Western Europe's Growth Prospects: an Historical Perspective

Nicholas Crafts

Competitive Advantage in the Global Economy Research Centre, University of Warwick

December 2011

Abstract

This paper surveys the recent history of Western European growth. It concludes that this experience has been disappointing and that further reforms are desirable in many countries. The requirement for reform comes both from achieving 'close-to-frontier' status and from the opportunities provided by the new technological era. The paper goes on to consider the effects that the current crisis may have on medium-term growth rates. The lesson from the 1930s is that, if the current crisis leads to a similarly bad downturn, the policy reaction in terms of greater state intervention will not be conducive to improved growth prospects.

Keywords: catch-up growth; general purpose technology; social capability; supply-side policy

JEL Classifications: N14; O52

1. Introduction

It is well-known that Western European growth performance was lack-lustre from the mid-1990s up to the start of the current financial crisis. This was a far cry from the so-called Golden Age of the early postwar years and was for the average country a period of falling behind rather than catching up the United States. It was a surprise to many that relative productivity performance deteriorated because it appeared that, on the whole, supply-side policy had improved. Yet, while American productivity growth accelerated, European productivity growth slowed down.

Of course, since the Golden Age there have been big changes in the global economic environment. Among the most prominent are rapid globalization combined with a new world division of labour associated with the rise of Asia, the advent of a new general purpose technology (GPT) based on information and communication technologies (ICT) and the return of financial crises after a period of unusual stability. Moreover, by the mid-1990s, after a long period of catch-up, Western European economies could be thought of as close-to- rather than far-from-the frontier. The implications of these developments can be thought of as a mixture of opportunities and threats together with a need to implement appropriate institutional and policy reforms (Aghion and Howitt, 2006).

The evolving European growth process has taken place in the context of European integration, starting with the European Payments Union which resulted from the Marshall Plan. The successive moves have included the Treaty of Rome in 1957, subsequent enlargements of the European Union which mean that the original 6 became the 27, the Single Market in 1992, and European Monetary Union in 1999. All these steps can be thought of as reducing trade costs which, of itself, can be expected to raise productivity and have at least temporary positive effects on economic growth.

As the United States experienced a productivity renaissance, it became common among American economists to argue that Western Europe needed reforms. A standard diagnosis was that Europe had too much regulation, too much taxation but too little competition (Baily and Kirkegaard, 2004). Certainly, on average, competition in European product markets was weaker, regulation was stricter and tax rates were higher than in the American economy but, paradoxically, this was at least equally true in the period before 1995 when Europe was growing faster and still catching up the United States. Nevertheless, it is generally agreed that there are a number of desirable reforms which many European countries should undertake or, put another way, quite big productivity gains to be had if individual countries emulate 'best practice' in areas like competition and regulatory policy, and the design of educational and tax systems (Barnes et al., 2011).

European growth prospects may, however, have been or may yet be adversely affected by the financial crisis. It is already generally agreed that a substantial permanent fall in the level of output is likely although there is some uncertainty about its magnitude (Furceri and Mourougane, 2009). It is less clear whether the trend growth will be reduced through declines in the rate of productivity growth. It should be recognized that one channel by which this might happen is that major crises can lead to significant changes in supply-side policy and make it more difficult to achieve desirable reforms.

Several questions prompted by this account will be addressed in the remainder of this paper. They are as follows.

1) How bad is the recent European growth record in historical perspective?
2) Why did European growth performance deteriorate in the late 20th century?
3) Has European integration been good for European growth? ... and is it still?
4) Does history suggest that the crisis will change policy in ways that hurt long-term growth?

These are big questions on which there is no consensus. Nevertheless, posing them may allow a clearer sense of the issues now facing Europe if not a set of easy solutions.

1. Catch-Up Growth in a Changing World Economy

The key idea with which to approach the postwar European experience is catch-up growth. The leader throughout has been the United States but for much of the period since 1950 Western European countries were reducing income and/or productivity gaps with that country. It is well-known that these gaps provide an opportunity to grow faster than the leader but at the same time catch-up growth is not automatic. In the terminology of Abramovitz (1986) it depends on 'social capability' and 'technological congruence'. The former relates to the incentive structures which influence the effective assimilation of new technology and the latter to the cost-effectiveness of technologies that might be transferred, i.e., whether they are 'appropriate' (Basu and Weil, 1998).

It is useful to distinguish between catch-up growth in far-from-the-frontier and close-to-the-frontier economies. In the former, rapid total factor productivity (TFP) growth can be obtained by reducing productive and allocative inefficiency and by importing technology. In essence, this is a transitory phase but growth can be rapid while it lasts and this was a large part of the Golden Age, especially linked to structural change in terms of a rapid decline in the share of agriculture in employment (Crafts and Toniolo, 2008). As catch-up proceeds, the technological impetus to growth may be expected to switch at least partly from imitation to invention. Arguably, European countries needed reforms after the Golden Age to position themselves for this later stage of growth but were slow to make this transition (Eichengreen, 2006).

This can be generalized to the proposition that the process of catch-up growth typically entails a series of ongoing reforms with the danger that at some point the political economy of the next step in modernization becomes too difficult. As modern growth economics stresses (Aghion and Howitt, 2006), the institutions and policy choices that can galvanize a far-from-frontier economy differ in many ways from what is appropriate for a close-to-frontier economy. In particular, in the latter case stronger competition in product markets and high-quality education become more important. Similarly, as new technologies come along, institutions and policies may need to be reformed. Yet, making the requisite adjustments may be problematic and achieved only slowly and incompletely such that catch-up growth falters. The constraints of the historical legacy are important in this context. Indeed, Table 1 reveals that real GDP per person in both Western Europe and Japan as a proportion of the United States level was similar in 2007 to what it had been in 1973.

Fast European growth in the 1950s and 1960s was based on policies and institutions which facilitated high rates of investment and the diffusion of American technology in the era of Fordist manufacturing. Broadly speaking, this was a period where, to use the terminology of Hall and

Soskice (2001), 'co-ordinated market economies' prospered. This was generally a period of greater government intervention in terms of regulation, state ownership and industrial policy. In later decades, growth opportunities centred more on the services sector and the diffusion of information and communications technologies (ICT). This seems to have been an era which placed a greater premium on flexible adjustment in labour and product markets and on intangible capital accumulation rather than on massive investment in physical capital (Nicoletti and Scarpetta, 2005; Timmer et al., 2010). In this era, the 'liberal market economies' were better placed. However, as ideas of 'best practice' in microeconomic policy changed, there was a general change of emphasis among OECD countries towards competition and privatization policies.

From 1973 to the eve of the current crisis, world trade grew at 4.8 per cent per year, much faster than GDP growth (WTO, 2008). A striking feature of these years was the emergence of a new international division of labour in which Asian countries became much more important as exporters of manufactures while the shares of Europe and North America contracted sharply (Table 2). This reflected Asian success in putting in place policies and institutions that promoted rapid catch-up growth, first in Japan, then in the Asian Tigers followed by China and India (Table 1) together with falling trade costs which for trade between Asia and Europe fell by about 20 per cent between 1970 and 1995 (Jacks et al., 2011). Adjustments to Asian catch-up and, in particular, this new exporting prowess were required, especially of those European countries like Italy where revealed comparative advantage was positively correlated with that of dynamic Asia (Rae and Sollie, 2007). More generally, as catch-up growth has spread more widely across the world European countries have been faced with new opportunities and threats.

Finally, Europe's route to catch-up growth brought with it increasing demands for social transfers. Partly, this came simply as a result of raising income levels but to a large extent it resulted from greater openness as European integration and globalization advanced (Lindert, 2004). The median European economy spent 21.1% of GDP on social transfers in 1980 compared with 10.5% in 1960 and 1.2% in 1930. Managing these demands without undermining growth was an important challenge; insofar as they were financed by 'distortionary' taxation, this became a drag on growth (Kneller et al., 1999).

2. Western Europe's Growth Performance: Catching Up after 1950

The period from the early 1950s to the mid-1990s was an era when Western Europe was catching up the United States. The data for growth performance in these years are shown in Tables 3 and 4. During the era of strong β-convergence in the Golden Age, which came to an end with the first oil crisis, both real per person and real GDP per hour worked (labour productivity) grew much faster in most European countries than in the United States. In the following period of growth slowdown, labour productivity continued to grow faster than in the United States but catch-up in real GDP per person ceased. The discrepancy is, of course, explained by slower growth in labour inputs in European countries as unemployment rose and work-years shortened; this is captured in Table 5.

The Golden Age was a period of macroeconomic stability, notable for the relative absence of financial crises, which followed the traumas of two world wars and the great depression. Some have seen this as an episode of fast growth based on a reversion to the pre-1914 trend line (Janossy, 1969) but econometric analysis shows that it was clearly more than this (Mills and Crafts, 2000). That said, countries with relatively large scope for postwar reconstruction such as West Germany

found that this stimulated their growth in the 1950s (Temin, 2002). As Table 6 shows, TFP growth was very rapid during the Golden Age especially in countries with low initial productivity levels. This was based to a large extent on reductions in inefficiency (Jerzmanowski, 2007), especially based on the structural change associated with the shift of labour out of agriculture (Crafts and Toniolo, 2008). At the same time, technology transfer speeded up as American technology became more cost effective in European conditions and obstacles to technology transfer were reduced (Nelson and Wright, 1992).

