Why Productivity Enhancing Reforms Will Help Greece Exit the Crisis and Usher in Long Run Growth

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Abstract

With the onset of the Greek crisis, Greece was dealt a huge economic shock of historical significance, resulting in losses of quantitative and qualitative significance. This paper takes a longer-run view in assessing where Greece is at in tackling the problems that the crisis has bequeathed us. An important dimension of the Greek crisis is that the Greek population lost not only income but also wealth. Such losses may be offset only by sustained increases in employment and economic growth. Public investment has virtually ceased during the crisis, so that because of depreciation public capital has decreased. Private capital has also decreased, because of the collapse of private investment. Moving forward, economic growth depends critically on the joint evolution of private capital and public debt. There are two additional elements whose joint dynamics are important for the debt dynamics, over and above the rate of private capital accumulation. They are the dynamics of population growth and of total factor productivity growth. In Greece nowadays, fewer births, increased return migration by recent immigrants, and out-migration by young, skilled and thus geographically mobile Greeks imply a contraction of population and a worrisome demographic change in the form of adverse age composition, which has major fiscal implications.

Thus, Greece needs an accelerated creation of job opportunities, which will not only allow the unemployed to return to jobs but also to prevent outmigration. In order to create employment opportunities, we need massive private and public investments. The aging of the population (and the accelerated retirements from the public sector, a cost-saving measure) itself is a factor in declining savings and the need for increased investment. What is not discussed much, in the context of the crisis, is that domestic savings might constrain the massive investment that is necessary, even with modest government savings, and therefore massive inward foreign investment would be necessary.

The paper first assesses various ideas about getting growth started, and what might be

hampering that. It also details what we could expect in the way of productivity growth when reforms currently envisioned and hopefully in progress are brought to fruition. The discussion draws extensively from the case of the *Finnish Great Depression*, an episode that all things considered is quite similar to the Greek crisis, which could well justify the term *Greek Great Depression*. It was precipitated by the shock of the collapse of the Soviet Union, Finland's greatest trading partner at the time, but was also accompanied by a banking and credit crisis. It was followed by an admirable period of economic growth, which I find a rich source of lessons for the Greek crisis. The paper details growth-hampering features of the Greek educational system and discusses in depth growth-enhancing properties of market deregulation. Small improvements in each of many markets and industries can add up to significant contributions to Greece's total factor productivity growth performance. Second, in the immediate aftermath of fiscal stabilization, the problem of the Greek trade deficit, which some consider as the principal cause of the crisis remains acute. The considerable improvement in unit labor costs that has taken place has not been followed by a commensurate improvement in the trade deficit. Recapturing and realizing gains in foreign markets is in part a problem that Greece shares with other "peripheral" EU countries, and to a degree not sufficiently appreciated and widely discussed. Real appreciation of the euro appears to be mainly due nominal exchange rate appreciation rather than domestic costs (measured via either unit labor costs or the consumer price index). This in turn suggests that in order for Greece to improve its advantage in international markets it needs to accelerate its effort at productivity improvements and just as much at growth-enhancing product market reforms.

Greece shows up as a laggard in unsettlingly many comparisons. But the fundamentals are there for a full recovery and accelerated growth, if only we let free the forces that produce and sustain economic growth. These forces are human capital and good institutions.

1 Introduction

An economy at any point in time does not operate under the influence of its past only. It is driven just as much by the expectations of its members about the future. Thus, an economy's evolution going forward reflects both its past and numerous forces that contribute to expectations about the future. Word-of-mouth, political slogans, influential private individuals, appointed as well as elected leaders and respected institutions and of course the media (and increasingly the social media) all contribute in different ways in shaping the future.

With the onset of the Greek crisis, Greece was dealt a huge economic shock of historical significance, resulting in losses of quantitative and qualitative significance. Quantitatively, the sum total of incomes lost for as long as the economy remains below what it would have been its potential output, given the fact prior to the onset of the crisis, is one quantitative measure of the magnitude of the loss.[2] The incomes lost due to the contraction are only part of that loss; while the suffering in the form of shattered lives and careers are harder to measure, they amount to a huge component of the loss.[3]

My intention in this paper is to assess where Greece is at in tackling the problems that the crisis has bequeathed us. I do not intend to embellish the difficulties ahead and am grounding my approach on facts. The problems require inspired, transformational approaches, broad political support and patience. Greece's circumstances are not completely unique. The contraction is particularly severe historically, as Figure 1 demonstrates, but arguably not unique qualitatively. As Figure 1 shows, the Greek real GDP contraction has been more severe than that for the US during its Great Depression. Latvia shows comparable severity to that of Greece, during its internal devaluation efforts since its accession to the European

[2] See Ball (2014)

[3] There is solid evidence that unemployment experiences have far reaching effects on those affected, and especially those who are young. Loss of skills during unemployment is a well-established and important component of the total welfare loss associated with unemployment, because of the negative unemployment duration dependence that it induces. See Pissarides (1992) for the classic statement of the problem and Elsby *et al.* (2010) for a more recent reminder of the issue. Oreopoulos *et al.* (2008) point to important intergenerational effects of worker displacement.

