a successful distribution system to copy. Only the Saturn experiment at GM breaks new ground in sales of volume cars, and it is too early to know if this is a winning formula.

Production Operations: The factory, which most of the public still blames for the problems of Detroit, is in fact the one success story of the 1980s. Both productivity and quality have improved sharply and continue to improve. Indeed, American auto factories now have a remarkable productivity and quality advantage compared with average European practice and the best American plants are better than the average plant in Japan.

However, there has been a price. The steady loss of market share by the Big Three and the recent collapse of the market in North America has created both an army of unemployed and serious over staffing still to be dealt with. What's more, the need to reduce headcounts still further in the Big Three and their suppliers, even if their market share can be stabilized and the market returns to its 1989 level, works against the need to build confidence that new, lean production methods can turn the tide.

The Total Lean Enterprise: The nature of the auto industry today is that production chains must be coordinated vertically and across the world. In addition, the leading lean enterprises (all Japanese) have a series of horizontal alliances with other sectors and the Japanese financial system which give them an enormous advantage in global competition.

The performance of American firms in terms of global strategy and forging alliances with other American firms has been dismaying. For example, no one in Detroit, New York, or Washington seems to grasp that American firms must devise a credible threat to Toyota, Nissan, Mitsubishi, and Honda in the Japanese market. This can be done only by establishing production systems in Japan or elsewhere in East Asia along with a high quality sales channel in Japan. Failing this step, the American firms can expect that the leading Japanese firms will continue to harvest enormous profits in Japan and redeploy these funds in direct investments across the world.

While the public debate is over the "openness" of the Japanese market to imported American cars, the real question is the openness of the Japanese industrial system to American ownership of Japanese firms. For example, GM is now offering assistance to Isuzu—which might charitably be called a trailing Japanese firm—but apparently has no intention to buy it and to demand membership in the Daichi Kangyo Bank group, a step which would seem obvious to any Japanese business executive. Similarly, Ford continues to pursue the difficult task of formation flying with its Japanese affiliate, Mazda, when a more logical approach would be to buy it, create an entity called "Ford of Asia" to balance Ford of Europe and Ford North America, and gain access to the vast riches of the Sumitomo Group.

Perhaps these steps have not been taken because they would be very difficult in the absence of financial allies in the U.S. The American auto firms and their major suppliers are classic cases of stand alone enterprise: Widely held shares (with the exception of Ford) and no traditional relations with the banking sector or other major industrial firms.

The consequence of this system is nicely illustrated in the current cases of Chrysler and Subaru. Against my expectations at the time the MIT book was finished, Chrysler has become a remarkably competent company in the past two years. Indeed, it now shows signs of understanding lean production better than GM and Ford and has some very exciting new products in development. The problem is that Chrysler has no friends in the American industrial world and no money. It stands completely alone. Its survival depends on how long the recession lasts and how successful its new LH model is.

Subaru, by contrast, is another "trailing firm" on the Japanese team. When it ran aground a year ago, however, there was absolutely no question that it would be allowed to fail. The Industrial Bank of Japan and Nissan, the two key members of its "industrial alliance", sent in new management (from Nissan Diesel) and large amounts of money. The company is now being thoroughly reorganized and its product line totally revamped. It is almost certain to come back stronger than it was before.

If large American firms fall into a lower orbit each time they make a major error while erring Japanese firms are boosted back into their original or even a higher orbit by their allies, it is not hard to predict that over a period of decades there will be more and more large Japanese firms and fewer and fewer large American firms.

This has been a long list of problems. Indeed, given the slump in the economy, the slow pace of getting lean, and the emerging "green" problems facing the industry, I think it is very likely that the Big Three and their leading suppliers—the home team—won't survive if the outcome is solely in the hands of the marketplace.

I also think it is impossible that the home team will be allowed to fail in a rapid, dramatic fashion. The nature of politics and society is such that no country allows its largest institutions to collapse over night. Therefore, something will be done to preserve the American-owned auto industry, but I fear it will be the wrong thing.

Let me conclude by suggesting how to "do the right thing" for the auto sector:

1. Deal directly with the trade deficit. One of the most important features of lean production—one not understood by many trade economists—is that production, once set up in one place, has no tendency to migrate. The strong commitments to the work force and suppliers make lean producers keep production systems in place, even as factor costs shift dramatically. What's more they are able to do this successfully for long periods of time by continuously improving productivity (to reduce costs) along with improvements to product quality, refinement, and variety (to raise selling prices.)

The \$30 billion trade deficit between the U.S. and Japan in motor vehicles and parts is unlikely to decline very much for a very long time because of the weak shoving of the American firms on the one hand and the strong commitments Japanese firms have to their work force and suppliers in Japan on the other. The debate in the United States has been over the North American content of transplant vehicles—which will rise steadily no matter what policies government pursues (in accord with the fundamental logic of lean production which calls for producing as much of a product as possible in geographic proximity). The real issue is what to do about the \$30 billion which will keep flowing across the Pacific in the form of finished units, even as transplant vehicles reach very high levels of North American content.

The best approach is to negotiate some sort of trade balancing requirement, which gives credit to Japanese firms for exports from North America while steadily reducing their imports. A twenty year time frame but with an immediate and significant start would seem to be appropriate. An immediate drop in imports will give the Big Three the breathing space they may need to avoid collapse, but the remainder of the adjustment should be very gradual. Lean production systems cannot be built overnight, by either the Americans or the Japanese.

2. Maintain a policy of completely open investment. We have all watched in the past as Detroit was given import relief, with inadequate results in the way of improved performance. The only way to insure that Detroit really does "get lean" is to guarantee that they will gradually fail if they don't. Unrestricted Japanese investment is the only means to this end. It is the key element in walking the fine line between a "hands off" policy which allows the American-owned industry to collapse and a "lame duck" policy, as now advocated by some members of the Congress, which preserves the American market for American-owned firms.

In walking this fine line, one of the key Administration policies on Japanese investment—a restriction on the number of Japanese expatriate managers allowed to work in the U.S.—should be dropped all together. We need all the help we can get in getting on with lean production.

Similarly, efforts to restrict Japanese keiretsu organization of their supply chains in the United States should be abandoned. The problem of supply chain organization is how poorly we organize ours, not how well they organize theirs.

3. Couple product regulation with industrial realities. The current debate over CAFE illustrates the limits to our historic American desire to regulate without regard to industrial consequences. The simple fact is that fuel economy measures which significantly restrict the ability of the Big Three to sell their largest products will lead to the collapse of these companies.

I do not advocate doing nothing. Indeed, I am an alarmist on the greenhouse issue. I believe we need to do a lot in a hurry. However, we must acknowledge the conflict between "greenness" and home team survival at the outset and rationally explore the options.

4. Create American structures for industrial alliances. The 1991 debate on banking reform was remarkable in that every issue was discussed except the effects of the current American system of "stand alone" industrial finance on the long-term survival of American industrial firms. No observer of the Japanese and German systems of industrial finance can doubt that with our present system, the role of American firms in the world economy will steadily shrink.

The only reforms advanced to date seem to involve some only type of collusion by the home team—"let all of our firms in a sector work together to compete against Japan, Inc." These proposals run in exactly the wrong direction. The strength of Japanese industry in world competition involves the combination of extremely intense competition between firms in the same sector coupled with long-term shared destiny with financial organizations and firms in other sectors. The Congress will need to tackle this issue soon. Why not in 1992 while there is still time to find solutions suited to American conditions?

Radical techniques pioneered by Japan pose a challenge to the mass production of western manufacturers, says Kevin Done

A 'lean' revolution in car making

The disparities in the performance of the world's leading car makers are enormous, and they carry deeply disturbing implications for the future control and ownership of what is still the world's largest manufacturing activity.

No matter what the yardstick - efficiency and productivity in design, development, manufacturing and distribution, or the quality and reliability of the finished product - the gap between the best and worst performers is both noticeable and growing.

The Europeans take more than twice as many hours as the Japanese to assemble a car. It takes the Europeans and the Americans almost double the engineering effort to develop a new car compared with the Japanese, and the Japanese will be finished in two-thirds of the time.

A provocative study to be published this autumn after five years of research led by the Massachusetts Institute of Technology suggests that the differences stem from a revolution in manufacturing as sweeping as the triumph of mass production over craft production earlier this century.

The \$5m, 14-country study undertaken by the International Motor Vehicle Programme at MIT - to be published as a book entitled *The Machine That Changed The World* - maintains that a new way of making things, for which the authors have coined the phrase "lean production", is making mass production obsolete. The study claims that the implications of the manufacturing revolution under way in the vehicle industry can be applied to other industrial sectors.

Twice in this century the auto industry "has changed our most fundamental ideas of how we make things. And how we make things dictates not only how we work, but what we buy, how we think and how we live", claim the directors of the study, Daniel Roos, James Womack and Daniel Jones.

The world has become used to seeking explanations for the disparities between the leading car makers in

cultural differences, in forms of social organisation, or in wage levels, the cost of money, or unfair exchange rate advantages. Explanations are also sought in the form of miracle cures from what is perceived as the Japanese way of developing and producing cars. The advantage lies in quality circles, team-working, continuous improvement or just-in-time supply systems. New Japanese buzz words, from *kanban* to *kaizen*, have entered western vocabularies.

As car makers in North America and in Europe retrench in front of the apparently relentless advance of the Japanese automotive industry, solutions are sought in protectionism, import quotas and local content rules.

Lean production may have arisen first in Japan - the concepts were pioneered after the Second World War by Mr Eiji Toyoda and Mr Taiichi Ohno at the car maker Toyota - but other Japanese and western groups are successfully implementing elements of lean production, most notably in North America.

The study suggests that the recovery of European car companies will depend on how fast they can come to grips with and change over to lean production. "The companies that first mastered this system were all headquartered in one country - Japan. As lean production has spread under their aegis, trade wars and growing resistance to foreign investment have followed."

The MIT team takes issue with claims that the world auto industry faces a massive over-capacity crisis, estimated - by Ford among others - at more than 8m units in excess of current world sales of about 50m units. "This is a misnomer. The world has an acute shortage of competitive lean production capacity and a vast glut of uncompetitive mass production capacity. The crisis is formed by the former threatening the latter."

While many western companies may now understand lean production and at least one, Ford, is well along the path to introducing it, the MIT study says gloomily that in the absence of a crisis threatening the

very survival of a company, only limited progress in changing from mass production to lean production is possible.

It says that General Motors of the US, the world's biggest car maker, best exemplifies the problem. "In the age of lean production, it finds itself with too many managers, too many workers and too many plants." GM has not yet faced a life-or-death crisis, however, as Ford did in the early 1980s, and as a result has been unable to change.

How does lean production differ so essentially from mass production?

According to Roos, Womack and Jones, the mass producer uses narrowly skilled professionals to design products made by unskilled or semi-skilled workers tending expensive single-purpose machines. These churn out standardised products in very high volume.

Because the machinery costs so much and is so intolerant of disruption, the mass producer adds many buffers in the shape of extra supplies, extra workers and extra space in order to ensure smooth production. Because changing over to a new product costs even more, the mass producer keeps standard designs in production for as long as possible.

The lean producer, by contrast, uses teams of multi-skilled workers at all levels of the organisation, employs highly flexible, increasingly automated machines to produce low volumes of products in great variety.

The MIT study uses the term "lean production, because the system uses less of everything: half the human effort in the factory, half the manufacturing space, half the investment in tools, half the engineering hours to develop a new product in half the time."

The beginnings of lean production techniques can be traced back to early days of Toyota when the company was beset by strikes. In 13 years Toyota had by 1950 produced 2.5 cars compared with the 7,000 (cars and kits) a day that were pouring out of Ford's vertically-integrated complex at Rouge close to Detroit. Ford

Toyota is the world's third-largest car maker and is close to capturing 10 per cent of the world car market.

Mr Ohno began by re-thinking processes in the metal-stamping shop and the final assembly area, but eventually the principles of lean manufacturing have been applied throughout the manufacturing chain from assessing the wishes of customers, to design, development, engineering, manufacturing, the components supplier network, final assembly and distribution.

In the MIT analysis, Mr Ohno's thinking of rework was inspired. He reasoned that the mass production practice of passing on errors to keep the line running, caused errors to multiply endlessly. He placed a cord above every work station and instructed workers to stop the whole assembly line immediately if a problem emerged that they could not fix. Then the whole team would come over to work on the problem.

The Toyota Production System and from it lean production has taken a couple of decades to develop, but the results have been impressive. "Today, Toyota assembly plants have practically no rework areas and perform almost no rework. By contrast, a number of mass-production plants devote 20 per cent of their plant area and 25 per cent of their total hours of effort to fixing mistakes."

The testimony to this achievement comes from American buyers' reports on the quality of rival products. Toyota's vehicles, says the MIT study, have among the lowest number of defects of any in the world, comparable to the very best of the German luxury car producers.

The data on which the MIT conclusions are based come from what is claimed to be the most comprehensive international survey of the auto industry ever undertaken. The International Motor Vehicle Programme has visited and gathered information from more than 90 plants in 17 countries, about half of the assembly capacity of the entire world.

The European luxury car makers are not spared from investigation, and indeed the MIT team concludes that their disturbing findings about American and European volume car makers apply just as devastatingly to luxury

car makers such as Mercedes-Benz and BMW.

A Japanese plant required half the effort of the American luxury car plants, half the effort of the best European plant, a quarter of the effort of the average European plant, and one-sixth the effort of the worst European luxury car producer. On a visit to the high-quality but low-productivity German luxury car plant, the MIT team describes the scene.

"At the end of the assembly line was an enormous rework and rectification area where armies of technicians laboured to bring the finished vehicles up to the company's fabled quality standard. We found that a third of the total effort involved in assembly occurred in this area. The German plant was expending more effort to fix the problems it had just created than the Japanese plant required to make a nearly perfect car the first time."

The MIT team examines some of the most frequent explanations for the yawning disparities between car makers and plants:

- The degree of automation. Automation does affect productivity, but at any level of automation the difference between the most and least efficient plant is enormous... High-tech plants that are improperly organised end up adding about as many indirect technical and service workers as they remove unskilled direct workers from manual assembly tasks."

- Manufacturability or ease of assembly. Trades union leaders are interested in whether the competitive gap arises from the manufacturability of the product rather than from the operation of the factory. The conclusion is that ease of manufacture is one of the most important results of a "lean-design process."

- Product variety and complexity. The study debunks the idea that a more focused factory is the solution to competitive problems. "The plants with the highest 'under the skin' complexity also had the highest productivity and quality." Not surprisingly these were Japanese plants in Japan.

None the less, the MIT researchers insist that their study has shown that it is too simple now to equate "Japanese" with "lean" production and "western" with "mass" production.

The levels of achievement are greatly in Japan itself as well as where in the world.

The challenge of lean production applies throughout the automotive manufacturing chain. The gap in productivity and quality in the assembly plant has been apparent for so long, but it is now in new mo design and development that some of the most alarming disparities are to be found. They add credence to the impression that traditionally organised western car makers are in danger of being swamped by an array of new products developed with much shorter lead times and much shorter life cycles.

As lean production techniques are diffused by Japanese producers around the world the challenge western car makers takes on huge proportions. There are 11 Japanese assembly plants and three major plants operating in North America, and the focus is now moving to Europe. In the US Japanese cars are already taking 30 per cent of the market, and the transplants accounted for 21 per cent of US car output in the first six months this year.

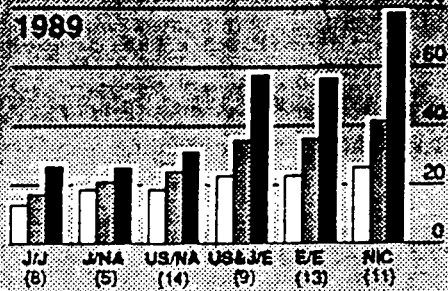
In effect between 1982 and 1992 the Japanese will have built in the U.S. mid-west an auto industry larger than that of Britain or Italy or Spain and almost the size of the French industry. By the late 1990s the Japanese companies will account for at least a third of North American car production capacity - perhaps much more - and have the ability to design and manufacture entire vehicles in wholly foreign culture 7,000 miles from their origins."

*Rauson Associates, New York, \$22.50.

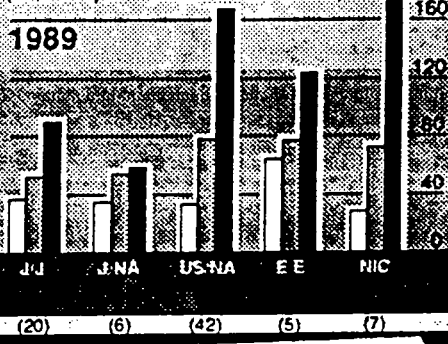
J/J Japanese-owned plants in Japan
 J/NA Japanese-owned & joint venture plants in N.America
 US/NA American-owned plants in N.America
 US&J/E American & Japanese-owned plants in Europe
 E/E European-owned plants in Europe
 NIC Plants in Mexico, Brazil, Taiwan, & S.Korea
 (8) Sample size

Best
 Average
 Worst

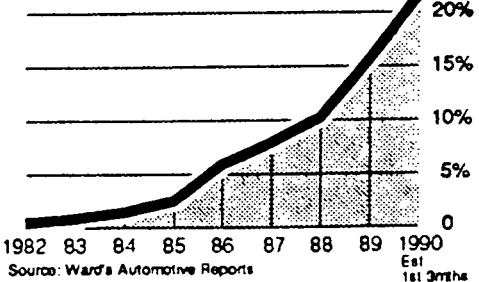
PRODUCTIVITY (hours per car)



QUALITY (defects per 100 cars sold in US)



JAPANESE SHARE OF N.AMERICAN CAR PRODUCTION



Source: International Motor Vehicle Programme, MIT

SENATOR BINGAMAN. Thank you very much. Before we ask any questions, let's hear from the other witnesses.

Ms. Howes, thank you for being here and go right ahead.

**STATEMENT OF CANDACE HOWES, ASSISTANT
PROFESSOR OF ECONOMICS, DEPARTMENT OF
ECONOMICS, UNIVERSITY OF NOTRE DAME**

Ms. HOWES. Thank you.

There are many things on which I would agree with Jim Womack, but one of the things on which we disagree is the importance of maintaining open investment in the United States, and it's to that issue that I want to address my remarks today.

I want to address primarily the question of the role that Japanese foreign direct investment can play in the revitalization of the U.S. auto industry.

Now, some have argued that Japanese investment will provide a number of benefits to the U.S. economy.

It will transfer a superior production system to the United States. It has the potential to upgrade the quality of our work force through training and therefore to hold high-wage jobs in the auto sector. It has the potential to train our suppliers in superior systems development capabilities, and to train our suppliers in quality control and in superior inventorying techniques. Finally, it has the potential to substitute domestic production for imports and so to reduce our trade deficit.

What I want to argue is that because of the particular form that Japanese foreign direct investment is taking, none of these things are likely to happen.

The particular form that Japanese investment takes in the auto industry in the United States is the following: Japanese firms build what I will call greenfield plants. Greenfield plants are brand-new plants traditionally put in agricultural areas, low-wage areas. They are building branch assembly plants that assemble low-content vehicles; that is, vehicles with a high proportion of Japanese parts.

This form of direct investment is distinct from the form of direct investment that other countries have assumed in the United States, and it's somewhat different from the form that Japanese investment has taken in the European market. While it is not necessarily the case that none of the positive effects of foreign direct investment can occur, I think it is the negative effects that are inevitable in the absence of alternative policies toward foreign direct investment in the United States.

Why is this the case? I want to argue that Japanese firms have virtually no incentive to transfer their full productive system to the United States. In order to understand this, I have to explain something about the structure of the Japanese industry, and I want to go a little further in

exploring that structure, or explore a part of that structure that I think Jim Womack hasn't really touched on.

There are two faces of the Japanese system, both of which are important to its success. One side, which people are more familiar with largely because of Mr. Womack's book, is characterized by a system of incentive systems that lead to a high degree of cooperation.

The labor relations system, for example, tends to be characterized by cooperation between management and labor to achieve some common goal. That may involve labor participation in the development of both the product and the production process. The supplier system is characterized by greater cooperation between assemblers and first-tier suppliers. Suppliers play an important role in the development of the product, an important role in maintaining quality and in minimizing inventory costs.

There is greater cooperation between firms and their financiers, banks or owners of equity in the firms, which has tended to allow an orientation toward long-term growth rather than a short-term high return on investment.

In essence, the Japanese tend not to buy labor, capital and materials through traditional market relationships, but rely on a formal cooperative relationship between the actors in these particular markets.

The result, I would argue, like many before me, is a greater effort on the part of all participants in the system, greater efficiency, greater equality, but also potentially higher fixed costs. And that's where the other side of the Japanese system comes in.

This is a side of the system which I think tends to be based more on pure market relations. Forty percent of automotive employment in Japan is in third- and fourth-tier suppliers. The employment relationships in those third- and fourth-tier suppliers are characterized not by permanent employment but by impermanent employment. Nor are they characterized by relations of cooperation; manpower and wages are approximately 30 percent below wages in the assembly and first-tier supplies sector.

Here, relations assume all of the traditional characteristics one expects from the market. The existence of this secondary sector introduces a certain flexibility into the system which reduces the risk associated with the high fixed costs of the more cooperative part of the system.

Now, Japanese firms have virtually no incentive to transfer the first part of the system to the United States, but they appear to have a very good incentive to transfer the second part of the system to the United States. Consider the case of some typical high-technology components.

These components are developed cooperatively by the assembler with the parts manufacturer, or by the parts manufacturer cooperatively with the assembler during the design of the vehicle. Now, every Japanese vehicle which is produced in the United States is also produced in

Japan, and, of course, the Japanese firm really needs only one supplier to help them develop that high-technology part, whether it is used in an American-built car or whether it is used in a Japanese vehicle.

So, who is the Japanese firm going to go to? They are likely to go the supplier which is close to their assembly or to their design operations. They are likely to go to the supplier with whom they have a long-term relationship. Therefore, they're likely to go to a Japanese supplier, a Japanese supplier with whom they have probably had a close relationship for 40 years.

If they develop that part in the United States for use in American-built cars, they would have to abandon their Japanese supplier and abandon a long, trusting relationship.

So, what are they willing to source in the United States? They're willing to source parts that have traditionally come from the lower-tier suppliers, generic parts that are not designed for specific vehicles but can go into a range of vehicles—inexpensive, low-value parts, parts with low engineering content, and bulky parts for which transportation costs are a fairly high proportion of delivered costs.

These parts include in the generic category: glass, steel, paint, windshield wipers and tires. In the inexpensive, low-value category: plastic moldings. In the bulky, high-transportation cost categories: seats. That is why the actual content of U.S.-assembled Japanese vehicles is and will remain so low.

Moreover, these parts are coming from largely Japanese transplant parts plants which have recently been built in the United States. The 300-odd Japanese transplant parts manufacturers are non-union; they pay low wages. The average total compensation in Japanese transplant parts plants is approximately \$10.00 an hour, which is 40 percent below the industry average.

So, a Japanese firm can actually transfer the flexible, market-oriented part of their system to the United States, and they can realize some significant cost savings by that transfer. They save, of course, on compensation and transportation costs.

What is the meaning for the U.S. parts industry? The larger the share of the market that Japanese transplants and imports secure, the smaller will be the market share remaining for U.S.-designed and manufactured, high-technology, high-value parts.

What about the transfer of the industrial relations system, you might ask: Are there not in fact new skills being taught to U.S. assembly workers? Well, again, I would say that there really are two sides to the Japanese system.

To a certain extent, the skills that assembly workers have are developmental skills. They do assist in the breaking in of a new product; they do assist in the development of the production process. But once that product is broken in, once that production process is developed,

then Japanese assembly workers—much like American assembly workers—become machine tenders, or extensions of the machine.

Now, the developmental aspect of this work process is of course very important, but, again, that can take place mainly in Japan, especially if the same product is being made in Japan that is being made in the United States. Then, they can simply transfer a fully debugged assembly process to the United States.

Moreover, there seems to be increasing evidence that many of the developmental tasks are either taking place in Japan or, to the extent that some developmental tasks have to take place in Japanese transplant plants in the United States, they're being performed by Japanese personnel on short-term visas.

