envisioned in 1960. The American Airlines SABRE system was under development in the late 1960s, and the United Air Lines APOLLO system was operational by 1972. American spend more than $150 million and United spent more than $250 million on these systems during this period. There are many other reservation systems today, but these two can be found in the offices of about half of today's travel agents and they account for 80 percent of the airlines' domestic revenues. In 1960 the important role of telecommunications and automation in the service side of aviation was neglected.

To sum up, the concrete assumptions of the early 1960s were smashed by the discontinuities that were not foreseen. It is not the smooth trend lines that lead us to the future but rather the disjointed, stop-and-go, discontinuous, and uncertain path of reality.

During the next three days the participants in this conference should think about the predictable and the unpredictable events of the future. The following potential forces of change need to be considered:

- New forms of regulation,
- New relationships between real GNP and aviation growth,
- New forms of route distribution,
- New forms of price and non-price competition,
- New aircraft retirement conditions, and
- New forms of technology.

THE OUTLOOK FOR THE UNITED STATES ECONOMY

Nariman Behravesh, Wharton Econometric Forecasting Associates

Two questions are often asked these days. The first is, is the United States economy is a recession now? The unequivocal answer is no. The second question is if not now, when will the next recession in the United States occur? Of course, that is a much more difficult question to answer. My answer is not in the next two or three years. In brief, given the inherent strength in the domestic United States economy and given the willingness of the Federal Reserve System to provide enough credit to keep the United States economy going, it is hard to describe a scenario in which a recession occurs, at least in the next two or three years.

I caution people that I am not complacent and that we are not looking at a very strong growth picture. I foresee a "muddling through" or a "muddling along" scenario for the next couple of years.

Let us look at what has happened since World War II to see if history can provide any guidance about when the present recovery will end and how it will end. Unfortunately, history has little to reveal about when the next recession in the United States is going to occur. There have been seven postwar recessions in the United States and a corresponding number of recoveries. The problem is that the timing of recessions varies widely. On average, postwar recoveries have lasted about four years. So, from an actuarial point of view, the United States is due for a recession any day now. The problem is that the shortest recovery in the United States lasted one year. That was in 1980-1981. The longest recovery lasted some seven years in the 1960s. The range around the average of four years is a wide one, so it is difficult to figure out exactly when the next recession is going to occur.

There is a good deal more certainty about how the next recession in the United States is going to occur, or rather how it is not going to occur. Recessions or recoveries in the United States rarely die of old age. They tend to get pushed over the brink by some occurrence or another. Such occurrences take two forms. One is an outside shock, like the Arab oil embargo or the Iranian revolution. The other is a policy reaction or overreaction to imbalances that begin to occur in the economy. Typically what happens is that as you get to a mature phase in the recovery and imbalances start to appear in the economy, strains start to show up and, typically, policy makers, and it is usually the Federal Reserve in this case, get worried and tend to want to tighten up, and that tends to be enough to push the economy over the brink.

It has usually been this kind of situation that has brought about recessions in the past. But Wharton does not see those pre-recessionary imbalances in the economy at present.

Let me make this point again in the following way: United States growth tends to slow down because of two types of constraints, physical or financial. Are there physical constraints on the United States economy that will continue to grow in the next couple of years? The answer is no. There are three measures that people look at when they attempt to answer that question.

Are there strains in labor markets? The answer is no. The unemployment rate is quite high by historical standards. It is nowhere near that full-employment unemployment rate that economists tend to think of. The economy is quite far from any tightness in labor markets and any inflationary pressures in labor markets.

Another measure to look at is capacity utilization. In other words, is the United States economy bumping up against capacity ceilings? We are operating at somewhere around 80 percent of capacity on average in the United States. When the economy is operating at a capacity utilization rate in the high eighties inflationary problems begin to arise. The United States is well below the kind of problem capacity situation that is typically encountered by the third or fourth year of a recovery.

Finally, inventory accumulation starts to show up in a mature phase of a recovery. Inventories now are far below their peaks. Economists tend to look at the ratio of inventories to sales as some gauge of whether or not inventories are out of line. Right now they are not.

