

**Demand Constraints and Economic Growth**

by

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**We would like to acknowledge the insights of Professor Robert Gregory, who delivered an address at a conference, The Path to Full Employment and Equity, convened by the Centre of Full Employment and Equity, University of Newcastle, December 3-4, 1998, which stimulated the analysis presented here. In particular, Professor Gregory indexed per capita GDP growth to show that the U.S., the UK, and Australia have all grown at about the same rate, regardless of their different experiences with respect to productivity growth and employment growth. We have extended this analysis to include a number of other countries, and have offered an explanation for what Professor Gregory had presented as a puzzle.**

**Abstract:**

In recent years, the U.S. has seemed to achieve the best of all possible worlds: robust economic growth, very low unemployment, and low inflation. Many would attribute this performance to fewer supply side constraints, as the U.S. has moved away from stifling regulations and other impediments to trade. Indeed, our lower unemployment rates—especially when compared with the very high unemployment rates suffered in European countries—would appear to be due to freer labor markets and to a less generous social safety net that saps private initiative.

However, in this paper we show that while it is true that the U.S. has enjoyed a higher, and growing, employment rate than that of all of our major competitors, per capita GDP growth since 1970 actually lags behind that of all other major countries. The reason, of course, is our dismal rate of productivity growth. Indeed, we show that when one decomposes per capita GDP growth into its component parts—growth of employment rates and growth of output per employee—the U.S. experience is quite different from that of the other countries. In some sense, countries "choose" high employment paths or low employment paths, but regardless of that choice, economic growth does not appear to be much affected. We argue that this is because countries have not faced significant supply constraints; rather, per capita GDP growth has been largely demand constrained. This is why policies that would remove supply constraints do not really lead to more rapid economic growth. The policy conclusion is that Keynesian "demand side" policies are preferable to "supply side" policies if one is to increase growth rates.

It is no secret that economic growth in most developed countries has been slower since 1973 than it had been in the early post-war period. The reasons are complex, but are widely believed to include: oil price shocks that increased energy prices sharply; tighter environmental, worker safety, consumer protection, and financial regulations that interfered with private decision making; social safety nets that reduced work incentives; government deficits that absorbed private saving and thereby reduced investment; and general stagflation brought on by failed Keynesian aggregate demand management experiments. Notably, most of these could be categorized as factors that constrained aggregate supply. Indeed, most economists now reject the thinking that dominated macroeconomic policy in the period right after WWII, according to which growth was believed to be primarily demand-constrained. Today, most economists would argue that higher demand would simply revive the stagflation that crippled economies at the end of the 1970s.

Relatively higher growth in the last few years, and especially lower unemployment levels, in the U.S. are cited as supporting evidence. The U.S. is said to have relied more upon “free markets”, with larger holes in its safety net and with lower taxes and fewer regulations that sap entrepreneurial initiative. The U.S. has also got its “fiscal house” in order—not only succeeding in balancing its budget, but also in achieving substantial government surpluses that are adding to national savings to finance an investment-led boom. Declining union power, erosion of worker protection laws, stagnant or falling real wages, infrequent adjustments to minimum wages (which have allowed real minimum wages to fall far below 1960s levels), and abolition of welfare in favor of workfare have all diminished labor supply constraints, allowing the U.S. to achieve unemployment rates far below those suffered by almost all developed countries.

Certainly, it is argued, the U.S. does not face demand constraints. Indeed, over the course of the Clinton expansion, most analysts have worried that U.S. demand may be too high and its growth too robust. It was exactly this thinking that caused the Fed to raise interest rates in 1994, and to threaten as recently as last summer that it might be forced to raise rates again. Because inflation never did pick up, and because the economy has continued to grow at what is believed to be a robust rate with no signs of significant supply-side bottlenecks, the Fed never did tighten policy again. Indeed, in recent months the Fed has even lowered interest rates—but this was done

primarily to offset deflationary forces arising from outside the U.S. economy. The U.S. could “afford” an interest rate reduction because of deteriorating economies in Asia—which would increase the supply of resources and finished goods flowing to the U.S..

Figure 1 compares inflation-adjusted GDP per capita for the U.S., UK, Japan, Italy, France, Canada, and Australia. We have used 1970 as a base year, indexing GDP per capita for all countries to 100—which allows us to compare relative growth. Japan stands out as the unusually successful economy to 1990: its GDP per capita increased by a factor of two. All of the other countries increased per capita GDP by a factor of one and a half to one and three-quarters. Surprisingly, the U.S. had the worst performance of the group. In terms of growth of output per head, the U.S. certainly does not stand out—in spite of its “freer” markets – even during the 1990s.