In some countries, especially in Northern Europe, catch-up during the Golden Age was promoted by the development of corporatist 'social contracts' which were based on bargaining equilibria between capital and labour that featured wage restraint in return for high investment (Eichengreen, 2006). These arrangements which also typically entailed a high level of coordination in wage bargaining, stimulated investment, which allowed new technology to be installed, and growth (Gilmore, 2009). This can be seen as an enhancement of social capability under Golden-Age conditions. In other countries, for example, Italy, growth was promoted by industrialization based on elastic supplies of labour and undervalued currencies which underpinned investment and allowed the realization of internal and external economies of scale in the industrial sector (Crafts and Magnani, 2011). In both cases, there would later be difficulties arising from the institutional legacy, either of the reforms they had undertaken or of the reforms that that they had failed to make.

The opportunity for rapid growth based on industrialization and technology transfer was a tide that raised all boats. However, there was a variance in outcomes and the inverse correlation between the initial income level and the golden-age growth rate was not perfect. For example, a glance at Table 3 reveals apparent underperformance by the UK and Ireland and this underlines the importance of social capability. Neither of these countries succeeded in achieving a corporatist social contract. Beyond this, the UK had weaknesses in corporate governance and industrial relations which persisted in conditions of weak competition in product markets (Crafts, 2012) while Ireland pursued highly protectionist policies until 1960 rather than the openness to FDI based on low corporate taxation which subsequently underpinned the Celtic Tiger (Barry, 2008). Spain achieved rapid growth during the Golden Age, notably following a 'Washington-Consensus' type reform in 1959 which greatly reduced barriers to trade and exchange-rate distortions (Prados de la Escosura and Roses, 2010).

In fact, the evidence suggests that European economic growth was accelerated in these years by trade liberalization which acted to raise the long-run income level. The starting point was the European Payments Union which emerged from the conditionality of the Marshall Plan; a gravity-model analysis confirms that the EPU had a large positive effect on trade levels (Eichengreen, 1993). The subsequent establishment of the European Economic Community and the European Free Trade Area increased trade considerably. Estimates of the decline in trade costs during these years are shown in Table 7. If the widely-used Frankel and Romer (1999) estimate of the impact of trade on income is used, membership of the EEC may have raised income levels of the 6 by about 8 per cent by 1970 (Boltho and Eichengreen, 2008). Similarly, the total long-term effect of reductions in trade protection, including reduction of external tariffs, raised European income levels by nearly 20 per cent by the mid-1970s according to estimates by Badinger (2005). European integration was a stepping stone to greater liberalization of trade through its 'juggernaut' and 'domino' effects (Baldwin, 2006).

After the early 1970s, growth slowed down markedly right across Europe. The end of the Golden Age had a number of unavoidable aspects including the exhaustion of transitory components of fast growth such as postwar reconstruction, reduced opportunities to redeploy labour out of agriculture, narrowing of the technology gap, and diminishing returns to investment. Moreover, the United States itself experienced a productivity growth slowdown. All-in-all, the scope for catch-up growth was considerably reduced although by no means eliminated. As Table 6 reports, there were big reductions in the contributions of capital deepening and, especially, TFP growth to labour productivity growth. The median contributions of the two growth sources fell between 1960-70 and 1970-90 by 1 and 1.6 percent age points, respectively. However, European countries continued to narrow the productivity gap with the United States as real GDP per hour worked rose from 62.9 per cent of the American level in 1973 to 85.3 per cent in 1995 (Table 5).

On the other hand, Table 5 also reports that catching up in real GDP per person virtually ceased with the European level at 68.0 per cent of the American level in 1973 and 70.0 per cent in 1995. This reflects a tendency during these years for Europeans increasingly to work less than Americans, a reflection of rising unemployment, earlier retirement and longer holidays. The underlying reasons for this are likely to have been a combination of distortions to markets and differences in preferences. The former impacted upon the long-term rise in structural unemployment which was largely driven by policy, mainly through increased generosity of unemployment benefits and higher taxes on labour, especially during the later 1970s and early 1980s, but was also compounded by trends in collective bargaining institutions (Nickell et al., 2001). Preferences may matter more for earlier retirement and hours of work but in each case distortions also had a significant effect between the late 1960s and the early 1990s as the implicit tax on continuing to work and expected replacement rates rose (Duval, 2003) while increased taxes affected female labour supply and working-time regulations and employment protection affected male labour supply (Causa, 2008). To a large extent, all these distortionary policy developments can be seen as a response to the adverse macroeconomic shocks of the 1970s mediated by collective bargaining.

Although there were unavoidable reasons why productivity growth slowed down and European countries generally continued to narrow the productivity gap with the United States, it is clear that catch-up slowed and that productivity performance could have been better after the Golden Age. What accounted for this undue slowdown in productivity growth? One very obvious point is that the fragility of the Eichengreen wage moderation/high investment equilibrium was revealed and it did not generally survive the turbulence of the 1970s, a time when union militancy and union power rose dramatically, as did labour's share of value added, and the rewards for patience fell in conditions of greater capital mobility, floating exchange rates and greater employment protection. At the same time, the corporatist model of economic growth was becoming less appropriate in economies which now needed to become more innovative and less imitative in achieving productivity growth, as Eichengreen (2006) himself has pointed out.

The period from the mid-1960s to the early 1980s was notable for a substantial increase in social protection. This took the place through a general expansion of social transfers (Table 8) financed to a considerable extent by ‘distortionary’ taxation and, in some countries, increases in employment protection (Tables 9 and 10). As with the policies that reduced labour inputs reviewed above, this can be seen as a legacy effect of corporatist social contracts interacting with the turbulent macroeconomic conditions of the 1970s. Financing this expansion of government outlays by a

different tax mix would have been considerably better for growth (Johansson et al., 2008); the similar estimates of Kneller et al. (1999) indicate that the average 10 percentage point increase in the share of direct tax revenues in GDP between 1965 and 1995 could have entailed a fall in the growth rate of about 1 percentage point. Moreover, high levels of employment protection (if enforced) slow down the process of creative destruction and the labour force adjustment that it entails. The difference in employment protection between France and the United States could account for a difference of 0.5 percentage points per year in labour productivity growth in the 1980s and 1990s according to the estimates in Caballero et al. (2004).

It is also relevant to look at the progress that European countries made in the upgrading needed as they moved closer to the frontier, in particular with regard to education and competition the areas stressed by Aghion and Howitt (2006). Some data relating to education are reported in Table 11. The measure of cognitive skills shown, based on test scores, correlates strongly with growth performance (Hanushek and Woessmann, 2009) and it is striking that even the top European countries were well behind Japan and South Korea. The averages reported in Table 10 actually mask quite a contrast in trends with some countries such as Finland, Netherlands and Sweden improving rapidly over time but Germany and, especially, Italy deteriorating. Woessmann et al. (2007) show that the variance in outcomes in terms of cognitive skills is explained by the way the schooling system is organized rather than educational spending. The United States does not do well on this measure but it has had much higher enrolment in tertiary education than European countries which were generally slower to catch up than their Asian rivals, as Table 10 shows, and which in some cases fell seriously behind.

Table 12 reports OECD measures of competition-inhibiting product market regulation (PMR). It shows that there was some reduction over time but that this was quite belated in some countries. The evidence is that strict PMR raised mark-ups and lowered entry rates, thus reducing competitive pressure on managers with adverse impacts on both investment and innovation (Griffith and Harrison, 2004; Griffith et al., 2010), and reduced European TFP growth relative to the United States in this period by around 0.75 percentage points on average based on the estimates in Nicoletti and Scarpetta (2005). Similarly, in many European countries competition policy was much weaker than in the United States (Table 12). The analysis in Buccirossi et al. (2009) found that this held back TFP growth.

European countries' supply-side policy typically left quite a lot to be desired in the post Golden Age years but this was not enough to preclude continuing catch-up of the United States in terms of real GDP per hour worked. Interestingly, however, two countries which were 'growth failures' in the Golden Age and which were in crisis in the 1970s and early 1980s, namely, Ireland and the UK, stand out as having made important reforms which improved their relative performance. The former represents an interesting permutation on the Eichengreen Hypothesis because it developed a new kind of social contract in which wage restraint was exchanged for tax cuts which were conducive to employment growth and to massive inflows of FDI already encouraged by Ireland's low corporate tax rates and strong connections with the United States (Barry, 2002).

The UK was a country which had failed to establish a favourable Eichengreen equilibrium. Yet it held back on policy reform in areas such as fiscal policy, privatization and collective bargaining in vain attempts to do so. The Thatcher years after 1979, when a radical prime minister, aided by the

absence of restraints in the British political system to the exercise of executive power, finally gave up on corporatism and ended the implicit trade union veto on reform, were a period of de-regulation and much increased competitive pressure which addressed failures in management and in industrial relations, thus addressing some of the weaknesses that had undermined the UK in the Golden Age (Crafts, 2012).

In the 1970s and 1980s, the impetus to economic growth from European integration slowed down but was still positive. European Union trade growth was boosted by the enlargements from 6 to 12 member countries. Table 7 shows that they were associated with relatively large decreases in trade costs. Nevertheless, the impact on growth from trade creation for the Union as a whole was clearly quite modest (Bayoumi and Eichengreen, 1997). There was, however, a significant attempt to strengthen integration through the inauguration of the Single Market. This clearly had a pro-competition shock in sensitive sectors and this led to increase in TFP of around 2 per cent in those industries (Notaro, 2011). Over 10 years, the impact may have been to raise European GDP by around 2 per cent – considerably less than the Cecchini Report of 1988 had envisaged could be possible with full implementation of the concept (Boltho and Eichengreen, 2008).