The answer to the question, are there physical constraints to United States growth right now is no. What about financial constraints to growth? The answer is maybe. The private debt situation in the United States seems to be getting a little worse. Consumers are incurring more and more debt as a percentage of their income, businesses seem to be borrowing at fairly high rates, and the United States government is "dissaving" at a rather alarming and record rate. It might be concluded that there could be problems for financial growth in the United States.

However, in the past two or three years, the lack of internal funds for growth and for financing investment has been more than made up for by a record inflow of foreign capital. This has been of tremendous help in getting through a period when our savings have been very low.

Now the big question is how long can these record capital inflows into the United States continue? Will foreigners start getting tired of investing in this country, and will there be a drying up of foreign capital inflows?

How would the Federal Reserve react to a drying up of foreign capital inflows? So far the Federal Reserve has been willing to supply a fair amount of credit to the United States economy, enough to keep it going.

It is important to caution that it is not good to be too complacent or too sanguine because there are two problem areas in the United States economy that are creating many of the difficulties that we are seeing today. These are the "two deficits," the deficit in the federal budget and the trade deficit. They are very closely linked, they are both very high, and, as a percentage of the gross national product (GNP), they are at record levels in the postwar period.

Before discussing where we go from here and why we will not see a collapse of the system as a result of these two imbalances, let us review briefly how we got here. In 1981 extremely large tax cuts were enacted coupled with a fairly substantial increase in defense spending. The logic then was that we could cut non-defense spending enough to compensate for this. We could not, so the federal government ended up with very large deficits. In 1981 and 1982 the Federal Reserve was extremely concerned about inflation. It tightened the money supply and interest rates went up, both in nominal and in real or inflation adjusted terms. The economy collapsed, but then it began to recover. The reason for the recovery was a tremendous fiscal stimulus. By 1982 the Federal Reserve had backed off from its very tight monetary policy stance. By 1983 and 1984 the rate of inflation had come down and the economy was growing; this provided a tremendous boost for the dollar in world markets, partly because of the growth and the potential growth in the United States but, also, because this mix of very stimulative fiscal policy and very tight, neutral monetary policy had raised real interest rates.

That meant that real rates of return were quite a bit higher in the United States than elsewhere in the world. This began to attract funds into the United States and continues to do so. The result was that the demand for dollar-denominated assets around the world was high, and this kept pushing the dollar further and further up. As the dollar went higher, two things happened: we were able to import goods at much lower prices than they could be produced domestically, and our manufacturing sector was hurt because our domestic demand was being satisfied by foreign production not by domestic production.

Now we have an imbalance in the budget resulting, through the strength in the dollar, in an imbalance in trade. To some extent this is being offset abroad by surpluses in the trading partner countries' budgets and their trade balances. In effect, this is a situation of off-setting disequilibria.

Many people have suggested that this is an unsustainable situation and that the system is going to collapse around us. I disagree with that, and the Wharton forecast is essentially based on an unwinding of these imbalances and a slow progression to a more balanced situation in the world.

Four assumptions underlie the Wharton forecast and lead us to believe that this unwinding will be slow and that the economy will not collapse:

1. The dollar will decline in an orderly fashion and, correspondingly, the capital inflows into the United States that were described earlier will not dry up overnight, but will instead diminish gradually.

2. The United States rate of inflation will remain low (in the 4 to 6 percent range) for quite a few years.

3. Domestic demand in the United States will remain strong.

4. The United States will make no policy mistakes.

Because the last is the most interesting of the assumptions, I will discuss it first, and then the rest in reverse order.

Fiscal policy in the United States is really a mess right now. I will discuss three aspects of fiscal policy: the budget, tax reform, and protectionism. Each of them has its own problems.