On the other hand, U.S. labor market experience does differ markedly from that of most other developed countries—European unemployment rates remain stubbornly high, often double those of the U.S.. Figure 2 plots the employment rate for the same countries, again using 1970 as a base year. By the mid 1990s, the U.S. employment rate had risen by nearly 25 percent over its 1970 level. Growth of the employment rate can occur either because unemployment rates fall or because a larger percent of the population comes into the labor force. Looking to the U.S. case, most of the long-term growth in the employment rate is due to rising labor force participation rates of women; however, since 1990, the growth has been driven by falling unemployment rates. Canada, like the U.S., also experienced rising labor force participation of women, but high unemployment in recent years has more than compensated, causing the employment rate to fall considerably since its mid-1980s peak. Japan and European countries, however, have had very little change in their employment rates; the employment rate in France has actually fallen by about 5 percent since 1970. This less favorable experience might be attributed to a number of factors, including older populations, younger retirement ages, more generous social safety nets, and perhaps cultural norms that limit female participation (for example, in Japan where married women are expected to leave the labor force).

We conclude, then, that while U.S. per capita GDP growth has not been unusually high, our labor markets have performed much better than have those of our major competitors. This

raises a question, however. If we have managed to increase the proportion of our population that contributes to production at a pace that far exceeds that of all our rivals (with the exception of Canada), why haven't we increased output per head more significantly? The answer, of course, lies in lower productivity growth. Per capita GDP growth can be attributed to rising employment rates plus rising output per worker (see Box 1). Figure 3 compares productivity growth for the same set of countries, again using 1970 as the base year. Japan stands out with productivity that is 2 times higher by 1990 than it had been in 1970. Italian productivity had increased by a factor of 1.8; most of the other countries increased productivity by something between 1.5 to 1.75 times what it had been in 1970. The U.S. and Canada lag far behind—U.S. productivity had not even increased by 20 percent by 1996.

On the surface, this seems to be a strange result. The “freer” U.S. labor markets seem to have contributed to higher employment rates, but have not generated the conditions that allow employers to raise productivity much. It is possible that higher participation rates have been produced only by bringing less suitable workers into the labor market—a point to which we will return below. If this is the case, U.S. growth continues to be supply-constrained, with the constraint having to do with quality rather than quantity of labor inputs.

However, it is instructive to plot the data from figures one to three in a different manner. Figures 4 through 7 show growth of the GDP indexes, divided into the constituent components:

**Box 1: A Simple Identity**

Start with the following identity:

**Equation 1a:**

$$GDP \equiv EMP * \left( \frac{GDP}{EMP} \right)$$

Where GDP is gross domestic product and EMP is total employment. Without changing the nature of the equation, we can divide both sides of Equation 1 by the population (POP), as follows in Equation 1b:

**Equation 1b:**

$$\frac{GDP}{POP} \equiv \frac{EMP}{POP} * \frac{GDP}{EMP}$$

This equation says simply that per capita income, by definition, is equal to the product of the employment rate and productivity. Taking the total derivative, we see that:

**Equation 1c:**

$$\Delta \left( \frac{GDP}{POP} \right) \cong \Delta \left( \frac{EMP}{POP} \right) + \Delta \left( \frac{GDP}{EMP} \right)$$

Which of course says merely that the growth of output per person (per capita income) is equal to the growth of the employment rate plus the growth of productivity.

growth of employment rates and growth of productivity. Figures 4 and 7 show that per capita output growth in Western Europe<sup>1</sup> and in Japan is entirely attributable to growth of labor productivity. In contrast, U.S. per capita output growth is just about equally divided between growth of productivity and growth of the employment rate. Cyclical fluctuation of per capita GDP growth in the U.S. has been due to fluctuation of the employment rate—productivity growth has been much smoother. Finally, Figure 6 shows the same data for a variety of other developed countries (Australia, Israel, Canada, New Zealand, and South Africa); all the long-run growth can be attributed to growth of productivity, but there have been very large short-run swings of the employment rate. Note that each time the employment rate rose, GDP per capita increased sharply.

What does it all mean? Previous to 1990, Japan is the clear economic miracle—increasing per capita output by two-and-a-half times since 1967, in the face of what would appear to be severe supply constraints. Not only are Japan's non-human resources quite limited, but it also suffers from an aging population and restrictive cultural norms that have prevented any growth of its employment ratio. Further, it has strong labor unions as well as informal labor market practices (such as “life-long employment”) that generate great rigidity. Its trade restrictions effectively reduce the opportunity to relieve supply constraints through imports. However, in spite of all this, it has increased relative labor productivity by more than ten times as much as the U.S. has. Note, also, that the first oil price shock did apparently generate a supply constraint as the rate of economic growth fell and as long-term productivity growth suffered a set-back. However, the economy quickly adapted to higher energy prices, and productivity growth resumed. This seems to indicate that whatever supply constraints Japan encountered, it was able to overcome them. A similar story can be told about Western European countries. Even while suffering from “Eurosclerosis”, these countries have managed to generate faster growth of GDP per capita than has the U.S., again, with all the growth attributed to growth of productivity. “Freer” labor markets and more favorable demographics do appear to generate faster growth of

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<sup>1</sup> As indicated in Figure 4, Western Europe includes Austria, England, France, Finland, Germany, Italy, Luxemburg, Netherlands, Norway, Portugal Spain and Switzerland.

employment rates (and perhaps even lower unemployment rates), but they do not produce higher rates of growth of per capita output.

