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Fifty Years Of Economic Growth In Western Europe: No Longer Catching Up But Falling Behind?

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Throughout the years from the early 1950s to the mid-1990s labour productivity grew more rapidly in western Europe than in the United States. In the early postwar period, the United States had a large productivity lead but this was quickly reduced by rapid European catch-up growth during the Golden Age which ended in the early 1970s. In the next 20 years, both the United States and western Europe experienced a productivity growth slowdown but here too Europe had the faster growth and by the mid-1990s the leading European countries had overtaken the United States in terms of (purchasing power parity adjusted) real GDP per hour worked.

Since 1995, however, the United States has experienced a productivity growth revival whilst in western Europe productivity growth has weakened markedly such that in recent years the United States has outperformed. This reversal of relative growth outcomes has coincided with the disappearance of the Solow Productivity Paradox in the United States and is clearly related to greater American success in exploiting the productivity potential of information and communications technologies (ICT). This raises the question whether the old pattern of faster productivity growth in Europe will reassert itself or whether we have entered a new era where American productivity growth will permanently be the faster of the two.

Several explanations for this turnaround in relative growth performance can be suggested:

- a European productivity surge is just around the corner following an ICT diffusion lag
- a sclerotic Europe is now less amenable to catch-up growth
- ICT fits less well than earlier technologies with European 'social capability'

This article will seek to evaluate these hypotheses from the standpoint of Moses Abramovitz's insightful approach to understanding postwar European economic growth.[1]

Social capability and technological congruence

Abramovitz's analysis of catch-up growth can be found in his famous 1986 paper and was further elaborated in Abramovitz and David (1996). The key concepts that he introduced to explain why countries fall behind or fail to catch-up with the productivity performance of the leaders are 'social capability' and 'technological congruence'.

Social capability refers to a society's effectiveness is assimilating technology both in terms of rapidity and realization of its productivity potential. This depends on how well markets function and on how successful governments are in creating incentive structures that promote economic efficiency. Success in catch-up growth requires institutions and policies that facilitate investment, innovation and technology transfer, and which prevent vested interests from obstructing the growth process. The suggestion that social capability matters for growth outcomes has a parallel in endogenous growth theory which has pointed to the importance of these microeconomic foundations .

[1] The focus will be on the big EU countries for which there is much more reason for concern than in the small countries. Ireland is plainly a complete exception to the problems discussed here but to address the Irish experience would be another lecture altogether.

A key feature of the period was that in many countries postwar settlements developed 'social contracts' that underpinned a commitment to wage moderation in return for high investment in a corporatist setting accompanied by trade liberalization (Eichengreen, 1996). The quid pro quo for greater exposure to the risks of international economy was enhanced social insurance (Rodrik, 1997). As Abramovitz himself pointed out, such arrangements could eventually outlive their usefulness but prove hard to change - yesterday's solutions become tomorrow's problems.

Technological congruence relates to the transferability of the leader's technology to the follower countries where its cost-effectiveness will depend on relative factor prices, the availability of skilled labour, market size etc.. It may be quite rational not to adopt the leader's technology elsewhere where cost or demand conditions are different. Broadly speaking, American technology based on cheap energy inputs and mass production was not suitable for European conditions before World War II. Subsequently, a number of factors, including integration of European markets, changes in relative factor prices, greater codification of knowledge, and the proliferation of multinational enterprise, reduced the barriers to diffusion of American methods that had prevailed earlier.

The Golden Age of European growth

The period between 1950 and 1973 is conventionally known as the Golden Age of European economic growth. Table 1 reports growth rates of real GDP per person in excess of 4 per cent per year for most western European countries with the fastest growth experienced by countries with the lowest initial income levels, i.e., the most scope for catch-up growth. An Abramovitzian interpretation of this episode is that obstacles to catch-up growth in the form of lack of social capability and/or technological congruence diminished and the large American productivity lead at mid-century offered a lot of scope to Europeans for rapid advance as they emulated American technology and business organization.

There were, of course, other reasons for rapid growth in the Golden Age. These included the transfer of workers out of agriculture and postwar reconstruction – which exerted a powerful effect while they lasted through the 1950s and 1960s especially. There was a bounce back from the disruption of the world wars and interwar depression and protectionism aided by a relatively benign macroeconomic environment during the Bretton Woods era. And these circumstances gave rise to an unprecedented investment boom.