So, I can only conclude from these observations that there really isn't a desirable transfer taking place. Yes, there is some transfer, but it's really that secondary part of the system that introduces cost flexibility into a system characterized by high-fixed costs. It's a part of the system which is characterized by low wages and insecurity for the work force and parts producers.

Unless vehicles are designed and developed and fully sourced in the United States, Japanese firms won't transfer those high-technology parts to the United States. So, as long as they are simply branch plants assembling Japanese parts, we should not expect to see a significant transfer of the system; we should not expect to gain the benefits from the demonstration effect that the Japanese plants could potentially give to American firms.

The last point is the fact that these plants are greenfield plants as opposed to brownfield plants. By brownfield plants, I mean existing plants which have been retrofitted, or plants being built in areas which have traditionally had a lot of automotive production. The fact that these are greenfield plants has serious long-term implications for the level in the industry.

New plants are being built in non-union regions, and they're using young work forces. Yes, the transplant assemblers pay UAW-level wages, but their benefit costs, because they use a young work force, are so much lower than the benefit costs in the existing Big Three assembly plants at this point that they can amount to a savings of \$400 a car.

Those parts that the assemblers do buy in the United States come largely from U.S.-based transplant suppliers, and these suppliers, as I have mentioned before, pay very low wages and have very low compensation costs, again, because they use a nonunion, young work force.

So, the advantage that the Japanese transplants derive from building greenfield plants, using young, nonunion workers and sourcing from new transplant parts suppliers, can add up to almost \$1000 a car.

One of the big problems with this is that it puts tremendous pressure on U.S. firms to negotiate for lower wages or, more likely, for lower benefit costs. How else can they compete, especially in the short run?

And this compensation-squeezing strategy tends to undermine other very positive efforts that the Big Three are making to restructure along more cooperative lines.

My own experience doing education in Ford plants, under a program that was designed to introduce team production into the plants, suggested that Ford workers—and this is even in a company where the industrial relations system seems to work fairly well—are not convinced that there is really a long-term plan for cooperation that is going to work to their benefit, because at the same time that they're being asked to cooperate, they're being asked to reconsider some of the most strategic parts of their long-run security: their pension and medical benefits.

So what is the answer? I don't want to go into details of particular programs, but really to suggest a more general view that should be taken. I think we need to take a page from Japan's book. When faced with competition from a superior production in the 1930s, initially, and then throughout the 1940s and 1950s, that superior production system being, of course, the U.S. mass production system, what did the Japanese do? They made sure that the superior production system would be transferred in total, to the extent that they wanted it, to Japan.

And they arranged that transfer by licensing technology, by protecting their markets from imports, and by restricting foreign direct investment. They protected their markets in order to insure growth during the time that they were developing their own production system, and they protected their market from foreign direct investment in order to insure protection from internal competition from a system that they could not yet compete with.

The American auto industry is really in a similar position to the Japanese auto industry of the 1950s. They are trying to make this transition to a superior production system, and they need time and money in order to do that.

To allow continued foreign direct investment in the United States is not going to allow them that time. I would argue that at this point, there's sufficient foreign direct investment to offer the necessary competitive challenge to keep their nose to the grindstone. I don't think there needs to be anymore.

Thank you very much.

[The prepared statement of Ms. Howes, together with an attachment, follows:]

PREPARED STATEMENT OF CANDACE HOWES

I propose in this testimony to address several questions raised by the Joint Economic Committee. First, what are the prospects for the Big Three? Second, can we rely on the transplants or do we need the Big Three to maintain high wage jobs in the U.S.? Third, what are the implications of transplant production for Big Three assemblers and the supplier industry? And finally, what role should the federal government play?

What is the fundamental problem facing the Big Three at this time? The Big Three have been steadily losing market share to Japanese firms since the mid 1970s. The Big Three cannot produce vehicles of quality comparable to Japanese firms, they cannot bring new models to the market with a four year lead time, and they cannot produce inexpensive vehicles at low volume as do Japanese firms. Success in the auto market of the 1990s requires that firms be able to cost effectively produce new models in each market segment (including low volume niches) every three or four years. U.S. firms were built around a mass market production imperative. To achieve the ideal competitive strategies for the fragmented markets of the 1990s will require substantial reform of their organizations. Given time and money, U.S. firms will no doubt succeed. But the steady loss of market share which has led to costly excess capacity, coupled with an unusually long recession which has exacerbated capacity utilization problems and through transplant investment suggests that time is running out for U.S. firms. Short of time and money, U.S. firms will not recover easily.

As a consequence, hundreds of thousands of jobs will be lost, high wage production jobs in auto assembly and parts manufacture, as well as engineering, and scientific jobs will be lost. There will be a permanent erosion of the manufacturing base, as upstream suppliers to the U.S. auto industry lose their markets. Communities will be devastated and the trade deficit will rise.

Other economists and industry analysts have suggested a simple solution to the problem of our eroding manufacturing base. The strength of the industrial base, they argue, depends not on who owns it, but on the quality of the investment made in it. All that is necessary is that the investment be designed to introduce best practice production techniques, and to train production, research and engineering personnel in those techniques. Japanese firms have what is widely regarded as the best practice techniques at this time. Presumably Japanese firms will be transferring those techniques to the production facilities which they are now building in the United States. If we encourage Japanese foreign direct investment in the U.S., it is argued, they will upgrade our productive capabilities, train our workforce, provide an important demonstration effect for our surviving firms and reduce the trade deficit as they substitute transplant vehicles for imports.

This argument, while correct in theory is wrong in practice. Given the particular form that Japanese foreign direct investment is taking in the United States--low U.S.-content, greenfield branch assembly plants, and low-value generic parts--it will not solve our productivity and competitiveness problems. Nor will it help to hold high wage jobs in the United States. Japanese production in the United States will be persistently low content, in the absence of some non-economic incentive to increase content, because there is no economic incentive to source high value, engineering intensive parts in the United States. On the other hand, there is some incentive to source low value,

generic parts and bulky parts for which transportation costs are a large percentage of delivered costs. These are the parts which Japanese firms will source in the U.S. They will source them from Japanese transplant parts firms.

This quasi-transfer has implications for the future of our manufacturing base, the skill level of our workforce, and the wage levels of our production workers. Research and development on advanced materials, mechanical engineering, and electronics technology for industrial applications will be peeled off and transferred to Japan as Japanese firms capture a greater share of the U.S. market. The skill levels required for the operations which will be performed in the United States are relatively low. Even in the assembly plants, the maximum skill levels required are potentially lower than those currently required in a Big Three plant. The consequences will include a significant loss of high wage production jobs, design, engineering and research jobs, and high technology materials and production capabilities. It will further result in a degradation of the private social insurance system in the U.S., and a significant loss of income. It will exacerbate the steady loss of market share for Big Three firms.

The solution to the problem does lie partly with federal policies. The federal government must assume a similar role to that assumed by the Japanese government when it found its fledgling auto industry faced with competition from the superior mass production system of U.S. automakers. The Japanese government established policies to insure that the necessary elements of that system would be transferred to Japan under Japanese ownership.

In what follows I explain why the Japanese firms have little incentive to transfer their production system to the United States, why the parts that they do transfer will further degrade the U.S. industrial base, why this will lead to a significant loss of employment and income, and what the federal government should do to help strengthen the auto sector in light of these problems.

WHY JAPANESE FIRMS HAVE LITTLE INCENTIVE TO TRANSFER THEIR PRODUCTIVE SYSTEM TO THE UNITED STATES

It seems that much of Western enthusiasm for the Japanese system is based on an incomplete view of the system. The Japanese production system is a finely balanced blend of two diametrically opposed incentive systems. One, the system which has enthused western writers, draws on community values and common interests to forge a consensus around corporate strategy. But this incentive structure, embedded in large manufacturing firms, depends on a surrounding structure of contingent workers and secondary suppliers whose behavior is motivated by the more traditional market incentives--short term profits, losses, wage rates and the threat of unemployment. Students of Japanese industry have concentrated on the large manufacturing firms where the non-market based incentive system prevails. They seem to endorse the transfer of that part of the system. The secondary markets for parts and labor, about which less is known, is never mentioned in discussions of transfer.

The success of the Japanese production system, and much of its appeal, owes to its ability of firms to construct cooperative rather than competitive market-mediated relations with some of their suppliers of labor, parts, materials and finance, while exploiting the progressive discipline of the market in their competition with rivals to bring new products and processes to the market. This is apparent in the permanent employment

system of large firms, in the cooperative long term relationship between assemblers and first tier suppliers, and in the relationship of large firms to their banks and stockholders. Large Japanese firms seem to affect, through negotiation and mutual agreement, many of the exchanges which would be mediated by the market in a western firm. The result is an incentive structure which can elicit the quick responses needed for success in contemporary fragmented markets.

For example, the permanent employment system in large firms, which was initiated in the 1950s to retain scarce skilled labor, is a small part of an incentive system which now draws a high level of commitment from employees. The technological and commercial dynamism of the system--new products are brought to market in half the time required of western firms--is frequently credited to the broad training and sophistication of the permanently employed workforce.

The majority of the workers in the top tier firms in the industry face a labor market only for entry level positions in the firm. Once the worker joins the firm there is virtually no lateral mobility outside the company. Workers expect to spend their lifetime (until age 55) in a single firm. Workers are rewarded through promotion and both group and individual performance-based productivity bonuses. Promotion is based on performance criteria which include some measure of the workers' ability to handle a broad range of tasks and work collectively in ability groups. Broadly defined tasks and job rotation relieve the traditional boredom of the assembly line while raising the employees' awareness of, identification with, and ability to contribute to the objectives of the firm. The tasks performed by the production worker in a Japanese firm cross into functions commonly performed by skilled tradespeople and even engineers in western firms. For example, production workers are involved in the design and breaking in of the production process when a new model is introduced.

First tier suppliers are part of the team as well, contributing to the design of the product from the early stages. Unlike Detroit-based firms which traditionally organize relations with many suppliers through a competitive bidding process, Japanese firms maintain very long term, frequently exclusive relations with first tier suppliers. Because suppliers and assemblers often hold stakes in the equity of one another's firm, they are conscious that their fortunes depend on one another's strength. Consequently, the Japanese assemblers have been better able to utilize the design and engineering capabilities of their suppliers. The just-in-time system of inventory and parts delivery and statistical quality control reduce waste and build quality into the production process without costly inspection.

But the consensus forged through job security and sharing the benefits of prosperity depends on the cost flexibility built into the system by the use of contingent workers and secondary and lower tier suppliers. At this level of the system, market forces determine wages, prices, working conditions and the terms of contracts.

Only 32 percent of Japanese employees in all industries enjoy the benefits of lifetime employment.¹ In the auto industry, lifetime employment is extended to those working in assembly plants or first tier suppliers. Of the approximately 500,000 people who

¹ Cole, Robert. 1979. *Work, Mobility and Participation: a Comparative Study of American and Japanese Industry*, Berkeley, University of California Press, p. 61

are employed in the auto parts industry in Japan,² about 40 percent are employed by third and fourth tier suppliers.³ There is no permanent employment in the third and fourth tiers and wages are 33 percent below the level of wages among assemblers and first tier suppliers.⁴

An army of third and fourth tier suppliers which is never involved in planning, which does not have exclusive relations with any assembler and which wins contracts through a cost-based bidding process, builds cost flexibility into a system otherwise threatened by the high fixed costs of permanent employment and long term contracts. This too is a crucial part of the Japanese system.

Japanese vehicles built in the United States are also built in Japan. Firms need only one supplier to help develop each engineering intensive part. If they source that part from a supplier in Japan they are unlikely to also source it in the United States. Not only would that lead to duplication of development effort, but it might also jeopardize the long term relation built on trust and cooperation with a valued supplier. On the other hand, the parts sourced on the basis of short term competitive contracts can be dual sourced. It is these parts the Japanese firm will source in the U.S.

Evidence from Toyota suggests that this is the pattern by which parts sourcing is being transferred. Toyota employs 65,000 people in Japan designing, manufacturing and assembling 3.6 million vehicles.⁵ Among its assembly plants are Takaoka which produces the Corolla (the same vehicle assembled at the NUMMI plant in California) and Tsutsumi which assembles the Camry (also assembled in Kentucky). Toyota plans to directly employ approximately 5,500 people in the United States when it reaches full production in the mid 1990s.

Despite the fact that Japanese assembly workers in the Takaoka plant in Japan and American assembly workers in the NUMMI plant in California, both require roughly the same number of hours to assemble a car,⁶ Toyota employs twice as many people in Japan per vehicle than it does in the United States. This does not reflect differences in productivity. Rather it shows that there is substantially more "system" work--design and engineering of the vehicle, high technology parts design and fabrication, research and development--taking place in Japan than in the United States. The difference in employees per vehicle really reflects the relative roles played by Japanese and U.S. production in the Toyota production system. The U.S. operations are simply branch plants assembling imported designs from imported parts, using imported production technology. If

² JAMA (Japan Automobile Manufacturers Association). 1987. *The Motor Industry of Japan*, Washington, D.C., JAMA, p.18.

³ Howes, Candace. 1991. *The benefits of youth: the role of Japanese fringe benefit policies in the restructuring of the U.S. motor vehicle industry*. *International Contributions to Labour Studies*, 1 p. 113-132

⁴ Cole, R.E. and Yakushiji, T. 1984. *The American and Japanese Auto Industries in Transition*, Ann Arbor, University of Michigan, Center for Japanese Studies, p. 157-161.

⁵ Toyota Motor Corporation. 1987. *The Automotive Industry: Japan And Toyota, 1987 edn*, Toyota Motor Corporation, Public Affairs Department.

⁶ Krafcik, J.F. 1987. *Trends in international automotive assembly practice*, Massachusetts Institute of Technology, International Motor Vehicle Program

the U.S. share of total employment can be used as a measure of the U.S. contribution to Toyota output, U.S. production will make only a marginal contribution to the "Toyota production system" --approximately 8 percent. By the time Toyota reaches its U.S. sales goal of 1 million units in the mid 1990s, U.S. sales will contribute approximately 20-25 percent to total Toyota unit sales. U.S. sales can not be considered a marginal part of Toyota sales.

Toyota can fully realize the strength of the Toyota production system which is based on cooperation--close relationship between assemblers and suppliers, the team approach to design, the troubleshooting role played by production workers in the start-up phase of production--through its operations in Japan. Since it produces vehicles in Japan which are identical to those assembled in the U.S., it can iron out most of the production and supply problems in its Japanese plant. If the synergy with suppliers can take place in Japan, if all the high value parts are designed there, there is little need for those relations to exist in the United States. In fact, if Toyota dismantled its supply chain and moved parts to the U.S., it would weaken the system.

On the other hand, they can transfer a debugged assembly line to the United States and use production workers in fairly traditional ways (as they did at NUMMI). While production worker skills are crucial in the design of the process and during the break-in period, tasks become more routine and even mechanized and immutable after break-in. If the Japanese assembly workers make necessary changes during the start up process in the sister plant in Japan, then the work of American production workers can be reduced to machine tenders.

The presence of teams and just-in-time sourcing practices in the U.S. transplants has led some authors to conclude that the cooperative industrial relations and supplier systems are being transferred. But teams can serve a range of functions from innovators to monitors. In fact, teams are an especially cost effective system for monitoring workers. If the reward structure is partially based on team performance and if workers monitor one another, they can eliminate the need for a supervisor. The monitoring efficiencies alone can justify teams. Therefore, the presence of teams does not necessarily imply that workers are being given discretionary roles in a constantly evolving production process.

Nor does just-in-time sourcing imply a complete transfer of sourcing practices. Just-in-time sourcing also has two faces. If it is the interface between just-in-time production in the assembly plant and just-in-time production in the supplier plant, it is an effective tool for quality control. If suppliers are not doing just-in-time production, it is simply a way to shift the costs and risks of holding inventory onto the supplier. In the U.S., transplants buy low value-added, standardized parts from nonunion transplant suppliers who pay an average hourly compensation rate 40 percent below the average for the auto parts sector as a whole. This is an even greater wage differential than is found in Japan. These are "third tier" suppliers; they do not work closely with assemblers in the design and development of parts; their function is to absorb the costs and risks of holding inventory.

Japanese investment in the U.S. auto industry does not fit the profile of foreign direct investment which has been promoted by economists Edward Graham and Paul Krugman, Robert Reich and Robert Lawrence. The investment practice of Japanese

auto makers differs little in effect from imports. Japanese firms have circumvented the limits imposed by the Voluntary Restraint Agreement on their growth in the U.S. market without really abandoning integrated production in Japan. The Japanese production system remains in Japan while something very close to the end product is exported to the United States. This type of investment does not promise to transfer Japanese "best practice" techniques to the United States. It will not upgrade our productive capabilities, it will not train our workforce or improve the trade balance. What it will do is erode sophisticated the research, design and engineering capabilities of our supplier sector as Japanese transplants displace U.S. firms and source their high technology components from Japan.

WHY JAPANESE GREENFIELD INVESTMENT LEADS TO EMPLOYMENT LOSS

Despite the tremendous excess capacity in the U.S. industry, most Japanese firms have chosen to build new plants in rural areas--a practice known as greenfielding--largely in the upper south region of the country. Japanese transplant suppliers have followed, building hundreds of new parts plants within a few hours distance of the assembly plants. Because Japanese firms choose the greenfield investment strategy, they are able to achieve unit costs which are almost \$1000 below U.S. firms, regardless of any productivity differences. The Japanese investment practices and the competitive response of U.S. firms has put intense downward pressure on wage and benefit levels.

There are three sources of the cost advantage: First, a minor but much publicized advantage comes from the tax breaks and subsidies offered by localities in the bidding war for Japanese investment. The second and far greater advantage comes from the tremendous savings in fringe benefit costs associated with the use of the youthful, non-union, homogeneous workforce that can be found in the rural upper south. The third factor cost advantage comes from use of low-wage third and fourth tier suppliers.⁷

State subsidies give transplants a per vehicle cost advantage of about \$50 to \$75 annually over a 10 year period. The advantages associated with using a young, non-union labor force are far greater. Even if the transplant pays Big Three level assembly base wages--as most of them do--Big Three hourly benefit costs, especially due to pension and medical insurance, can exceed those of transplants by \$400 per vehicle. As the domestic industry has declined, an ever smaller base of workers has funded, through their hourly compensation, a pension fund which must support an ever larger pool of retirees. The companies did not anticipate in the 1970s that they would be supporting a retiree population as large as their active work force by the mid 1980s. As a consequence, the cost of supporting those funds has escalated over the last ten years. Because of the particular form of pension plan that many transplants are adopting, and because they have young workforces and no retirees, most transplants will never face these problems. The cost of pensions at a typical transplant are one-fifth to one-half those at the Big Three.

⁷ See Howes, Candace. 1990. Foreign direct investment in the auto industry, preliminary draft, forthcoming study for the Economic Policy Institute, Washington, D.C., December, and Howes, (1991), *ibid*, for a more detailed treatment of the role of Japanese fringe benefit policies and the cost advantage in the restructuring of the U.S. motor vehicle industry

Since medical insurance for retirees was not pre-financed, the costs of supporting a large number of retirees from an ever shrinking base of active workers is even more staggering. The savings in medical insurance costs associated with a young labor force are spectacular. Even if the transplants have exactly the same medical benefits as a typical Big Three firm, for a work force with an average age of 25, the cost will be half that of a workforce with an average age at Honda is approximately 32 years after nine years of operation the average age at Mazda is less than 30. The average age of the Ford production is 48 years.

Finally, transplants also face lower purchased materials costs, costs rich can range from 65 to 80 percent of the cost of a vehicle. First, about 50 percent of their purchased components are still imported from Japan where they benefit from all the cost advantages of the Japanese system, including the use of low tier suppliers. Second, those components which are purchased in the United States come almost exclusively from Japanese suppliers operating in new greenfield plants themselves. Greenfield suppliers enjoy similar cost advantages to greenfield assemblers--state subsidies to attract the investment, young workforces and potentially lower benefit costs. But transplant suppliers also have labor costs which are 40 percent below other parts suppliers in the industry. Some of that cost difference is due to lower wage rates which are about 50 percent of UAW rates, and benefits which are about 25 percent of UAW costs.⁸ The cost advantage associated with the use of transplant suppliers may be over \$400. The total greenfield cost advantage associated with state subsidies, lower assembly labor costs and lower supplier costs, could be close to \$900.

The transplant location strategy has greatly enhanced their ability to transfer exploitive components of their production system to the United States while preserving the creative integrated part of the system--and most of the jobs--in Japan. The advocate of unrestricted investment would argue that the U.S. firms could and should meet the competitive challenge of the Japanese system by building new production facilities, and exploiting the possibilities of more efficient spatial arrangements practiced by Japanese firms. But the real cost advantage associated with Japanese greenfield investment is not based on the transfer of a superior production system--that stays in Japan--but on lower labor compensation costs. For U.S. firms to meet that competition they must fire older workers, gut their pensions and lower the long term living standards of workers in the auto industry as a whole, hardly a formula for revitalization.

Unfortunately, because the Japanese firms have achieved this labor cost advantage, introducing large compensation cost differentials at the assembly level for the first time in 40 years, U.S. firms are now more likely than ever to adopt the wage cutting strategy as well. Furthermore, the fact that this process has taken place within over a very short time, and during a period when the U.S. industry has sustained unprecedented losses over a long recession, the ability of U.S. firms to invest in the new technology and new forms of organization necessary to regain market share has been very limited. That makes the costless (at least in the short run) strategy of squeezing labor costs all the more attractive.

⁸ Howes, 1991, *ibid*, pp. 33, footnotes 13 & 14

Between 1982, when Honda opened the first transplant facility, and 1993, when the current wave of investment should be completed, the Big Three will have lost roughly 3 million units of sales to transplants. Those 3 million units represent over 350,000 jobs, mainly in the midwest. Because they perform so many operations in Japan, the transplants will replace only 200,000 of those jobs in the United States. There will be a net loss of 150,000 jobs to transplants. Many of the people who held those lost jobs will be over 40, and many will be black, two groups which have a difficult time finding comparable jobs, especially in the auto industry.

The 350,000 people displaced from jobs in the midwest will forego approximately \$10 billion in gross compensation annually. If their jobs are lost to young people in auto plants in the upper south, earning comparable wages in assembly plants but much lower wages (\$8 an hour) in parts plants, only \$3.8 of new income will be generated. There will be a net income loss of \$6.2 billion to workers in the industry.

THE ROLE OF THE FEDERAL GOVERNMENT

Greenfield investment, low value parts sourcing, and low compensation rates will not revitalize the U.S. manufacturing base. The adoption of best practice production techniques, appropriately adapted to U.S. cultural norms, by U.S. firms will. But, U.S. firms, like any firm in an industry trying to compete with a superior foreign rival, need time and resources to complete the conversion to "best practice" production techniques.

American firms cannot complete this task without some assistance from the federal government in the form of trade, investment and technology policies. There are three crucial elements to a federal policy to encourage productivity growth and rapid adjustment in the auto industry. First, the rate of loss of market share must be slowed, to allow firms to recover profitability. Second, policies must be devised to ensure that, to the extent possible, there will be a transfer of technology and best practice techniques. Third, if the U.S. industry is going to reorganize to meet the Japanese competition, the option to cut costs in the short run by driving compensation rates must be foreclosed. U.S. firms need the cooperation of labor to accomplish the reorganization of the industry.

The current mix of trade and investment policies has created the illusion that import competition is contained (by the VRA) while in fact import competition is still on the rise from unprotected segments--all trucks, vans and most sport utility vehicles--and from the high import content in transplants. The United States puts no upper limit on truck imports or transplant investment. Therefore, there is no upper limit on the potential loss of market share to Japanese firms. The European Community, in contrast, restrains levels of both imports and low content transplants. In order for Japanese firms to expand in the European market they must ultimately achieve high levels of European content; there is no similar pressure for Japanese firms to achieve high levels of U.S. content. High content requirements can force technology transfer. The United States should consider adopting policies similar to those of the European Community to slow the loss of market share at least during the transition phase, and to encourage more complete transfer of the Japanese productive system policies are modest compared to those pursued by Japan during the developmental period of its auto industry.