One might suppose that higher employment rates are associated with falling productivity because less able workers are brought into employment. However, labor productivity and employment rates in the U.S. are highly and positively correlated. That there is no necessary relation between the two, however, is shown by the divergent experiences of Canada, which has a positive correlation between employment rates and productivity, and France which exhibits a strong negative correlation. Looking at Figure 6, again, what we find is that productivity grows steadily for this group of countries, with deviations from GDP per capita trend growth fully explained by growth of the employment rate. In other words, high cyclical growth of GDP draws workers into the labor market without adversely affecting productivity.

While it is true that a significant part of U.S. employment growth has been in the low productivity portion of the service sector, many analysts have concluded that there has been a lot of growth in higher-productivity service sector jobs.<sup>2</sup> Furthermore, as Lester Thurow has argued, rising service sector employment relative to manufacturing employment in Germany has not slowed productivity growth. Indeed, the German service sector is just about as productive as the manufacturing sector. Thurow attributes this to a conscious effort by policy-makers to take a “high road” approach to employment—setting high minimum wages in the service sector forces employers to keep productivity high and growing. Even if it were true that the marginal workers brought into the U.S. labor market had low productivity, this could not explain the very large divergence between productivity growth in the U.S. and Japan—U.S. employment rates grew by about 25 percent and productivity grew by less than 20 percent, while Japanese productivity grew by 190 percent.

There is, however, reason to believe that to some extent countries “choose” high employment paths or low employment paths. Given the long run path of employment, and given long run growth of aggregate demand, long run labor productivity growth is then determined

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<sup>2</sup> In a previous paper, we showed that the vast majority of jobs created during the Clinton expansion—10.9 million out of a total of 11.4 million—have gone to those with at least some college education.

primarily as a “residual”. The Japanese experience before 1990 might be taken as the limit to productivity growth (simply because it has the highest rate of growth of productivity of the analyzed countries). Japan “chose” a low employment path—essentially holding the employment ratio constant—with high aggregate demand, which generated rapid growth of productivity. Demand was maintained at a high level through a combination of very large government deficits, high investment demand, and generally a high flow of net exports after 1980. However, toward the end of the 1980s, the government deficit rapidly fell and the budget moved to balance in 1990. When the U.S. “double-dipped” in the early 1990s recession and as other Asian countries began to effectively compete with Japan for world markets, foreign demand for Japanese products was hurt. Together, these negative influences lowered aggregate demand and contributed to a deep and prolonged recession—which was worsened by various financial system “shocks” in Japan and Asia. After 1990, demand growth was insufficient to generate much growth of per capita GDP; this has led to low growth of labor productivity.

What lessons can be learned? We suggest that our analysis leads to the following conclusions.

- U.S. growth has not been extraordinary—even during the Clinton expansion. Growth of GDP per capita has been slow relative to that of the other major developed economies.
- The U.S. has “chosen” a high employment growth path. It may be true that this is in large part due to “freer” labor markets, but this has not generated more rapid economic growth.
- Other countries typically have “chosen” slower employment growth, but still achieved more rapid growth of output per head because productivity growth has been higher than that achieved in the U.S..
- Apparently, output growth has not been significantly constrained by either quality or quantity of inputs. Countries with severe labor constraints (as well as other resource constraints) achieve growth by raising productivity.
- There is no reason to suppose that the U.S. has come up against supply constraints even during the Clinton expansion. Even if it is true that labor markets were tight, growth of productivity is an alternative to employment growth as a means of expanding output per

head.

- As growth appears to be primarily demand-constrained, it is not likely to be increased by policies that would stimulate supply, such as policies to increase national savings (through savings incentives or by reducing government deficits), to increase educational achievement of the labor force, to loosen regulations, or to stimulate private initiative. Such policies might affect the contribution to growth made by a rising employment ratio, but these would not increase per capita GDP growth. In other words, policies that would enhance “human capital” might increase employment but they would perversely lower productivity unless they were supplemented by policies that would stimulate aggregate demand.

Even if one remains unconvinced that post-1970 growth has been largely constrained by demand rather than by supply, the substantial excess capacity and deflationary forces around the world should convince all reasonable observers that the problem today is one of insufficient aggregate—world—demand. In particular, there is no danger that the U.S. is running up against supply constraints—with countries around the world looking to U.S. markets as the outlet for their excess production. High domestic demand and rapid GDP growth could allow the U.S. to reverse its long-term dismal performance in the productivity sphere—to achieve rates of productivity growth similar to those enjoyed by a number of our competitors over the past 30 years.

Japan’s post-1990 experience should also serve as a cautionary example. Its economic miracle was not ended by the supply constraints that are supposed to limit growth—it has the highest saving rate in the developed world, its government had achieved a balanced budget, and its many years of exceedingly high investment had created ample productive capacity. However, as soon as domestic and foreign demand for its output fell, economic growth collapsed—as did productivity growth. This result is particularly interesting because the U.S. has finally achieved the balanced government budget that many economists have claimed is necessary to remove supply constraints that supposedly limit growth. And like Japan in the 1980s, we have been enjoying an investment-led boom that is likely to come to an end soon. Unlike Japan, saving by

the household sector is actually negative in the U.S., perhaps due in part to the phenomenal run-up in the stock market. When the bubble bursts, consumers may reduce purchases. The U.S. will then face a situation in which firms, households, and the government are all retrenching by cutting spending even as the U.S. runs record trade deficits. Perhaps at that point, economists will recognize the demand deficiency that we believe has been the real constraint on growth since 1970.