Nevertheless, the importance of recognizing the role of social capability in economic growth is underlined by the differing outcomes across European countries faced with this golden opportunity. An obvious contrast, suggested by Table 1, is between the UK and West Germany. Clearly, at the outset the UK had less scope for catch-up and might be expected to grow somewhat less quickly. However, Table 1 also gives a strong signal of British underperformance in that countries such as Denmark and the Netherlands with similar initial productivity levels achieved productivity growth in excess of 4 per cent per year compared with just under 3 per cent for the UK during the period 1950-73.[2] By 1973 the UK had fallen

[2] Underperformance by the UK and superior performance by West Germany is confirmed by growth regressions which normalize for initial income and economic structure; see, for example, Crafts (1995).

from third to eleventh in the European productivity league table. In contrast, Germany outperformed countries with similar initial levels of productivity.

An interpretation based on social capability would point to important differences between these two countries in terms of capital markets, industrial relations and the extent of competition in product markets which modern microeconomic analysis can interpret as obstacles to faster growth through impeding both total factor productivity (TFP) growth and investment. Moreover, West Germany was an example of a country which forged a successful social contract in the sense of Eichengreen whereas the UK did not, although a good deal was sacrificed in continuing attempts by successive governments to do so.

Econometric research has shown that British firms achieved much better productivity growth and did more innovation when confronted by strong competition except when they were subject to control by dominant external shareholders who could internalize the benefits of monitoring management (Nickell et al., 1997). In the absence of either competitive pressure or strong shareholders, managers and their workers were in the comfort zone and able to avoid the pain of reorganization, job losses etc. that might accompany effective use of new technology and work practices. This can be understood in terms of basic microeconomics as falling foul of a classic principal-agent problem. In this period, German firms were much more likely to be characterized by dominant shareholders and also enjoyed much less market power on average than their British counterparts. The UK did not put in place strong competition policy and remained strongly protectionist until the late 1960s.

With regard to industrial relations many British firms but virtually no German firms were confronted by multiple trade unions whose opportunism inhibited sunk−cost investments – in terms of microeconomic analysis, a classic hold−up problem. Multiple unionism exerted a significant penalty in terms of foregone productivity growth (Bean and Crafts, 1996). The problem here was that, unless the unions were able to unite and take a long term view, there was no possibility of achieving the 'wage-moderation for high investment' deals that were characteristic of successful postwar settlements. And the fragmented and decentralized nature of wage bargaining also precluded the delivery of a Scandinavian−style social contract.

Reform of industrial relations, along with many other supply-side reforms such as privatization, abolition of punitive marginal tax rates and ending the subsidization of lame duck manufacturing firms were all subject to the veto of organized labour for as long as government was seeking some kind of wages policy in pursuit of full employment. The situation might be characterized as one of 'status−quo bias' (Fernandez and Rodrik, 1991) in that reform would be beneficial overall but was blocked by a coalition of those who would be losers and who feared that they might be losers.

After the Golden Age

After the early 1970s, European growth slowed down quite markedly. The end of the Golden Age had a number of root causes including the weakening of the positive transitory factors, diminishing returns to investment as the postwar boom went on and a significant reduction in the scope for catch-up growth as the productivity gap with the United States narrowed. In fact for many countries this last factor may have been the most important. As growth slowed

down, the postwar settlements came under severe pressure and became less capable of delivering wage moderation while capital found new exit options in a more globalized world. Nevertheless, the legacy of the European postwar settlements as they encountered the turbulent 1970s was a substantial increase in public spending (and taxation) relative to GDP and strengthened regulation of labour markets, as Table 2 reports.

These developments were surely not favourable for European growth. For example, the econometric estimates in Kneller et al. (1999) indicate that the average rise in distortionary taxation in Europe was sufficient to reduce the growth rate by about 1 percentage point per year – no doubt, partly by pushing economic activity into the shadow economy. That said, it should be recognised that the rise in distortionary taxation in most European countries left them with tax takes not much different from the United States which relies heavily on direct taxes and has no value added tax.