Finally, the fact that large private corporations have been able to bear much of the cost of the private social insurance system in this country for decades does not mean

that they should be required to bear an inequitable share when they cannot. Obviously alternative methods of sharing the costs of social insurance must be devised, both to guarantee adequate provision of social insurance costs will contribute to the loss of U.S. competitiveness.

The benefits of youth: the role of Japanese fringe benefit policies in the restructuring of the US motor vehicle industry

Candace Howes*

Introduction

As in many US manufacturing industries, US car firms have faced declining profit rates over the last few decades. Like many manufacturing industries, the US motor industry must and is going through a restructuring or rationalisation process which will change its production system, its industrial relations system and its geographical organisation. What shape that restructuring will assume is still pending.

Though many factors have contributed to the disequilibrium which is forcing the restructuring in the industry, competition from Japanese firms is perhaps the most disruptive to the stable oligopoly that has characterised the industry for three decades. Japanese firms have developed a production system now regarded as the standard for the industry—the 'best practice' system. On average Japanese firms build higher quality vehicles at lower cost than US firms. Numerous measures of productivity demonstrate superior static efficiency among Japanese firms and Japanese technological development of product and process has outstripped US firms for nearly a decade.

Japanese firms have challenged US firms in several ways. In the early 1970s, Japanese factor costs were far below those of US firms. The Japanese entered the low end of the US market with small inexpensive imports. By the late 1970s, Japanese productivity was on a par with US producers and the quality gap was closing. When, in 1981, the Reagan Administration negotiated an agreement with Japan voluntarily to restrain Japanese car imports to 1.68 million units a year, Japanese firms were firmly in a position to move upscale in product and challenge US firms on the basis of quality, reliability and innovative technology across a range of products including small and medium size passenger cars, luxury cars, pickup trucks and sport utility vehicles. Several Japanese firms also built North American assembly plants, skirting the restriction imposed on imports by the voluntary restraint agreement.

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US firms face an important choice. On the one hand, they may meet the Japanese competition by reforming or rationalising their production system, possibly becoming more 'Japanese'. This is the more difficult path, entailing a complete reorganisation of the firm, a redefinition of the role of management and probably the consent of the workforce. The workforce plays a substantive role in this rationalisation because the new production process requires constant discretionary input from workers. If US firms reform and rationalise their production system along the lines suggested by their Japanese competitors, they open the possibility of sustained high rates of productivity growth.

Alternatively, US firms can 'sweat' their workers and suppliers. This approach does not require the consent of the workforce. It is based on an intensification of exploitation, with no underlying increase in productivity. In the long run, exploitation is limited by a floor below which wages and supplier prices cannot be pushed without driving them from the market.

Driven by an immediate need for relief as well as a long-term appreciation of the need to rationalise, most firms have chosen some combination of the two strategies, contracting out work to low-cost suppliers, increasing the intensity of work in house while developing programmes to reform and rationalise the organisation of production within the firm and the relationship with outside suppliers. Unfortunately, exploitation attenuates workers' and suppliers' willingness to co-operate in a rationalisation process.

Some authors have argued that, in contrast to imports, Japanese investment in the US has the salutary effect of pushing the US firms towards the high productivity path. Japanese firms, the argument goes, by transferring their superior production system to the United States will demonstrate an alternate production system and train US workers and suppliers in new skills. Ultimately the US firms will either become more Japanese or continue to lose their market share. In either case, the performance of the US industry will improve, regardless of whether production is taking place in facilities of US or Japanese parent firms. Japanese direct investment, so the argument goes, should be encouraged because it displaces imports and transfers superior technology. Robert Reich is an articulate proponent of the position that we should not

bar foreign firms from operating in the United States—particularly if they'll spend more money training American workers than is spent by American firms in the same industry, pay American workers higher salaries, give them more job security, and make them far more productive than American firms do—even if the country where they have their headquarters prohibits American firms from investing there. Studies have shown that Japanese firms, in particular, fulfill all these criteria (1991, p. 53).

Since most Japanese investment in new productive capacity is in the car industry, Reich is implicitly talking about Japanese car firms.¹ Robert Lawrence of the

¹ It is difficult to estimate what percentage of foreign investment in new productive capacity should be attributed to the car industry. However, figures for the 1988 foreign direct investment position (*Survey of Current Business*, June 1989, Table 4, p. 48) put Japanese foreign direct investment in manufacturing at \$12 billion. There are eight Japanese car plants in the US. Each has already or plans soon to invest an average of about \$800 million, for a total of \$6.4 billion. There are also approximately 300 Japanese parts plants being built. This suggests that new Japanese car capacity represents by far the greatest part of Japanese investment in US manufacturing.

Brookings Institution is even more explicit about Japanese investment in the US motor vehicle industry:

Japanese-affiliated automakers have transferred production technology and skills to the United States. . . . Japanese operations and the responses of some US automakers have allowed the recovery of competitiveness in an industry in which it had seriously eroded.

The new approaches to production technology, buyer-supplier relations and labor-management practices introduced by the foreign-affiliated automakers into their own operations are being diffused to their Big Three competitors. By engaging in joint ventures, US producers have not only learned valuable lessons about building small cars, but also important lessons about labor-management relations. . . . The Japanese emphasis on training has given US workers valuable new skills and experience. Their emphasis on collaborative relationships with suppliers has diffused Japanese know-how to US autoparts makers (1990, p. 1).

This argument relies on an industrial organisation explanation for Japanese foreign direct investment. Firms with a competitive advantage based on monopolistic control of a superior technology invest in foreign markets in order to capture the rents which cannot be recovered through exports or licensing. As with trade, according to the theory, there are potential gains from foreign direct investment based on comparative advantage, increasing returns to scale and increasing competition especially in an industry with imperfect product markets. Foreign direct investment may extend the gains from trade where rents cannot be captured through trade. But there are additional potential gains from foreign investment based on externalities. The foreign firm is not always able to capture the full rent. As workers are trained and US managers are exposed to Japanese managerial practices, these superior techniques ultimately filter out to US firms. In time, the US firms will adopt the technology, monopolistic rents will be eroded, vehicle prices will decline and overall efficiency, both technical and allocative, will be improved (Graham and Krugman, 1989).¹

I will argue that Japanese direct investment in the US does not fit this profile. As it is now practised, Japanese direct investment in the US is not very different from importing. As a consequence, all of the potential costs and none of the salutary effects of FDI are being realised. Furthermore, when Japanese firms assemble vehicles in the US, they capture not only technological rents available through trade but also factor cost-based rents which are largely foreclosed to US parent firms. The rents are a consequence both of the superior production system in Japan and of segmented labour markets in both Japan and the US. Japanese firms, through investment in the US market, have access to a labour market of young, healthy, non-union workers. Through the mechanism of fringe benefits, these workers are very cheap relative to workers in Big Three firms.

Were Japanese foreign direct investment motivated only by technological rent seeking, there would be no real factor cost differences and there would be less potential for competition around labour compensation. Certainly US firms could

¹ Graham and Krugman (1989) survey the theoretical and empirical literature on foreign investment and conclude that industrial organisation explanations are more plausible than cost-of-capital explanations for the rise of foreign investment in the US. Despite the rent-seeking nature of recent investment, they conclude that the gains from inward foreign direct investment outweigh the losses.

cite cost differences to justify requests for concessions in wages and benefits. But in an economic context in which all players seem to be 'on a level playing field', it is more difficult for companies to argue that labour costs are either the problem or the solution. Once labour cost differences exist and are measurable (and the companies *are* measuring them), the option to restructure along the alternative 'easy' path is opened.

Contrary to Graham and Krugman, Reich or Lawrence, who take a sanguine view of Japanese foreign direct investment, I regard it as a Trojan horse, foreclosing the possibility that labour and parts suppliers will be involved in an effort to rationalise the motor vehicle industry.

In what follows I discuss first the disequilibrium in the car industry that is forcing the restructuring, second the alternatives for restructuring, and third the kind of restructuring that Japanese direct investment will lead to, and the effect it will have on wages and benefits in the car industry.

Disequilibrium in the car industry

The golden years before 1967, when profit rates averaged between 30 and 40%, can be attributed to a fortunate combination of social and economic factors. The market was growing at an extraordinary rate, fuelled by the post-war boom and rising average incomes. Labour peace had been bought through innovative agreements carved out in the 1950s in exchange for above average wages, annual increases linked to productivity growth in the economy as a whole (which was less than productivity growth in the industry), generous fringe benefits, including pensions and medical insurance, and programmes to maintain income during downturns.

Both labour and management were able to achieve their objectives through a system of rule-based bargaining (Katz, 1985, ch. 2). By the rules, annual wage increases and protection against inflation could be negotiated and benefits progressively improved, based loosely on the companies' ability to pay. Union leaders preserved internal political peace through their success at the bargaining table and the companies were able to buy protection from disruptive strike activities at an affordable price. Pattern bargaining and virtually universal unionisation in assembly assured equal labour rates across plants and firms. No plant or company could bid down the costs of another.

Several factors account for the decline in profitability after 1967. First, as indicated in Table 1, productivity grew by 43% in SIC 371 (Motor Vehicles and Equipment) over the business cycle between 1958 and 1967, while real average hourly earnings (deflated by the wholesale price index for SIC 371) grew only 6%. Over the next two cycles, 1967–1973 and 1973–1978, real earnings grew more rapidly than labour productivity. It was only after 1978 that the gap again widened between productivity growth and earnings growth. Therefore, between 1967 and 1978, the income share of labour was increasing while the profit share was declining.

Second, during the period following the energy crisis in 1973, the capital–output ratio began to rise. Firms retrofitted plants to increase energy efficiency, but they did not retool plants to fit the changing mix as consumers demanded more fuel-efficient vehicles. After Japanese and European firms began to import small fuel-efficient

Table 1. *Earnings and productivity growth, SIC 371 1958-1985*

	Real average hourly earnings: production workers	Output per production worker hour	Real labour costs ^a
1958	100	100	100
1967	106	143	74
1973	163	176	92
1978	196	202	97
1985	216	252	86

Source: BLS, *Employment and Earnings*, and BLS, *Office of Productivity and Technology*, May 1991, unpublished data.

^aExcluding benefit costs.

vehicles, US firms experienced chronic capacity imbalances as a consequence of their slow adjustment to the new demand mix and loss of market share to foreign competitors. Finally, the stable oligopoly which had characterised the industry throughout the 1960s began to erode and with it the pricing policies. While General Motors maintained price leadership, it had more difficulty maintaining the margins of the golden years in the face of new low-cost entrants.

It is the existence of new entrants which is most crucial both to the erosion of profit margins, and eventually to the destabilisation and restructuring of the industry. New entrants had cheaper and eventually better products. Throughout the 1970s, the Japanese competitors had a cost advantage due to lower labour compensation rates. In 1975, hourly compensation rates in Japan for production workers in motor vehicle manufacturing were 37% of the compensation rates for US production workers. Between 1975 and 1988, although hourly compensation rates for both countries doubled, the devaluation of the dollar relative to the yen had the effect of raising Japanese compensation rates to 70% of US rates (US Department of Labor, Bureau of Labor Statistics, Office of Productivity and Technology, March 1989). Labour costs were still an advantage, but not the overwhelming advantage they had been in the 1970s.

Ultimately more important than hourly labour cost differences was the fact that Japanese competitors introduced a new production system to the industry. By the late 1970s, Japanese firms surpassed the productivity levels of US firms (Japan Industrial Policy Research Institute, 1982). They had developed a system which apparently solved the problem both of control of and co-operation from workers, greatly enhancing the contribution made by management and production workers alike. They solved quality problems which had long been considered intractable by US firms, and they had found a way to elicit co-operation from their suppliers.

The entry of new competitors threw the oligopolistic structure of the industry into chaos. US firms began to lose their market share, pricing discipline eroded, and excess capacity became commonplace, putting further pressure on firms to discount in order to keep costly plants running near capacity.

Between 1958 and 1967, profit rates¹ in the car industry averaged between 30 and 40%, over the business cycle. Beginning in the cycle after 1967, however, the historically high rates began to fall. Between 1967 and 1975, profit rates averaged around 20–25%, and since 1978 have averaged 7–10%.

Alternative roads to restructuring

Steadily declining profit rates heralded the inevitable restructuring of the industry. Whether that restructuring will imply rationalisation is another question. Although restructuring involves the construction of new institutions to regulate the economy or the industry in question, it does not necessarily imply rising productivity. For example, a change in the relative power between capital and labour which restores profit rates by reducing the share to labour is a case of restructuring but not of rationalisation.

Rationalisation has a long history in the economics literature going back in its neoclassical variant at least to Marshall, and certainly to Marx.² Rationalisation implies an increase in aggregate productivity in the industry or economy. In its static formulation, rationalisation has implied concentration and centralisation to exploit the benefits of increasing returns to scale. The dynamic definition of rationalisation attributed growth to the introduction of new technologies and new industrial processes. Concentration was important because it reduced the risk of investing in new technologies. Opposing sides in the British inter-war debate on rationalisation put greater or lesser emphasis on the static notions of rationalisation associated with scale economies (Shove) as opposed to the dynamic notions (Schumpeter, Hobson and Dobb) associated with new technologies and new industrial structures which would in a 'gale of creative destruction' replace the old. Dobb especially, contributed the notion that intra- and inter-organisation interdependence were important.

Two notions, useful to this analysis, emerge from the rationalisation debate. First, both the static and dynamic concepts of rationalisation emphasise the importance of firm size. Economies of scale require large firms, limited of course by the extent of the market. Development of new technologies and new industrial structures also require large size to overcome uncertainty around the process of restructuring. Second, rationalisation is a learning process in the dynamic model, and learning requires scope and sophistication on the part of the parties involved, and most importantly co-operation.

While rationalisation may involve or be furthered by competition, it does not necessarily imply competition. In fact, one defining aspect of rationalisation has been the removal of many decisions from the sphere of the market, either through internalisation within the firm or through cartelisation between firms. Rationalisation is seen as a solution to the waste of atomistic competition. German and Japanese firms were able to use cartelisation to regulate market forces. US and British firms have

¹ I measure profit rates as income to capital as a percentage of capital stock. Income to capital included before-tax profits, depreciation and amortisation allowances, and property taxes. Capital stock is a perpetual inventory measure net of depreciation assumed to be straight line. All data is from Annual Reports, 10-K Reports or Moody's Industrial Manual.

² My discussion of the literature of rationalisation is based on Wright (1991) and Shove (1930).

been obliged to harness the market through increased concentration (Best, 1990, chs 3, 6).

The steadily declining profit rates of the car industry after 1970 indicated the need to restructure its regulatory institutions—the industrial relations system, the production system, the supplier system, etc. Restructuring did not begin with competition from Japan. As soon as profit rates began to fall, US firms sought ways to maintain margins.

The first evidence of restructuring came in the car parts industry. Because there were both union and non-union firms in the parts industry, labour cost-based competition increased during this period. Between 1962 and 1973, the percentage of employment in plants with 500 or more employees declined from 62 to 58%. By 1983, it had declined to 42% (Herzenberg, 1989, Table 46A). Most plants with 500 or more employees are unionised. The unionisation rate in the parts sector declined from 92 to 67%, between 1975 and 1985 (Herzenberg, 1989, Table 48). Within companies, one began to see unionised plants in north central urban locations closing while new plants were opened in the southern states, or in Mexico or Brazil. Parts employment in the north central region as a percentage of national employment in parts declined from 73 to 56% between 1974 and 1983 while the percentage in the south increased from 14 to 32% (Herzenberg, 1989, Table 46B).

Then the downturn beginning in late 1978 in the car industry opened up the first possibility of erosion in pattern bargaining in the universally organised assembly sector. As part of its effort to avoid bankruptcy, Chrysler broke both with the pattern set by Ford and General Motors in the 1979 round of bargaining, and with the rules of bargaining maintained since the early 1950s. In three rounds of bargaining between September 1979 and January 1981, the UAW agreed to a total of \$600 million in wage and benefit concessions, effectively eliminating percentage wage increases known as 'annual improvement factors' (AIFs) and cost-of-living increases (COLAs) for 1979 to 1982. By 1982, hourly compensation for Chrysler workers was \$2.50 below that of Ford and General Motors workers (Katz, 1985, p. 55).

While one may have foreseen future developments in the departure from pattern of the early 1980s, at the time it was viewed as a temporary deviation. By the end of contract negotiations in 1987 the gap had once again been closed. Moreover, although Chrysler wage rates were reduced below those of Ford and General Motors, it must be remembered that this hardly left Chrysler, then on the verge of bankruptcy, with a cost advantage.

As the experience of the 1970s and early 1980s signalled, one path to restructuring could involve the erosion of pattern bargaining and the opening of competition on the basis of labour costs across firms, plants and regions. While eroding wages in the parts sector may have reduced unit costs somewhat, resistance in the assembly sector put a limit on wage erosion as a solution to the problem, at least for the time being.

There are at least three possible paths for restructuring now open to the US car industry. The first possibility is that Japanese firms with superior production systems, lower costs, higher quality vehicles and deeper pockets will simply drive complacent US firms out of business. In this case, a superior production system used by new firms would replace both the existing production system and existing firms. Alternatively, US firms may respond aggressively to competition from Japanese

firms. Firms which choose the high road strategy would develop or adopt a more efficient and dynamic production system. Their suppliers and employees would be willing participants in the rationalisation of the industry. Firms which choose the low road would seek, through the usual means of concessions and plant relocation, continual reductions in compensation rates and supplier prices.

Technology transfer or social dumping

Reich and Lawrence and other proponents of foreign direct investment would have us believe that Japanese firms, by transferring a superior production system, will set the terms for rationalisation of the industry. What is this system which Reich and Lawrence are so keen to transfer? And precisely what is the incentive to Japanese firms and the mechanism for transferring the Japanese production system to the US?

It seems that much of the enthusiasm for the system is based on interpretation of only part of the system. The Japanese production system is a finely balanced blend of two diametrically opposed incentive systems. One, the system which has enthused western writers, draws on community values and common interests to forge a consensus around corporate strategy. This incentive structure, embedded in large manufacturing firms, appears to depend on a surrounding structure of contingent workers and secondary suppliers whose behaviour is motivated by more traditional economic incentives. Students of Japanese industry have concentrated on the large manufacturing firms (Dore, 1973, 1986, 1987; Aoki, 1990; Abegglen and Stalk, 1985). Less is known about the secondary markets for parts and labour.

The success of the Japanese production system and much of its appeal owes to its superior capacity to contain the destructive competitive forces of the market while promoting the constructive effects of competition. This is apparent in the industrial relations system for large firms, in the relationship between assemblers and first tier suppliers, and in the relationship of large firms to their banks and stockholders. Many of the exchanges which would be mediated by the market in a Western firm seem to be affected through negotiation and mutual agreement in large Japanese firms. Japanese firms, for historically specific reasons, entered into relations with workers, suppliers and financiers that entailed a greater sharing of power than is characteristic of Western firms. The result is an incentive structure better suited to the needs of contemporary markets.

For example, the permanent employment system in large firms, which was initiated in the 1950s to retain scarce skilled labour, is part of an incentive system which now draws a high level of commitment from employees. The technological and commercial dynamism of the system—new products are brought to the market in half the time required of Western firms—is frequently credited to the scope and sophistication of the permanently employed workforce.

The majority of the workers in the top tier firms in the industry face a labour market only for entry-level positions in the firm. Once a worker joins the firm there is virtually no lateral mobility outside the company. Workers expect to spend their lifetime (until 55) in a single firm, and are rewarded through promotion and both group and individual performance-based productivity bonuses. Promotion is based on performance criteria which include some measure of the workers' ability to handle

a broad range of tasks and work collectively in groups. Broadly defined tasks and job rotation relieve the traditional boredom of the assembly line while raising the employees' awareness of the objectives of the firm. Dore, Aoki, Abegglen and Stalk all suggest that this incentive system successfully encourages employees to view their interests in common with the firm.

First tier suppliers are part of the 'team' as well, contributing to the design of the product from the early stages. Unlike Detroit-based firms which traditionally organise relations with suppliers through a competitive bidding process, Japanese firms maintain very long-term, frequently exclusive relations with suppliers. Because suppliers and assemblers often hold stakes in the equity of one another's firm, they are conscious of their common fortune. Consequently, the Japanese assemblers have been able to exploit the design and engineering capabilities of their suppliers. The just-in-time system of inventory and parts delivery and statistical quality control build quality and conservation into the production process without costly inspection.

But the consensus forged from job security and sharing the benefits of prosperity depends on the cost flexibility built into the system through the use of contingent workers and secondary and lower tier suppliers. This is the level of the system where more familiar relations of power between capital and labour and between monopoly or oligopoly capital and competitive capital prevail.

Robert Cole estimates that only about 32% of Japanese employees in all industries enjoy the benefits of lifetime employment (1979, p. 61). In the car industry, it is those working in assembly plants or first tier suppliers that are offered lifetime employment. There are approximately 500,000 people employed in the car parts industry in Japan (JAMA, 1987, p. 18). Using Toyota as an example I have tried to calculate the relative importance of secondary suppliers and the contingent workforce to firm flexibility.

Toyota produces approximately 30% of the vehicles in Japan; assuming Toyota accounts for 30% of parts employment, it accounts for 150,000 car parts jobs. There are 176 firms in the Toyota Group, which includes first and second tier suppliers (Dodwell, 1986, p. 31). In a survey of over 500 Japanese parts suppliers (Cole and Yakushiji, 1984, pp. 157-161), it was found that very large first tier suppliers had average employment of 3000 to 6000, while employment in second tier suppliers averaged 340. Cole shows the employment distribution by firm size of a representative sample of male members of the workforce (employed or looking for work) in Yokohama, a city with an industrial structure comparable to Detroit (1979, p. 79, Table 11).¹ Thirty-nine per cent of the workforce was employed in firms of 1000 or more employees, 5% in firms of 500-999, 13% in firms of 100-499, and 41% in firms with less than 100 employees. The survey of Detroit showed only 25% employed in firms of less than 100 employees and 57% employed in firms with more than 1000 employees. If people employed by Toyota suppliers were distributed across firm sizes in comparable proportions to the distribution of workers in Yokohama, one would find 50,000 people, one-third of Toyota-related parts workers, employed in third and fourth tier supplier firms (Table 2).

In the survey by Cole and Yakushiji it was found that employees in second tier suppliers were paid wages that were 87% of the average in first tier suppliers.

¹ Of course this is only a proxy for comparison of automotive supplier structures.

Table 2. *Estimated Toyota parts employment by firm size*

Tier	Firm size	Number of firms	Share of employment (%)	Employment
1st	1000+	50	39	58,000
1st	500-999	10	5	7500
2nd	100-499	115	13	19,500
3rd/4th	< 100	4000	41	61,500
Total		4176	100	150,000

Source: Compiled by Howes, based on Cole (1979, Table 11, p. 79) and Dodwell (1986, p. 31).

Table 3. *Index of hourly wages in Japanese car parts, 1983*

Tier	Firm size	Index of wage rates
1st	500+	100
2nd	100-499	87
3rd/4th	30-99	67

Source: Compiled from Cole and Yakushiji (1984, p. 160).

Workers' wages in the third tier were 67% of those in first tier suppliers (Table 3). Eleven per cent of the workforce in second tier suppliers was part-time and seasonal, compared to 4.2% in first tier suppliers. Presumably there is an even higher proportion of temporary workers among lower tier suppliers. While 100% of first tier suppliers were unionised with a 95% membership rate, among second tier suppliers, only 50% had unions and only 69% of employees in union firms were members of the union.

There exists an army of third tier suppliers which is never involved in planning which does not have exclusive relations with any assembler and which wins contracts through a cost-based bidding process. These contingent workers and suppliers build cost flexibility into a system otherwise characterised by high fixed costs. This, too, is a crucial part of the Japanese system.

There is no reason why the creative parts of the system should be transferred and a good reason why the exploitative parts of the system would fit well in the United States. Toyota employs 65,000 people in Japan designing, manufacturing and assembling 3.6 million vehicles (Toyota Motor Corporation, 1987). In addition, it purchases parts from 176 first and second tier suppliers (most of which are more than

50%, dependent on Toyota and employ a total of 100,000 people) and from several thousand third and fourth tier suppliers (employing another 50,000 people). Among Toyota's assembly plants are Takaoka which produces the Corolla (the same vehicle as that assembled at NUMMI) and Tsutsumi which assembles the Camry (also assembled in Kentucky). In the US, Toyota ultimately plans to employ approximately 5500 people when it reaches full production of 550,000 cars in the mid-1990s. Each Toyota employee in Japan produces 55 cars annually. Each Toyota employee in the US produces 100 cars annually.