## References

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## Data Notes

- We have omitted Germany from Figures 1-3 owing to difficulty surrounding unification of East and West in 1990. However, our analysis reveals that Germany falls squarely in the middle range of European per capita income, employment rates and productivity.
- Gross Domestic Product is computed at market prices in 1987 U.S. dollars to create a uniform measure of living standards.
- Data sources for Figures 1, 2 3, 8 and 9 are as follows:
  - GDP data are from the World Bank's *World Development Indicators* CD ROM (1998).
  - Employment data are from the Bureau of Labor Statistics website: <http://stats.bls.gov:80/>
  - Population data are from the *IMF International Financial Statistics* series (December 1998).
- 4. Data for Figures 4, 5, 6, and 7 are from Alphametrics. GDP is computed in 1986 dollars. "Western Europe" includes: Austria, England, France, Finland, Germany, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain and Switzerland. "Other Developed Countries" includes: Australia, Canada, Israel, New Zealand, South Africa.

5. All data for Figure 10 are from the *IMF International Financial Statistics* series (December 1998). The IMF series on Government Deficits ends in 1993.

Figure 1: Per Capita GDP

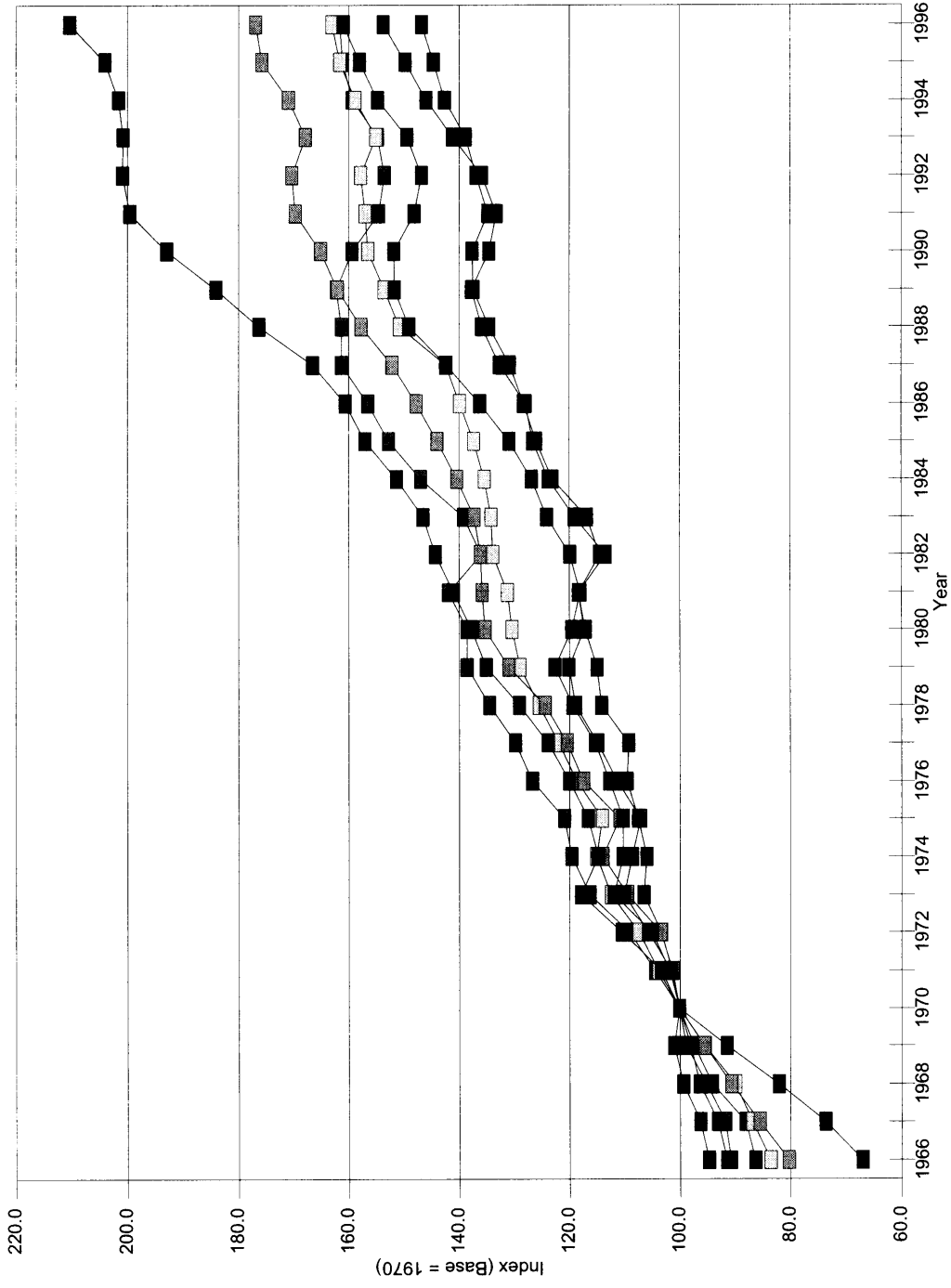


Figure 2: The Employment Rate

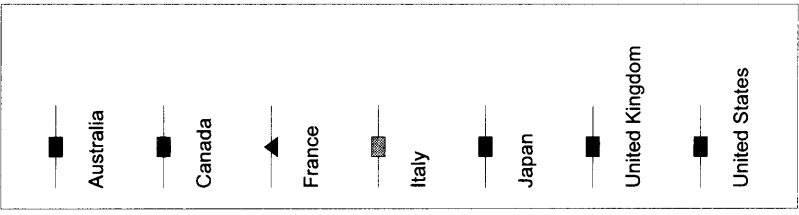
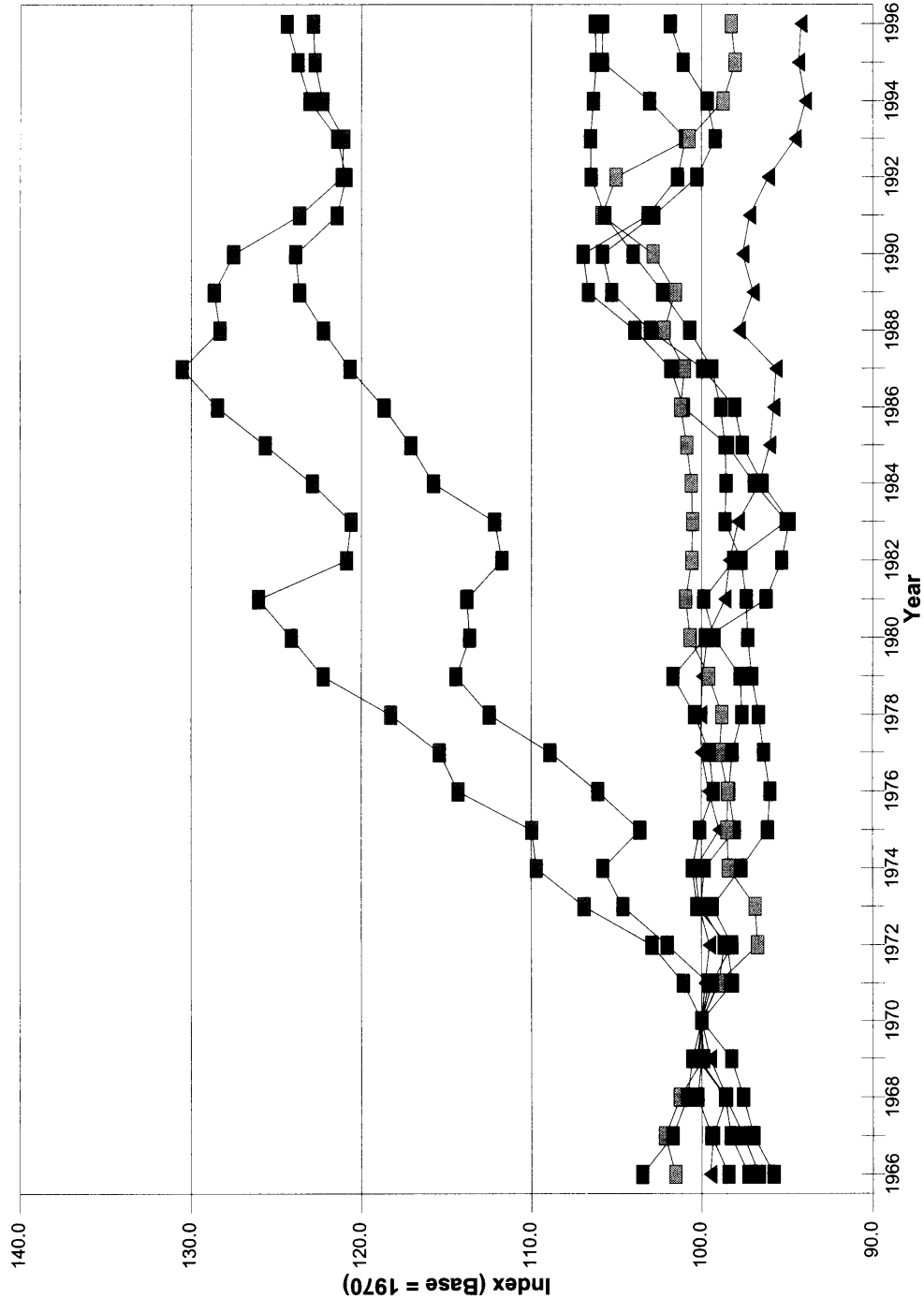
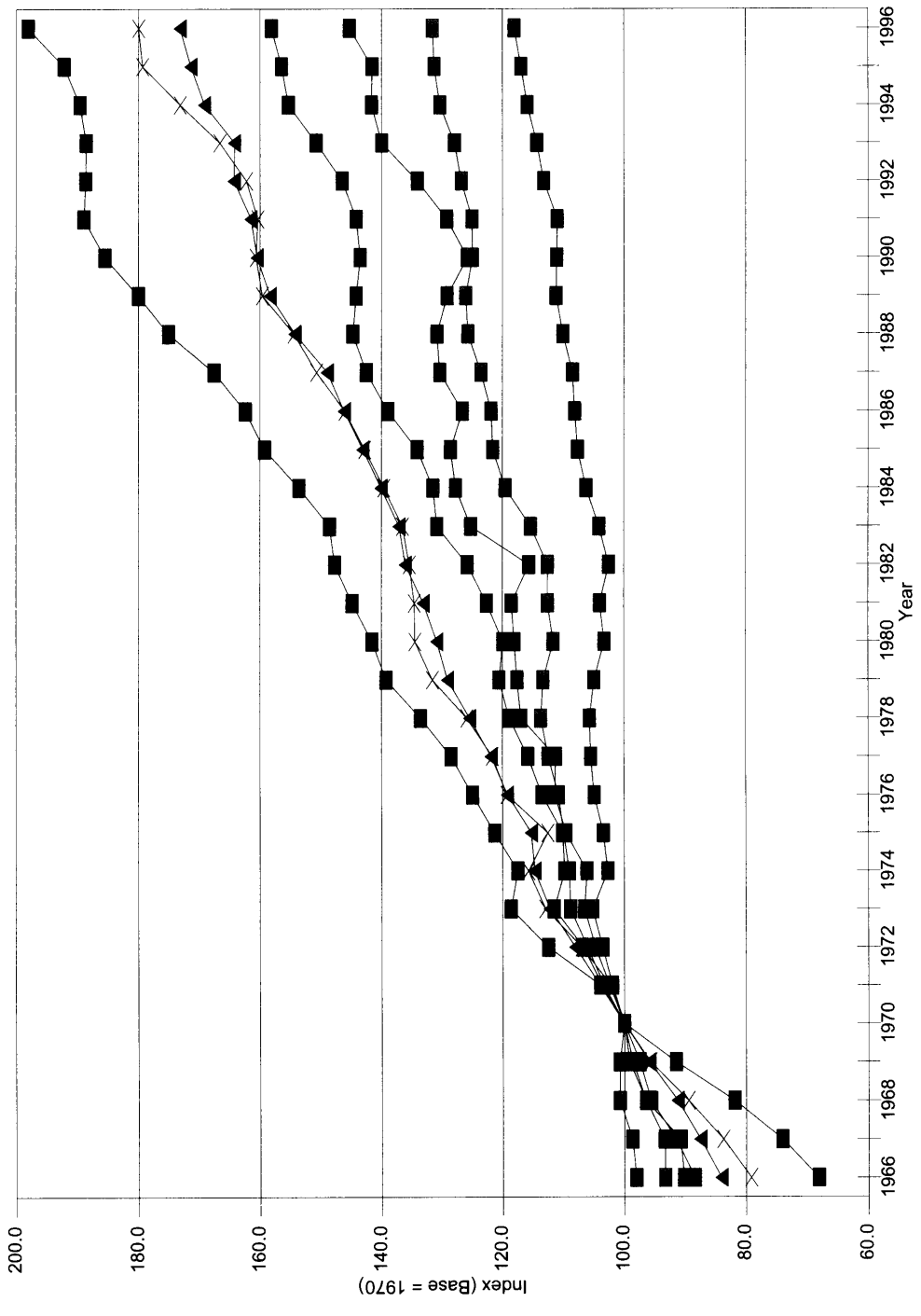
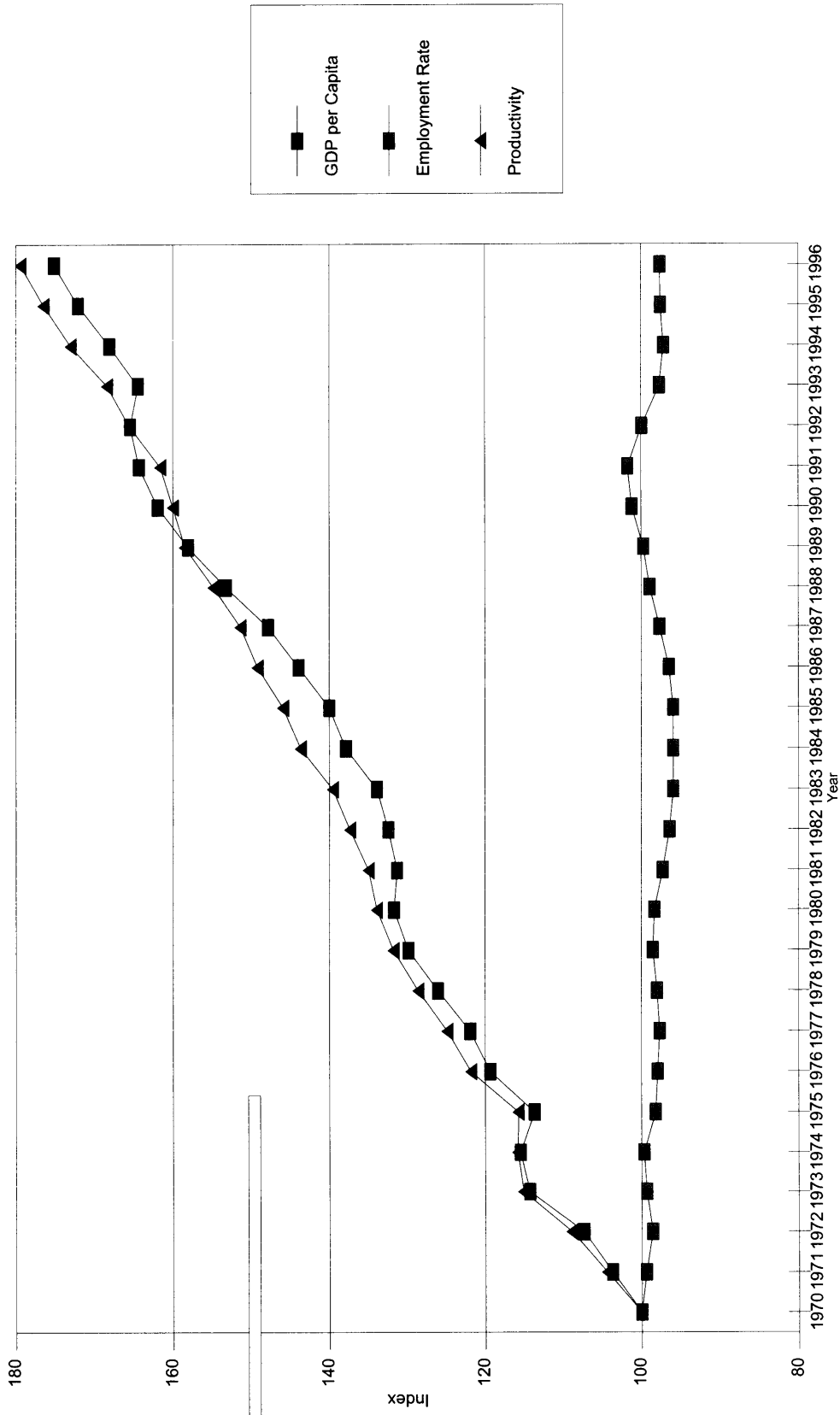


