Appendix: Discussing the growth and prosperity gap between the United States and the euro area

Diverging GDP growth

Average annual macroeconomic output in the euro area rose by 2.4% between 1996 and 2001, and thus appreciably more slowly than in the United States (+3.6% pa). The growth differential between the USA and the euro area is probably , for the most part, not a cyclical phenomenon. This is indicated, *inter alia,* by various estimates of overall production potential, according to which, over the longer run, too, the USA is on a much higher and steeper expansion track than the euro area.

Differing contributions by the factors of production

Using a Solow decomposition of growth rates to examine the supply-side background behind economic growth, one finds that the euro area's problems are centred on the labour market. In the second half of the 1990s the annual contribution by labour as a factor of production to economic growth was only 0.4 percentage point, or just one-quarter of the value for the United States.[1] In addition, the residual component, which is connected to total factor productivity, is considerably stronger in the USA, where capital as a factor of production likewise made a greater contribution to growth.

Key reasons for the growth gap

The relative inflexibility of labour markets plays a dominant role in scholarly studies of the euro area's growth disadvantage. Estimates of the non-accelerating inflationary rate of unemployment (NAIRU), which is substantially higher in western Europe than in

1 See European Central Bank, New technologies and productivity in the euro area, *Monthly Bulletin*, July 2001, p 45; S Oliner and D Sichel, The resurgence of growth in the late 1990s: is information technology the story? Federal Reserve Board Finance and Economic Discussion Papers Series No 2000-20, March, p 24.

the United States, are cited as empirical evidence of the high level of structural unemployment. The faster increase in total factor productivity in the United States is attributed to two factors: more intensive research and development work, and evidence that new technologies proliferate more rapidly in the United States than in Europe. The new information and communications technologies (ICT) are a striking example. An OECD study shows that the US ICT sector contributed an annual average of just under one percentage point to real GDP growth between 1995 and 2000, compared with ¼ percentage point in the major European industrialised countries.[2] The main reasons cited are institutional differences, such as labour-market rigidities, a lack of venture capital, and generally large bureaucratic roadblocks hampering the establishment of enterprises. It appears that the relatively entangled web of regulations in the euro area is not only getting in the way of the "New Economy" but is also smothering economic activity in many sectors.

Reassessing the "New Economy"

In the meantime, the euphoria with which the "New Economy" was greeted in some quarters, which peaked in 2000, has receded appreciably on both sides of the Atlantic, making way for a more realistic view of the situation. That has also shed new light on the growth gap between the USA and the euro area. Unlike just a few years ago, today some observers are critically examining whether this gap will remain as large as it was in the second half of the 1990s. In particular, the fact that macroeconomic imbalances in the United States are likely to increase following the renewed recovery of the economy is considered to pose a risk to the upswing in the USA and the overall world economy. It is also uncertain whether the investment-promoting decline in the relative prices of capital goods will continue at its earlier pace.

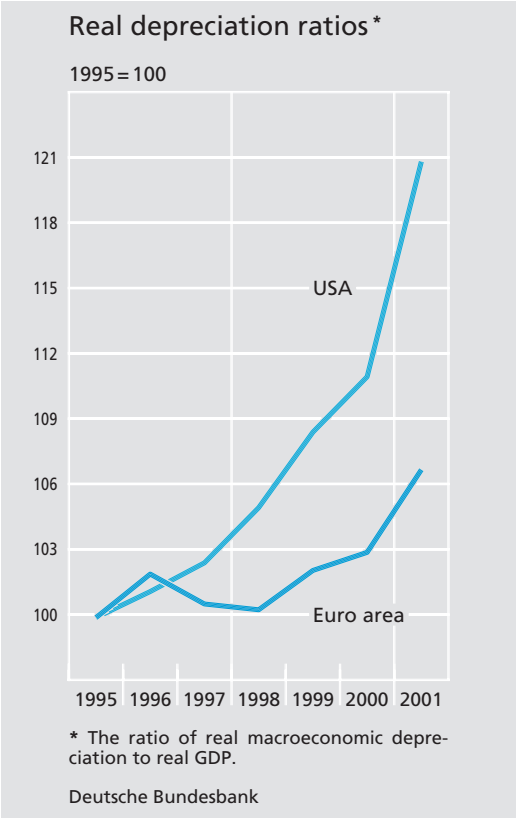
On the significance of statistical measurement strategies

In addition, the size of the reported growth gap is put into perspective by indications that methodological differences in calculating real GDP lead to the USA's growth advantage being overstated. The different methods of evaluating or capturing quality differences in the statistical measurement of prices used by the United States, on the one hand, and by many euro-area countries, on the other, are a particularly notable example. The Bundesbank estimated that total average output in Germany between 1996 and 1999 would have been just under ¼ percentage point higher if the US method of deflation had been applied.[3]

On the role of macroeconomic depreciation

Moreover, it should be borne in mind that the sharp increase in ICT investment in the United States has been offset by a considerable rise in depreciations. In terms of prosperity, it is advisable to factor the depletion of the capital stock out of GDP because it does not represent distributable income. From 1996 to 2001 real depreciations in the United States went up by an average of 7% a year, around twice as much as in the euro area. The depreciation ratio, ie the ratio of real depreciations to price-adjusted GDP, which is an approxi-

2 See A Colecchia and P Schreyer, ICT investment and economic growth in the 1990s: is the United States a unique use? A comparative study of nine OECD countries, STI Working Papers 2001/17, p 16.
3 For more see Deutsche Bundesbank, Appendix: Problems of international comparisons of growth – a supplementary analysis, *Monthly Report*, May 2001, p 39.



mate quantification of the increase in depreciations, rose in the United States from 12% in 1995 to 14% in 2001, compared with an increase of just under one percentage point to 15½% in the euro area.