3. Western Europe's Growth Performance: Falling Behind after 1995

In the recent past real GDP per person in Western Europe has declined slowly relative to the United States; Table 5 reports that for the EU15 the ratio was 67.5% in 2007 compared with 70.0% in 1995. The data in this table show that in this period the main reason was slower labour productivity growth in Europe. Trends in annual hours worked were now more similar while the earlier tendency for employment rates to fall relative to the United States was reversed so that total hours worked per person rose in Europe.

The growth in employment per person partly reflects an end to the policies that reduced labour inputs during and after the 1970s. Thus, on average, policies that affect the NAIRU moved a little way towards reducing unemployment (Nickell, 2003) and labour force participation of older males stopped falling as incentives to early retirement from replacement rates and implicit taxes were no longer rising and, in some countries, were reduced (Duval, 2003). However, much of the increase in employment rates seems to owe little to policy and more to changes in norms with regard to female employment especially in Southern Europe. It seems that the increase in hours worked per person led to reductions in labour productivity growth over these years as investment failed to respond and the additional workers were lower quality (Dew-Becker and Gordon, 2008).

The growth rate of real GDP per hour worked increased in the United States between 1973 to 1995 and 1995 to 2007 from 1.28% per year to 2.06% per year. In contrast, as is reported in Tables 4 and 14, the rate of labour productivity growth fell between these two periods in 12 European countries and in the latter period was lower than that in the United States in 12 of the 16 countries. Indeed, labour productivity growth in Italy and Spain, fell well below 1 per cent per year.

The acceleration in American productivity growth was underpinned by ICT. Table 15 compares ICT with the two other GPTs which are commonly placed in the pantheon, electricity and steam, in terms of their impact on productivity growth in the leading economy of the time. The comparison reveals both that the impact of ICT has been relatively big, and also that it has come through very quickly. This new GPT is unprecedented in its rate of technological progress, reflected in the speed

and magnitude of the price falls in ICT equipment reported in Table 15. These historical comparisons suggest that, over time, societies have been getting better in exploiting the opportunities presented by GPTs. Also, during the 20th century the international diffusion of technology has become much quicker (Comin et al., 2006).

The main impact of ICT on economic growth comes through its use as a new form of capital equipment rather than through TFP growth in the production of ICT equipment. This is because users get the benefit of technological progress through lower prices and as prices fall more of this type of capital is installed. In a country with no ICT production, adapting the neoclassical growth model to embody a production function with two types of capital (ICT capital and other capital) shows that the steady state rate of growth will be TFP growth divided by labour's share of income plus an additional term which depends on the rate of real price decline for ICT capital multiplied by the share of ICT capital in national income (Oulton, 2010).

The implication is that, in the recent past, ICT has offered Europe a great opportunity to increase its productivity growth. The estimates of the contribution of ICT capital deepening to the growth of labour productivity reported in Table 16 show that European countries have been less successful on average than the United States in seizing this opportunity. That said, ICT production has boosted productivity growth notably in Finland, Ireland and Sweden and the use of ICT capital has made a strong contribution to productivity growth, especially in the services sector, in countries like the UK.[1] Table 16 suggests that strong productivity performance in the period 1995 to 2005 relied on one or both of ICT production and market services. It is also clear that the diffusion of ICT has been aided by complementary investments in intangible capital and in high-quality human capital, which some but not all countries have made (Tables 11 and 17).

The international evidence is that the diffusion of ICT has been significantly inhibited in countries which are heavily regulated. Employment protection has been shown to deter investment in ICT equipment (Gust and Marquez, 2004) because reorganizing working practices and upgrading the labour force, which are central to realizing the productivity potential of ICT, are made more expensive. Restrictive product market regulation has deterred investment in ICT capital directly (Conway et al., 2006) and the indirect effect of regulation in raising costs has been relatively pronounced in sectors that use ICT intensively. There has been a strong correlation between product market regulation and the contribution of ICT-using services (notably distribution) to overall productivity growth (Nicoletti and Scarpetta, 2005). Since we know that these forms of regulation have been weakened over time (Tables 10 and 12), the general story is not that regulation has become more stringent but rather that existing regulation became more costly in the context of a new technological era. Evidently, social capability depends upon the technological epoch.

The Italian and UK experiences illustrate this story very well. Italy was relatively badly placed to exploit the opportunities of the ICT era. The diffusion of this new technology was hindered by oppressive regulation and shortfalls in human capital by comparison with the European leaders in the take up of ICT (Conway et al., 2006). The estimates in Tables 11, 16 and 17 indicate that

[1] These estimates exaggerate the implications of ICT production for real income growth in Ireland because much of the output was exported and the benefits of price falls accrued to foreign users. In principle, a correction for terms of trade effects is needed and this would constitute a significant offset (Crafts, 2005).

investment in intangible capital and the quality of education has been low and that the contribution to productivity growth of ICT capital has been very modest.

Microeconomic studies confirm this picture while adding further insights as to why diffusion of ICT has been relatively slow in Italy. The take-up of ICT in manufacturing has been strongly correlated with firm size and changes in organizational structure (Fabiani et al., 2005). In this context, Bugamelli and Pagano (2004) found that many firms appear to be constrained in their ICT investment by the adjustment costs associated with reorganization, especially if their workforce had relatively low levels of human capital. These costs reflect regulatory burdens but, because they are fixed costs, they bear very heavily on the small- and medium-size firms that have been central to Italy's distinctive variety of capitalism. In the retail sector, where the potential for ICT to raise productivity was very considerable, it is clear that productivity performance was impaired by regulation; barriers to entry and mark-ups in retailing remained high on average with adverse consequences for TFP (Daveri et al., 2010). However, in districts where competition was stimulated by the 1998 regulatory reform both ICT investment and labour productivity increased (Schivardi and Viviano, 2011).

The UK has been more successful than most European countries in exploiting the opportunities of ICT and this has made a notable contribution to a relatively strong productivity performance in recent years (cf. Table 16). The 1980s' de-regulation of services that are intensive in the use of ICT (notably finance and retailing), which reduced barriers to entry, was important in this outcome as the OECD cross-country comparisons make clear. It is also clear that investment in ICT has been much more profitable and has a bigger productivity payoff if it is accompanied by organizational change in working and management practices (Crespi et al., 2007). This would not have happened with 1970s-style British industrial relations. For example, Prais (1981) noted the egregious example of the newspaper industry where these conditions precluded the introduction of electronic equipment in Fleet Street although an investment of £50 million could have reduced costs by £35 million per year.

The context for the UK's success with the diffusion of ICT is the strengthening of competition indicated by its PMR scores in Table 12. There is strong evidence that increases in competition had effects through reducing managerial failure. Increases in competition resulting from the European Single Market raised both the level and growth rate of TFP in plants which were part of multi-plant firms and thus most prone to agency problems (Griffith, 2001). Liberalization of capital market rules allowed more effective competition for corporate control and a notable feature of the period after 1980 was divestment and restructuring in large firms and, in particular, management buyouts (often financed by private equity) which typically generated large increases in TFP levels in the period 1988-98 (Harris et al., 2005). Stronger competition also acted to remove the industrial relations problems which obstructed organizational change and paved the way for successful adoption of ICT. Thus, the 1980s had seen a surge in productivity growth in unionized firms as organizational change took place under pressure of competition (Machin and Wadhwani, 1989) while de-recognition of unions in the context of increases in foreign competition had a strong effect on productivity growth in the late 1980s (Gregg et al., 1993).

Failure to grasp the opportunities presented by ICT has been more important than the adjustment problems presented by the new international division of labour although it is clear that in coping with this similar attributes are valuable, namely, a good education system, flexible labour markets,

and light regulation of product markets. Given its exports profile, Italy's mix to Asian competition has been relatively high and its flexibility is very low compared with most other OECD economies (Rae and Sollie, 2007). Yet the implications of this for growth performance have been small. The 'market-crowding' impact on export growth has been much smaller than relatively slow growth in the EU15 (Italy's main market), and trends in the real exchange rate (Breinlich and Tucci, 2010). There has been an adverse trend in the terms of external trade but the effect only reduced real income growth by 0.1 percentage point over the ten years to 2006 (Bennett et al., 2008).

Over recent years, it is clear that productivity growth in market services was very disappointing in many European countries (Table 16). One reason for this is continued weakness of competition reflected in high mark-ups which appear to have survived the introduction of the Single Market (Hoj et al., 2007). Studies have regularly shown that addressing these issues by reducing the barriers to entry maintained by member states would have raised productivity performance significantly; unfortunately, governments still have considerable discretion to maintain these barriers notwithstanding the Services Directive (Badinger and Maydell, 2009). It should also be noted that failure to deal with excessive regulation in professional services in particular has also had adverse effects on productivity growth in user industries (Barone and Cingano, 2011).

The impetus from European integration in this period also came from European Monetary Union. The initial impact on growth was probably positive but much less dramatic than early estimates suggested. The currency union effect on trade volumes was initially thought to be very large but better econometrics and the opportunity to examine the actual impact of EMU now suggests that trade volumes increased by perhaps 2 per cent (Baldwin et al., 2008) with the implication that the trade effect on GDP was modest. There are, however, several channels through which EMU may have raised productivity and a recent study found that EMU had raised the level of real GDP per hour worked by 2 per cent with possible additions from increased macroeconomic stability, although no effect from reducing mark-ups (Barrell et al., 2008). There is no evidence that EMU membership stimulated structural reform (Duval and Elmeskov, 2005).