Whatever may have been the difficulties as the Golden Age came to an end, it is important to bear in mind that from 1973 to 1995, Table 1 shows that western European countries (with the exception of Switzerland) achieved faster labour productivity growth than did the United States and catch-up continued, although more slowly than before. Moreover, the EU countries generally continued to catch-up in terms of TFP until the mid-1990s. TFP growth was faster than in the United States in thirteen out of fifteen EU countries in 1979-89 and twelve out of fifteen EU countries in 1989-95. Whereas the TFP gap between the EU and the United States was 20 per cent in 1979 by 1995 this had halved to 10 per cent (O'Mahony, 2002). Of itself, this implies that simplistic arguments about European sclerosis are inadequate

Moreover, other developments pushed in the opposite direction. In particular, exposure to international competition continued to intensify for the tradables sector and by the 1980s the degree of market power in manufacturing in European countries was fairly similar to that in the United States. And European countries also moved in the direction of deregulation of product markets, as is shown in Table 2, albeit noticeably more slowly than the United States. Given the existence of agency problems in firms, deregulation of product markets and greater competition can be expected to speed up the adoption of new technologies. Econometric evidence suggests that had European countries deregulated more energetically this would have been positive for TFP growth (Nicoletti and Scarpetta, 2003).

The UK had a somewhat different trajectory from the large continental European economies in that its response to relative economic decline during the Golden Age and to macroeconomic crisis in the 1970s was Thatcherism. In terms of the indicators reported in Table 2 this pushed the UK in the direction of lower direct taxation than the European average, made for relative early and aggressive deregulation in product markets and headed off any thought of a move to the levels of employment protection common in mainland Europe. More generally the Thatcher experiment entailed the end of the trade unions' veto on economic reform and a change in bargaining power that neutralized industrial relations problems.

This radical change in British supply-side policy was successful to the extent that relative economic decline vis-a-vis Europe ceased and the productivity slowdown in the UK was markedly less severe than the general European experience. Weaknesses in social capability were addressed. On the other hand, macroeconomic instability remained a serious problem

and this undermined investment while the price of Thatcherism in terms of rapidly increasing income inequality and weakening of the welfare state might be thought excessive by most Europeans.

ICT and the Post-1995 US Productivity Growth Acceleration

The acceleration in American productivity growth has been much discussed and it is generally accepted that it owed a good deal to ICT. The episode has been analyzed by several authors using variants of growth accounting techniques. They show a distinct change of pace in the mid-1990s and attribute this mainly to the impact of ICT. The estimates in Table 3 are drawn from a study that focused especially on comparison between the EU countries and the United States and therefore has considerable advantages from the point of view of this paper.[3]

Growth accounting potentially captures the contribution of ICT to labour productivity growth through three channels, namely, the growth of ICT capital in use (ICT capital deepening), TFP growth in ICT production, and TFP spillovers, i.e., externalities that raise productivity additional to the remunerated payoff to investment in ICT capital. These spillovers are hard to measure but are sometimes thought to be reflected in accelerations in TFP growth in ICT-intensive sectors.

Table 3 reports estimates that ICT capital deepening contributed 0.75 percentage points in 1995-2000; this was approximately double its contribution to American growth in the first half of the 1990s. During the 1990s there was spectacular technological progress in ICT production, which encouraged ICT capital-deepening as ICT equipment became much cheaper, but also contributed directly to growth as Moore's Law continued to apply and ICT production became larger relative to GDP in the United States. Table 3 records a growth contribution of 0.43 percentage points per year in 1995–2000. The combined effect of ICT through these two effects contributed 1.18 percentage points per year to the growth of labour productivity which was twice the impact of ICT in the previous 5 years and accounts for well over half the late 1990s' productivity acceleration.

The estimates in Table 3 also show a strong contribution from other TFP growth of 0.78 percentage points which was also about twice as much as in the years 1990-5. Here there is some scope to argue what might be involved. It seems likely that this acceleration owes at least something to cyclical influences. On the other hand, sectors intensive in the use of ICT account for a disproportionate share of labour productivity growth during the period suggesting that TFP spillovers from ICT were also part of the story.