First, there is budget reduction about which there has been much discussion in the press recently. Congress has had a difficult time coming to grips with how to go about reducing the deficit. There has been an impasse, and there have been many attempts to enact sweeping changes that would help to bring down the deficit. The standoff comes about because the President is adamant about not raising taxes and the Congress, especially the Democrats, are adamant about not touching the entitlement programs, specifically Social Security. Essentially they have squeezed about everything else they can out of the budget. Until and unless there is agreement about these two untouchable portions of the budget, there will not be much progress in reducing the deficit. The Wharton projection, based on the budget reduction package that was passed last year, is that the deficit will remain around $200 billion far into the future.

If no progress had been made on the deficit last year, that number would have gone up to about $250 or $300 billion in time. Another thing to keep in mind is that you really need to look at the deficit as a percentage of the GNP. As the GNP grows, the deficit as a percentage of the GNP will come down very slowly.

Despite all the rhetoric that is going on in Congress today, not much will happen on the deficit until the next Administration takes office because there is not much more than can be done on this problem until and unless taxes are again considered as a way to reduce the deficit.

The Wharton view is that tax reform is stalled, despite a lot of discussion in Congress. Obviously specific elements of tax reform are of great interest to the airline industry, specifically the future of the investment tax credit.

The reasons behind the slow progress of tax reform are fairly simple. Tax reform is not a high priority for many congressmen. The major concerns of their constituents seem to be deficits and protectionism. Tax reform is a very poor third.

The House is indifferent to tax reform. The Senate is downright hostile. That is not to say that Congress might not pass a bill that they will

call tax reform, but it will be quite modest and quite insignificant in the whole scope of things.

Let me quickly turn to protectionism, which is the most likely source of mischief in the Congress. Protectionism is the one area in which a policy mistake might be made.

There are some three to four hundred bills pending before Congress on various aspects of protectionism. Most of them are very narrow bills aimed at one or another industry. There are few that are really broad enough to do much damage. These bills reflect massive frustration on the part of the Congress with regard to the Administration's seeming indifference to the trade problems that the United States is having. Congress' preference would be for the President to let them off the hook through some kind of a grand plan for trade. Their second preference would be to do something symbolic in the area of trade legislation in the hope that the President would, indeed, veto it, so that they could still say to their constituents, "Look, we tried to do this, but it didn't succeed."

Fiscal policy is going to remain fairly stimulative because of the size of the deficit. However, there is a potential for a policy mistake in the form of protectionism. If a major protectionist bill were passed, there surely would be retaliation on the part of our trading partners, and that would be damaging not only to the United States economy but also to the world economy.

In contrast, monetary policy gets fairly high marks in recent years. The Federal Reserve has been very good at fine tuning in an attempt to keep United States growth on track without incurring additional inflation. From that point of view monetary policy has really done a fine job. However, in recent months M1, the narrow measure of the money supply, has grown very rapidly. This has created considerable concern about whether inflation might be rekindled. My own judgment is that this is not a risk right now, given the weakness in the United States economy, but it could become a danger if this kind of monetary growth persisted.

Many are concerned about whether the Federal Reserve at some point will get worried and tighten up in an attempt to prevent inflation from building up in the United States. However, because inflation is so low the Federal Reserve has no reason to allow the United States to go into a recession. There are two other areas that the Federal Reserve is particularly concerned about. First, right now there are many strains in the banking system, because of the farm problem and because many energy-producing states and sectors are being hurt by continued declines in the price of petroleum. This would be a very bad time for the Federal Reserve to try to tighten up because it would guarantee that those problems would worsen.

Second, the recently agreed-to accord on the dollar, referred to as the Group of Five Agreement, guarantees that the Federal Reserve is not going to tighten. In order for the dollar to come down, United States interest rates have to come down. Thus we expect interest rates to decline gradually through the middle of 1986, and then to pick up gradually in late 1986 and in 1987.

Now, let me turn to the next assumption that domestic demand will remain strong. The factors behind consumer spending suggest that it will continue to do quite well in the near future. Income growth has been strong. There continue to be cuts in personal taxes. Employment, especially in the services sector, has been quite strong. Consumer debt has risen, but consumer assets have also risen. From a net worth point of view consumers are quite well off. Consumer confidence remains high. All in all most of the factors would suggest that consumers are going to continue spending at a reasonable rate.