The difference in cars per worker is not a measure of productivity differences. Rather, it is clear evidence of the difference in levels of integration between US and Japanese operations. Japanese assembly workers in the Takaoka plant in Japan and American assembly workers in the NUMMI plant in California both require roughly the same number of hours to assemble a car (Krafcik, 1987). Therefore, for each vehicle produced, there must be substantially more labour involved in the 'system' work—design, engineering, high technology parts fabrication, research and development—in Japan than in the US. The apparent difference in productivity really reflects the difference in the role of Japanese and US production in the Toyota production system. The US operations are branch assembly plants. US production is a marginal part of the 'Toyota production system'. US sales are not a marginal part of Toyota sales.

Toyota can fully realise much of the strength of the Toyota production system, the close relationship between assemblers and suppliers, the team approach to design, the troubleshooting role played by production workers, through its operations in Japan. Since it produces the same vehicles in Japan, it can eliminate any problems in the production process there. If the synergy with suppliers can take place in Japan, and if all the parts are designed there, there is little need for those relations in the US. In fact, if Toyota dismantled its system and moved parts to the US, the system would be weakened.

On the other hand, Toyota can transfer a 'debugged' assembly line to the US and use production workers in fairly traditional ways (as they did at NUMMI). Since the assembly process is among the most mechanised and hence immutable parts of the production process, there is less room for worker input into the production process than in the case of the design process or batch production. If the Japanese assembly workers make necessary changes during the start-up process in the sister plant in Japan, then the work of American production workers can be reduced to that of machine tenders.

Since teams are used, some authors have argued that a transfer is taking place. However, teams serve a range of functions from integrative to supervisory. Teams are still the most cost effective system for monitoring workers. If the reward structure is even partially based on team performance and if workers monitor one another, they can eliminate the need for a supervisor. This does not imply, however, that they have discretionary roles in a constantly evolving production process.

The fact that transplants obtain parts 'just-in-time' from hundreds of US based suppliers is also taken as evidence of a transfer. But in the US, transplants buy low value-added, standardised parts from non-union transplant suppliers who pay an average hourly compensation rate 40% below the average for the car parts sector as a

whole. These are 'third tier' suppliers; they do not work closely with assemblers in the design and development of parts; their function is to absorb the costs and risks of holding inventory and supplying 'just-in-time'.

Despite Reich's claim that there are many studies which show that Japanese firms spend more money training workers than is spent by American firms, pay American workers higher salaries, give them more job security, and make them far more productive than American firms, given closer consideration, these factors do not add up to the transfer of a superior production system to the US.

Japanese investment in the US car industry does not fit the profile of foreign direct investment which has been promoted by Graham and Krugman, Reich and Lawrence. There are unlikely to be positive externalities for the US economy. In fact, the investment practice of Japanese car makers differs little from imports. Japanese firms have circumvented the restrictions of the voluntary restraint agreement without really abandoning integrated production in Japan. The Japanese production system remains in Japan while something very close to the end product is exported to the US.

Furthermore, it appears that Japanese firms do not sacrifice the factor cost advantages associated with the dualistic structure in Japan when they come to the US. In the next section, I show that there are real differences in factor costs facing US and Japanese firms. The factor cost differences are based primarily on benefit cost differences which occur when new greenfield plants are built in an industry which is populated by older plants and an aging workforce. Japanese firms are able to employ a segment of the labour force which is not available to the Big Three. There are additional advantages derived from the tax system and from low wage rates in the secondary sector of the industry.

The pension cost advantage

The cost differences follow from the different structures which prevail in US and Japanese parent car production in the US. US parent assemblers have an older workforce and obtain a higher proportion of parts in house and from unionised parts suppliers. Japanese firms have younger workforces and obtain a large proportion of their parts both from Japan, and from very low-wage non-union Japanese-parent parts suppliers in the US. There is little wage differential at the assembly level, but there is a very large benefit cost differential. At the supplier level, there is a huge differential both in wage rates and benefit costs.

US firms are mostly assembly-centered firms with varying degrees of vertical integration. General Motors produces about 50% of its parts in house, Ford, 40%, and Chrysler about 30%. The remainder of the parts are obtained from outside suppliers, located largely in the US. All in-house parts employees are covered under the Big Three contracts, and compensated at the same rate as assembly workers. Only 36% of the workforce of independent (non-Big Three) suppliers were still unionised in 1985 (Herzenberg, 1989, Table 48); the percentage is probably lower in 1991.

The average compensation for workers in the parts sector (including workers in the Big Three) was about \$16.88 in 1986, 75% of compensation in the assembly sector;

Table 4. Hourly earnings and compensation rates in the car industry, 1986

Sector	Average hourly earnings (\$)	Index	Total compensation (\$)	Index
Big Three assembly and parts	15.00	100	22.50	100
Transplant assembly	15.00	100	17.50	77
Parts:				
Total	12.69	85	16.88	75
Independents	10.40	69	13.00	58
Transplants	8.00	53	10.00	44

Source: Estimated by Howes from BLS sources and Florida (1988).

average compensation in the independents was about \$13.00 or 58% of compensation in the assembly sector (and 77% of the average for the parts sector) (Table 4).¹

The US parent firms operate approximately 70 assembly plants in the US and Canada, most of which are 30 or more years old. There are about 200 in-house parts operations. The workforce in the Big Three plants, now comprised largely of workers with at least 10 years seniority, averages 45–50 years of age.

Japanese firms now operate 11 North American assembly plants. With the exception of the NUMMI plant (the General Motors–Toyota joint venture) which is a retrofitted post-war General Motors plant, no transplant is more than 10 years old, most being two to three years old. Workers in transplant assembly operations are paid wages comparable to those in Big Three assembly plants (*Automotive News*, 2 July 1990). This is not surprising since three of the plants are organised by the UAW and the rest are trying to avoid unionisation. The average age of the workforce in these plants is 25–30 years (US Internal Revenue Service, Form 5500).

Japanese operations in the US are essentially assembly operations. While the average level of vertical integration for Japanese firms is about 15–20% in Japan,² this is not reflected in comparable levels of in house production in US-based plants. A minimum of 50% of the value of parts used in transplants are imported from Japan.³ US-sourced parts are either purchased from outside suppliers or manufactured within the assembly plant. The vast majority of parts purchased from outside suppliers are purchased from US subsidiaries of Japanese parts manufacturers. These 'transplant suppliers' are exclusively non-union and compensation rates are about 58% of compensation rates for the parts industry as a whole and 44% of compensation rates in Big Three parts plants (Table 4).

¹ Average hourly earnings come from an unpublished 1985 BLS study of average hourly earnings in independent parts suppliers, and published BLS data for average hourly earnings in SIC 3711 (automotive assembly) and SIC 3714 (automotive parts and accessories) in 1986 (BLS, Employment and Earnings). Earnings and compensation for transplant parts come from a survey done by Florida (1988). Average hourly compensation is estimated assuming a 50% roll-up for benefit costs in assembly, 33% in total parts, 25% in independent parts. (See Howes, 1990, p. 33, for assumptions and methodology.)

² Calculated by Howes (1991) from company annual report data.

³ The percentage imported by value is probably even higher, but the Japanese firms report US assembled parts as 100% US content, despite the fact that many of the parts in parts are imported. See Howes (1990) for a discussion of transplant local content.

These structural differences account for the enormous cost differential between US and Japanese firms. Consider the fringe benefit cost differences.¹ The Big Three have defined benefit plans. Each employee is guaranteed a monthly income of \$1500 after 30 years of employment. The companies must contribute to the fund whatever amount is necessary both to meet the current obligations and guarantee that the fund will be adequately financed to cover future obligations. As the domestic industry has declined, an ever smaller base of workers has funded, through their hourly compensation, a pension fund which must support an ever larger pool of retirees. The companies did not anticipate in the 1970s that they would be supporting as large a population of retirees as their active workforce by the mid-1980s. As a consequence, the cost of supporting these funds as a proportion of active hourly labour costs has escalated over the last 10 years.² In 1987, the Big Three paid between \$2300 and \$6600 into the pension fund for each hourly worker, the equivalent of \$1.10–3.17 per hour, assuming 2080 paid hours per year.

Even if a transplant pays UAW-level assembly base wages, there are tremendous labour cost savings in benefit costs, especially for pension and medical insurance. Take the example of Toyota where employees are covered by a defined contribution pension plan. Under the terms of the plan, the company will match contributions of the employee up to 4% of wages. If the employee contributes 4% of his or her wages, the maximum company contribution per employee will be \$1269 a year or 61 cents per hour, roughly 19 to 55% of the hourly pension cost to the Big Three.³

The cost of the plan is driven by the savings behaviour of employees but only to the limit of the cap on the contribution by the company. According to Ghilarducci, young workers are not inclined to save under the plan, hence, the cost to the company is probably considerably lower than 61 cents per hour. Unlike the case for defined benefit plans, costs for companies with defined contribution plans are unlikely to escalate unexpectedly. Costs rise only with wage rate increases, improvements in the negotiated benefit or changes in the savings behaviour of employees, all predictable and controllable events.⁴

Mazda, Diamond Star (DSA), Nissan and Honda all have defined benefit plans. Mazda and DSA are both union plants. They have probably negotiated defined benefit plans because of pressure from the unions to adopt plans comparable to those of the Big Three. Honda and Nissan, being the first transplants in the US,

¹ Data on aggregate, per participant, and per active worker pension costs were compiled by Teresa Ghilarducci from the IRS Form 5500s for each firm for 1987. Ghilarducci (1991) presents the data within an analysis of the changing structure of private social insurance.

² It is important to note that the hourly labour cost of pensions (and other benefits also paid to retired workers) is partly an accounting artefact. If a large part of the hourly cost of pensions is attributed to the cost of supporting retiree pensions, there is no obvious reason (excepting where increased costs result from bargaining increased benefits for retirees) why this should be part of hourly labour costs, rather than part of the overhead costs of operating the firm.

³ According to *Automotive News* (2 July 1990), the top wage rates (including COLA) for Toyota production and maintenance workers in 1989 was \$14.23 and \$16.28, respectively. The average of the production and maintenance wage was \$15.25. Four per cent of \$15.25 is 61 cents; for employees who work 2080 hours (40 hours per week multiplied by 52 weeks) and contribute 4% of their wages, the company will contribute \$1269 per year.

⁴ The defined contribution plan is not only less expensive for the employer, but of less value to the employee. If a Toyota employee contributed \$1269 annually to his or her retirement fund, matched by a contribution from the company, after 30 years, the fund would be worth about \$120,000, which would, at a 7% annual rate, pay out \$703 a month.

Table 5. US motor vehicle assemblers' pension plans, 1987

Firm	Date	Type	Benefit
Chrysler	1950	DB	} 32% of preretirement earnings for a 30-year veteran; no deduction for Social Security
Ford	1950	DB	
General Motors	1950	DB	
Honda	1982	DB	2.5% of career average salary for every year of service
Nissan	1983	DB	Maximum 50% of salary (including Social Security) for 30 years of service
NUMMI	1985	DC	(DB beginning in 1989); maximum 3% of salary contributed to match employee's contribution
Mazda	1987	DB	0.9375 of career average salary plus 0.9375 of salary above 1/2 Social Security maximum earnings base. Approximately 1.5% of career average for every year of service
Toyota	1986	DC	Limit 3% of earnings contributed to match employee's contribution
DSA	1989	DB	NA
SIA	1990	DC	NA

Source: Compiled by T. Ghilarducci (April 1991) from 1987 IRS Form 5500 for each company. NA: not available; DB: defined benefit; DC: defined contribution.

probably adopted defined benefit plans to avoid any obvious differences between compensation packages in their non-union and union plants.

Though the benefits to the workers will be comparable to those in Big Three plants, the cost of funding the plans will be much lower because there are no current obligations to a large pool of retirees. It will be a very long time before these plants see active/retiree ratios comparable to those of the Big Three. All workers now legally vest (have the right to a pension) after 5 years of service, but the level of the benefit and the cost of provision increases with years of service.

NUMMI, Toyota and Subaru-Isuzu (SIA) have defined contribution plans. NUMMI, which began with a defined contribution plan in 1985, switched to a defined benefit plan in 1988. Since Toyota and SIA are latecomers, perhaps they realised the threat of unionisation was fairly minimal, especially after witnessing the repeated failure of drives at Honda and Nissan.

Table 5 lists the main pension plans of US motor vehicle assemblers by date of inception, type of plan, and benefit formula in 1987. Pension costs for the main plan for each firm per worker and per participant are shown in Table 6. Participant/worker ratios differ greatly between firms, especially between transplants and Big Three firms. Participants include all retirees or their survivors, those eligible to receive a pension in the future but no longer working for the company and current workers. Because of the accounting method used which attributes all pension costs, both present and future funding, to the current cost of labour, a large pool of retirees (reflected in high participant worker ratios) implies high pension costs per hour of labour.

Table 6. Pension cost per hour, 1987

Firm	Hourly cost per worker (\$)	Hourly cost per participant (\$)	Ratio participant/worker
Chrysler	2.90	1.55	1.80
Ford	2.63	1.45	1.81
General Motors	0.95	0.58	1.62
Nissan	NA	NA	NA
Honda	0.50	0.50	1.00
Toyota	0.43	0.43	1.00
NUMMI	0.39	0.39	1.00
Mazda	NA	NA	NA

Source: Based on Ghilarducci (1991, Table 3, p. 10); original source: 1987 IRS Form 5500 for each company. NA: not available.

As Table 6 shows, hourly pension costs for Honda, NUMMI and Toyota in 1987 were 50 cents or less, while Big Three costs ranged from nearly \$1 to almost \$3. The large difference between General Motors, on the one hand, and Ford and Chrysler, on the other, is in part due to the proportionately smaller pool of General Motors retirees. It may also reflect changes in investment return assumptions which reduce the current liability for the company. NUMMI is an interesting footnote. Although the average age in the plant is probably comparable to the age in a General Motors plant (since most of the workers were drawn from among those employed in the plant when it was a Chevrolet plant), hourly pension costs are low because General Motors absorbed the accrued pension liabilities when it entered into the joint venture with Toyota. For the purposes of pension cost to NUMMI, these workers are 25 to 30 years old.

Health care costs

The costs of funding a large number of retirees from the hourly labour costs of an ever shrinking base of active workers is even more staggering in medical insurance. Pension funds are just that, funds which are in the best of cases pre-financed. But medical insurance is costed on a 'pay-as-you-go' basis. The savings in medical insurance costs associated with a young labour force are spectacular. Even if the transplants have exactly the same medical benefits as a typical Big Three firm, for a workforce with an average age of 25, the cost will be half that for a workforce with an average age of 45.¹ The average age at Honda was 30 years after seven years of operation, the average age at Mazda, less than 30. The average age of the Ford production workforce is 48 years.

In 1988, the cost of medical benefits at the Big Three averaged \$3-4 per hour. Each firm was spending almost \$6000-8000 per year per active employee, or \$520-660 per month to cover health insurance for both an older active workforce and a

¹ Personal communication from the UAW Social Security Department.

large population of retirees.¹ A pretty good individual insurance policy for a healthy person now costs about \$300 a month. Suppose transplants are spending \$300 a month (\$3600 per year) on insurance for healthy young workers and a negligible retired population. Their hourly health insurance costs would be approximately \$1.75 per hour for a 2080 hour year. Since there are insurance discounts for large institutions, the actual cost would probably be lower.

These estimates are confirmed by an internal Chrysler memorandum comparing the hourly health care costs at NUMMI (\$1.70) and Chrysler (\$4.20). Health care costs are probably higher at NUMMI than at the average transplant because the workforce is older.

Supplier-related cost advantages

Transplant assemblers enjoy an hourly labour cost advantage of between \$2.50 and \$5.50 an hour over the Big Three, due to the pension and medical benefit cost advantages of building greenfield plants and using a young labour force.

For the transplants, the benefits of greenfielding do not stop at assembly labour costs. Sixty-five to 80% of the cost of a vehicle is in purchased materials including raw materials—steel, aluminium, iron, fabrics, plastic—and component parts. For transplants the purchased materials share is closer to 85%. At this point, transplants probably enjoy lower purchased materials costs for several reasons. First, about 50% of their purchased components are still imported from Japan where all the cost advantages of the Japanese system, including the use of tertiary suppliers, are operative. Second, those components which are purchased in the US come almost exclusively from Japanese suppliers operating in new greenfield plants themselves. Greenfield suppliers enjoy similar cost advantages to greenfield assemblers—a young workforce and lower benefit costs. As noted earlier, transplant suppliers have labour costs which are 44% of labour costs in Big Three parts plants and 75% of labour costs in the average independent parts supplier.

Suppose, hypothetically, that Big Three firms produced 50% of the parts in house, paying assembler level compensation rates of \$22.50 in 1986, obtained 40% of their parts from independents, paying \$13.50 per hour, and 10% from overseas where we will assume the same rate as parts from Japan. The weighted average labour costs for all hours of production labour embodied in the vehicle would be \$17.20. Suppose that transplant assemblers produced 15% of parts in house, paying \$15 an hour in wages and \$2.50 an hour in benefit costs. Eighty-five per cent of parts were obtained elsewhere, half from transplant parts suppliers, where average rates are \$10 per hour, half from Japan where average hourly compensation costs for the industry were \$7.50 in 1986 (US Department of Labor, BLS, March 1989). The weighted average hourly compensation rate for the transplants is \$10.06, 58% of the rate paid by the Big Three (Table 7). This is a crude estimate, but the labour cost differential is of such an order of magnitude that any fine tuning would not close the gap significantly. Japanese firms retain a very large labour cost advantage owing to the kind of investment that

¹ I estimated hourly health costs from the fraction of total company health care expense in the US which is attributed to hourly workers, divided by estimated hours. Company health care expenses come from Bernstein Research (1990). The fraction due to hourly workers is estimated from the share of hourly workers in the total labour force.

Table 7. Average hourly labour costs for all production hours in a vehicle, 1986

	In-house assembly and parts	Outside domestic	Outside imports	Total weighted average	Index
Big Three vehicle					
Hourly compensation (\$)	22.50	13.00	7.50	17.20	100
(weight, "%")	50	40	10	100	
Transplant vehicle					
Hourly compensation (\$)	17.50	10.00	7.50	10.06	58
(weight, "%")	15	42.5	42.5	100	

Source: Compiled by Howes, based on data from BLS, Employment and Earnings; BLS, March 1989; Florida (1988).

they engage in in the US market. In fact, since Japanese car-workers' compensation rates rose to 76% of US rates by 1988, Japanese firms actually widened the gap through transplant investment.

Conclusion: the colonisation of the American production system

Japanese transplants, like the Trojan horse, may look like a gift, apparently providing jobs, new income, transferring a superior technology and revitalising the US motor industry. However, as the Trojan horse was the vehicle for Greek entry into and colonisation of Troy, so may the transplants be the vehicle by which superior Japanese firms transform a weak American production system into an assembly outpost. There is no real transfer of technology, partly because it would undermine the strength of the system in Japan, and partly because it would defeat the role of US operations in the Japanese production system as a whole. US operations are part of the secondary or tertiary, flexible underside of the Japanese system which is so necessary to maintain consensus in the primary sector.

No one's interests (save those of the Japanese firms) are served by the erosion of private benefits. As Ghilarducci has pointed out, this could be part of a trend towards the erosion of the private social insurance system in the US. Certainly, it is the most effective tool yet to erode pattern bargaining in the assembly sector of the motor industry. Once competition around labour costs is possible, US firms have a greater incentive to 'sweat' labour and suppliers, which undermines the co-operative environment necessary to rationalise their productive systems. In the long run, they will run out of options.

Americans cannot remain neutral in the face of incoming foreign investment, especially where it threatens to dismantle strategic industries and reduce the US industrial structure to an assembly outpost. A variety of policies, including trade, investment and tax policies could be designed to promote competition from foreign firms on the basis of superior technology rather than inferior compensation systems. Only if firms, both domestic and foreign, are obliged to retrofit 'brownfield' plants in existing car-producing regions, pay wages and benefits which reflect the industry

standard, and obtain a large proportion of their parts from existing (even upgraded) domestic suppliers will new foreign investment provide the benefits suggested by Reich.

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SENATOR BINGAMAN. Thank you very much.
Mr. Boltz, why don't you go ahead, please.

**STATEMENT OF RONALD R. BOLTZ, VICE PRESIDENT
PRODUCT STRATEGY AND REGULATORY AFFAIRS,
CHRYSLER CORPORATION**

MR. BOLTZ. Thank you very much, Mr. Chairman.

On behalf of Chrysler, I would like to thank you for your interest in the health of the auto industry and in the challenges we face.

I'm joined by associates from Chrysler, Jim Rickert, who is the Director of Product Strategy, and Patricia Kennedy from our Washington office. They're going to help me with a series of charts that I'd like to show you today, Senator, to illustrate industry conditions. And then at the end of my talk, I'd like to address a few policy options that you may wish to consider.

The auto industry, in terms of the economy, has stalled at a sales level worse than we would expect in a normal recession, and that's shown on this chart. The recovery was under way during June and July after sales bottomed out in January. However, the sales pace has deteriorated through the fall and is now traveling below recession levels.

The charts themselves are also attached to our testimony. If you could, Jim, just swing them around a little bit so that the Chairman can see them. Thank you.

Consumers are certainly pessimistic about the economy, as we show on the chart to your left. Consumer attitudes turned down during the summer of 1990, bottoming out when the Nation went to war in the Gulf in January of this year. Attitudes rebounded sharply beginning in March, and we thought the worst was over. However, the sharp declines in September, October, and November of this year leave the index at the lowest level we've seen since the 1981-82 recession.

An industry——

SENATOR BINGAMAN. Let me just ask, the shaded areas on that chart indicate times of recession?

MR. BOLTZ. Yes, they do, sir.

SENATOR BINGAMAN. Okay.

MR. BOLTZ. The industry volume decline is rough enough for domestic manufacturers. However, we often get hit with a double whammy. Market share shrinks along with industry volume. The imports, particularly the Japanese, seem able to gain share in a recession, as shown on the chart to your right.

The Japanese alone now capture over one third of the car market, and the chart indicates the share that Japanese manufacturers held in periods of recessions—those are the boxes—compared to their share between periods of recession, which, in all cases, are far lower.

If you consider only the retail business, as we do on the next chart, foreign makes——

SENATOR BINGAMAN. Let me just ask, on——

MR. BOLTZ.—Capture one half the car market.

SENATOR BINGAMAN. Could I ask on chart 3 about the line extending out to 1995; is that your projection as to what's going to happen between——

MR. BOLTZ. It is. It is simply the trend of the information from 1970 forward. Clearly, if you performed a statistical analysis and extrapolate the trend, it would continue to increase, yes, sir.

SENATOR BINGAMAN. Okay.

MR. BOLTZ. That is not our projection, but we are running at 35 percent. There are really no limits to the share a manufacturer could gain in this market, foreign or domestic.

As shown on this next chart, foreign markets capture over one half of the car market. Now, this is the retail car market alone. That's on chart 4, sir. Traditional domestics at 49 percent, versus foreign makes at 51 percent, with the Japanese commanding 43 points.

Domestic manufacturers still dominate the fleet markets where profits are slim or nonexistent. But even here, the Japanese are significant, and their share is growing.

Domestic share continues to erode, despite quality improvements, and that's illustrated on this chart. Clearly, we've narrowed the quality gap that exists. If you eyeball it, we're about two years behind the best of the imports

We've exercised restraint in pricing, as shown on Chart 6. The domestics' cumulative price increase since 1986 is about half that of the Japanese. And, in fact, is less than the Consumer Price Index.

We're marketing harder than ever, as shown on the next chart, and so are the Japanese. In my mind, they saw the need for incentives when the quality gap diminished and added transplant capacity.

Well, here's the net result, shown on the chart to your left. Big Three pre-tax losses on North American vehicle operations continue to accumulate in 1991. The losses total \$12 billion dollars through the first three quarters of this year. Twelve billion dollars breaks the previous record set in 1982, and the year is not over.