It seems very likely that the productivity gains from EMU are dwarfed by the output losses that might result from a major financial crisis, especially a twin or triple event entailing banking, currency and/or sovereign debt crises and it seems quite possible that this may be the fate of one or more Eurozone countries. History tells us that cumulative losses of GDP from such crises can easily run to 15 or 20 per cent (Bordo et al., 2001: Reinhart and Rogoff, 2009). The scenario recently simulated by OECD (2011b) sees reduction in GDP growth of 2 percentage points in year 1 and 3.7 percentage points in year 2 following a disorderly sovereign debt restructuring even excluding the possibility of currency crises or major bank failures. Even if the Eurozone escapes these traumas, there are a number of countries who have lost international competitiveness while also having very high ratios of public debt to GDP. The policy responses now needed to address these problems while remaining within EMU imply a long period of slow growth, a 'lost decade'. The experience of the 1930s when exit from the gold standard was prompted by pressures of this kind (Wolf, 2008) and was a route to recovery (Bernanke and Carey, 1996) underlines the risks to the currency union especially if bailouts are too difficult.

4. What Difference Might the Crisis Make to Prospects for Structural Reform?

It is generally accepted that severe financial crises lower the level of potential output (and thus necessitate fiscal consolidation to correct structural deficits). The magnitude of the decline for OECD countries is unclear but probably substantial; it is estimated by Furceri and Mourougane (2009) at about 4 per cent of GDP while IMF (2009) suggests about 10 per cent of GDP. Neither of these papers claims that medium-term growth rates are reduced by such crises but this cannot be ruled out a priori. In fact, it seems quite possible that this turns on the policy responses to the crisis and the extent to which desirable structural reforms are encouraged, postponed or even reversed.

On the eve of the crisis, there was widespread agreement on reforms which would improve Western European growth performance, although, of course, the extent of what was needed varied across countries. This consensus was based on empirical analysis of the experience of recent decades and would reflect the discussion of the sections 3 and 4 above. Barnes et al. (2011) sum up by listing improving the quantity and quality of education, strengthening competition, cutting unemployment benefits, reducing and reforming taxes, and lowering employment protection (cf. Table 18). Similarly, the very influential analysis by Sapir (2006) stresses the importance at the EU level of completing the Single Market in services and at the national level of reforming labour market and social policies where these reduce flexibility and employment.

The econometric literature on fiscal consolidation, crises and reform, which typically focuses on the period since 1970, offers mixed messages. It is well known that successful fiscal consolidations rely heavily on cutting current public spending rather than investment or raising taxes (Alesina and Perotti, 1997). Although fiscal retrenchment does lead to productive expenditure being reduced, on average education, health and transport infrastructure are relatively protected (Sanz, 2011). As the state of public finances becomes very weak, the odds of starting a fiscal consolidation increase, as a 'war of attrition' model might suggest (Larch and Turrini, 2011), which is favourable to long-run growth by reducing debt levels from the high levels that undermine growth (Checherita and Rother, 2010.) On the other hand, fiscal consolidation seems to slow down structural reform (Hoj et al., 2006) and there is the non-trivial risk that fiscal consolidation is very long-delayed as in Italy after the troubles of the 1970s (Crafts and Magnani, 2011).

However, given the magnitude of the problems that Europe now confronts, it is useful to turn to history to consider the lessons from the 1930s, the last time we went through a crisis of similar magnitude and dimensions, when the implications for policy were probably the most important channel for medium-term growth rate effects (Eichengreen, 2011). This time it probably will be different in key respects, for example, break-up of the Eurozone is much less likely than collapse of the gold standard because the benefit-cost ratio for exit is much less attractive (Eichengreen, 2010) and policymakers are aware of past mistakes. Nevertheless, several aspects of the 1930s' experience have implications for the reform agenda and they give fewer grounds for optimism than the modern literature.

First, it is well-known that the Great Depression saw big increases in protectionism. This is reflected in the trade costs estimates reported in Table 7; more generally, Jacks et al. (2011) found that intra-European trade costs rose by an average of about 20 per cent between 1929 and 1938. The most interesting analysis of the pattern of protectionism in the period is by Eichengreen and Irwin (2010); this shows that countries that devalued were less protectionist on average and the authors argue that protection in the 1930s is best seen as a second-best policy which was used when conventional

macroeconomic management tools in the form of fiscal and monetary policy were unavailable. The countries to which this description applies today are Eurozone economies with sovereign debt and competitiveness problems.

Second, the 1930s saw a general retreat from competition in the advanced countries together with increases in regulation and, in Europe, nationalization. Voters were less willing to trust in markets and demanded greater state intervention. This was reflected in policy developments at the time and in the postwar settlements of the 1940s. Both the British and American governments sought to encourage cartelization – the difference being that in the United States the Supreme Court struck down the provisions of the National Industrial Recovery Act in 1935. In the United Kingdom, competition in product markets weakened markedly with adverse productivity effects which lasted far into the postwar period (Crafts, 2012). In the United States, product market regulation was greatly increased with adverse implications for economic efficiency and it was not until the 1970s and 1980s that this was reformed (Vietor, 1994). Across, Europe state ownership was extended so that countries typically entered the Golden Age with nationalized industries supplying 10 per cent of GDP (Millward, 2011).

Third, the shock of the 1930s encouraged workers to demand much greater social protection and promoted tighter regulation of the labour market. In the United States this was famously addressed by the New Deal. There the 1930s saw the federal government pass the Social Security Act in 1935 which established a wide range of benefits including unemployment insurance and retirement benefits. Another long-lasting intervention was the Fair Labor Standards Act of 1938 which brought in minimum wages and overtime restrictions (Fishback, 2007). Across European countries we see the development of much more ambitious social policies which leave their footprint in a big increase of social transfers between 1930 and 1950, as reported in Table 9. To the extent that this was financed by distortionary taxation, there is a negative implication for growth.

The general direction of these responses to the 1930s economic crisis runs very much in the opposite direction to the supply-side reforms which are required to speed up European growth. They do not bode well for the agenda of completing the single market and making labour markets more flexible and employment-friendly put forward by Sapir (2006). Obviously, today's institutions are different and they may contain these pressures towards policy moves which would hurt long-term growth prospects.[2] We are going to find out.

5. Conclusions

At the start of the paper, I set out a number of questions on which the discussion of the last four sections throws some light. In what follows, they are reviewed in turn.

The first issue is how bad recent European growth performance has been. An obvious caveat is that there have been significant variations within Western Europe. Nevertheless, it is clear that the average has been disappointing and this is reflected in a failure to match the growth record of the United States since the mid-1990s, in particular with regard to that country's acceleration in productivity growth. This reflects two problems, namely, the difficulties of coping with increases in

[2] An example of this is the existence of WTO treaties today which may have been effective in restraining protectionism in the downturn of 2008/9 when it appears that increases in tariffs and non-tariff barriers played little part in the collapse of world trade (Kee et al., 2010).

the employment rate and the struggles to achieve a rapid diffusion of ICT. In both cases, better economic policies could have made the difference. The comparison with the United States is the relevant one on which to focus rather than worrying about much faster growth in China which is catching up and still at a low productivity level by western European standards.

Growth performance, especially in terms of productivity, has deteriorated in many Western European countries in the last 20 years or so and the second issue is to explain this. This reflects inadequate rather than inappropriate policy reform; reforms have generally moved supply-side policies in a growth friendly direction, even in countries with very weak productivity growth, but their implementation has not gone far enough. The need for reform has been both to modernize as countries reach a more advanced level and also to meet the needs of a new technological era. The general trajectory of desirable reform is quite well understood across the OECD and the obstacles to its being achieved are political in terms of status-quo bias (Fernandez and Rodrik, 1991) and the difficulty of accepting upfront costs for long-term benefits.

The third question raised at the outset concerns the role that European integration has played in promoting European economic growth. It seems clear that this was positive from the Treaty of Rome to the Single Market. The literature gives us good reasons to believe that trade liberalization raises income and productivity levels well beyond the contribution of traditional welfare triangles and regional trade agreements within Europe have delivered this result both directly and through incentivizing further liberalization. The total impact of this comparing 2000 with 1950 was estimated by Badinger (2005) to amount to raising the level of real GDP person by26 per cent. Unfortunately, the impact of the Single Market has been seriously diluted because it has not been implemented effectively with regard to services. European Monetary Union is more of a gamble and it is too soon to say what its final impact will be. Trade effects are probably small and could easily be outweighed by the costs of a Eurozone crisis or, for some countries, the costs of averting such a crisis.

Finally, I considered the possible supply-side policy implications of the ongoing crisis which started in 2008. Here the relevant place to look for history lessons is probably the 1930s. If so, the auguries are not very good. The crisis risks reversing the favourable direction of structural reforms and giving rise to a world of more state intervention, lower willingness to implement the Single Market, and more expensive social protection; in other words, just the opposite of what the Sapir Report thought was needed in Europe.

References

Abramovitz, M. (1986), "Catching Up, Forging Ahead, and Falling Behind", *Journal of Economic History*, 36, 385-406.

Aghion, P. and Howitt. P. (2006), "Appropriate Growth Theory: a Unifying Framework", *Journal of the European Economic Association*, 4, 269-314.

Alesina, A. and Perotti, R. (1997), "Fiscal Adjustments in OECD Countries: Composition and Macroeconomic Effects", *IMF Staff Papers*, 44, 210-248.

Badinger, H. (2005), "Growth Effects of Economic Integration: Evidence from the EU Member States", *Review of World Economics*, 141, 50-78.