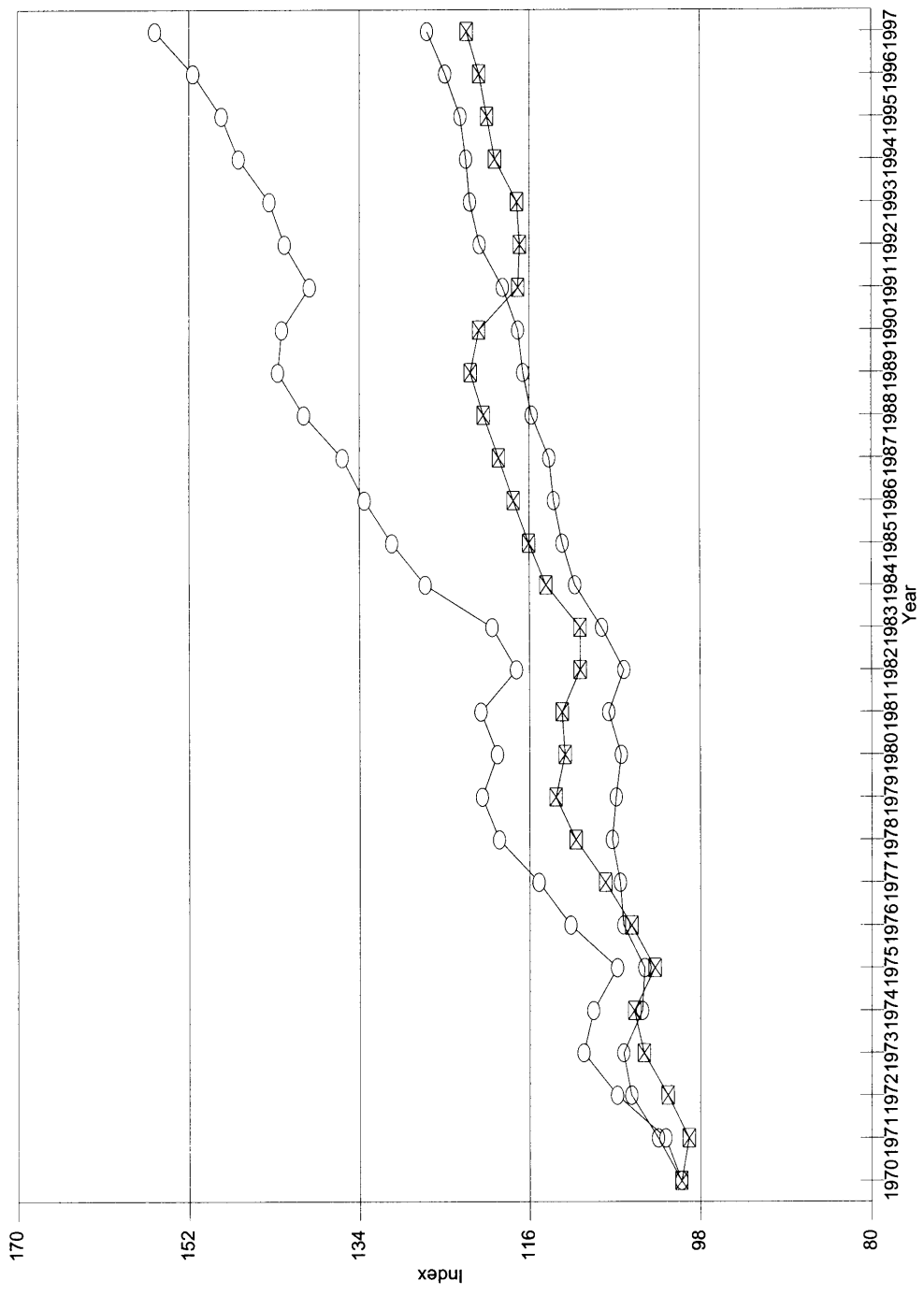
Figure 3: Productivity



**Figure 4 - Economic Growth  
Western European**



**Figure 5 - Economic Growth  
The United States**