There are a number of factors that are favorable for investment. The tax breaks that were passed in 1981 continue to have a positive effect. Interest rates have come down some 300 basic points on the short end during the past year. Inflation has come down, especially in the prices of producers' durable equipment. Another factor is that many companies are now engaging in high-tech upgrading of their capital stock. Part of this is in response to increased foreign competition. In other words, many companies believe that the only way they can compete is by becoming more efficient.

There are two negative factors on the investment front. The low rate of capacity utilization referred to earlier is discouraging some businesses from investing. The other troubling aspect is that the profits outlook is on the sluggish side. This means that the internal funds for financing investment may not be overly forthcoming.

Housing will continue to remain strong. The long-run demographic factors suggest that we will be adding about 1.8 million units a year to our housing stock. The decline in interest rates has helped many more families to be able to afford to buy housing. Thus housing should remain a source of strength in the near future.

The major weakness in the United States in recent years has been net exports. Domestic demand is being satisfied by foreign production. Thus inflow of imports into the United States has been a source of weakness for the United States economy. That should start to turn around very slowly by mid-1986, largely because there will continue to be declines in the dollar of 10 to 12 percent over the next couple of years. By 1987 we expect growth in the United States economy to begin to edge up. We expect to see growth in the 2-1/2 percent range for a couple of years. There is a fairly close correlation between revenue passenger-miles and revenue ton-miles and real growth in the United States economy. So it can be expected that those aggregate measures of air transportation should correspondingly show some growth over the next couple of years, but not the kind of growth that occurred in 1984. Thus, we are looking for sluggish, but continued growth. We are not looking at a collapse in that sector either.

Inflation remains low and has become kind of a non-issue in the United States. I rarely get calls about inflation. It is clearly not on people's minds, and rightfully so. Inflation is going to stay low for a number of reasons. The unemployment rate is still high by historical standards. Labor unions have been and will continue to be moderate in their wage demands. Commodity prices have remained low. Most people predicted that, as the dollar came down, commodity prices would start to increase. That has not happened, largely because the world economy remains weak. Commodity prices have continued to slide. Oil prices have softened, and as a potentially major development for the United States economy, there could be a significant reduction in petroleum prices by some time in the middle of 1986. One scenario to which Wharton now assigns a 20 to 30 percent probability shows that the price of oil could come down to $18 a barrel by the middle of 1986. This could have quite severe ramifications for the United States in a number of different ways. It would mean the inflation rate in the United States could, at least for a while, come down to between 1

and 1-1/2 percent, but of course it could create severe strains for some of the energy-producing sectors of the United States. It would severely damage Mexico, which might then default on its debt resulting in further strains on the financial system.

The last assumption was for an orderly decline in the dollar. This is the major risk in some ways for the United States outlook. A free-fall of the dollar could create tremendous problems for the United States in two ways. We would get a temporary spurt in the rate of inflation. In other words, foreign goods would suddenly become very expensive in the United States, and therefore importing competing goods to the United States would also start to get very expensive.

Another consequence of a dollar free-fall would be that interest rates would rise rapidly, largely because the dollar free-fall would be accompanied by a drying up of foreign capital inflows into the United States. All of a sudden the sources of financing would not be there, but the demands would continue to be there, so there would be rapid rise in interest rates.

Wharton assigns a relatively low probability to a rapid dollar decline, even though it is the single biggest risk in the outlook. First, it is in nobody's interest around the world to have the dollar decline rapidly. There are many asset holders out there who have very large dollar portfolios, and obviously it is not in their interest to have the dollar collapse. The other issue is that the United States has by far the largest capital market in the world. Where is everybody going to park their money if not in the United States? In any event the majority of funds will end up in the United States. Thus it is unlikely that there will be a dramatic decline in the dollar

Finally, my interpretation of the so-called "G5 Agreement" is that the five governments involved essentially guaranteed to bring about the dollar decline in an orderly fashion.