Badinger, H. and Maydell, N. (2009), "Legal and Economic Issues in Completing the EU Internal Market for Services: an Interdisciplinary Perspective", *Journal of Common Market Studies*, 47, 693-717.

Baily, M. and Kirkegaard, J. F. (2004), *Transforming the European Economy*. Washington: Institute for International Economics.

Baldwin, R. (2006), "Multilateralising Regionalism: Spaghetti Bowls as Building Block on the Path to Global Free Trade", *The World Economy*, 29, 1451-1518.

Baldwin, R., Di Nino, V. , Fontagne, L., De Santis, R. and Taglioni, D. (2008), "Study on the Impact of the Euro on Trade and Foreign Direct Investment", *European Economy Economic Papers* No. 321.

Barnes, S., Bouis, R., Briard, P., Dougherty, S. and Eris, M. (2011), "The GDP Impact of Reform: a Simple Simulation Framework", OECD Economics Department Working Paper No. 834.

Barone, G. and Cingano, F. (2011), "Service Regulation and Growth: Evidence from OECD Countries", *Economic Journal*, 121, 931-957

Barro, R. J.and Lee, J-W. (2010), "A New Data Set of Educational Attainment in the World, 1950-2010", NBER Working Paper No. 15902.

Barrell, R., Gootschalk, S., Holland, D., Khoman, E., Liadze, I. And Pomerantz, O. (2008), "The Impact of EMU on Growth and Employment", *European Economy Economic Papers* No. 318.

Barry, F. (2002), "The Celtic Tiger Era: Delayed Convergence or Regional Boom?", *ESRI Quarterly Economic Commentary*, 84-91.

Barry, F. (2008), "Politics, Institutions and Postwar Economic Growth in Ireland", *CESifo Forum*, 9, 23-34.

Basu, S. and Weil, D. N. (1998), "Appropriate Technology and Growth", *Quarterly Journal of Economics*, 113, 1025-1054.

Bayoumi, T. and Eichengreen, B. (1997), “Is Regionalism simply a Diversion? Evidence from the Evolution of the EC and EFTA”, NBER Working Paper No. 5283.

Bennett, H., Escolano, J., Fabrizio, S., Gutierrez, E., Ivaschenko, I., Lissovolik, B., Schule, W., Tokarick, S., Xiao, Y. and Moreno Badia, M. (2008), “Competitiveness in the Southern Euro Area: France, Greece, Italy, Portugal, and Spain”, IMF Working Paper No. 08/112.

Bernanke, B. and Carey, K. (1996), “Nominal Wage Stickiness and Aggregate Supply in the Great Depression”, *Quarterly Journal of Economics*, **111**, 853-883.

Boltho, A. and Eichengreen, B. (2008), “The Economic Impact of European Integration”, CEPR Discussion Paper No.6820.

Bordo, M., Eichengreen, B., Klingebiel, D., Soledad Martinez-Peria, M. (2001), “Is the Crisis Problem Growing More Severe?”, *Economic Policy*, 23, 53-82.

Bosworth, B. P. and Collins, S. M. (2003), “The Empirics of Growth: an Update”, *Brookings Papers on Economic Activity*, 2, 113-206.

Breinlich, H. and Tucci, A. (2010), “Foreign Market Conditions and Export Performance: Does ‘Crowdedness’ Reduce Exports?”, CEPR Discussion Paper No. 7975.

Buccirossi, P., Ciari, L., Duso, T., Spagnolo, G. and Vitale, C. (2009), “Competition Policy and Productivity Growth: an Empirical Assessment”, CEPR Discussion Paper No. 7470.

Bugamelli, M. And Pagano, P. (2004), “Barriers to Investment in ICT”, *Applied Economics*, 36, 2275-2286.

Caballero, R., Cowan, K., Engel, E. and Micco, A. (2004), "Effective Labor Regulation and Microeconomic Flexibility", NBER Working Paper No. 10744.

Causa, O. (2008), “Explaining Differences in Hours Worked among OECD Countries: an Empirical Analysis”, OECD Economics Department Working Paper No. 596.

Checherita, C. and Rother, P. (2010), “The Impact of High and Growing Government Debt on Growth: an Empirical Investigation for the Euro Area”, ECB Working Paper No. 1237.

Comin, D., Hobijn, B. and Rovito, E. (2006), “Five Facts You Need to Know about Technology Diffusion”, NBER Working Paper No. 11928.

Conway, P., de Rosa, D., Nicoletti, G. and Steiner, F. (2006), “Regulation, Competition and Productivity Convergence”, OECD Economics Department Working Paper No. 509.

Conway, P. and Nicoletti, G. (2006), “Product Market Regulation in the Non-Manufacturing Sectors of OECD Countries: Measurement and Highlights”, OECD Economics Department Working Paper No. 530.

Crafts, N. (2002), “The Solow Productivity Paradox in Historical Perspective”, CEPR Discussion Paper No. 3142.

Crafts, N. (2004), "Steam as a General Purpose Technology: a Growth Accounting Perspective", *Economic Journal*, 114, 338-351.

Crafts, N. (2005), *Interpreting Ireland's Economic Growth,* background paper for UNIDO, *Industrial Development Report.*

Crafts, N. (2012), "British Relative Economic Decline Revisited: the Role of Competition", *Explorations in Economic History*, 49, forthcoming.

Crafts, N. and Magnani, M. (2011), "The Golden Age and the Second Globalization in Italy", Banca d'Italia Economic History Working Paper No. 17.

Crafts, N. and Toniolo, G. (2008), "European Economic Growth, 1950-2005: an Overview", CEPR Discussion Paper No. 6863.

Crespi, G., Criscuolo, C., and Haskel, J. (2007), "Information Technology, Organizational Change and Productivity Growth: Evidence from UK Firms", London School of Economics Centre for Economic Performance Discussion Paper No. 783.

Daveri, F., Lecat, R. and Parisi, M. L. (2010), "Service De-regulation, Competition and the Performance of French and Italian Firms", mimeo, Banque de France.

Dew-Becker, I. and Gordon, R. J. (2008), "The Role of Labor Market Changes in the Slowdown of European Productivity Growth", NBER Working Paper No. 13840.

Duval, R. (2003), "Retirement Behaviour in OECD Countries: Impact of Old-Age Pension Schemes and Other Social Transfer Programmes", *OECD Economic Studies*, 37, 7-50.

Duval, R. and Elmeskov, J. 92005), "The Effects of EMU on Structural Reforms in Labour and Product Markets", OECD Economics Department Working Paper No. 438.

Edquist, H. (2010), "Does Hedonic Price Indexing Change our Interpretation of Economic History? Evidence from Swedish Electrification", *Economic History Review*, 63, 500-523.

Eichengreen, B. (1993), *Reconstructing Europe's Trade and Payments*. Manchester: Manchester University Press.

Eichengreen, B. (2006), *The European Economy since 1945*. Princeton: Princeton University Press.

Eichengreen, B. (2010), "The Break-Up of the Euro Area", in A. Alesina and F. Giavazzi (eds.), *Europe and the Euro*. Chicago: University of Chicago Press, 11-56.

Eichengreen, B. (2011), "Crisis and Growth in the Advanced Economies: What We Know, What We Do Not, and What We Can Learn from the 1930s", *Comparative Economic Studies*, 53, 383-406.

Eichengreen, B. and Irwin, D. A. (2010), "The Slide to Protectionism in the Great Depression: Who Succumbed and Why?", *Journal of Economic History*, 70, 871-897.

Fabiani, S., Schivardi, F. and Trento, S. (2005), "ICT Adoption in Italian Manufacturing: Firm-Level Evidence", *Industrial and Corporate Change*, 14, 225-249.

Fernandez, R. and Rodrik, D. (1991), "Resistance to Reform: Status-Quo Bias in the Presence of Individual-Specific Uncertainty", *American Economic Review*, 81, 1146-1155.

Fishback, P. V. (2007), "The New Deal", in P. V. Fishback (ed), *Government and the Economy: a New History*. Chicago; University of Chicago Press, 384-430.

Flora, P. (1983), *State, Economy and Society in Western Europe 1815-1975*, vol. 1. Chicago: St James Press.

Frankel, J. A. and Romer, D. (1999), "Does Trade Cause Growth?", *American Economic Review*, 89, 379-399.

Furceri, D. and Mourougane, A. (2009), "The Effect of Financial Crises on Potential Output: New Empirical Evidence from OECD Countries", OECD Economics Department Working Paper No. 699.

Gilmore, O. (2009), "Corporatism and Growth: Testing the Eichengreen Hypothesis", MSc. Dissertation, University of Warwick.

Gregg, P., Machin, S., and Metcalf, D. (1993), "Signals and Cycles: Productivity Growth and Changes in Union Status in British Companies, 1984-9", *Economic Journal*, 103, 894-907.

Griffith, R. (2001), "Product Market Competition, Efficiency and Agency Costs: an Empirical Analysis", Institute for Fiscal Studies Working Paper No. 01/12.

Griffith, R. and Harrison, R. (2004), "The Link between Product Market Regulation and Macroeconomic Performance", European Commission Economic Papers No. 209.

Griffith, R, Harrison, R. and Simpson, H. (2006), "Product Market Reform and Innovation in the EU", *Scandinavian Journal of Economics*, 112, 389-415.

Gust, C. and Marquez, J. (2004), "International Comparisons of Productivity Growth: the Role of Information technology and Regulatory Practices", *Labour Economics*, 11, 33-58.