At the same time, Chrysler continues to invest record amounts—over \$16 billion over the next five years—in new product development, new plants, and an all-new research and development center to improve product quality and slash lead time.

Some would say that domestic manufacturers are getting what they deserve for the uneven quality they've produced in the past, or for using obsolete management practices. I'm not here to defend the domestics.

I would like to note, in passing, that no group of companies could possibly lose \$12 billion in nine months without structural problems

aggravated by a weak economy. No one is that lethargic, or that stupid. Not for \$12 billion, sir, not across a group of companies.

There are structural reasons why this is happening. Furthermore, unless we overcome the structural advantages enjoyed by our Japanese competitors—and you've heard some of those today—there is a risk that the domestic industry will continue to falter long-term.

Under the guise of free trade, the United States seems willing to give away one third of its combined car and truck market to foreign competition, and that's illustrated on this chart. That is far greater than Western Europe at 15 percent, and Japan at 3 percent.

Let me note, this is of selected car and truck markets combined. If you were looking at the car markets alone, sir, the figures would be, in terms of foreign penetration for car markets, 43 percent for the United States I believe it's 12 percent in Western Europe and 5 percent in Japan. I have another chart that illustrates the foreign penetration—car markets alone for 1991—to supplement this material.

Unlike Europe, which recently acted to cap Japanese share at 16 percent through the end of the decade, the United States does not impose limits on foreign penetration of its markets. The Japanese enjoy a sanctuary in their home market, and use the profits generated in this sanctuary to finance penetration of other markets around the world.

That's illustrated on this chart. With the cap in Europe, we can expect the Japanese to once again target U.S. markets for penetration increases. As you'll notice on this chart, we've taken the seven largest Japanese auto companies. We've estimated their global market profits. As you can see, from 1987 forward, they make all of their money in the home market of Japan where foreign penetration is 5 percent or less, depending on how you want to look at the markets. And elsewhere in the world, they earn no profits whatsoever.

The penetration of the U.S. market is largely the result of Japanese transplant capacity, as illustrated on this chart. Transplant capacity grew from 60,000 units in 1982—a very small amount—to about 2 million units today. Transplants did not principally reduce imports. Transplants did however largely displace U.S. domestic capacity. And we believe that the Japanese will level off imports—this is our projection—while transplants continue to grow, increasing their penetration of the U.S. market above 40 percent in the future.

Added transplants will continue to put pressure on capacity utilization, as shown on this chart. As transplants and imports capture a growing share of the U.S. market, U.S. companies adjust by closing plants. This affects the whole supply chain, not just the assembly business.

There has been a net loss of about 200,000 U.S. jobs, not just from increased import sales, but from job losses among suppliers due to the low U.S. content in transplant vehicles. We can calculate domestic content several ways.

SENATOR BINGAMAN. Let me just ask about that figure, 200,000 lost jobs, tell me again what that is, over what period of time.

MR. BOLTZ. This is our estimate of direct job losses over a five-year period, sir, as the Japanese have increased market share in assembly and among supplier plants. Not among dealership or downstream personnel. It's just direct manufacturing job losses.

SENATOR BINGAMAN. But are you suggesting that those are jobs that are lost as a result of the transplants coming in, or those are jobs that were lost because of the loss in market share?

MR. BOLTZ. Because of the market share transfer from domestics to the Japanese in total, from both imports and transplants, sir, we'll get at that in a minute when we look at content.

As I said, we can calculate domestic content several ways. Here's two examples. No matter how you define it, whether you deduce it by EPA definitions or by an estimated parts value—no matter how you define it—transplant domestic content is far less than one half that of domestic manufacturers. As you can see, whether it would be a transplant that replaces a domestic unit or whether it be an import replacing a domestic unit, there is not as much local, domestic U.S. content in those vehicles as there would be if that unit were built 100 percent domestically by a U.S. company, at the level of 88 to 90 percent content, for example.

Import content, as you can see in all instances, is less than one fourth domestic and perhaps as low as 1 percent. In answer to one of your questions, it really does matter if domestic companies produce automobiles.

It certainly matters to auto parts trade. Auto parts for Japanese transplants are driving the increase in the auto trade deficit. This chart depicts the increase in auto parts trade deficit over the last several years, from 1985 forward.

The Japanese transplants are importing high value-added parts from their home market, and they largely deal with suppliers that are Japanese-owned, even when sourcing parts locally. We do not compete against Toyota alone. We compete against its keiretsu—its bank, its suppliers, and its government—all interwoven and mutually supporting.

We also believe that the auto industry—a healthy domestic auto industry—really matters to U.S. workers, including those in Japanese transplants.

The transplant manufacturers pay lower social costs for U.S. workers than domestic manufacturers, especially in health-care, pension and job security benefits. As an example, chart 15 illustrates the difference in pension benefits and health-care costs.

And finally, a healthy domestic auto industry really matters to a host of other critical U.S. industries. As illustrated on this chart, the auto industry is the largest customer for rubber products, malleable iron, lead, screw machine products and stampings.

Senator, we buy 40 percent of the machine tools consumed in the United States, 25 percent of the glass, 20 percent of the semiconductors, 18 percent of the aluminum, and 12 percent of the steel, for example.

If the industry does matter, then we should ask ourselves what policies should the U.S. Government pursue to foster the health of the industry.

We would suggest five. First is trade policy. We should recognize that our open market, one-way trade policy is a disaster. We should use our market as a tool to reduce the trade imbalance. Japan should share in the pain of the recession, as they have shared the fruits of the good times. Chrysler supports limiting Japanese market share as the Europeans are doing, at least until the Japan home market reflects significant import penetration.

Second, sectoral policy. We believe the United States should abandon its hands-off approach to key industries, while global competitors benefit from interlocking support between government and industry. The United States is the only country in the world that does not nurture its domestic auto industry with conscious policies.

Third, health-care reform. Health-care costs cripple our economy in two key ways. First, they burden manufacturers with enormous costs totally disproportionate to comparable costs borne by our foreign competitors. In the case of autos, our costs are more than twice those of German manufacturers and three times those of Japanese manufacturers operating in their own countries. Second, all health-care costs ultimately fall on the backs of the American consumer, through higher co-payments, deductibles and out-of-pocket payments, including higher taxes, higher prices, lower wages and less job opportunity. Consumers with less disposable personal income do not make for a dynamic economy. We need a health policy that controls aggregate costs and distributes those costs fairly throughout the economy. All of our foreign competitors do business in such an environment. Instead, we must cope with a system that places a disproportionate burden on business, and particularly a punitive burden on mature, labor-intensive firms like auto manufacturers.

Fourth is regulations. Congress should review the Nation's regulatory agenda, recognizing its impact on business and consumers. Without reopening either the Clean Air Act or the fuel economy debate, Congress and the Administration should and can work together to identify and then balance the real benefits with the huge compliance costs for each new regulation. For example, we favor the use of energy taxes and market incentives rather than antimarket CAFE mandates to achieve energy conservation or energy policy goals.

And finally, there's tax policy. Congress should look at tax policies that could boost consumer attitudes and help the economy accelerate out of the recession. That's a short-term view.

Tax policy revisions could also help the industry invest for the long term. The Congress should consider a business transfer tax or value-added tax, which taxes imports and subsidizes exports. We should reward capital investment by bringing back an investment tax credit, and we should revise the alternative minimum tax.

In summary, the domestic automobile industry matters to the economic health of the Nation. Right now, the domestic automobile industry is in trouble. We are doing a phenomenal amount to help ourselves, ranging from quality improvements and investments in new models and plants to cost reductions and new management practices.

The auto industry does need a constructive partnership with the U.S. government if we are going to survive in a world where other companies do have partnerships with their governments, and where one-way trade is a way of life with our major competitor, Japan.

Thank you, sir, for your attention.

[The prepared statement of Mr. Boltz follows:]

PREPARED STATEMENT OF RONALD R. BOLTZ

Good afternoon. My name is Ron Boltz. I am Vice President for Product Strategy and Regulatory Affairs, and General Manager of Small Car Operations, at Chrysler Corporation. On behalf of Chrysler, thank you for your interest in the health of the auto industry and the challenges we face.

I will be showing you a series of charts today to illustrate industry conditions, then suggest policy options that could help the industry.

The auto industry recovery has stalled at a sales level worse than we would expect in a normal recession (Chart 1). A recovery was underway during June and July after sales bottomed out in January. However, the sales pace deteriorated through the fall, and is now traveling below normal recession levels.

Consumers are pessimistic about the economy (Chart 2). Consumer attitudes turned down during the summer of 1990, bottoming out when the Nation went to war in the Gulf in January. Attitudes rebounded sharply beginning in March, and we thought the worst was over. The sharp declines in September, October and November, however, leave the Index at the lowest level we've seen since the 1981-82 recession.

An industry volume decline is rough enough for domestic manufacturers. However, we often get hit with a double-whammy—market share shrinks along with industry volume. The imports, particularly the Japanese, seem to be able to gain share in a recession (Chart 3). The Japanese alone now capture over one-third of the car market.

If you consider only the retail business (Chart 4) foreign makes capture over one-half the car market—with the Japanese commanding a 43 percent share. Domestic manufacturers still dominate the fleet market, where profits are slim or non-existent, but even here Japanese share is significant and growing.

Domestic share continues to erode despite quality improvements (Chart 6). narrowed the quality gap. And we've exercised restraint in pricing (Chart 6). The domestic cumulative price increase since 1986 is about half that of the Japanese, and 1955 than the CPI.

We are marketing harder than ever (Chart 7), and so are the Japanese. In my mind, they saw the need for incentives when the quality gap diminished and added transplant capacity came on stream.

The net result is that Big 3 pretax losses on North American vehicle operations continued to accumulate in 1991 (Chart 6). Losses total \$12 billion through the first three quarters of 1991. \$ 12 billion breaks the previous record set in 1982, and the year is not over. At the same time, Chrysler continues to invest record amounts, over \$16 billion during 1991-86 on new products, new plants, and an all new R&D center to improve product quality and slash leadtime.

Some would say the domestic manufacturers are getting what they deserve for the uneven quality they produced in the past, or for using obsolete management practices. I'm not here today to defend the domestics. I would like to note in passing that no group of companies could lose \$12 billion in nine months without structural problems aggravated by a weak economy.

There are structural reasons why this is happening. Furthermore, unless we overcame the structural advantages enjoyed by our Japanese competitors. There is risk that the domestic industry will falter long term.

Under the guise of free trade, the United States seems willing to give away one third of its combined car and truck market to foreign competition (Chart 9). That is far greater than Western Europe at 15 percent and Japan at 3 percent.

Unlike Europe, which recently acted to cap Japanese share at 16 percent through the end of the decade, the United States does not impose limits on foreign penetration of its markets. The Japanese enjoy a sanctuary in their home market, and use the profits generated in this sanctuary to finance penetration of other markets around the world (Chart 10). With the cap in Europe, we can expect the Japanese to once again target U.S. markets for penetration increases.

Penetration of the U.S. market is largely the result of Japanese transplant capacity, which grew from 60,000 units in 1982 to about 2 million today. Transplants did not principally replace imports. Transplants largely displaced U.S. domestic capacity. And we believe the Japanese will level off imports while transplants continue to grow, (Chart 11), increasing their penetration of the U.S. market above 40 percent.

And added transplants will continue to put pressure on capacity utilization (Chart 12). As transplants and imports capture a growing share of the market, U.S. companies adjust by closing plants. This affects the whole supply chain. There has been a net loss of about 200,000 U.S. jobs. Not just from increased import sales, but from job losses among suppliers due to the low U.S. content in transplant vehicles.

We can calculate domestic content several ways. Here are two examples (Chart 13). No matter how you define it, transplant domestic content is little more than one-half that for domestic manufacturers. And import content is less than one-fourth.

So, it really does matter if domestic companies produce autos. It certainly matters to auto parts trade (Chart 14). Auto parts for Japanese transplants are driving the increase in the auto trade deficit. The Japanese transplants are importing high-value-added parts from their home market. And they largely deal with suppliers that are Japanese-owned, even when sourcing parts locally. We do not compete against Toyota alone, we compete against its keiretsu—its bank, its suppliers and its government, all interwoven and mutually supporting.

It really matters to the U.S. workers in Japanese transplants (Chart 15). The transplant manufacturers pay lower social costs for U.S. workers than domestic manufacturers, especially in Health Care, pension and job security benefits.

And, finally, a healthy domestic auto industry really matters to a host of other critical U.S. industries (Chart 16). The auto industry is the largest customer for rubber products, malleable iron, lead, screw machine products and stampings. We buy 40 percent of the machine tools consumed in the U.S., 25 percent of the glass, 20 percent of the semi-conductors, 18 percent of the aluminum and 12 percent of the steel.

If the industry does matter, we should ask ourselves—What policies should the U.S. Government pursue to foster the health of the industry? (Chart 17)

Trade Policy. We should recognize that our open market, one-way trade policy is a disaster. We should use our market as a tool to reduce the trade imbalance. Japan

should share in the pain of the recession, as they have shared the fruits of the good times. Chrysler supports limiting Japanese market share, as the Europeans are doing, at least until the Japan home market reflects significant import penetration.

Sectoral Policy. The U.S. Government should abandon its "hands off" approach to key industries, while global competitors benefit from interlocking support between government and industry. The United States is the only country in the world that does not nurture its domestic auto industry with conscious policies.

Health Care Reform. Health costs cripple our economy in two key ways. First, they burden U.S. manufacturers with enormous costs totally disproportionate to comparable costs borne by our foreign competitors. In the case of autos, our costs are more than twice those of German manufacturers and three times those of the Japanese. Second, all health costs ultimately fall on the back of the American consumer, through higher copayments, deductibles and out-of-pocket payments, higher taxes, higher prices, lower wages, and less job opportunity. Consumers with less disposable income do not make for a dynamic economy.

We need a health policy that controls aggregate costs, and distributes those costs fairly throughout the economy. All of our foreign competitors do business in such an environment. We, instead, must cope with a system that places a disproportionate burden on business, and a particularly punitive burden on mature, labor intensive firms like auto manufacturers.

Regulations. Congress should review the Nation's regulatory agenda, recognizing its impact on business and consumers. Without reopening either Clean Air or fuel economy debates. Congress and the Administration should work together to identify and then balance—the real benefits with the huge compliance costs for each new regulation. For example, we favor the use of energy taxes and market incentives rather than anti-market CAFE mandates to achieve energy conservation goals.

Tax Policy. Finally, Congress should look at tax policies that could boost consumer attitudes and help the economy accelerate out of the recession. Tax policy revisions also could help industry invest for the long-term.

The Congress should consider a business transfer tax or VAT which taxes imports and subsidizes exports. We should reward capital investment by bringing back an investment tax credit and revising the alternative minimum tax.

In summary, the domestic automobile industry matters to the economic health of the Nation. Right now, the domestic, auto industry is in trouble. We are doing a phenomenal amount to help ourselves, ranging from quality improvements and investments in new models and plants to cost reductions and new management practices.

The auto industry does need a constructive partnership with the U.S. Government if we are going to survive in a world where other companies do have partnerships with their governments, and where one-way trade is a way of life with our major competitor, Japan.

Thank you for your attention.

Sales Performance

U.S. Auto Industry

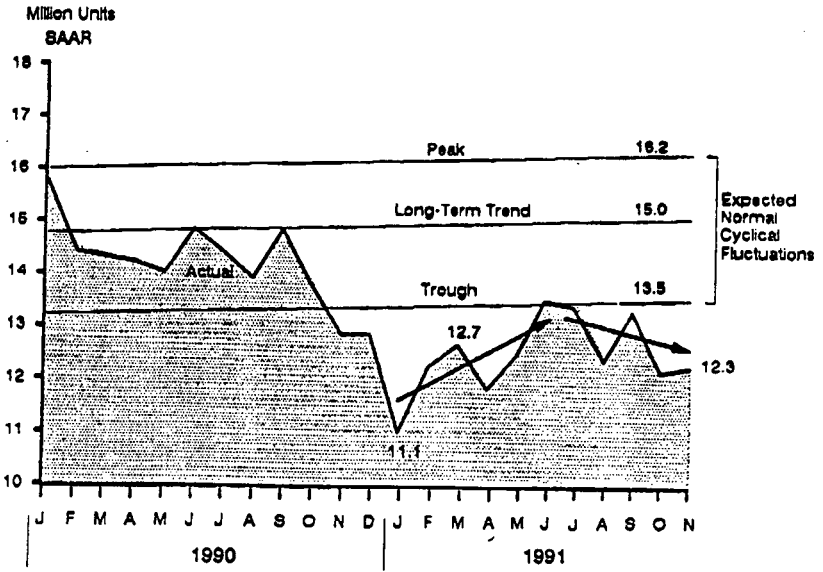
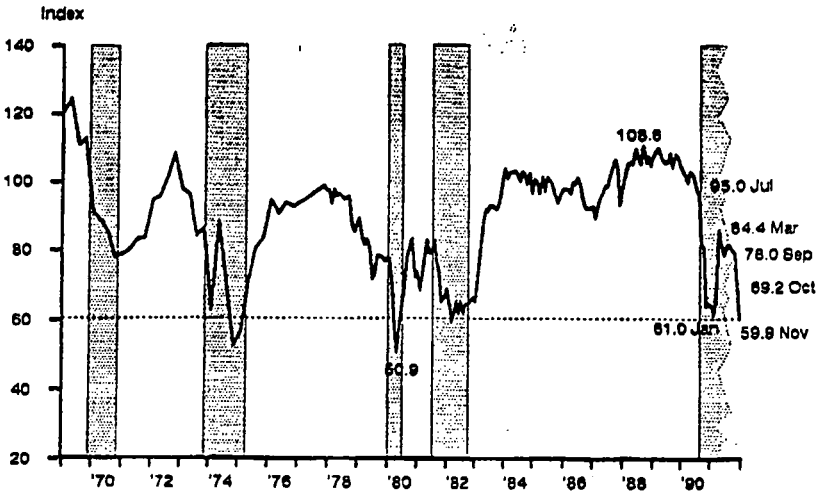


Chart 2

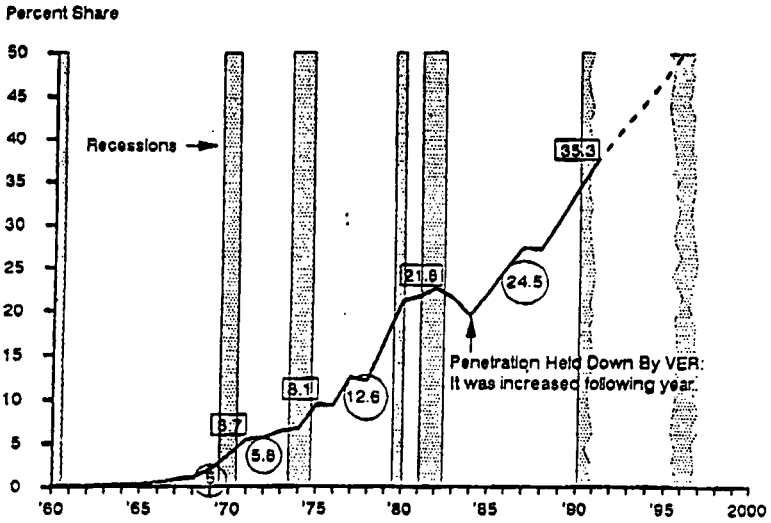
Consumer Attitudes



Sources: Average of University of Michigan
and Conference Board indexes

Japanese Penetration U.S. Car Industry

Chart 3

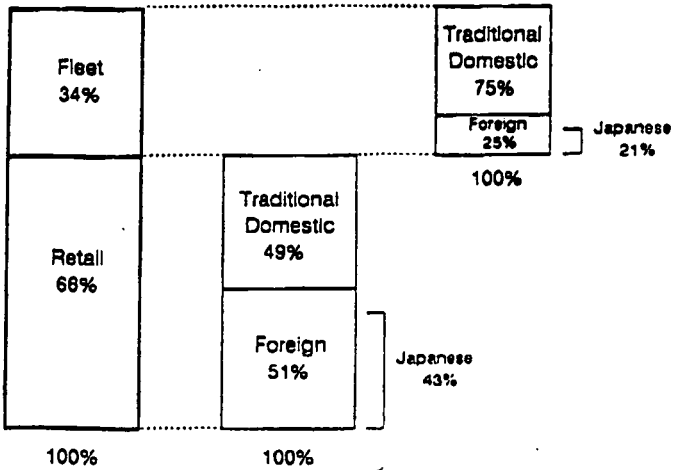


Note:

- Designates average penetration during recessions
- Designates average penetration during economic recoveries

Sourcing Pattern

U.S. Car Industry, Jan - Aug, 1991



Quality Improvements Imports Vs. Domestic

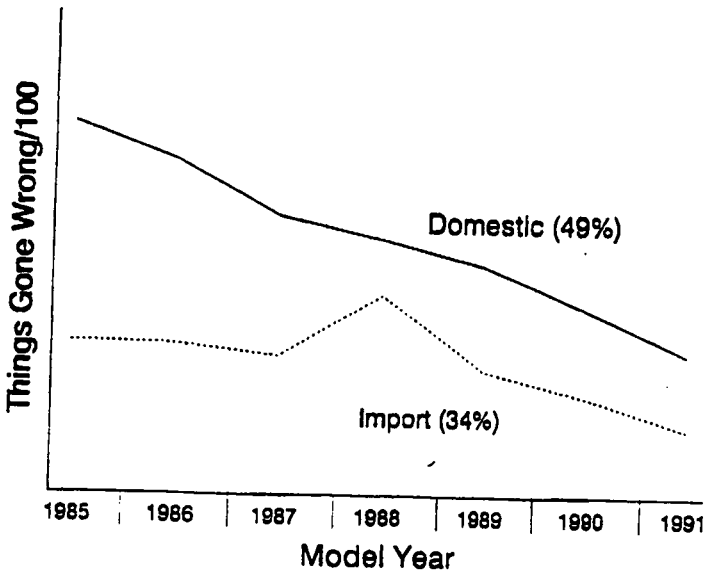


Chart 6

Domestic Vs. Japanese Cumulative Price Increases

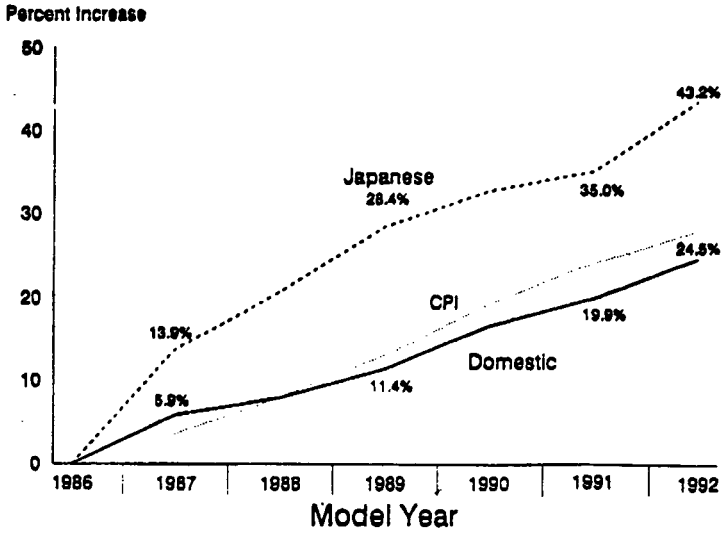
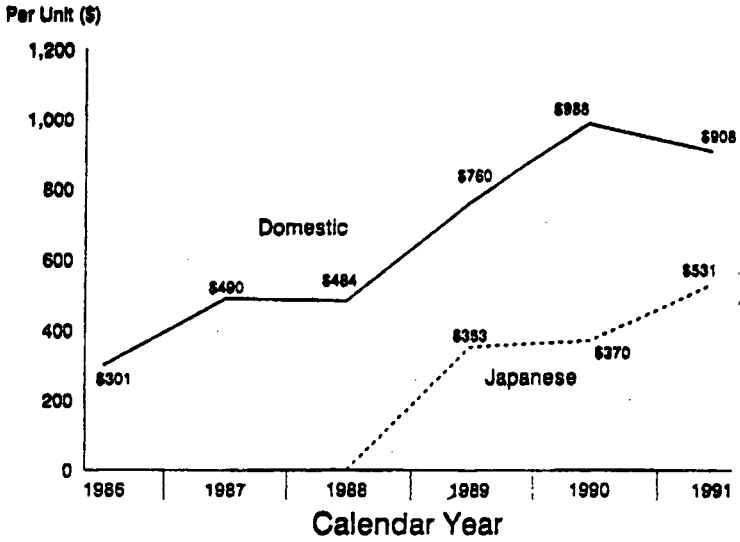