In summary, the situation in the United States from the Wharton point of view is not an unstable one. It is not something that is going to collapse over the next couple of years. It will change slowly. The baseline calls for slow, sluggish growth, a type of muddling through, but no recession, at least not between now and 1988. To develop a recession scenario, there would either have to be a collapse in the dollar, which I have discounted, or some kind of a policy mistake. For the moment the only policy mistake on the horizon is protectionism and there now seems to be less than a 50/50 chance of that occurring.

DISCUSSION

Bruno Diesner, DeHaviland Aircraft Company Canada

There has been quite a bit of discussion lately of free trade or protectionist barriers, both here in the United States and internationally. How long do you think it would take to implement a policy of free trade to the point where it operated efficiently, what advantages and disadvantages do you see in free trade for the United States, and what administrative problems do you think there might be with regard to preserving such a policy?

Nariman Behravesh

There are administrative problems. The mechanism through which these actions are brought about, the General Agreement on Tariffs and Trade (GATT) discussions, have typically been very drawn out. They are just beginning a discussion that could easily last two years before the trade barrier reductions are fully in effect and fully implemented. The question is, when they are implemented, to what extent will they open up other countries to United States goods? There has been much discussion of non-tariff barriers in places like Japan. Those are much harder to address. Thus I am only marginally optimistic that some progress can be made in the next couple of years.

Some progress has been made over the years in trying to reduce tariff barriers. On average the tariffs in this country and in many of our trading partners are only about 4 percent, but in certain industries they are much higher. Some industries are not protected, whereas others are protected by tremendous barriers.

Many economies have protected agriculture. Japan is a notorious example. It has a very inefficient agricultural sector that is protected. If this protectionism were stopped, United States agriculture would receive a boost because we could expect to export many more agricultural products to that country. Thus some progress can be made, but the problem is that a number of countries have sectors that they view as somehow sacrosanct, and it is going to be very hard to break those barriers down. In terms of overall advantages, the greater the volume of trade the faster the total economy will grow. The problem is that in the process some industries may suffer, even though the economy as a whole will benefit.

David S. Lawrence, Sikorsky Aircraft Company

How much of the decline in oil prices do you think will filter through to fuel costs at the pump?

Nariman Behravesh

Quite a bit, I would think. If price per barrel does go down to $22 or $23, we will see quite a bit of a price break and a corresponding percentage change at the pump. I am not sure what the time lag is. It might be a couple of months.

David S. Lawrence

You do not foresee offsetting taxes?

Nariman Behravesh

That is the big question, of course. Can Congress bring itself to raise some kind of import surcharge? So far there has been much resistance on the part of the Democrats especially because they would view it as a regressive tax that would hurt the poor more than it would hurt the rich. If they could figure out a way of offsetting that problem through some kind of credit, then I would give a greater chance to an oil import fee being passed. Earlier this year during budget discussions the Senate Republicans raised the issue of a surcharge on imported petroleum. It was shot down very fast, so at this point there is less than a 20 percent chance that it would be passed.

John W. Drake, Purdue University

You mentioned as one of the reasons why things are as they are that, because of physical constraints, plants can use only about 80 percent of capacity. I believe you also said that problems do not develop until around 85 percent.

Nariman Behravesh

Depending on the industry, it is somewhere between 85 and 89 percent.

John W. Drake

Is it not likely that some of the plant capacity that is being counted when they talk about 80 percent is unusable and is, in fact, that capacity which manufacturers are actively trying to replace now, and that this helps to keep the economy going along as it is, so that 80 percent is not really a good number? Might the percentage of capacity operated that is losing money be higher?

Nariman Behravesh

That is a very good point. I would have said that it was an even stronger point a couple of years ago. We are seeing much investment activity directed at upgrading existing capacity rather than adding to it. Therefore I would say that the obsolescence of capacity is less of a problem now because so much upgrading has been going on. You are right that the numbers may be understating the amount of capacity utilization, but I still think we are far from the flash point for inflation. It is obvious that prices are not rising and part of this has to do with the fact that we are importing capacity. That, in and of itself, is a factor that is keeping prices down.

David C. Sepanen, Boeing Commercial Airplane Company

You went through your well-founded reasons why we could expect lower prices this year, but real interest rates are extremely high. If lower interest rates could be a panacea for the world economy, why do we not see lower interest rates?