Hall, P. A. and Soskice, D. (2001), "An Introduction to Varieties of Capitalism", in P. A. Hall and D. Soskice (eds.), *Varieties of Capitalism*. Oxford: Oxford University Press, 1-68.

Hanushek, E. and Woessmann, L. (2009), "Do Better Schools Lead to More Growth? Cognitive Skills, Economic Outcomes, and Causation", NBER Working Paper No. 14633.

Harris, R., Siegel, D. S., and Wright, M. (2005), "Assessing the Impact of Management Buyouts on Economic Efficiency: Plant-Level Evidence from the United Kingdom", *Review of Economics and Statistics*, 87, 148-153.

Hoj, J., Galasso, V., Nicoletti, G. and Dang, T-T. (2006), "An Empirical Investigation of Political Economy Factors behind Structural Reforms in OECD Countries", *OECD Economic Studies*, 42, 87-136.

Hoj, J., Jimenez, M., Maher, M., Nicoletti, G. and Wise, M. (2007), "Product Market Competition in OECD Countries: Taking Stock and Moving Forward", OECD Economics Department Working Paper No. 575.

IMF (2009), *World Economic Outlook*. Washington, DC.

Jacks, D. S., Meissner, C. M. and Novy, D. (2011), "Trade Booms, Trade Busts, and Trade Costs", *Journal of International Economics*, 83, 185-201.

Janossy, F. (1969), *The End of the Economic Miracle*. White Plains, NY.: IASP.

Jerzmanowski. M. (2007), "Total Factor Productivity Differences: Appropriate Technology vs. Efficiency", *European Economic Review*, 51, 2080-2110.

Johansson, A., Heady, C., Arnold, J., Brys, B. and Vartia, L. (2008), "Taxation and Economic Growth", OECD Economics Department Working Paper No. 620.

Kee, H. L., Neagu, C. and Nicita, A. (2010), "Is Protectionism on the Rise?: Assessing National Trade Policies during the Crisis of 2008", World Bank Policy Research Working Paper No. 5274.

Kneller, R., Bleaney, M. and Gemmell, N. (1999), "Fiscal Policy and Growth: Evidence from OECD Countries", *Journal of Public Economics*, 74, 171-190.

Larch, M. and Turrini, A. (2011), "Received Wisdom and Beyond: Lessons from Fiscal Consolidation in the EU", *National Institute Economic Review*, 217, R1-R18.

Lindert, P. H. (2004), *Growing Public*. Cambridge: Cambridge University Press.

Machin, S. and Wadhwani, S. (1989), "The Effects of Unions on Organisational Change, Investment and Employment: Evidence from WIRS Data", London School of Economics Centre for Labour Economics Discussion Paper No. 355.

Maddison, A. (2003), *The World Economy: Historical Statistics*. Paris: OECD.

Mills, T. C. and Crafts, N. (2000), "After the Golden Age: a Long-Run Perspective on Growth Rates that Speeded Up, Slowed Down, and Still Differ", *The Manchester School*, 68, 68-91.

Millward, R. (2011), "Public Enterprise in the Modern Western World: an Historical Analysis", *Annals of Public and Cooperative Economics*, 82, 375-398.

Nelson, R. R. and Wright, G. (1992), "The Rise and Fall of American Technological Leadership: the Postwar Era in Historical Perspective", *Journal of Economic Literature*, 30, 1931-1964.

Nickell, S. J., Nunziata, L., Ochel, W. and Quintani, G. (2001), "The Beveridge Curve: Unemployment and Wages in the OECD from the 1960s to the 1990s", London School of Economics Centre for Economic Performance Discussion Paper No. 502.

Nickell, W. (2006), "The CEP-OECD Institutions Dataset, 1960-2004. London School of Economics Centre for Economic Performance Discussion Paper No. 759.

Nicoletti, G. and Scarpetta, S. (2005), Regulation and Economic Performance: Product Market Reforms and Productivity in the OECD", OECD Economics Department Working Paper No. 460.

Notaro, G. (2011), "European Integration and Productivity: Exploring the Early Effects of Completing the Internal Market", *Journal of Common Market Studies*, 49, 845-869.

OECD (2010a), *Revenue Statistics, 1965-2009*. Paris.

OECD (2010b), *OECD Factbook*. Paris.

OECD (2011a), *Social Expenditure Database*. Paris.

OECD (2011b), *OECD Economic Outlook*, November. Paris.

Oliner, S. D., Sichel, D. E. and Stiroh, K. J. (2007), "Explaining a Productive Decade", *Brookings Papers on Economic Activity* 1, 81-152.

Oulton, N. (2010), "Long-term Implications of the ICT Revolution: Applying the Lessons of Growth Theory and Growth Accounting", London School of Economics Centre for Economic Performance Discussion Paper No. 1027.

Prados de la Escosura, L. and Roses, J. (2010), "Stabilization and Growth under Dictatorship: the Experience of Franco's Spain", CEPR Discussion Paper No. 7731.

Prais, S. J., 1981, *Productivity and Industrial Structure*. Cambridge: Cambridge University Press.

Rae, D.and Sollie, M. (2007), "Globalisation and the European Union: Which Countries are Best Placed to Cope?", OECD Economics Department Working Paper No. 586.

Reinhart, C. M. and Rogoff, K. S. (2009), *This Time is Different*. Princeton: Princeton University Press.

Sanz, I. (2011), "What do OECD Countries Cut First when Faced with Fiscal Adjustments", *Southern Economic Journal*, 77, 753-775.

Sapir, A. (2006), "Globalization and the Reform of European Social Models", *Journal of Common Market Studies*, 44, 369-390.

Schivardi, F. and Viviano, E. (2011), "Entry Barriers in Retail Trade", *Economic Journal*, 121, 145-170.

Temin, P. (2002), "The Golden Age of European Growth Reconsidered", *European Review of Economic History*, 6, 3-22.

The Conference Board (2011), *Total Economy Database*.

Timmer, M., Inklaar, R., O'Mahony, M. and van Ark, B. (2010), *Economic Growth in Europe: a Comparative Economic Industry Perspective*. Cambridge: Cambridge University Press.

United Nations (1958), *Yearbook of International Trade Statistics*. New York.

United Nations (1976), *Yearbook of International Trade Statistics*. New York.

van Ark, B., Hao, J. X., Corrado, C. and Hulten, C. (2009), "Measuring Intangible Capital and its Contribution to Economic Growth in Europe", *EIB Papers*, 14(1), 63-93.

Vietor, R. H. K. (1994), "Contrived Competition: Economic Regulation and Deregulation, 1920-1980s", *Business History*, 36(4), 1-32.

Wallis, J. J. (2010), “Lessons from the Political Economy of the New Deal”, *Oxford Review of Economic Policy*, 26, 442-462.

Woessmann, L., Ludemann, E, Schutz, M. and West, M. R. (2007), “School Accountability, Autonomy, Choice and the Level of Student Achievement: International Evidence from PISA 2033”, OECD Education Working Paper No. 13.

Wolf, N. (2008), “Scylla and Charybdis: Explaining Europe’s Exit from Gold, January 1928 to December 1936”, *Explorations in Economic History*, 45, 383-401.

Wolfl, A., Wanner, I., Kozluk, T. and Nicoletti, G. (2009), “Ten Years of Product Market Reform in OECD Countries: Insights from a Revised PMR Indicator”, OECD Economics Department Working Paper No. 695.

WTO (2001), *International Trade Statistics*. Geneva.

WTO (2008), *International Trade Statistics*. Geneva.

Table 1. Real GDP Measured at Purchasing Power Parity

a) Levels and Growth Rates of Real GDP/Person

	1950 ($GK 1990)	***1973 ($GK 1990)***	***2007 ($GK 1990)***	***Growth Rate, 1950-73 (% p.a.)***	***Growth Rates, 1973-2007 (% p.a.)***
Western Europe	4569	11392	21589	4.05	1.91
USA	9561	16689	31357	2.45	1.88
Japan	1921	11434	22950	8.07	2.07
China	448	838	6303	2.76	6.12
India	619	853	2817	1.41	3.57
Asian Tigers	955	3631	21212	5.98	5.34
World Average	2111	4083	7468	2.91	1.80

b) Shares of World GDP (%)

	1950	***1973***	***1990***	***2007***
Western Europe	26.2	25.6	22.2	17.5
North America	29.2	24.0	23.3	20.8
Japan	3.0	7.8	8.6	5.9
China	4.5	4.6	7.8	16.8
India	4.2	3.1	4.0	6.4
Other Asia	4.8	5.2	8.0	10.2
Rest of World	28.1	29.7	26.1	22.4

Source: Maddison (2003) with updates from website.