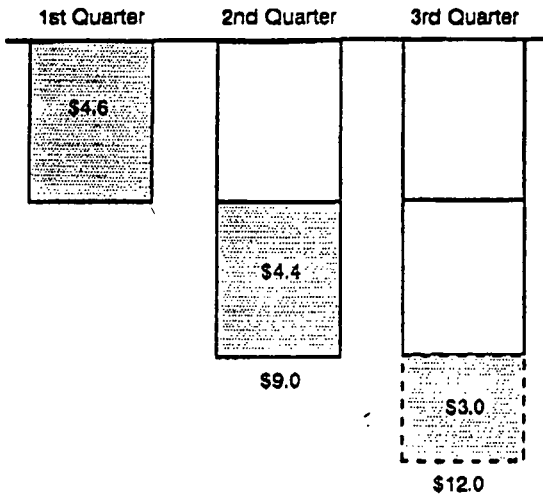
Chart 7

Domestic Vs. Japanese Retail Incentives



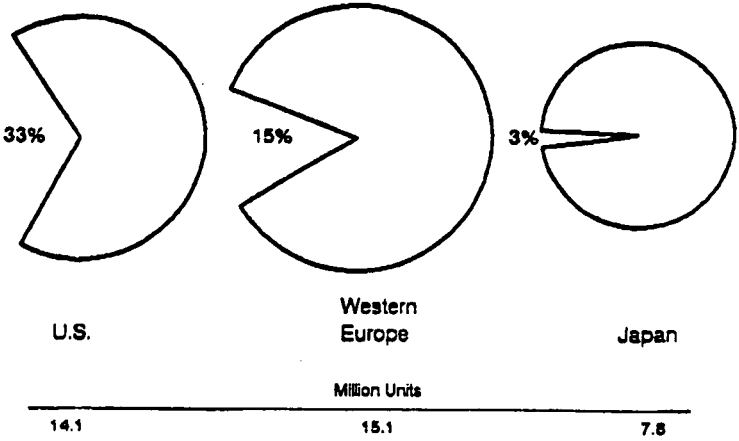
Pre-Tax Losses On North American Vehicle Operations, 1991

Billion Dollars



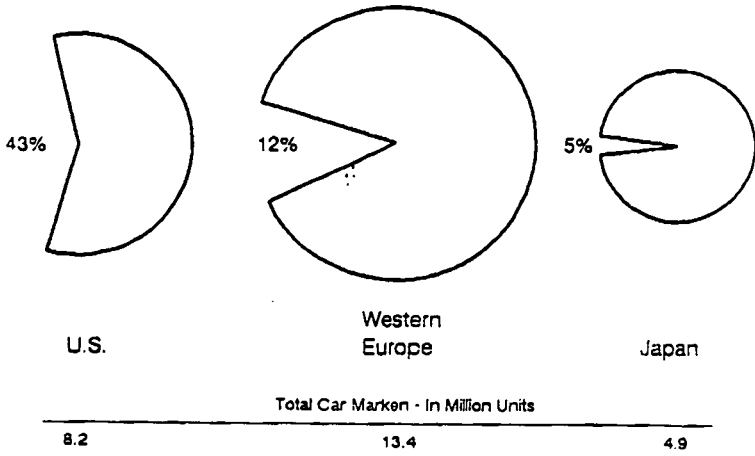
Foreign Penetration, 1990

Selected Car & Truck Markets



Foreign Penetration, 1991

Selected Car Markets



JAPANESE COMPANIES GLOBAL AUTO PROFITS



\$(Billions)

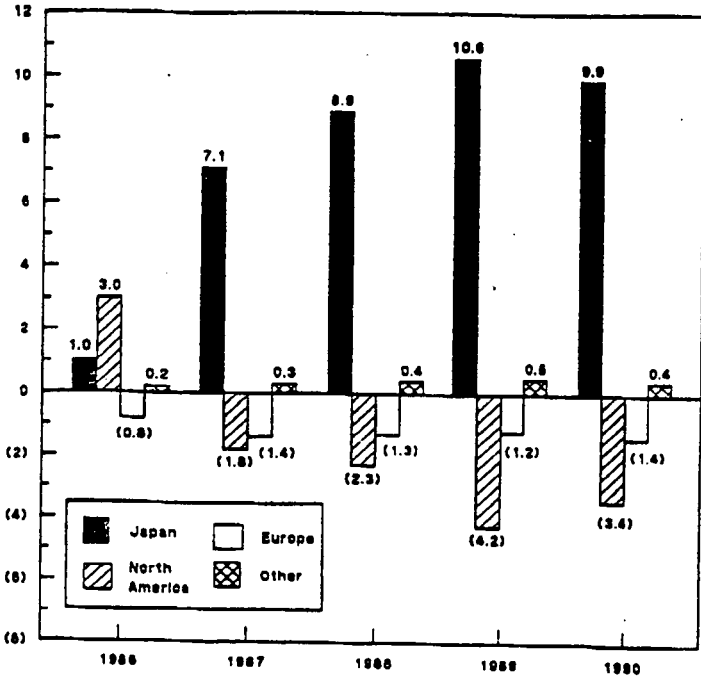
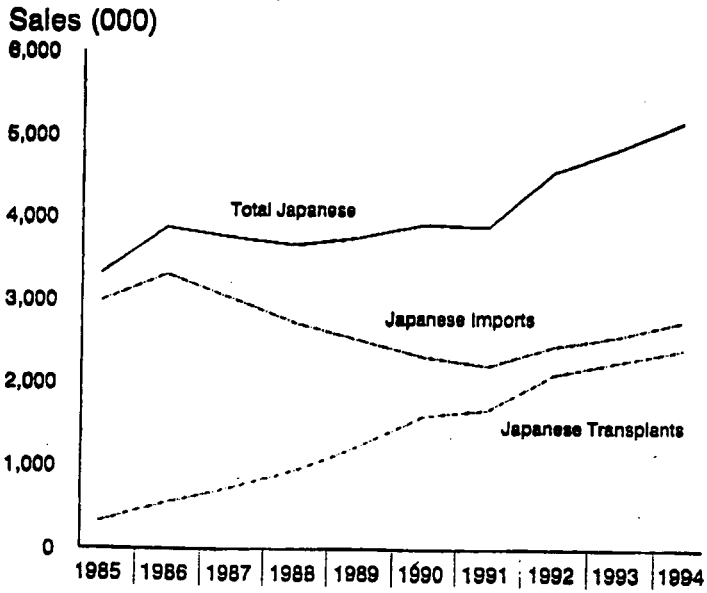
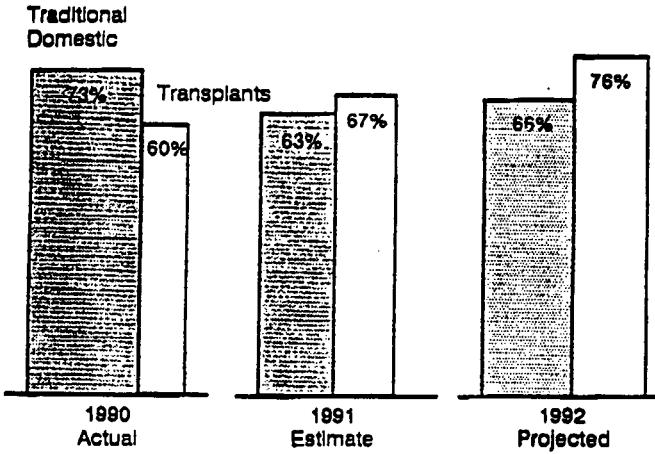


Chart 11

Japanese U. S. Vehicle Sales

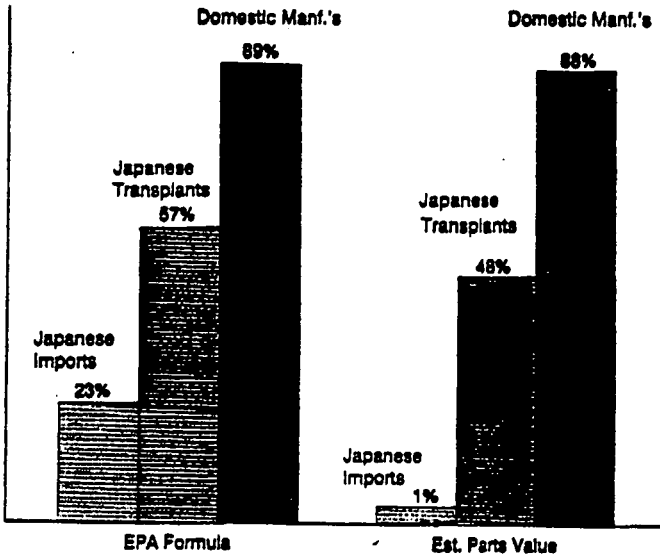


Expected Capacity Utilization North American Auto Industry

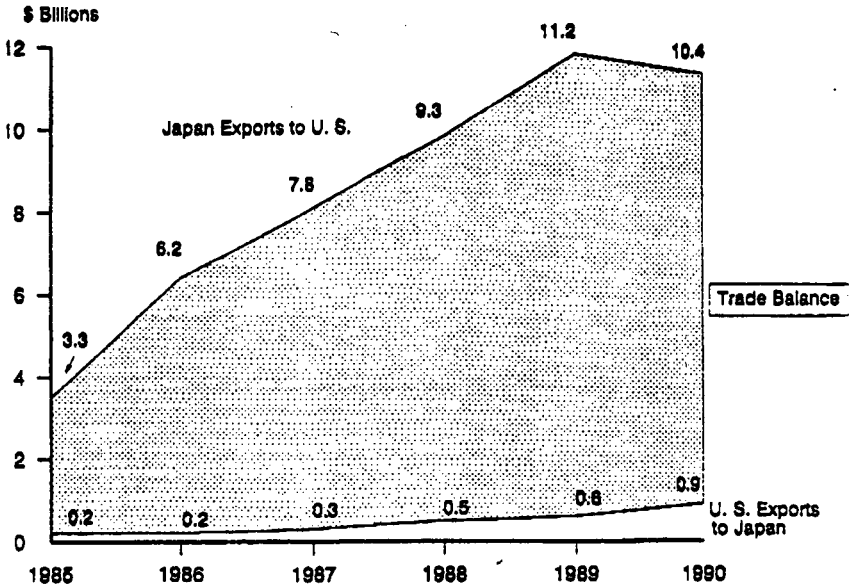


U. S. Domestic Content

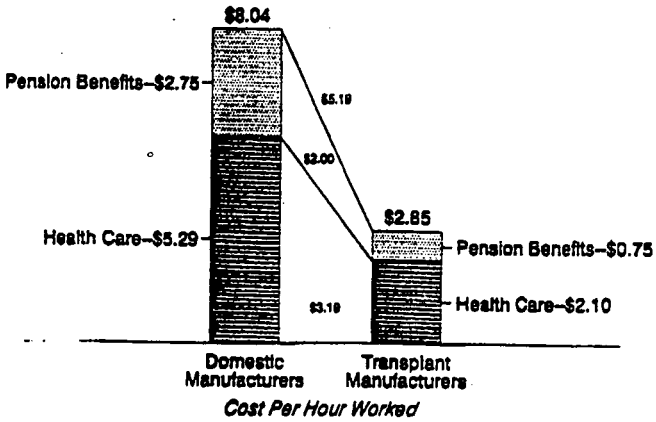
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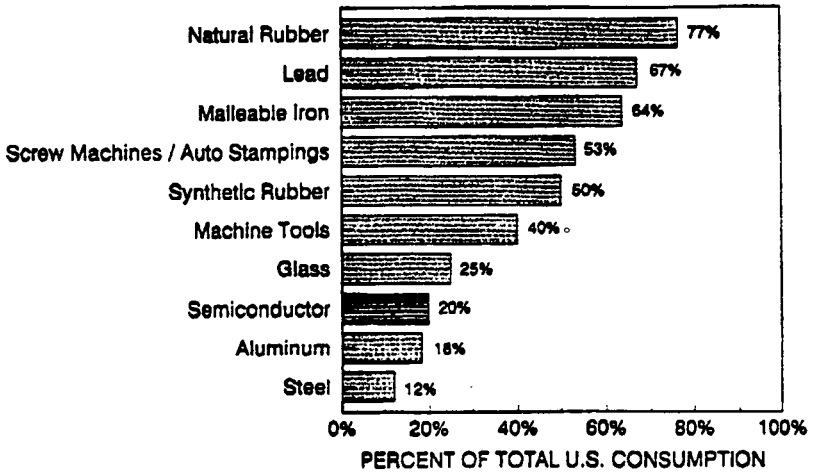
U. S. / Japan Auto Parts Trade



Domestic Vs. Transplant Pensions And Health Care



The U.S. Auto Industry Accounts for ...



POLICY OPTIONS:

- TRADE POLICY
- SECTORAL POLICY
- HEALTH CARE REFORM
- REGULATIONS
- TAX POLICY

SENATOR BINGAMAN. Thank you very much.

Before we get on to any questions, let's hear, please, from Mr. Raftery. Thank you for being here.

**STATEMENT OF WILLIAM A. RAFTERY,
RAFTERY CONSULTING, INC., ALPINE, NEW JERSEY;
FORMER DIRECTOR, MOTOR AND EQUIPMENT MANUFACTURERS'
ASSOCIATION**

MR. RAFTERY. Mr. Chairman, thank you very much for the opportunity.

What I will attempt to do is to address a number of the issues that I believe your Committee has indicated an interest in, and in a few cases I will diverge from my prepared text.

As to the state of the Big Three, obviously this question can best be answered by the representatives of the Big Three, and I believe that Mr. Boltz has done that, and done it extremely well.

Due to the depressed economy and, as he pointed out, structural changes in the industry itself, their sales volumes have been poor, to say the least.

Based upon my discussions with representatives of the U.S. automotive parts industry, I would have to conclude that many, if not most, of those suppliers are not overly optimistic with the prospects for the Big Three in the near future.

Many have expressed their feeling to me that the Big Three has lost its competitive position, both with regard to technology and cost and, maybe, most importantly, in the eyes of the American consumers.

In addition, although the Big Three and their suppliers have made very, very substantial progress in terms of productivity and quality, their competition, especially from Japan, continue to take giant steps. And so progress, in terms of catching up, has been relatively modest.

I might add a personal observation that I think the passenger cars produced in the United States by the Big Three, by the Japanese, and by the vehicle manufacturers even in Europe have made tremendous progress and offer the consumers tremendous value these days, providing those prices don't go too high.

And I think it is unfortunate in the United States that we find ourselves in the kind of an economic position that we are in, because if it were not for that, I believe that car sales would set all kinds of records. And I commend the industry for that.

There is a strong feeling within the industry—the parts industry—though not a consensus, that in spite of significant improvements in quality, productivity and the vehicles themselves, our Big Three has not yet reached parity with the continually improving Japanese automotive industry.

One of the points made is that they continue to lag in the time required to bring a new product to market.

Shifting gears, I would like to comment that I believe that common problems within the automotive industry of the United States are both structural and cyclical. And cyclical is not limited to the automotive industry.

To the extent possible in a free market society, American industry, not just the automotive industry, somehow should develop and must develop a philosophy and objective, and an implementation program that takes extreme cyclical and the ravages of cyclical out of the business economy.

In my opinion, there will be winners in a globalized automotive industry, but those companies, for the most part, will have to be multinational. There is also a feeling within the domestic market that in the immediate future the Big Three can probably expect a smaller share of this North American market.

Shifting over to the U.S. automotive parts manufacturers, it is no surprise to anyone here when I say that business is flat and has been flat for several years. And that relates both to the original equipment business, as well as to the U.S. automotive aftermarket.

The situation of parts manufacturers, especially in selling to the OEs, is complicated by the fact that Japanese vehicle manufacturers have, as we know, enjoyed unprecedented success in penetrating the U.S. market, and many U.S. suppliers have found it difficult to penetrate this segment of the OE market for any number of reasons.

Now, at this point, I would like to comment on keiretsu, because I think the term keiretsu is frequently misunderstood and, in my simple way of thinking, there are several kinds of keiretsu.

One has to do with the financial relationships and interlocking boards of companies and the banking institutions in Japan. I call that horizontal keiretsu. I'm not going to comment on that.

The other is vertical keiretsu. I describe vertical keiretsu as having more to do with supplier/customer relations.

I think many Americans have the impression that if a Japanese supplier is part of a Japanese vehicle manufacturer's pure keiretsu, they become the only supplier to that vehicle manufacturer, and that is absolutely not true.

If you review the major product lines purchased by Japanese vehicle manufacturers, they will purchase from three, four and five suppliers, of which typically one, if any, are part of their financial keiretsu. I am describing here financial keiretsu as a situation where a Japanese vehicle manufacturer has an investment which exceeds 20 percent ownership in the supplier.

Selling a new vehicle manufacturer—I'm back to talking about U.S. parts manufacturers—as a first-tier or a systems supplier is difficult enough. But selling a vehicle manufacturer whose business philosophy,

business culture and business operating procedures are so radically different from the Big Three, makes it much more difficult.

In addition, many U.S. suppliers are finding it difficult adjusting to selling their products as a second or third-tier supplier, whereas they had previously been first-tier suppliers. That is true, even in the cases where a supplier has been first-tier to the Big Three, and suddenly finds itself in a position of being second-tier or third-tier to the Big Three.

That is more true in instances where that supplier has been first-tier to the Big Three and is attempting to sell a Japanese transplant, and typically doesn't even realize that their product is not first-tier, but rather a second-tier or third tier.

All of these changes in operating procedures, combined with advanced in technology and the drive towards lean production, makes the challenges that the U.S. automotive parts industry faces greater than at any time in its 90-year history.

The automotive aftermarket industry is similarly flat for most product lines and it has been for several years. I would go further and say that for many product lines, it has been flat now for 10 years.

Parts are lasting longer and, as such, are replaced less frequently. In addition, the length of warranties has increased. These developments, in combination with present economic conditions, are reasons for the present state of the U.S. automotive aftermarket industry.

Personally, I do not believe, and many of my colleagues in the industry agree, that a substantial change is imminent, even with a turnaround in the economy. We are dealing with a new marketplace.

With a changing automotive industry, there will be winners and losers also among U.S. parts manufacturers.

I think, in terms of numbers, there will be more people who lose than win. By losing, I don't mean go out of business, but rather do not retain their market position.

The winners will be phenomenally successful. They are apt to be multinational in structure. They are apt to be large.

On the reverse side, the small domestic companies who are second- and third-tier suppliers have marvelous opportunities.

The companies which I feel face the most serious problems are medium-sized companies. They are not multinational, they are presently first-tier suppliers. They don't have the wherewithal to become first-tier, and they will have difficulty adjusting to second-tier, and unless they create strategic alliances or joint ventures with their counterparts—whether they be European or Japanese or both—they will face a very, very serious challenge.

With regard to lean production, I have had a modest disagreement with the people at MIT because all of the emphasis deals with manufacturing.

I was happy to hear Mr. Womack talk about a philosophy of lean production earlier today. I may be wrong, and possibly I wasn't

listening, but I had never heard Jim use that word—lean production philosophy. I think that is a driving force towards something that goes well beyond manufacturing.

What we are really talking about is a lean production philosophy of management. And the role of lean production in running a company and implementing that within a company goes well, well beyond the production line, the just-in-time inventory. Essentially, it deals with everything that company does: its purchasing, its financial arrangements, and so on.

We think of lean production as originating with the Japanese, and I am sure that it has. But it is a mistake to assume that lean production, in connection with practices by the Big Three, is something that just happened.

I'm sure that Mr. Boltz can address that issue, but I think it is fair to say that some of the practices of lean production were being implemented by the Big Three as long as 10 years ago.

However, the basic principles of lean productions, as it is practiced in Japan, are being transferred to the United States, but not exactly as they operate in Japan.

Even the U.S. suppliers are making every attempt to meet the lean production practice requirements of their customers, but they have not adopted lean production philosophies to their overall operations.

My description of this situation is that they tend to serve their customers on a lean production basis, but they do not necessarily deal with their suppliers or produce their products on a lean production basis.

In other words, they implement the program on the sale side, but not on the buy side, and that leads to problems. If you do that over an extended period of time, a company will never be competitive in a global market.

Are the Big Three important? You bet they are. The United States needs and should have a vibrant U.S. automotive manufacturing industrial sector, and not one that is just foreign-owned.

It does not necessarily have to be the Big Three, as we know them today, but it must be an industry that is dedicated to the well-being of the domestic economy and the national security of the United States.

On the other hand, transplants, as long as they employ American labor and use American raw materials and componentry, and provide value added, in my opinion at least, should not be discriminated against.

Basically, my concern is U.S. jobs. We should not, in my opinion, measure a company's products' country of origin by ownership, but rather by U.S. jobs and U.S. value added.

Now, what are the problems of the U.S. automotive parts industry? The challenges which it faces are complex, to say the least. It faces radical changes, both domestically and globally. It is dependent upon a close working relationship with its customers and suppliers.

It requires advanced technology. It must learn to operate efficiently and profitably in spite of shorter production runs.

I cannot overemphasize that point. It is a changing industry, which will have to learn to deal with shorter production runs. That doesn't only apply to the automotive parts industry; it is something that the vehicle manufacturers are also dealing with.

Here are just some of the issues that the industry faces:

A substantial overcapacity.

State incentives which are already available to transplants from Europe or Japan, but they are not available to established U.S. companies.

The aftermarket industry, which many U.S. suppliers have relied upon, is shrinking and likely will continue to shrink.

U.S. suppliers are having difficulty in changing their operations to meet the needs of a changing OE market, both domestically and internationally.

As I mentioned earlier, many are having difficulty in adjusting to becoming second- and third-tier suppliers when their company has historically been a first-tier supplier.

There is a relative lack of adequate financing for modernization to meet the needs of changing industry.

The growth of vehicle manufacturer transplants creates increased capacity and increased competition for the Big Three. However, ultimately, the growth of the vehicle manufacturer transplants should mean increased opportunity for the more qualified U.S. parts manufacturers suppliers.

This in turn should present opportunities for these qualified suppliers, not only in the United States, but also in overseas markets.

Furthermore, this scenario is likely to drive the supply industry—first-tier, second-tier and even third-tier—ahead technologically. However, in the process, some of our companies will fall by the wayside.

Furthermore, there will be increased competition from both European and Japanese-owned parts manufacturers transplants here in the United States.

I'd like to note that while the United States has tended to place much of their attention on Japanese penetration, the European automotive supplier industry has also made substantial progress, both directly and indirectly, in supplying the Big Three, as well as the aftermarket, I might add.

There should continue to be high visibility on the need for transplants to purchase from, and rely upon, suppliers whose products are produced substantially in the United States using U.S. labor, U.S. componentry and U.S. raw materials.

This has to do with the deficit, and we have heard an awful lot over the past six months about the parts deficit with Japan.

One point that I would like to make is that that is an issue that should be addressed, but it of itself is not the only issue. If we push the deficit issue as a singular issue, and if we establish a short-term goal of reducing or getting rid of that deficit—we, representing the parts industry—gamble on the fact that that might force transplant vehicle manufacturers to simply say that if the pressure is to reduce the deficit, we will vertically integrate.

If they vertically integrate, that's business that does not go to U.S. independent parts manufacturers and will never go to them. That is not in the interests of any parts manufacturer.

With regard to government assistance, there are certain programs that I feel should be considered.

In some form, financial incentives for high productivity equipment and training incentives for businesses to upgrade worker skills.

Antitrust legislation should be re-examined so that it provides competitive parity with the regulations of Europe and Japan. This, in my mind, does not necessarily mean that they have to change. Maybe, in some cases, we do.

Develop and implement an R&D tax credit program, but measure its results. It should not be a handout.