Both macro and micro level analysis suggests that there were substantial lags in obtaining the productivity payoffs from investments in ICT in the United States. This reflects the time that it takes to follow up investment in ICT with changes in organizational structures and to learn about the capabilities of ICT in specific business settings. Moving to new work practices such as operating with fewer layers of management, introducing flexible job responsibilities, decentralization of work structures and greater use of teamwork has been fundamental to high

[3] Other studies which refer to the non-farm business sector tend to show more dramatic impacts of ICT in the United States

productivity outcomes. The favourable results that accrued in the later 1990s were based in great part on high levels of investment in ICT from the early 1980s onwards.

Overall, there can be no doubt that the United States has experienced a strong improvement in its productivity growth from the advent of ICT notwithstanding the misdirected investments and excessive optimism of the bubble years.

ICT and European Productivity Growth

Table 3 shows that the EU lagged some way behind the United States in the contribution made by ICT to labour productivity growth post-1995. The shortfall in the contribution from ICT accounted for most of the difference between EU and American labour productivity growth. For all EU countries except Ireland, ICT production accounts for a much smaller proportion of GDP than in the United States and this is reflected in a lower TFP contribution. This may reflect comparative advantage and, as such, represents a consequence of different specialization in a globalized economy. However, a more important part of the difference in ICT growth contributions between the EU and the United States comes from capital-deepening and reflects consistently higher investment in ICT by the United States. Even in 2000 total ICT investment as a share of EU GDP was only 2.9 per cent – similar to the share achieved by the United States as early as 1980 (van Ark et al., 2003, Table 5).

Table 4 provides an additional way of interrogating differences in productivity performance. The novelty here is to compare the productivity growth record in sectors intensive in the use of ICT and in those that are not. It is striking that the EU has much inferior performance in ICT–using services after 1995 probably reflecting weaker TFP spillovers as well as less capital–deepening. Again, failure of the EU to match American productivity growth after 1995 appears as largely an ICT-related problem.

Why have the EU countries been slower and less effective than the United States in exploiting the potential of ICT ? Aspects of both technological congruence and social capability, which have acted as disincentives to investment in ICT, are relevant. These include the supply of human capital, and regulation of both product and labour markets.

An obstacle to the rapid diffusion of computer technology in the world as a whole is an inadequate supply of human capital, a complementary factor of production. Relative to the United States, the traditional European strength in human capital has been in workers with strong vocational training and the relative weakness has been in the production of college graduates. In the earlier postwar period, countries like Germany obtained substantial productivity advantages from their training systems geared to producing craft qualifications. In the ICT era, however, it is strength in depth in higher education that has paid off.

As recently as the mid-1990s ICT equipment was much more expensive in EU countries than in the United States. Even in the UK where the differential was least prices were about 30 per cent higher than in the United States, in Germany the gap was 45 per cent whilst in Portugal it was as high as 75 per cent (de Serres, 2003). These price differentials reflect barriers to trade, taxes and weak competition and suggest that European slowness to follow the American lead in regulatory reform may have been unfortunate. The demand for computers has been shown to be quite price-sensitive and the implication of relatively high

ICT equipment prices was a delay in accumulating the knowledge and intangible organizational capital necessary for exploiting the potential of (and enhancing the returns to) ICT.

In fact, the relationship between ICT investment and economy−wide TFP growth may be more complicated than this. If success in exploiting the potential of ICT involves the diversion of effort into (unmeasured) investment in accumulating intangible organizational capital, then while there will be a positive relationship between ICT investment and subsequent TFP growth but a negative correlation between ICT investment and contemporary TFP growth. This is the pattern revealed by sectoral experience in the United States where strong TFP growth after 1995 is positively related to ICT investment in the 1980s but negatively related to ICT investment in the 1990s (Basu et al. 2004). On this interpretation the belated upturn in ICT investment in the EU which was seen in the late 1990s may not only imply a future acceleration in TFP growth but be partly responsible for the reduction in TFP growth observed after 1995.