Nariman Behravesh

That is a good question. We have seen lower interest rates on a nominal basis. Nominal interest rates came down some 300 basic points in the past year. The problem is that the rate of inflation has also declined in that period, which is all good news, mind you, but it has not done much for a decline in real rates. They have come down a little bit, but not a lot. Real rates are still very high by historical standards. The fundamental reason for this is a perverse policy mix: a very stimulative fiscal policy and a monetary policy that has eased a little but is still sitting on the fence. There are other reasons as well. While inflation has come down, expectations of inflation have not come down as much. People are still worried about inflation. Financial deregulation has played a part in that. Furthermore, the 1981 tax breaks that were passed for corporations actually raised the real rate of return. You would expect that to be reflected in real interest rates. The policy mix is the key. If more progress is made on the deficit, I think we will start to see easing on the real side.

Question What would be the result if the prime rate could be dropped to 6 percent today?

Nariman Behravesh

The negatives would be, primarily, lower interest income, I would think. Interest income, incidentally, has been rising at a very rapid rate in recent years. Generally a lower prime rate would be very positive for the economy. We would see the interest-sensitive sectors of the economy rebound. We would see a lot more strength in housing and investment. We would see a further decline in the dollar. It would be a very positive development if, in fact, the prime rate were to come down, but one element has got to be present, a reduction in the federal deficit.

AVIATION: TODAY, TOMORROW, AND IN 1990

George W. James, Airline Economics, Inc.

The economic outlook projected by Dr. Behravesh was certainly encouraging. A similar pattern is developing in the airline industry as we look at what happened last year, this year, and what the prospects are for next year and even the longer run.

This discussion will concentrate on what happened in 1985, take a look at 1986, and compare the three-year period, 1984-1985 and 1986, to see if developments during these years can provide some insights that will help clarify the future of the industry. Some of the structural changes in the industry that appear to be under way will also be examined.

The most important thing to do in looking at 1985 is to examine the formulas for revenues and costs. First, revenues are obtained by multiplying traffic times yield. The second part of the equation is taking capacity or available seat-miles and multiplying these by unit costs (which is cost per seat-mile) to arrive at operating expense.

These relationships are important to understand because we often fall into the trap of just looking at traffic to see profitability (i.e., traffic is improving, therefore, the carriers must be improving financially). This is not the case, of course, because if there were no charge to the passenger there would be no revenue despite a 100 percent load factor. How then do these factors work out in combination?

Under deregulation, from time to time any one of the four variables, traffic, yield, unit costs, or capacity, can become more important than the others as far as profitability is concerned. Also, no one of them can be a permanent solution to profitability. Yield cannot always increase 10 percent per year nor can costs be cut indefinitely. For example, in the first half of 1985 the real key to the profitability of the industry, some $950 million, was the increase in load factor. In the first half of the year the carriers for which load factor increases were the primary reason that their profitability improved were Air Cal, American, America West, Delta, Eastern, New York Air, PSA, Republic, Southwest, US Air, and Western.

Three carriers had better profits because yield was the key to their success: Alaska, Midway, and People Express. Unit cost decreases were the primary reason that profitability improved in the first half of the year for Northwest and Frontier.

There were also several carriers that lost money or decreased their operating profit in the first half of the year. Decreased load factors affected Aloha and Hawaii. Because of the United strike fewer people came to Hawaii. Ozark was the only carrier for which operating profit decreased because of a yield decrease. Four carriers, Pan American, Piedmont, Trans World, and United, had unit cost increases in the first half of the year, leading to a decline in their operating profitability or a loss.

In summary, the industry was profitable in the first half of 1985 mainly because of improved load factors. However, in 1984 the dominant factor was yield increase.

From January through July 1985 there was a 15 percent growth in revenue passenger miles (RPMs) and a three-point increase in load factor. In September, traffic growth was only about 6 percent, and a drop in load factor can be expected. This means that the primary factor for improving profitability in the first half of 1985 began to