Sharp rise in the investment ratio in the United States

The importance of depreciations has risen much more sharply in the United States than in western Europe for several reasons. One is that the real (gross) investment ratio in the United States rose by 3½ percentage points to just under 21½% of real GDP between 1995 and 2001. This increase was sharper than that in the euro area, where the ratio rose by one percentage point, likewise reaching just under 21½%. The main factor behind these increases is the investment boom caused by the development of the "New Economy" in the second half of the 1990s, which was much more pronounced in the United States than in western Europe. The other reason is that the use of hedonic methods of price measurement in the United States made an important contribution to the rise in the investment ratio by creating particularly strong "growth effects" in ICT goods (which are almost always classified as investments) compared with standard methods.[4,5]

Because of the stronger growth of real fixed capital formation, growth of the real capital stock was also more dynamic in the United States than in the euro area. The shift in the structure of the use of macroeconomic demand towards fixed capital formation is already enough to explain the increase in the weight of depreciations relative to GDP. It must also be borne in mind that, owing to the use of degressive depreciation formulas, depreciations contained in the US national accounts are chronologically more closely linked to investment in fixed assets than in euro-area countries, where depreciations in the national accounts are usually linear.[6]

Change in the structure of capital goods

In addition, the depletion of the value of fixed assets rose particularly sharply in the United States in the second half of the 1990 owing to changes in the structure of capital goods. This is associated with the fact that the in-

4 See Deutsche Bundesbank, Problems of international comparisons of growth caused by dissimilar methods of deflation – with IT equipment in Germany and the United States as a case in point, *Monthly Report*, August 2000, p 8.
5 The use of hedonics is associated with a tendency for depreciations to increase. The impact on the net domestic product of the above-mentioned discrepancy in GDP growth caused by different deflating methdods is therefore less pronounced.
6 See OECD, Measuring Capital (Manual), Paris 2001, p 97f.

vestment boom in the United States was focused more strongly on ICT goods than in the European industrialised countries; such goods generally have a shorter life-span than traditional machinery and equipment.[7] This is also indicated by tax write-off rules in Germany. PCs, for instance, have an imputed life-span of three years, putting them at the lower end of the scale; automobiles have to be written off over six years, lorries over nine, and company buildings over 33 years.

Expanding net domestic product

Owing to the sharp rise in the share of depreciations in US macroeconomic output, the real net domestic product, which approximates an economy's distributable income more closely than GDP, grew by 3% per year between 1996 and 2001, ½ percentage point less than GDP. In the euro area, real net domestic product growth, at 2¼% per year, was only ¼ percentage point slower than GDP. A comparison of the net domestic product reduces the growth advantage of the United States to "only" just under one percentage point. It must be borne in mind, though, that this effect – apart from the differences in the methods used for deflation and depreciation – will lose importance once the euro area, as is generally expected, catches up in ICT investment over the coming years. For the reasons mentioned above, the depreciation ratios will then rise as well.

Development of per-capita net domestic product since 1995

An analysis that puts prosperity at the forefront should also contain a per-capita assessment. A country with a fast-growing population needs to generate a correspondingly greater increase in real income than a country with a less-rapidly expanding population if it wishes to maintain or even increase the prosperity of its citizens. Between 1996 and 2001 the US population grew by an average of just under 1% owing to a higher birth rate and a sizeable influx of immigrants, whereas the euro area's annual population growth was only ¼%. Thus, per-capita real net domestic product in the United States grew by 2¼% per year as against 2% in the euro area.

This per-capita assessment results in a growth differential of "only" one-quarter percentage point between the two economic areas. On the one hand, this means the prosperity gap between the United States and the euro area probably did not grow as much during the second half of the nineties as the differences

Real per-capita net domestic product (NDP) in the United States and the euro area

%

Country/economic area	Real per-capita NDP	*With* Real GDP	Real depreciation ratio [1]	Population
	Average change between 1996 and 2001			
United States	2.2	3.6	0.4	0.9
Euro area	1.9	2.4	0.1	0.3
Memo item				
Germany	1.2	1.6	0.2	0.1
	Difference in percentage points			
between the US and ...				
... the euro area	+ 0.3	+ 1.2	+ 0.3	+ 0.6
Memo item				
... Germany	+ 1.0	+ 2.0	+ 0.2	+ 0.8

1 Real depreciation as a percentage of real GDP from the previous year, with changes expressed in percentage points. The deflator of the depreciation for the euro area is estimated using data on seven euro-area countries.

Deutsche Bundesbank

7 See D Baker, Is the New Economy Wearing Out? Challenge, vol 45, January-February 2002, p 118f.

in GDP growth would suggest. On the other, the fact that the gap between the USA and the euro area in real per-capita net domestic product grew and did not – as could have been expected – converge is not exactly a sign of economic strength on the part of the euro area.

Vast differences in price levels in 2001

In the USA real per-capita net domestic product was just under US$28,700 in 2001. This was nearly 50% greater than in the euro area and a third larger than in Germany. Per-capita incomes in the euro area and in Germany were converted into US dollars using purchasing power parities; this generally presents a more reliable picture of differences in price levels between countries, at least over the shorter run, than market exchange rates. At any rate, on the whole there is much to be said in favour of not only using the standard and mainly output-oriented GDP for international growth comparisons but also including income-relevant operating variables from the national accounts.