**Figure 6 - Economic Growth  
Other Developed Countries**

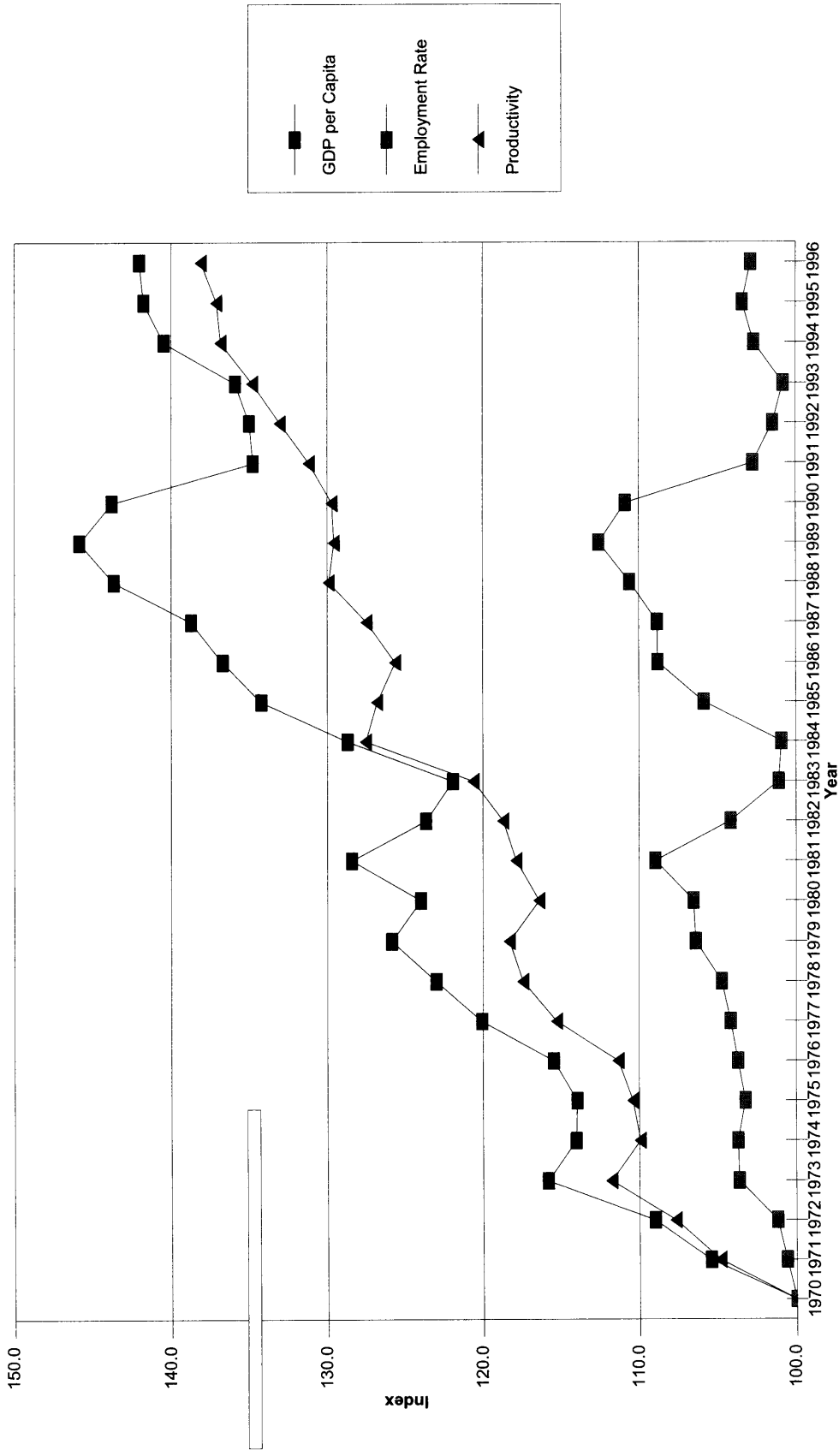


Figure 7 - Economic Growth  
Japan