Table 2. Shares of World Exports of Manufactures (%)

	1953	***1973***	***1990***	***2007***
Western Europe	51.9	55.9	54.2	40.8
North America	35.8	16.1	15.2	11.9
Japan	2.9	9.6	11.5	6.7
China	0.1	0.6	1.9	11.9
Rest of Asia	1.6	4.5	11.1	16.5
Rest of World	7.7	13.3	6.1	8.3

Sources: United Nations (1958) (1976) and WTO (2001) (2008)

Table 3. Levels and Rates of Growth of Real GDP/Person, 1950-95 ($1990GK and % per year)

a) 1950-73

	Y/P 1950	*Y/P 1973*	*Growth Rate, 1950-73*
Switzerland	9064	18204	3.08
Denmark	6943	13945	3.08
UK	6939	12025	2.42
Sweden	6739	12494	3.06
Netherlands	5971	13081	3.45
Belgium	5462	12170	3.54
Norway	5430	11324	3.24
France	5186	12824	4.02
West Germany	4281	13153	5.02
Finland	4253	11085	4.25
Austria	3706	11235	4.94
Italy	3502	10634	4.95
Ireland	3453	6867	3.03
Spain	2189	7661	5.60
Portugal	2086	7063	5.45
Greece	1915	7655	6.21

b) 1973-95

	Y/P 1973	*Y/P 1995*	*Growth Rate, 1973-95*
Switzerland	18204	20627	0.58
Denmark	13945	20350	1.74
Sweden	13494	17648	1.23
West Germany	13153	19849	1.92
Netherlands	13081	18700	1.65
France	12824	18206	1.61
Belgium	12170	18270	1.87
UK	12025	17586	1.75
Norway	11324	21578	2.96
Austria	11235	17959	2.16
Finland	11085	15970	1.88
Italy	10634	17216	2.21
Spain	7661	13132	2.48
Greece	7655	10321	1.37
Portugal	7063	11614	2.29
Ireland	6867	12734	2.85

Note: Ireland is GNP from 1973-95

Source: The Conference Board (2011)

Table 4. Levels and Rates of Growth of Real GDP/Hour Worked, 1950-1995 ($1990GK and % per year)

a) 1950-73

	Y/HW1950	*Y/HW 1973*	*Growth Rate, 1950-73*
Switzerland	8.16	17.86	3.46
Sweden	7.35	18.01	3.95
UK	7.00	13.37	2.85
Denmark	6.72	15.88	3.80
Belgium	6.00	17.42	4.73
Norway	5.78	15.06	4.25
Netherlands	5.73	17.32	4.91
France	5.07	15.63	5.02
West Germany	4.36	16.05	5.85
Finland	4.03	11.60	4.69
Italy	3.98	14.58	5.82
Austria	3.52	13.20	5.93
Ireland	3.00	8.18	4.45
Spain	2.60	9.92	6.00
Portugal	2.18	9.33	6.53
Greece	1.93	8.07	6.42

b) 1973-95

	Y/HW 1973	*Y/HW 1995*	*Growth Rate, 1973-95*
Sweden	18.01	23.13	1.15
Switzerland	17.86	21.92	0.95
Belgium	17.42	30.37	2.56
Netherlands	17.32	27.75	2.17
West Germany	16.05	30.83	3.01
Denmark	15.88	26.98	2.44
France	15.63	29.02	2.85
Norway	15.06	29.82	3.15
Italy	14.58	24.29	2.35
UK	13.37	24.33	2.76
Austria	13.20	23.50	2.66
Finland	11.60	22.36	3.03
Spain	9.92	22.21	3.72
Portugal	9.33	13.60	1.74
Ireland	8.18	17.21	3.43
Greece	8.07	11.63	1.68

Note: Ireland is GNP from 1973-95

Source: The Conference Board (2011)

Table 5. Decomposition of EU15/USA Real GDP/Person Gap, 1950-2007

	Y/P	*Y/HW*	*HW/E*	*E/P*
1950	0.482	0.381	1.190	1.063
1973	0.680	0.629	1.092	1.000
1995	0.700	0.853	0.974	0.843
2007	0.675	0.769	0.947	0.928

Note: the table shows the identity Y/P = Y/HW x HW/E x E/P for the ratio of EU15/USA

Source: derived from The Conference Board (2011)

Table 6. Contributions to Labour Productivity Growth, 1960-1990 (% per year)

a) 1960-1970

	Capital Deepening	*Human Capital Deepening*	*TFP*	*Labour Productivity Growth*
Austria	2.39	0.18	2.90	5.47
Belgium	1.36	0.42	2.33	4.11
Denmark	2.15	0.13	1.25	3.53
Finland	1.66	0.37	2.64	4.67
France	2.02	0.29	2.62	4.93
West Germany	2.10	0.23	2.03	4.36
Greece	3.63	0.26	4.45	8.34
Ireland	1.78	0.22	2.21	4.21
Italy	2.39	0.36	3.50	6.25
Netherlands	1.43	0.74	0.89	3.06
Norway	1.18	0.48	1.80	3.46
Portugal	2.05	0.35	3.99	6.39
Spain	2.45	0.38	3.73	6.56
Sweden	1.34	0.19	2.40	3.93
Switzerland	1.40	0.40	1.37	3.17
UK	1.45	0.17	1.24	2.86

b) 1970-1990

	Capital Deepening	*Human Capital Deepening*	*TFP*	*Labour Productivity Growth*
Austria	1.32	0.22	1.00	2.54
Belgium	0.96	0.18	1.38	2.52
Denmark	0.82	0.24	0.02	1.08
Finland	0.98	0.62	0.90	2.50
France	1.28	0.36	0.84	2.48
West Germany	0.79	0.40	0.69	1.88
Greece	1.24	0.50	0.06	1.80
Ireland	1.47	0.38	1.18	3.03
Italy	0.98	0.32	1.22	2.52
Netherlands	0.72	0.25	0.65	1.62
Norway	0.90	0.70	0.84	2.44
Portugal	0.90	0.44	1.01	2.35
Spain	1.54	0.37	1.13	3.04
Sweden	0.67	0.36	0.27	1.30
Switzerland	0.72	0.30	-0.38	0.64
UK	0.83	0.32	0.74	1.89

Note: estimates based on traditional neoclassical growth accounting formula with human capital contribution based on years of schooling.

Source: dataset for Bosworth and Collins (2003)

Table 7. Trade Costs

	Germany-France	*Germany-Italy*	*Spain-France*	*Spain-Italy*	*UK-France*	*UK-Italy*
1929	0.99	1.10	1.18	1.63	1.00	1.22
1938	1.33	1.12	2.26	1.74	1.21	1.54
1950	1.12	1.27	1.55	2.40	1.22	1.36
1960	0.91	1.01	1.52	1.54	1.22	1.25
1970	0.73	0.79	1.24	1.42	1.10	1.21
1980	0.55	0.61	0.89	1.08	0.74	0.86
1990	0.53	0.56	0.74	0.87	0.70	0.84
2000	0.61	0.66	0.70	0.87	0.75	0.90

Note: trade costs are inferred using a gravity model and comprise both policy and non-policy barriers to trade; 1929-38 estimates are not strictly comparable with those for 1950-2000; estimates that include Spain are for 1939 not 1938.

Source: data underlying Jack et al. (2011) generously provided by Dennis Novy

Table 8. Distortionary Tax Revenues (%GDP)

	1965	***1980***	***1995***	***2007***
Austria	21.2	26.7	29.6	30.1
Belgium	19.5	30.0	32.4	32.3
Denmark	17.8	27.0	33.1	32.5
Finland	17.3	23.2	31.8	29.9
France	21.3	30.0	31.2	31.2
Germany	21.2	27.3	26.8	25.3
Greece	10.0	13.9	18.6	20.6
Ireland	11.8	18.0	19.6	22.2
Italy	15.4	21.8	29.2	30.0
Netherlands	22.4	31.3	31.3	26.2
Norway	17.4	27.5	25.2	31.4
Portugal	8.8	12.6	19.2	21.8
Spain	8.7	17.9	22.9	27.4
Sweden	24.1	35.7	34.8	34.6
Switzerland	11.5	19.5	21.7	22.3
UK	20.3	24.9	22.7	25.5
USA	19.1	21.7	22.9	23.2

Note: distortionary taxes as defined in Kneller et al. (1999) and refer to direct taxes; Ireland in 1995 and 2007 as %GNP.

Source: OECD (2010a)

Table 9. Social Transfers (%GDP)

	1930	***1950***	***1960***	***1980***	***1995***	***2007***
Austria	1.2	14.3	15.9	22.6	26.6	26.4
Belgium	0.6	10.4	13.1	23.5	26.4	26.5
Denmark	3.1	9.3	12.3	25.2	28.9	26.1
Finland	3.0	6.8	8.8	18.4	27.4	24.6
France	1.0	12.6	13.4	20.8	28.3	28.4
Germany	4.8	17.9	18.1	23.0	26.6	25.2
Greece	0.1		10.4	11.5	19.3	21.3
Ireland	3.7	8.1	8.7	17.4	18.4	18.5
Italy	0.1	9.5	13.1	18.0	19.8	24.9
Netherlands	1.0	7.5	11.7	24.1	22.8	20.1
Norway	2.4	4.8	7.8	16.9	23.5	20.8
Portugal	0.0			10.8	18.1	22.5
Spain	0.1			15.5	21.5	21.6
Sweden	2.6	8.2	10.8	28.6	32.5	27.3
Switzerland	1.2	3.9	4.9	13.9	17.5	18.5
UK	2.2	9.3	10.2	16.6	20.4	20.5
USA	0.6	7.3	7.3	13.3	15.4	16.2

Note: 1950 is interpolated using the estimates in Flora (1983) and Wallis (2010)

Sources: Lindert (2004), OECD (2011a)

Table 10. Employment Protection (0-4)

	1960	***1980***	***2000***	***2008***
Austria	1.10	1.92	2.21	1.93
Belgium	1.38	3.21	2.18	2.18
Denmark	1.90	2.30	1.50	1.50
Finland	2.30	2.30	2.09	1.96
France	0.75	2.80	2.98	3.05
Germany	0.80	3.21	2.34	2.12
Greece			3.50	2.73
Ireland	0.00	0.90	0.93	1.11
Italy	3.45	3.60	2.51	1.89
Netherlands	2.70	2.70	2.12	1.95
Norway	2.91	2.91	2.56	2.69
Portugal		4.00	3.67	3.15
Spain	4.00	3.87	2.93	2.98
Sweden	0.00	3.50	2.24	1.87
Switzerland	1.00	1.00	1.14	1.14
UK	0.27	0.60	0.68	0.75
USA	0.21	0.21	0.21	0.21