Some consideration should be given to the development of a program which would provide incentives or financial assistance for tooling new products for original equipment applications and for the sale in the aftermarket.

That is an area that is overlooked, and because we have short runs, suddenly U.S. parts manufacturers find it prohibitively expensive to tool for the replacement market.

We have heard a lot about employment in the automotive parts industry. I'd like to relate to it as it relates to the deficit, and what makes up unemployment and how large it is.

Currently, the auto parts deficit with Japan is running at the rate of about \$9 billion annually. It was reduced by just under a billion dollars in 1990, and I believe will be reduced by an amount of at least that same magnitude in 1991. So, it is coming down.

In 1990, imported auto parts from Japan was valued at about \$10.5 billion. The 1991 deficit will likely approximate, as I said, \$9 billion.

This deficit results from the importation of parts from Japan, not by one source but by several sources.

First, Japanese-owned vehicle manufacturers who produce vehicles here in the United States and purchase imported parts both for production as well as for service.

Second, purchases by the Big Three.

Third, purchases by joint venture U.S.-Japan vehicle manufacturers and by Japanese transplants vehicle manufacturers for vehicles which they are producing for the Big Three.

Fourth, purchases by U.S.-based automotive parts manufacturers.

And fifth, purchases by the U.S.-based automotive aftermarket industry.

When these various elements are analyzed and compared with the \$9 billion deficit and the jobs related to it, it can be concluded that there are approximately 90,000 U.S. jobs that are impacted. And determining responsibility for these 90,000 jobs, Japanese vehicle manufacturers, as a result of imported parts from Japan, currently influence approximately 55,000 jobs.

Purchases by the U.S. automotive aftermarket industry, the Big Three and United States parts manufacturers, account together for approximately 35,000 of the remaining jobs impacted.

The auto parts deficit with Japan is larger than with any other country in the world, but with regard to jobs, it should be noted that if we were to coin the term "job deficit," or "job surplus," for the automotive parts industry between the United States and other countries, we would show a substantial job surplus for the United States with Canada; a very, very slight job surplus with Mexico; but job deficits with West Germany, France, United Kingdom, Italy and most other major automotive countries.

Surely this is an issue, as it relates to the role of the entire automotive industry, that should be addressed in the entire global marketplace.

In summary, I would like to make an appeal.

I believe there is an absolute need for the United States to develop an industrial strategy. As I see it, industrial strategy is different from industrial policy.

It simply means that what is needed is a comprehensive, cooperative strategic plan involving government and industry, and that includes labor, which, while assuring free market principles, at the same time follows a plan which will assure the existence and leadership of America's basic industries.

In my opinion—and I might say, in the opinion of most of the large U.S. parts manufacturers and especially those who are multinational in nature—we should not base "American products" on a company's ownership.

While encouraging and supporting U.S.-owned companies, we should view a company's output, its country of origin, by the value added to its products here in the United States—should be substantially U.S. labor, substantially U.S. componentry and substantially U.S. raw materials—and not by who owns the company.

Again, let me say that this view is certainly far from unanimous among U.S. parts suppliers. The large, the multinationals, the companies that are developing their own strategic plans globally, tend to take that position. Companies that are operating solely within the United States tend to say, Oh, no, no, no, base it on U.S. ownership.

In summary, we have an industry facing the greatest challenges in a hundred years. There will be winners and there will be losers.

Government should help the industry to win, but it shouldn't guarantee it.

Surviving companies must help themselves and, in the process, must change their operations.

It is not, and it cannot be, a time of business as usual.

Thank you very much.

[The prepared statement of Mr. Raftery follows:]

PREPARED STATEMENT OF WILLIAM A. RAFTERY

Mr. Chairman and Members of the Committee:

I wish to express my sincerest than for this opportunity to appear before you for the purpose of expressing my news on the state of and prospects for the U.S. based automobile manufacturing and parts manufacturing industries. My comments will be based upon my experience first working for a U.S. parts manufacturer following which I served as President of the Motor Equipment Manufacturers Association which is the U.S. trade association representing the manufacturers of automotive parts whose products are produced here in the U.S.

The views which I express are my own but it should be understood that I have made it a point to discuss the subjects covered in depth with a broad cross section of executives from within the U.S. automotive industry. With that in mind, these comments reflect, to a great degree, but not unanimously, their feelings.

1. STATE OF AUTOMOBILE PARTS MANUFACTURING INDUSTRIES

1.1 THE AUTOMOBILE INDUSTRY

As to the state of the Big Three, this question can best be answered by their representatives. However, as we all know, both due to a depressed economy and also to a transitional structural change in the industry itself, their sales volumes have been poor to say the least. Based upon my discussions with representatives of the industry, I would have to conclude that many suppliers are not overly optimistic with prospects in the near future. Many have expressed to me their feeling that the Big Three has lost its competitive position both with regard to technology and costs and as in the case of most products, it is twice as difficult to recoup market position than it is to maintain it. In addition, although the Big Three and their suppliers have made substantial progress in terms of productivity and quality, their competition, especially from the Japanese, continue to take giant steps forward. Hence, progress in terms of catching up is relatively modest. I might add that passenger cars produced throughout the world by the Big Three, by the Japanese, and by the Europeans are all outstanding and as we all know, competition is no longer from within, but is global. There is a strong feeling, though not a consensus, that in spite of significant improvements in quality, productivity and in the vehicles themselves, the Big Three have not yet reached parity with the continually improving Japanese automotive industry. They continue to lag in the time required to bring a new product to market.

The current problems within the automotive industry are both cyclical and structural. Somehow, American industry and not just the automotive industry must develop a philosophy, an objective and an implementation program that takes cyclicity and the ravages of cyclicity out of the business economy—to the extent possible.

Finally, I believe that to be a "winner" in a globalized automotive industry, U.S. companies will have to be clearly multinational. There is also the feeling that the Big Three can probably expect a smaller share of the North American market.

1.2 THE AUTOMOBILE PARTS MANUFACTURER

The U.S. automotive parts industry is flat. Its original equipment volume depends directly upon the production volume of the vehicle manufacturers and we all know what

that experience has been for the past several years. The situation is also complicated by the fact that Japanese vehicle manufacturers have, as everyone knows, enjoyed unprecedented success in penetrating the U.S. market and many U.S. suppliers have found it difficult to penetrate this segment of the original equipment market for numerous reasons. Selling a new vehicle manufacturer as a 1st tier or systems supplier is difficult enough but selling a vehicle manufacturer whose business philosophy, business culture and business operating procedures are so radically different from the Big Three makes it that much more difficult. In addition, many U.S. suppliers are finding it difficult adjusting to selling their products as a 2nd tier or 3rd tier supplier whereas previously they have been 1st tier suppliers. These changes combined with advances in technology and the drive toward lean production makes the challenges which the automotive parts industry face greater than at any time before in the industry's ninety year old history.

The automotive aftermarket industry is similarly "flat" for most product lines and it has been for several years in terms of units of sale. Parts are lasting longer and as such are replaced less frequently. In addition, the length of warranties has increased. These developments in combination with present economic conditions are reasons for the present state of the aftermarket. However, I do not believe that a substantial change is imminent even with a turnaround in the U.S. economy.

With a changing automotive industry, there will be winners and losers, especially among parts manufacturers. I believe there will be more losers than winners, but in the long run, the winners will be phenomenally successful. The greatest opportunities, in my opinion, are for those companies who are 1st tier suppliers and who are multi-national in structure and with smaller local suppliers who are likely 2nd or 3rd tier suppliers. Medium sized companies which are not multi-national and which typically have been 1st tier suppliers but in the future will be 2nd tier suppliers are likely to face the greatest challenge—unless they create joint ventures and/or strategic alliances.

2. LEAN PRODUCTION

"Lean Production" as we associate it with the Japanese automotive industry is not being and will not be directly transferred from Japan to the U.S.. However, the basic principles of "lean production" can be, are being and will be transferred. More often than not, suppliers to the Big Three are making every attempt to meet the "lean production" requirements of their customers but they have not adopted "lean production" philosophies in their own overall operations. My description of this situation is that they "serve customers on a lean production' basis but do not necessarily deal with their suppliers or produce their own products on a lean production' basis." This failure to change will ultimately cause a supplier to be uncompetitive both domestically and internationally.

3. THE IMPORTANCE OF THE BIG THREE

The U.S. needs and should have a vibrant U.S. automotive manufacturing industrial sector and not one that is just foreign owned. It does not necessarily have to be the Big Three as we know it today, but it must be an industry that is dedicated to the well being of the domestic economy and of the national security of the U.S.. Transplants as long as they employ American labor and use American raw materials and componentry and provide value added, should not be discriminated against — in other words, we should

not measure a company's products (country-of origin) by ownership but rather by its U.S. value added.

4. PROBLEMS AND PROSPECTS FOR THE U.S. AUTOMOTIVE SUPPLIER INDUSTRY

The problems and the prospects for the U.S. automotive supplier industry are complex to say the least. It faces radical changes both domestically and globally. It is dependent upon a close working relationship with its customers as well as with its suppliers. It requires advanced technology. It must learn to operate efficiently and profitably in spite of shorter production runs. Here are just some of the issues:

- There already is substantial over capacity.
- State incentives which are already available to transplants from Europe and Japan are not readily available to U.S. manufacturers.
- The aftermarket industry which many U.S. suppliers have relied upon is shrinking.
- They are difficulty is changing their operations to meet the needs of a changing original equipment market both domestically and internationally. Many are having difficulty in adjusting to becoming 2nd tier and 3rd tier suppliers when their company has historically been a 1st tier supplier.
- There is a lack of adequate financing for modernization to meet the demands of a changing industry.
- The growth of "transplants" obviously creates increased capacity and increased competition. However, ultimately, the growth of vehicle manufacturer "transplants" should mean increased opportunities for the more qualified U.S. suppliers. This, in turn, should present increased opportunities for these qualified suppliers not only in the U.S., but also in overseas markets. Furthermore, this scenario is likely to drive the supply industry (1st tier, 2nd tier and 3rd tier) ahead technologically. In the process, there will be many losers. Furthermore, there will be increased competition Joint Economic from European and Japanese owned parts manufacturers "transplants" here in the U.S. It should be noted that while the U.S. has tended to place much of their attention on Japanese penetration the European automotive supplier industry has also made substantial progress both directly and indirectly in supplying the U.S. automotive industry.
- There should continue to be high visibility on the need for "transplants" to purchase from and rely upon suppliers whose products are substantially in the U.S — using U.S. labor, U.S. componentry and U.S. raw material.

5. POSSIBLE GOVERNMENT ASSISTANCE

The following governmental activities should be considered:

- Financial incentives for high productivity equipment and training incentives for business to upgrade worker's skills.
- Anti-trust legislation should be reexamined so that it provides competitive parity with the regulations of Europe and Japan. This doesn't necessarily mean that they have to change. Maybe we do.
- Develop and implement a R&D tax credit program, but measure its results.
- Some consideration should be given to the development of a program which would provide financial assistance for tooling new products for original equipment applications and tooling products for sale into the aftermarket.

4. U.S. EMPLOYMENT IN THE AUTOMOTIVE PARTS INDUSTRY

Currently, the auto parts deficit with Japan is running at the rate of about \$9 Billion annually. It was reduced by just under \$1 Billion in 1990 and is likely to be reduced by an amount at least of the same magnitude during 1991.

In 1990, imported auto parts from Japan was valued at approximately \$10,500,000,000. The 1991 deficit will likely approximate \$9 Billion. The deficit results from the importation of parts from Japan by several sources, including:

1. Japanese owned vehicle manufacturers which produce vehicles here in the U.S.
2. Purchases by the Big Three.
3. Purchases by joint venture U.S./Japan vehicle manufacturers and by Japanese transplant vehicle manufacturers for vehicles which they are producing in the U.S. for the Big Three.
4. Purchases by U.S. based automotive parts manufacturers.
5. Purchases by the U.S. based automotive aftermarket industry.

When these various elements are analyzed and compared with the \$9 Billion deficit and the jobs related to it, it can be concluded that there are approximately 90,000 U.S. jobs that are impacted. In determining responsibility for these 90,000 jobs —

1. Japanese vehicle manufacturers, as a result of imported parts from Japan, currently influence approximately 55,000.
2. Purchases by the U.S. automotive aftermarket industry, the Big Three and U.S. parts manufacturers together account for approximately 35,000 of the jobs impacted.

The auto parts trade deficit with Japan is larger than with any other country in the world, but with regard to jobs, it should be noted that if we were to coin the term "job deficit" vs. "job surplus" for the automotive parts industry between the U.S. and other countries, we would show a substantial job surplus with Canada and a very, very slight job surplus with Mexico, but job deficits with W. Germany, France, the United Kingdom and Italy, etc., etc.

Surely this is an issue that should be addressed as it relates to the role of the U.S. automotive industry in a global market.

In my view there is an absolute need for the U.S. to develop an Industrial STRATEGY. All I see it, industrial strategy is different from industrial policy. It simply means that what is needed is a comprehensive, cooperative strategic plan involving government and industry which while assuring free market principles, at the same time, follows a plan which will assure the existence and leadership of American basic industries.

In addition, we should not base "American products" by the company's ownership. While encouraging and supporting U.S. owned companies, we should view a company's output (country of origin) by the value added to its products here in the U.S. (substantial U.S. labor, substantial U.S. componentry, and substantial U.S. raw materials) and not by who owns the company.

In summary—there will be winners and losers. Government should help the industry to win, but not guarantee it. Surviving companies must help themselves and must, in the process, change their operations. It is not and cannot be "business as usual."

Thank you very much for your kind attention.

SENATOR BINGAMAN. Thank you very much.

Could we get a couple of those charts put back up here? I want to ask a question about charts 9 and 10.

Mr. Womack, let me start with you and ask: On chart 10, it makes an effort to depict where Japanese companies are obtaining their profits.

My concern on this is that it reminds me a little bit of the hearing that we had a week ago in this same room with McDonnell-Douglas, where the argument was made, at least by some of the witnesses, that there is a foreign government subsidy of aircraft manufacturing, which is one of the major factors pushing McDonnell-Douglas to try to look somewhere else to get some relief.

Therefore, McDonnell-Douglas is, by their own admission, going into an arrangement, or proposing to go into an arrangement, with Taiwan in order to get capital, in order to get access to low-cost production in order to meet this foreign government subsidized competition.

Here, you don't have a government subsidy. Here you have a substantial subsidy—if that chart is accurate—of Japanese companies that they are obtaining by overpricing their product in their home market. Or, at least, pricing it at a level that gives them a very substantial profit, that they can then use to underprice their product in our market and gain more market share, as this chart on the right demonstrates that they are continuing to do or have done.

Would you comment as to whether you think that there is any kind of analogy to be drawn there, and if so, where does that lead us in terms of what our governmental policy ought to be in dealing with a situation where there is a foreign subsidy, even if its a private-sector subsidy that gives them an ability to penetrate our market?

MR. WOMACK. There are a couple of things about the chart. Let me say, I am not the expert on where the Japanese show their profits.

There is a school of thought that says that those Japanese profits are overstated, for various reasons. In fact, they are not doing as badly abroad as you would think. For reasons known to them, they choose to declare them in certain places, not others, and that would be the basis, by the way, of an IRS investigation of the transfer pricing.

I don't want to get into that. I don't know anything about it. I'll say that that is an interesting chart. I'm sure they have done the arithmetic correctly, in terms of the stated values.

The more fundamental point is this. There is no question that they are making tremendous money in their home market. Why?

Now, your point that there is not really much of a case to be made for government control is quite right. And I think it shows how we misunderstand the full panoply of competitive weapons.

The reason they can make that kind of money in Japan is that they control the distribution channel. They don't control it as a legal,

government issue. They control it as the owners of an extremely expensive, extremely complex, extremely high-quality system.

And you cannot go to Japan, as the Americans have found out, and try to sell cars with no channel. They are not interested in an unbundled product. "Here's the car; good luck with the service."

The whole thing comes together: the insurance, the finance, the car, the lifetime guarantee and all the other things they are used to.

So, the real problem, as I look at that chart, is that none of our companies are tapping into any of that money.

And to think you could get it simply by importing products from the States, I think is an interesting but naive idea. If you want to tap into that, you have to be on the ground floor.

That's why, in my initial remark, I said it is curious that none of our companies have thought about trying to buy any of their companies, which is how you get into this stream, and that would indeed be an earthquake in Japan if they were to try. It just seems to be beyond the pale.

I find that interesting. It seems to me that is not fully thought out.

So, I could go on and on, but I think that's the basic take I would have on that.

SENATOR BINGAMAN. Let me see if I understand what your prescription is with regard to trade.

Your suggestion is that we should embrace something like Dick Gephardt was recommending a year or two ago, as I understand it, or a couple or 3 years ago, and that is to put some upper limits on the amount of the trade deficit that we are willing to incur. Not just in this industry but, I gather, nation-to-nation.

MR. WOMACK. I was talking about cars.

SENATOR BINGAMAN. Okay. How would you propose that be enforced? If we get to next year and the surplus is larger than we have said it is going to be, what do we do?

MR. WOMACK. Well, let me just back up for one second.

I'm speaking as a practical person. What I think is going to happen is that the Administration is going to do a deal, not because they want to do a deal, but because they get backed into it.

Carter never believed in the Chrysler bailout, but he did it. Reagan certainly never believed in the VRA. George Bush doesn't believe in what he is about to do. That is a bad basis for policy.

My argument is that the pressure is going to be so intense on the home team that I think, just as a political reality, you are going to have to deal with it.

My suggestion, instead of dealing with it in a very backhanded sort of way, is to just put it up front and to say that this is an industry that we are not willing to sacrifice. Therefore, over a period of 10 to 15 years, we have to get a substantial reduction in this imbalance. And we have to start now.

That can be technically and mechanically done in different ways. Obviously, it has to have some "voluntary" component to make it doable in terms of the international trade regime.

I must say, I present that idea with extreme reluctance, but I am totally convinced that we are going to see something much worse.

Let me say, the Japanese do understand. I am often accused of being their apologist. They do understand a straightforward statement of: "This is our national interest. This is what we have to have."

What they hold against us, and what I must say I hold against us as well, is a series of essentially sneaky measures that never really admit that this is what we're doing, in which you have all of these indirect ways of doing the same thing. I think that is what we are going to fall into. And I think that is going to deeply embitter our relations, and needlessly. Rather, one just has to say: "Look, this is more than we can bear. Here's a way to reduce this. Let's agree on doing this. We did it with the VRA. You can do it with this."

SENATOR BINGAMAN. I think you indicated that the European Community has agreed that Japanese penetration of their market will not exceed 16 percent during this decade?

MR. WOMACK. That was not my statement, but yes.

SENATOR BINGAMAN. Mr. Boltz made that statement.

How is that done in compliance with our GATT—

MR. WOMACK. Oh, it is not. I mean, what they have said is, you get a fixed limit on so many units imported forever, and that's "voluntary". The Japanese said, "We volunteer."

So it's GATTable; they volunteered.

A second feature of that is an extremely unfortunate policy, which I think is going to hurt them. They have said: "We agree on an expectation that your transplant capacity in Europe will not exceed the following numbers in the following years."

That number turns out to track exactly the projected growth in the European market. So, what they have done is frozen imports forever, and said that for the future the Japanese transplants can have the growth, but the existing, on-the-ground players—the Europeans, plus GM and Ford—will get the existing market.

Now, I can tell you what happens if Volkswagen and Fiat and Ford and GM are guaranteed a 14 million unit market—and that's what has happened—they will never get any better because they really have no incentive to change.

This is a fence that says: "The Japanese get the growth, we'll take the residual." That residual, of course, is the great bulk of the total activity.

So, I can't advocate that to the United States. I think Bill, at the end, said one of the things you need in this country is the opportunity to fail as well as to succeed. Nothing I am proposing, in terms of pushing down the trade deficit, says anything about what firms prevail in the end.

I, myself, am quite prepared for the Japanese to totally take over the industry, if they can do it here. I hope it doesn't come to that.

SENATOR BINGAMAN. So, that's how you come to the conclusion that we need to deal with the trade imbalance, but foreign investment in the United States is not objectionable. It needs to be permitted.

MR. WOMACK. Absolutely. Otherwise, we are just guaranteeing that we become a third-rate country.

I mean, I just don't see any way around that.

Look, it's not a happy outcome, but the notion that we own it, therefore it is okay—I just find this an extremely naive notion that will hurt us in the long term.

SENATOR BINGAMAN. Let me ask, Dr. Howes, about your comments on what the Federal Government might do to deal with this very large cost advantage that transplants enjoy by virtue of this so-called greenfield strategy that they have used.

Your one suggestion was that we stop permitting additional transplants. But short of that, is there anything we can do? I mean, in the case of Europe, as to domestic sourcing of their components, do they require something of foreign transplants when they come in?

MS. HOWES. Yes. I have to separate the question into two issues because the domestic content side doesn't necessarily guarantee that there will be an equalization of this cost differential. But the cost differential comes from the difference in the cost of benefits. The difference in the cost of benefits—this is setting aside any productivity differentials—is really a function of being able to establish new plants in rural areas with low-wage labor, and use a very young work force.

Now, if we wanted to adopt a foreign direct investment policy that did not result in significant cost differentials, we might, for example, require that foreign investors purchase existing excess capacity, use the existing work force that is currently unemployed or underemployed, and adopt existing liabilities in terms of pension funds and medical expenses for that existing work force.

That would potentially equalize the cost differentials that are due exclusively to benefit cost differences. And it would also obviate some of the problem that is arising now in terms of the private assumption of very, very high costs of social insurance policies.

What it would do is distribute the costs of those social insurance policies across all the companies that are participating in this industry and in this market.

Now, alternatively, as I think Mr. Boltz suggested, you could adopt some sort of health insurance policy and national pension benefits insurance policy—and I don't know what the specific details of that policy would be—but something that would distribute the costs of supporting retirees and people who need health care across a broader segment of the population.

Can I address the domestic content issue?

SENATOR BINGAMAN. Sure. Go ahead.

MS. HOWES. The European Community does not have an explicit domestic content law, but in order to trade goods across boundaries within the European Community, one's product has to be "European made." And that is an implicit content level. It has, in practice, been a European Community content level of 80 percent.

That has really been worked out through a process of negotiations between Britain, Italy and France over whether France or Italy would allow transplants to be exported from Britain into the French and Italian markets.

But, in effect, what they have done is force or push the transplants to make a commitment to achieve 80 percent European content within a certain time period.

SENATOR BINGAMAN. And what is the comparable figure for the transplants in this country?

MS. HOWES. 50 percent. And as far as I can see, there is no reason why it will get any higher, in the absence of any alternative policy.

SENATOR BINGAMAN. Mr. Womack, did you have a comment on that?

MR. WOMACK. Yea, we disagree all the time on this.

Let me just give you a counter argument on it.

First off, the way CAFE works right now, nobody's going to go past 75 because you don't want to get your car put into a domestic category. That's one of the anomalies of the way the CAFE is written.

But, let me say, the logic of their system, as I understand it, is that over time they are going to find, to their surprise, that they are going to do a larger and larger fraction here.

SENATOR BINGAMAN. A larger and larger fraction where?

MR. WOMACK. Of the value in a specific line of products. Without CAFE, in fact, I think you can expect it to actually go very high over the next 10 years .

The reason is, one of the key features of the system to make it work is that you really need to do a large amount of the development activity in one place.

In addition—this is very interesting—the Japanese are discovering that Japanese-market customers don't want American-market cars. The interesting example there is the Honda Accord—America's favorite car. A big bust in Japan.

And the reason is—the critique is that it's too American. "Gee, that's an American car, I don't want one of those."

Therefore, what you now see—Toyota leading as always—is an announced intent to slow the replacement cycle.

Why are they doing this?

Well, they have said that the Camry for 1997-98—not the one just released, but the 1998 Camry—is a Georgetown exclusive—that's Georgetown, Kentucky—for all world markets.

The reality is that they don't expect to sell very many in Japan. Obviously, that car is going to be even more American.

This tracks very nicely with what happened to the Americans when they went to Europe at the time of the First World War. Henry Ford said that Europeans will want cars that Americans want. Europeans said, "We don't want cars that Americans want."

Ford Motor Company nearly went under trying to force the Model T down the Europeans' throats.