The relative weakness of investment in ICT in Europe seems also to be related to labour market regulation. Gust and Marquez (2002) showed that investment in ICT (but not investment in general) is negatively related to employment protection legislation. The reason is that employment protection legislation, which raises firing costs, is an obstacle to the upgrading the labour force and the reorganizing of work practices which are central to obtaining the payoff from ICT. This helps to explain why the UK, with much weaker employment protection than most European countries, has a relatively strong ICT capital deepening growth contribution in Table 3.

Thus, there is some reason to think that ICT is less compatible with European incentive structures than investment in other types of capital. Nevertheless, it is important not to exaggerate the importance of this result. The estimated coefficient on employment protection suggests that if the EU were as laissez faire in this regard as the United States rather less than half of the gap in the ICT investment/GDP ratio would be eliminated.

Conclusions

European growth prospects would be much better if an American-style success in ICT seemed to be imminent. The historical record suggests that convergence with the United States is not automatic and may even be somewhat unlikely. On the other hand, prior to the mid-1990s Europe had a strong record of catch-up and faster productivity growth than the United States. Of itself, this implies that simplistic arguments about European sclerosis are inadequate. The taxation and regulation that was imposed in the 1960s and 1970s was not so out of line with the United States as to preclude catch-up, although there probably was a cost in lower growth.

More nuanced hypotheses concerning regulation do, however, have some validity. In particular, it appears that employment protection regulation and the high price of ICT capital goods held back investment in ICT capital deepening in the 1980s. ICT investment seems to have been unusually sensitive to these factors and thus European policies exacted a price in the context of a new technological era that would not have been paid previously. Given the long lags that appear to characterize the realization of productivity gains from this new

general purpose technology the adverse implications were probably felt more in the 1990s than the 1980s. Nevertheless, ICT investment strengthened during the 1990s and may well boost TFP growth appreciably in the near future.

It appears therefore that there is some validity in each of the three hypotheses proposed in the introduction. The full impact of enhanced investments in ICT on European productivity growth has probably yet to come through. Regulation has had a negative impact on European productivity growth. And the diffusion of ICT has slowed down been slowed down relative to the United States by the adverse effects of employment protection and the preponderance of intermediate qualifications rather than college education in the labour force. Interestingly, in this new technological epoch, the UK appears to now to be better placed than Germany because of its greater strength in higher education and the weakness of its employment protection regulations.

The prescience of Abramovitz deserves the last word: "social capability [involves] adjusting steadily to the requirements of technological opportunity. the educational and institutional commitments induced by past development may, however, stand as an obstacle" (1986, p. 402). This is indeed an apt comment on the European experience of the 1990s.

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Table 1. Levels and Growth Rates of Real GDP/Hour Worked.

a) Levels (1990 Geary-Khamis dollars)

1950		***1973***		***1995***		***2003***	
Switzerland	8.99	Netherlands	20.41	Norway	32.69	Norway	38.67
Netherlands	7.64	Switzerland	18.79	France	31.70	France	35.13
UK	7.49	Denmark	18.58	Netherlands	31.15	Belgium	34.62
Denmark	7.36	France	17.73	Belgium	30.41	Ireland	32.71
Sweden	6.79	Sweden	17.27	Italy	27.42	Netherlands	32.67
Norway	6.24	Germany	16.60	Denmark	27.16	Denmark	31.13
Belgium	6.02	Belgium	16.44	Germany	25.97	Germany	30.00
France	5.63	Norway	16.20	Austria	24.81	Austria	29.71
Italy	5.04	Italy	15.97	UK	24.03	Italy	28.55
Finland	4.36	Austria	14.99	Sweden	24.01	Sweden	28.30
Germany	4.36	UK	14.31	Switzerland	23.13	Finland	28.08
Austria	4.00	Finland	14.07	Finland	22.82	UK	27.75
Ireland	3.47	Spain	10.36	Spain	22.61	Switzerland	25.27
Spain	2.60	Greece	10.15	Ireland	22.32	Spain	22.08
Greece	2.43	Portugal	9.56	Greece	14.70	Greece	18.74
Portugal	2.14	Ireland	9.17	Portugal	14.64	Portugal	16.61
USA	11.12	USA	22.08	USA	28.24	USA	32.75

b) Rates of Growth (% per year)