Sources: Nickell (2006) and OECD (2010b)

Table 11. Education: Cognitive Skills and Tertiary Years

	Cognitive Skills	*Tertiary Years 1950*	*Tertiary Years 1970*	*Tertiary Years 1995*	*Tertiary Years 2005*
Austria	508.9	0.069	0.086	0.274	0.532
Belgium	504.1	0.102	0.182	0.711	0.956
Denmark	496.2	0.240	0.341	0.584	0.570
Finland	512.6	0.092	0.189	0.620	0.900
France	504.0	0.054	0.146	0.419	0.597
Germany	495.6	0.104	0.102	0.551	0.684
Greece	460.8	0.076	0.139	0.511	0.894
Ireland	499.5	0.113	0.152	0.636	0.926
Italy	475.8	0.050	0.086	0.259	0.336
Netherlands	511.5	0.039	0.238	0.642	0.838
Norway	483.0	0.045	0.219	0.610	0.852
Portugal	456.4	0.031	0.049	0.240	0.305
Spain	482.9	0.044	0.075	0.410	0.787
Sweden	501.3	0.165	0.246	0.723	0.901
Switzerland	514.2	0.279	0.312	0.580	0.610
United Kingdom	495.0	0.053	0.247	0.399	0.595
Japan	531.0	0.127	0.170	0.815	1.076
South Korea	533.8	0.040	0.200	0.674	0.965
USA	493.9	0.420	0.674	1.474	1.682

Note: cognitive skills based on average maths and science scores at end of secondary school during 1964-2003 and converted into PISA scale; average years of tertiary education are for population aged 25 and over.

Sources: Barro and Lee (2010); Hanushek and Woessmann (2009).

Table 12. Product Market Regulation (PMR) (0-6)

	1975	*1990*	*1998a*	*1998b*	*2008*
Austria	5.2	4.5	3.9	2.33	1.45
Belgium	5.5	5.3	3.4	2.17	1.43
Denmark	5.5	4.7	3.0	1.59	1.06
Finland	5.5	4.6	2.7	2.08	1.19
France	6.0	5.2	4.3	2.52	1.45
Germany	5.2	4.6	2.8	2.06	1.33
Greece	5.7	5.7	5.3	2.99	2.37
Ireland	5.7	5.0	4.4	1.65	0.92
Italy	5.8	5.8	4.7	2.59	1.38
Netherlands	5.6	5.6	2.9	1.66	0.97
Norway	5.5	4.5	3.2	1.85	1.16
Portugal	5.9	5.3	4.4	2.25	1.43
Spain	5.1	4.7	3.5	2.55	1.03
Sweden	4.5	4.4	2.4	1.93	1.30
Switzerland	4.1	4.2	3.7	2.48	1.18
UK	4.8	3.0	1.4	1.07	0.84
USA	3.7	2.3	1.6	1.28	0.84

Sources: PMR indicator for 1975, 1990 and 1998a is based on REGREF from Conway and Nicoletti (2006); PMR for 1998b and 2008 from Wolfl et al. (2009).

Table 13. Competition Policy Indicator (0-1)

	1995	***2005***
France	0.45	0.52
Germany	0.49	0.52
Italy	0.41	0.44
Netherlands	0.42	0.53
Spain	0.36	0.42
Sweden	0.69	0.66
United Kingdom	0.31	0.60
USA	0.59	0.62

Note: first year for Netherlands is 1998 and for Spain is 2000.

Source: Buccirossi et al. (2009).

Table 14. Levels and Rates of Growth of Real GDP per Person and per Hour Worked, 1995-2007 ($GK1990 and % per year)

a) Real GDP per Person

	Y/P 1995	Y/P 2007	Growth
Norway	21578	28553	2.36
Switzerland	20627	24781	1.55
Denmark	20350	25060	1.76
Netherlands	18700	24405	2.24
Belgium	18270	23487	2.12
France	18206	22282	1.70
Austria	17959	23744	2.36
Germany	17672	21143	1.51
Sweden	17648	25381	3.07
UK	17586	23620	2.49
Italy	17216	20163	1.33
Finland	15970	24635	3.67
Spain	13132	17869	2.60
Ireland	12734	23338	5.18
Portugal	11614	14601	1.93
Greece	10321	15860	3.64

a) Real GDP per Hour Worked

	Y/HW 1995	Y/HW 2007	Growth Rate,
Belgium	30.37	35.74	1.37
Norway	29.82	36.72	1.69
France	29.02	35.44	1.69
Netherlands	27.75	33.84	1.67
Denmark	26.98	30.52	1.03
Germany	25.10	30.78	1.72
UK	24.33	31.65	2.22
Italy	24.29	25.63	0.46
Austria	23.50	28.68	1.68
Sweden	23.13	31.32	2.56
Finland	22.36	30.42	2.60
Spain	22.21	23.43	0.64
Switzerland	21.92	25.82	1.38
Ireland	17.21	26.01	3.50
Portugal	13.60	15.62	1.16
Greece	11.63	16.78	3.10

Note: Ireland is GNP

Source: The Conference Board (2011)

Table 15. GPTs: Contributions to Labour Productivity Growth (% per year)

Steam (UK)	
1760-1830	0.01
1830-1870	0.30
Electricity (USA)	
1899-1919	0.40
1919-1929	0.98
ICT (USA)	
1973-1995	0.74
1995-2006	1.45

Memorandum Item: Real Price Falls (%)

Steam Horsepower	
1760-1830	39.1
1830-1870	60.8
Electric Motors (Sweden)	
1901-1925	38.5
ICT Equipment	
1970-1989	80.6
1989-2007	77.5

Note:

Growth accounting contributions include both capital deepening from use and TFP from production

Price fall for ICT equipment includes computer, software and telecoms; the price of computers alone fell much faster (22.2% per year in the first period and 18.3% per year in the second period)

Sources:

Growth accounting: Crafts (2002) (2004) and Oliner et al. (2007).

Price falls: Crafts (2004), Edquist (2010) and Oulton (2010).

Table 16. Labour Productivity Growth in the Market Sector, 1995-2005 (% per year)

a) Growth Accounting

	Labour Quality	*ICTK/HW*	*Non-ICT K/HW*	*TFP*	*Labour Productivity Growth*
Ireland	0.2	0.4	2.1	1.8	4.5
Sweden	0.3	0.6	1.1	1.6	3.6
Finland	0.1	0.6	-0.1	2.6	3.2
UK	0.5	0.9	0.4	0.8	2.6
Netherlands	0.4	0.6	0.1	1.0	2.1
France	0.4	0.4	0.4	0.9	2.1
Austria	0.2	0.6	0.1	1.1	2.0
Portugal	0.2	0.6	1.3	-0.3	1.8
Belgium	0.2	1.0	0.4	0.1	1.7
Denmark	0.2	1.0	0.2	0.2	1.6
Germany	0.1	0.5	0.6	0.4	1.6
Spain	0.4	0.3	0.5	-0.8	0.4
Italy	0.2	0.3	0.5	-0.7	0.3
USA	0.3	1.0	0.3	1.3	2.9

b) Sectoral Contributions

	ICT Production	*Manufacturing*	*Other Goods*	*Market Services*	*Labour Productivity Growth*
Ireland	1.0	2.2	0.2	1.4	4.5
Sweden	1.1	1.0	0.2	1.4	3.6
Finland	1.7	0.7	0.4	0.4	3.2
UK	0.5	0.5	0.2	1.6	2.6
Netherlands	0.4	0.6	0.0	1.3	2.1
France	0.4	0.7	0.3	0.7	2.1
Austria	0.3	1.0	0.6	0.2	2.0
Portugal	0.5	0.5	0.2	0.6	1.8
Belgium	0.3	0.7	0.2	0.6	1.7
Denmark	0.3	0.3	0.3	0.7	1.6
Germany	0.4	0.6	0.3	0.2	1.5
Spain	0.1	0.1	0.0	0.2	0.4
Italy	0.3	0.0	0.2	-0.1	0.3
USA	0.8	0.6	-0.1	1.8	2.9

Note: reallocation effects not reported

Source: Timmer et al. (2010)

Table 17. Investment in Intangibles in the Market Sector, 2006 (%GDP)

	Computerized Information	***Innovative Property***	***Economic Competencies***	***Total***
Austria	0.89	3.14	2.42	6.46
Denmark	1.87	3.06	2.93	7.86
France	1.42	3.18	3.30	7.90
Germany	0.73	3.59	2.84	7.16
Greece	0.34	0.62	0.63	1.59
Italy	0.64	2.21	2.19	5.04
Spain	0.79	2.78	1.90	5.47
UK	1.55	3.16	5.84	10.54
USA	1.61	4.37	5.50	11.48

Source: van Ark et al. (2009)

Table 18. The Effects of "10 Per Cent" Reforms on Steady-State Real GDP per Person (% change, average across OECD countries)

Average Replacement Rate	2.2
Employment Protection Legislation	0.6
Standard Retirement Age	1.7
Average Tax Rate	2.1
Marginal Tax Rate	0.5
Share of Consumption and Property Taxes	0.7
Product Market Regulation	3.8
PISA Score	5.1
Average Years of Schooling	6.5

Source: Barnes et al. (2011)