In the end, over a 20 year period, they ended up with a product range in Europe that was totally different from what they had in Detroit.

It's my own view that the same thing will happen here. That on an individual product line basis, you would expect to get, I think, very high levels of domestic value added. You would also expect, however—and that's my point on the trade deficit—to see that the level of imported vehicles does not fall. It just keeps on coming. Because they have 30 billion dollars of value they need to add in Japan to keep everybody working. And they are just going to keep on adding it.

That's the problem.

SENATOR BINGAMAN. If, in fact, we're in a situation of substantial over-capacity, is that an additional argument for us to look at some kind of restraint on imports in this industry?

It seems to me that if everyone agrees, we have way too much world-wide capacity in a particular area. The end result of not restricting imports is essentially going to be driving our industry out of business. Am I missing something?

MR. BOLTZ. Well, I think a large part of the over-capacity situation is, in fact, driven by the transplants. They have expanded the capacity of the transplant facilities from, as I said, 60,000 units in 1982 to about 2,000,000 presently. With a relatively modest growth in our domestic industry—a trend, at best, of about 1 percentage point a year—that capacity has reduced utilization among the domestics, the transplants, everyone.

I mean, we are below 70 percent of assembly capacity utilization in this country.

When you look at assembly capacity utilization under 70 percent for the United States and you look at the assembly capacity utilization in Japan, for example, I think you can better understand the chart that Pat just covered up.

We are inside of 70 percent presently for both transplants and domestics. As you can see, nobody is making money, including the Japanese, in the North American auto business. Nor have they—the Japanese—for almost 5 years.

They make all of their profits on their home island of Japan. And one of the reasons is they utilize their capacity fully on the home island of Japan. Not surprisingly, they allow only 3 percent imports, sir. And that is the reason.

Now, I guess I would disagree with Jim a bit when he says we won't be able to work their market very hard. I can tell you, under the present circumstances and the present rules, he is absolutely right.

I would like to say, from Chrysler's perspective, we were able to take our Cherokees and our minivans to Europe, and go from zero sales in Western Europe to 50,000 inside of 2 years. We have a substantial portion, a good 40 percent, of the minivan market in Western Europe. It is a very attractive product.

I can tell you, as we looked at what we were attempting to do in Japan, we have had more of them fall off the boat than we have been able to sell in Japan because of that very sticky distribution system.

So, there are good reasons why imports comprise no more than 3 percent of the market in Japan. That is the source of their capacity utilization and that provides their profits.

As I said, we believe they use those profits to conquest other markets around the world, sometimes completely fairly, sometimes not.

There are keiretsus at work. Jim, with all due respect—he is a keen analyst and we respect him greatly in Detroit. He has brought us seminal work that we have paid attention to. But, with all due respect, I did not know that Isuzu was for sale. It would be very difficult for any of us to buy it unless it were.

And I would like to mention that it is part of a keiretsu. Daichi Kangugi, I believe you said correctly. I would like to note that keiretsu has sales revenues of some \$400 billion per year, if I remember correctly, compared to sales for the Big Three—General Motors, Ford and Chrysler combined—of about \$200 billion.

They are twice the size of the domestic Big Three manufacturers combined in sales revenues. And, yes, they can afford to repair that company and, perhaps, without General Motors help.

I would suggest that we are competing against giants as individual firms. Indeed, if we were ever to collectively combine in this country—which would be illegal—we would still be competing against giants to the tune of two to one in sales dollars.

SENATOR BINGAMAN. Mr. Raftery, did you have a comment?

MR. RAFTERY. Just to answer your question directly, I think the suggestion about a reduction in the voluntary restraints makes some sense. I think we can do that within the scope of free trade. I think that would provide, as Mr. Womack suggested, a timeframe during which it gives the United States Big Three an opportunity of catching up.

We are not locked into that, and it would just seem to me like a reduction of several hundred thousand vehicles. It makes a lot of sense.

But I want to add to that, if I may, Mr. Chairman, that in 1988, 1989 and 1990—the figures that I have seen—the importation of parts from Japan by Japanese transplants for their original equipment service requirements has not increased. That amazes me.

In speaking about that particular phase with one of the Big Three members, they were not surprised because, they said, the replacement market is down.

Their imports of parts for original equipment have gone up about 7 percent. Now, that is in the face of an increase in production of vehicles of around 60 percent.

So, it seems to me we are not where we want to be, but we are beginning to make progress.

MR. BOLTZ. Senator, if I may? Regarding some of the trade policies that could be considered to confront issues of this type.

If it is our desire to open Japan, if it is our desire to achieve a more level playing field by having that market more accessible to manufacturers in the United States, there are some bills that would help. Representative Gephardt is working on one, as I understand it; Senator Riegle is working on one that looks at the 3.8 million units the Japanese, either through imports or transplants, presently sell in the United States. It suggests that a cap be established for both transplants and imports at, or about, the level of 3.8 million. And, in the future, through the rest of the decade, that total should be reduced by 250,000 units annually, and that targets be established, I believe, on the basis of how far the Japanese market opens.

If the penetration of the Japanese market for imports of U.S. contented vehicles were allowed to rise 1 percent, then that total would be credited by 1 percent for shipments crossing the Pacific to the United States.

Something like that has a tendency to draw a line in the sand, if you will, and tells Japan what the rules are, what their future looks like in terms of their ability to further import vehicles or expand transplant capacity, on the basis that they open their markets to our domestic products in the same way.

And that there be an offset in the future. As we are allowed to ship units to their market, they are allowed to capture an increasing share of our market. And only under those conditions.

I would think legislation like that might make a great deal of sense for the Nation and, clearly, for the domestic auto industry.

SENATOR BINGAMAN. Mr. Womack, let me ask two questions.

First, you are suggesting President Bush may back into something which he doesn't really believe in. Are you suggesting that he would back into some endorsement of some kind of legislation along the lines we have just discussed, or that he would back into a reduction in the amounts coming in voluntarily?

What do you think he is going to back into?

MR. WOMACK. Well, let me suggest I have no inside information of any sort whatever. I am just looking at the way the game has been played so far, that there are a lot of things you can do by executive

order that do not require dealing with you and which you also can claim have some other purpose or whatever.

Dumping suits: Those don't get filed unless someone here in the Administration has said, "Give it a go."

Tax investigations.

Content issues. The U.S./Canada fight over the Honda cars. You can always reclassify light like trucks. You can fiddle with the definitions, and so forth.

I would predict a range of measures of that sort, and I would also predict, probably, some sort of symbolic reduction in the quota under the VRA.

As you may know, the Chrysler representative has the exact number—but there are hundreds of thousands of units under the current cap, and you can easily put a 500,000 unit reduction in, which in fact is trivial in terms of its actual effect.

SENATOR BINGAMAN. I thought you were referring to those kinds of things as a patchwork that wasn't going to get the job done.

MR. WOMACK. They do two things.

One, they don't really deal with the fundamental problem. Two, I think they really do have the effect of embittering trans-Pacific relations, because they do seem to be indirect, snuck in, never saying quite what you mean.

I really think it's important to deal with people straight on.

SENATOR BINGAMAN. But you're suggesting that the President will likely back into this accumulation of misguided policies, in your view.

MR. WOMACK. That's typically what happens in these situations, right.

SENATOR BINGAMAN. One point you make about lean production, which I would like to ask about in a slightly different context—and this changes the subject a little—but as I understand one of your points, it is that the fundamental logic of lean production calls for producing as much of a product as possible in geographic proximity.

I have had concern about the implications of that for the U.S.-Mexico Free Trade Agreement.

I have had reports that particular suppliers to General Motors have been advised that if they want to continue being suppliers to General Motors, they should plan to move to Mexico because that is where a great deal of the manufacturing for General Motors is going to occur.

If your basic logic is right that lean production does require it to be done in geographic proximity, is this an issue that we need to concern ourselves with? I mean, are we setting up a situation where the logic of the production method being used is going to take with it an awful lot more production in manufacturing capacity than we have otherwise thought?

MR. WOMACK. Well, as you may know, I have been doing some work for the Mexicans—I don't want to venture into being a lobbyist—where I have been advising the Mexicans on the free trade auto component.

I spent quite a lot of time on that.

I don't know quite what the rules of the game are. One of the rules that I laid down to the Mexican Government when they approached me a year ago about doing this was that I never go to Washington, and I don't normally. You called me; I came.

I don't know what the rules are.

SENATOR BINGAMAN. Well, if you are uncomfortable answering—and I wasn't asking you in your capacity as a representative of them—but if it puts you in an awkward position, skip it.

But it is an issue that concerns me.

MR. WOMACK. Here, I can answer the question in the following way: If you are going to run a really good system, I think you need to do it in one place. You can run an okay system in a dispersed mode, but it is never as good as a concentrated system.

It's not an accident that Toyota City is the most efficient thing in the history of the planet. It's all right there.

And they tell you, "We can solve problems face to face."

There is this desire to solve problems by memo, or by fax, or whatever, but most problems in manufacture are best solved face to face.

So, in logic, yes, do it in one place.

What should happen if you did have a reasonably open trade agreement with Mexico—I have written on this, so I am not saying anything that is not in the public record—is that certain categories of products—I have argued the smallest, cheapest, entry-level products—should be done in toto in Mexico.

I have also argued, and take this as a paid political announcement, I have also argued that those products currently are entirely done in East Asia. So, there is no loss to the United States in those products because we don't do them. We gave up on that. We threw in the towel.

In my view, that has always meant a relocation of production from East Asia to Mexico. It is the only viable way to make a free trade deal work, I said.

SENATOR BINGAMAN. Let me ask the witnesses, who may wish to comment, about two issues. I think they are key issues in the discussion we have had here, and they are areas of disagreement. Each of you has had a chance to comment on them, but I want to give you another chance before we conclude the hearing.

One is the disagreement that we have on whether to limit transplants into the country. Mr. Womack's position is that there should not be any limits because, as I understand it, he believes that putting in limits would be an incentive or a disadvantage in us modernizing our own industry to remain competitive.

As I understand it, Ms. Howes and Mr. Boltz and maybe Mr. Raftery—although I am not certain about all three of you—I think your position is that we should limit transplants, at least to some extent, and that you don't have that same fear about the effect of limiting

transplants on the modernization of our own industry, or the shift of our own industry toward lean production.

Any of you want to make the case a little stronger?

Ms. Howes, did you have a rebuttal of Mr. Womack on this subject?

Ms. HOWES. Yes, somewhat of a rebuttal.

I am not actually advocating limiting transplant investment. I am advocating regulating transplant investment.

Actually, my objective is exactly the same as Mr. Womack's, which is to create the conditions under which we can have a superior production system in the United States.

Now, under the present conditions, the way in which transplant investment takes place, I don't believe it is a transfer of a Japanese system to the United States, and I don't think it provides a demonstration effect for American firms.

What I think it does do is to exacerbate the excess capacity problem that you mentioned earlier, and, in a context in which—referring again to these wonderful Chrysler slides—in a context in which you have a significant potential cross-subsidization from a very profitable industry in Japan, which allows the Japanese to pursue a very classic competitive strategy.

You cross-subsidize a product in order to allow you to expand rapidly in a new market, and then once you have established yourself in a new market, you can begin to raise your prices and make profits.

Well, in the United States in these circumstances, we are creating enormous excess capacity. And most of the excess capacity is really with the Big Three. And the Big Three have no place to cross-subsidize, because their only real market is the U.S. market.

So, they can't retaliate against this strategy in any way, because, in order to retaliate, what they have to do is to establish a comparable production system.

To establish a comparable production system, you have to have a lot of money in order to restructure your industry.

Therefore, what I am really arguing is: Either you provide an environment in which the U.S. industry can be profitable over the next, probably, 10 years, even in the context of a highly cyclical economy—and that context in which the U.S. firms could be profitable would be the limitation of transplant investment or the limitation of total penetration by foreign manufacturers—or you provide a context in which the Japanese really have to transfer a fully realized Japanese system to the United States.

Then, they will just replace the U.S. firms, and you can abandon the U.S. firms and let the Japanese take over the business.

SENATOR BINGAMAN. Mr. Boltz, did you want to comment on that?

MR. BOLTZ. We are in—without any question in the minds of the people at Chrysler, and I'm sure my colleagues at General Motors and Ford—a global auto business.

Indeed, at least two of our domestic competitors operate in a world-wide sense.

I have no illusions that any type of restraint, any type of limit on the share of, let's say, Japanese transplant manufacturers in our market would cause Chrysler to miss for one second a beat adopting the principles of lean production and modernizing our facilities. We must accomplish that in order to remain competitive on a global scale.

We are attempting to grow our business, both in the United States and Canada, where fundamentally the growth rates are relatively low compared to other areas in the world.

As I mentioned, we have met with some success in exporting vehicles to Europe. Our products are quite competitive there. We have enjoyed success. We hope within a year to surpass total exports of 100,000 vehicles worldwide.

And to do so is going to require world-class product development and manufacturing, not only in the United States but in other areas around the world where we do business. And we are committed to that end.

I do not believe any limits will operate to stall that modernization process, or forestall our efforts to achieve that objective.

SENATOR BINGAMAN. Let me ask about another subject where I think there is substantial disagreement.

Mr. Womack seems to believe strongly that the domestic content of foreign vehicles that are produced in our market will rise as a natural matter, and the dynamic is such that that will happen.

I gather that Ms. Howes believes the opposite, and maybe some of the rest of you. I gather, Mr. Raftery, in your comments about the size of the deficit with regard to automobile parts, you have indicated that it may have leveled off, and this problem may not be as bad as before.

One statistic I was given before the hearing—I don't know if it's totally biased or what—it says that in 1980, the auto parts trade deficit with Japan was \$1 billion. By 1990, it was \$10 billion. I guess \$9 billion has been testified here instead of \$10 billion.

MR. RAFTERY. Between \$9 and \$10 billion.

SENATOR BINGAMAN. Okay. And a recent study at the University of Michigan estimated that it would reach \$22 billion by 1994. Now, that's a dramatic increase, if there is a basis for that, and even if they are off \$5 billion. That is obviously going in an opposite direction from what Mr. Womack has predicted.

Mr. Womack, would you have a comment as to how you reconcile that figure with your prediction, if there is a way to do that?

MR. WOMACK. Well, let's see. First off, let's just do a simple physical observation. The Japanese car industry has been running double-shifted 10 hours a day, 6 days a week, for the last 3 or 4 years.

There is no capacity left in the system. It is totally flat out. Indeed, they are making a terrible error. They are running the system into the ground.

And they are making manufacturing unattractive for young people for a totally different set of reasons. In Japan, there is too much work. And there is no cycle. It just grinds on and on and on.

So, the notion that they can flood the company with parts out of capacity that they have no people to operate, I think is not inherently plausible.

I would suggest, instead, that what is likely to happen is simply this: For each category of product where they have large U.S. volume, the domestic content of that product is likely to go up and up and up in the States. And they will bring in more and more and more new categories of product.

We have all been waiting for the shoe to drop on the big Toyota pick-up truck. There are no Japanese full-size family cars. There are lots of product categories out there. If they want to go for it, they can.

I say the natural progression is that you get high content on each product made here over time. It takes time, but you get there. You have more and more new products. The total amount of value coming across the ocean stays the same, and that is because they need to support the system they have in place. By the way, there is nowhere else in the world to send it.

So, therefore, that is my simple logic of what is happening here.

SENATOR BINGAMAN. Ms. Howes, did you have a comment on this issue?

Ms. HOWES. Well, on the capacity issue, I think that the Japanese actually are very good at regulating capacity so that it doesn't look as though they are building up excess capacity. In fact, they direct their companies to reduce excess capacity. Historically, they have done this at various points, so it doesn't look like they are about to flood the U.S. market.

On the other hand, they are quite capable of bringing on new capacity, not just in Japan but in other parts of Southeast Asia.

On the issue of whether American-made Japanese cars will follow a progressive logic of getting more and more American—having more and more American content—I do not agree with that. I do agree with the University of Michigan study, and I think there is absolutely no logic to why those cars would necessarily get more American.

I think that you have to distinguish between the illusion of what is American and what appears to be American.

And if you re-skin a car so that it looks different from the car that you are making in Japan, that doesn't mean that you have an American car. It means that you have a car that looks different in America, but has very similar internal works to the cars in Japan.

The Japanese haven't had a hard time selling Japanese cars in the United States. I don't think they are going to have to make them more American in order to continue selling them.

In terms of the numbers, the issue of why the trade deficit would jump from \$10 billion to \$20 billion, it's quite obvious why there is a \$10 billion deficit right now. If you have two million transplants being made in the United States, and those two million transplants are selling for approximately \$20 billion, and half of the content of those two million transplants is imported, then that is \$10 billion.

Now, obviously the trade deficit isn't just original equipment parts. But if you increase transplant capacity another 50 percent, which is a modest assumption, then you will increase parts imports by another 50 percent.

So, of course, the trade deficit will jump.

SENATOR BINGAMAN. Mr. Boltz, did you have a comment?

MR. BOLTZ. Yes, a couple of things.

First of all, let's look at the U.S.-Japanese vehicle sales. I don't have numbers on the chart, but here they are.

Jim is right. The Japanese transplants in 1990 were about 1.6 million. The 1990 imports were 2.3 million. They hit the VRA right on the money.

In 1991, it is running a bit below that, maybe 100,000, not several hundred thousand.

And in total, about 3.9 million units.

SENATOR BINGAMAN. 3.9 million units.

MR. BOLTZ. 3.9 million units total.

As you look out to 1994, our projections suggest that that is probably going to rise about 25 percent in total, to about 5 million units.

Now, give me a minute. Just take a look at this chart and add, either by taking imports north or adding more transplant capacity. You add produce vehicles with domestic content that is far less than the 88 percent level. For Ford, General Motors and Chrysler, assume a 40 percent level, or even the high 50s. You are going to create, in the next chart, a continuation of the auto parts trade deficit.

As transplants expand—they are a lot better than imports by perhaps double or more in terms of content—they have half as much domestic content as domestically produced vehicles.

As a result, auto parts trade deficit is going to expand. As you can see, from 1985 through 1990, almost all of the deficit was the result of the growth of the transplants. As transplants continue to grow, I would project that the auto parts trade deficit is going to continue to grow.

Jim thinks not. He thinks that because the Japanese are out of capacity in Japan, they will make conscious decisions to site plants in North America. I'm not that optimistic. They may; they may not.

They may decide to site them in Mexico, sir, and that is a concern that you have expressed. I know others share that concern.

They may very well choose to site them in expanded facilities on the home island for the very practical reason of continuing to add value from Japanese labor, from Japanese engineering.

They may very well decide that it is a lot better to do so because they are able to better understand the politics of the Japanese home market. They are better able to guide the policies that their governments would use regarding the auto industry; they are better able to take their profits and pay their taxes to their own government rather than someone else's.

I think we cannot speculate that easily on where that capacity will flow around the world. It could flow anywhere in the world, South America, Europe, wherever it is to their comparative advantage, not necessarily in the United States.

I do know that as transplants increase, at content below the content of domestic manufacturers, to the extent that those vehicles replaced domestic units produced by Ford, General Motors and Chrysler, it will expand the trade deficit, at least in the short run. And it will cost American jobs, without question.

SENATOR BINGAMAN. I guess this was the point I was making a little earlier.

The issue really is a question of how much market share Japan is able to gain from American producers. Japanese companies are able to gain from American producers. They may gain that by importing more vehicles. They may gain that by doing more transplants here and gain it that way.

Are you suggesting that the voluntary restraints are keeping them from importing more vehicles?

MR. BOLTZ. The voluntary restraints, indeed, acted to prevent imports greater than 2.3 million. In fact, the voluntary restraints helped develop the transplant industry, without question.

With regard to the upper limit of share—Japanese share of the U.S. car market is running at 37 percent at this instant—there is nothing to stop it from zooming past 40 percent.

Any company that is able to earn excess profits in its home market—that is the protected sanctuary that I was talking about—and then turn around and be willing to spend a proportion of those profits on marketing programs in the United States will be able to gain share.

A strange thing happens as you cross the international date line. Our Cherokees more than double in price on the way to Japan, going into that market. Their Previas are reduced in price. There is a dumping action, as you know. There is some question of trade practices and their fairness in that regard, sir.

I think, as long as they have a source of profits from a protected market, which they are willing to spend to conquest other markets around the world; principally, the United States, you will see share pressure of that type.

SENATOR BINGAMAN. Now, this chart on the right, you project total Japanese-U.S. vehicle sales through the year 1994. What percentage of U.S. market share does that projection indicate they will have by the end of 1994.

MR. BOLTZ. Probably, in the range of about 37 or 38 percent. I'll have to get you the exact figures, sir. I did not bring with me our estimate of the total U.S. car and truck market for 1994. Rather than hazard a guess, I would like to submit that for the record.

SENATOR BINGAMAN. Okay. I would appreciate it.

Mr. Raftery, why don't you go ahead and then we will conclude the hearing.

MR. RAFTERY. With regard to capacity. In 1990, the Japanese transplant capacity utilization ran at about 81 percent. They had a capacity of 1,830,000 vehicles and they produced a little under 1,500,000. That is including NUMMI but not including Canada.

Concerning the Michigan study. My recollection of the Michigan study is that they had a best-case and worst-case scenario. Best-case, as I call, projecting to 1994, was a \$15 billion automotive parts deficit with Japan. Worst-case, as I recall, was \$22 or \$23 billion.

When Michigan first announced that, there were immediately certain people who disagreed with that projection.

Now, that was prior to the 1990 results and the first six months of 1991 results. I think many people were surprised that in 1990 the auto parts deficit with Japan was reduced by just under a billion dollars, and the reduction this year, I think, will be at least that amount.

Based upon that, and based upon the figures I cited earlier, wherein the Japanese vehicle transplants have not increased imports of Japanese parts for OE purposes in three years, in spite of an increase of some 60 percent in vehicle production—I think it's 60 percent—and modest, modest 7 percent increase in OES imports—and I must say I am surprised at this—that would make me question where, if anywhere, the deficit is going.

I frankly don't know if its going down or going up. But it would certainly make me question how you would get to \$22-24 billion or even, maybe, \$15 billion. Not that that's a good situation. Right now, it's status quo.

Lastly, I think that with regard to putting limits on vehicles, either imported or transplants, vehicles are marketed to the consumer. As much as I feel we must provide every support we can to American industry, we also had better remember that there is a consumer. We have to satisfy the consumer.

SENATOR BINGAMAN. Mr. Boltz, did you have a last comment?

MR. BOLTZ. Yes, Senator. I would like to make one remark. Jim is right that the trade deficit did narrow a bit in 1990. He said he expects it to narrow some more.

It should, when you consider that the overall unit sales in the U.S. market have dropped precipitously as part of the recession, both in 1990 from 1989, and in 1991 from 1990.

So, one would expect that the parts deficit should narrow as well. I mean, industry sales are off more than 20 percent and, as you would expect, a fair share of the deficit should be off about the same amount.

We would be happy to send that information for the record, as well, to try and compare this to the unit sales of the industry in those 2 years.

SENATOR BINGAMAN. Mr. Womack, did you want to make a point.

MR. WOMACK. Let me just say one final thing.

I don't want to be confused with those who are supporting the Gephardt bill. I haven't seen the current Gephardt bill; I have only seen some early versions of it. I've seen an early version of the Riegle bill. I don't know what it looks like now.

The notion that you should base whatever you do on units strikes me as just being a wrong way to do things. You should base it on value.

Second, anything you do that doesn't give people credit for exporting, not just to Japan but to anywhere, is not in our interest.

Third, anything you are going to do, I think, has to be a very long-term rather than short-term policy—This is an emergency, do something quick. You really have to think it through because it fundamentally changes all of our trade relationships.

This industry is very big. This deficit is very big. This U.S.-Japan issue is right at the heart of the U.S.-Japan issue. You can't just casually, through the back door and as a matter of temporizing, get into this. This is very fundamental. We are going to have to make some choices.

SENATOR BINGAMAN. Thank you all very much for the testimony. I think the hearing has been very informative and undoubtedly we will be continuing to look into this in future hearings. I appreciate the effort that went into preparing the testimony and for coming today.

That will conclude our hearing.

[Whereupon, at 4:17 p.m., the Committee adjourned, subject to the call of the Chair.]

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