1950-73		***1973-95***		***1995-2003***	
Switzerland	3.3	Netherlands	2.0	Norway	2.1
Netherlands	4.4	Switzerland	1.0	France	1.3
UK	2.9	Denmark	1.7	Netherlands	0.6
Denmark	4.1	France	2.7	Belgium	1.6
Sweden	4.1	Sweden	1.5	Italy	0.5
Norway	4.2	Germany	2.7	Denmark	1.7
Belgium	4.5	Belgium	2.8	Germany	1.9
France	5.1	Norway	3.2	Austria	2.3
Italy	5.1	Italy	2.5	UK	1.8
Finland	5.2	Austria	2.3	Sweden	2.1
Germany	6.0	UK	2.4	Switzerland	1.1
Austria	5.9	Finland	2.2	Finland	2.7
Ireland	4.3	Spain	3.6	Spain	–0.3
Spain	6.2	Greece	1.7	Ireland	4.9
Greece	6.4	Portugal	2.0	Greece	3.1
Portugal	6.7	Ireland	4.1	Portugal	1.6
USA	3.0	USA	1.1	USA	1.9

Source: Groningen Growth and Development Centre (2004). Levels in 1950, 1973 and growth rates for 1950-73 and 1973-95 refer to West Germany. West German level in 1995 = 29.86.

Table 2. Supply-Side Policy Stances

a) Distortionary Tax Revenues (%GDP).

	1955	***1980***	***1990***	***2000***
France		27.8	30.8	33.6
Germany	20.2	27.6	27.0	27.3
Italy	17.1	22.0	28.0	30.1
Spain		18.6	23.8	24.7
UK	19.6	26.2	25.6	25.3
USA	19.1	26.3	22.1	24.9

b) Employment Protection Index (0-2)

	1960-4	***1973-9***	***1980-7***	***1998***
France	0.37	1.21	1.30	1.40
Germany	0.45	1.65	1.65	1.30
Italy	1.92	2.00	2.00	1.50
Spain	2.00	1.99	1.91	1.40
UK	0.16	0.33	0.35	0.35
USA	0.10	0.10	0.10	0.10

c) Product Market Regulatory Reform (0-6)

	1978	***1988***	***1993***	***1998***
France	6.0	5.7	4.7	3.9
Germany	5.2	4.7	3.8	2.4
Italy	5.8	5.8	5.3	4.3
Spain	4.7	4.6	4.2	3.2
UK	4.3	3.5	1.9	1.0
USA	4.0	2.5	2.0	1.4

Sources:
Tax revenues: OECD (1981) (2002); distortionary taxes are defined as in Kneller et al. (1999).
Employment Protection: Nickell (2003).
Regulatory reform: Nicoletti et al. (2001).

Table 3. Contributions to Labour Productivity Growth, 1995-2000 (% points per year)

	ICT			Other			Total
	Capital	***TFP***	***Total***	***Capital***	***TFP***	***Total***	
USA	0.75	0.43	1.18	0.25	0.78	1.03	2.21
EU	0.40	0.20	0.60	0.40	0.43	0.83	1.43
France	0.32	0.22	0.54	0.33	0.48	0.81	1.35
Germany	0.37	0.16	0.53	0.48	0.75	1.23	1.76
Italy	0.38	0.15	0.53	0.49	0.10	0.59	1.12
Spain	0.17	0.12	0.29	0.19	–0.26	–0.07	0.22
UK	0.65	0.32	0.97	0.62	0.17	0.79	1.76

Source: van Ark et al. (2003, Tables 19, 20 and A7). ICT capital refers to contribution of ICT capital-deepening; ICT TFP refers to TFP growth in ICT production.

Table 4. Contributions to Labour Productivity Growth Differences Between EU and United States (EU – US, % per year)

	1979-90	*1990-5*	*1995-2001*
Whole Economy	0.99	1.19	–0.62
ICT–Producing Industries	–0.13	–0.25	–0.45
ICT–Using Manufacturing	0.19	0.18	0.14
ICT–Using Services	0.19	0.26	–0.75
Non-ICT Industries	0.73	0.99	0.44

Source: Inklaar et al. (2003). ICT–Using services include retail and wholesale trade, financial services, research and development, and legal, technical and advertising services.