Union, with the downturn taking place faster but the upturn taking hold also much faster than Greece. In comparison, recovery in Finland was rather swift.

Several times in the recent past I have given talks with the title containing the phrase "The Debt Is a Lesser Problem." I firmly believed it then and continue to believe it now. The debt restructuring of 2012[4] demonstrates that the unenviable reality Greece found itself at five years ago allowed influential decision makers and international institutions to recognize the unavoidable and to help reconfigure the future at considerable political cost.

An important dimension of the Greek crisis is that the Greek population lost not only income but also wealth. Individuals lost real wealth in the form of decreases in the value of housing and business capital; they lost financial wealth in the form of pension rights and other types of privately held assets. To what individuals perceive as pension wealth, there corresponds an implicit obligation of the government for providing public pensions over and above their funded portions, which in Greece are a small part of the whole. This is accomplished by means of fiscal provisions, on one hand, and by means of income from public assets, on the other. The public as a whole has also suffered from a decrease in the value of public capital.

So, the public as a whole, the nation, has suffered a loss of income and wealth. Loss of disposable income means that people have less resources to save from. Loss of wealth means that people feel a greater need to provide for the future. Therefore, the net result for savings is ambiguous.

During 1960–2001, Greece added to its fixed real government capital about 3% per year [Kamps, Fig. 1]. During that same period real government capital amount to about 50% of GDP [Kamps, T. 2]. Public investment has virtually ceased during the crisis, so that in view of depreciation public capital has decreased. Private capital has also decreased, because of the collapse of private investment. Moving forward, economic growth depends critically on the joint evolution of private capital and public debt. The accumulation of private capital is determined by national savings, which in turn reflect the public's (and the world capital market's) willingness to lend to the Greek government. The evolution of the public debt

[4]See Zettelmeier *et al.* (2013) for a thorough analysis of the Greek sovereign debt restructuring.

reflects the time profile of the budget balance (deficits and surpluses). If markets perceive that the public debt is growing faster than a government can service its obligations, they may refuse to continue lending, a phenomenon that the Greek public has become so painfully aware of. Such an ability depends on the rate of economic growth. If the debt grows faster than GDP, then a projection of a future stream of surpluses will be necessary to persuade investors, domestic and foreign to continue lending. Or else, they would demand very high interest rates, which would in turn worsen the debt dynamics, or stop lending altogether.

There are two additional elements whose joint dynamics are important for the debt dynamics, over and above the rate of private capital accumulation. They are the dynamics of population growth and of total factor productivity growth. In Greece nowadays, fewer births, increased return migration by recent immigrants, and out-migration by young, skilled and thus geographically mobile Greeks imply a contraction of population[5] and a worrisome demographic change in the form of adverse age composition[6] that is likely to also have major fiscal implications. Given economic fundamentals, faster total factor productivity growth — productivity growth over and above what is explained by increased use of measurable factors of production — adds to a country'a ability to improve its citizens' well being and to service its debt obligations. A country's debt obligations also include obligations to its own citizens, which another lesson the Greek public has become so painfully aware.

While onset of population decline is not unique to Greece within the EU, it has particularly dire macroeconomic, especially fiscal implications for Greece at the present juncture. For the fiscal impact of outmigration, the context of the contentious debates in countries

[5]Greek population fell by 146407, from 10934097 to 10787690, a 1.3% decrease over 2001–2011. See Greek Government Gazette (2014) and Papadakis *et al.* (2012).

[6]The dependency ratio have evolved as follows: The ratio of 0–14 and 65 and over to 15–64, has increased over 1951–2010 from 0.53 to .499. The ratio of 65 and over to 15–64 has increased from 0.111 to 0.284, and that of 0–14 to 15–64 has fallen from 0.419 to 0.215. The total fertility index has fallen from 2.3 per woman in 1950s to 1.46 in 2010, having fallen to 1.2 before the influx of immigrant females of reproductive age since the 1990s [Greek Society for Demographic Statistics (2012)]. While the phenomenon is EU-wide (and world-wide, with the developed world experiencing a fall from 2.81 to 1.66, and the developing world from 6.07 to 2.68), it is extreme among all of the southern European debtors nations in the Eurozone, though not for Ireland.

like the UK is particularly relevant. For example, several researchers have demonstrated that immigrants into the UK provide a net fiscal benefit to the UK.[7] It follows that outmigration, especially by young and skilled (and arguably more enterprising, as well, because migration is selective not random) from a country like Greece, which is not accompanied by compensating remittances, can cause a net fiscal loss. This is another way to see the impact of adverse demographic development.

Thus, Greece needs an accelerated creation of job opportunities, which will not only allow the unemployed to return to jobs but also to prevent outmigration. In order to create employment opportunities, we need massive private and public investments. The aging of the population (and the accelerated retirements from the public sector, a cost-saving measure) itself is a factor in declining savings and the need for increased investment. What is not discussed much, in the context of the crisis, is that domestic savings might constrain the massive investment that is necessary, even with modest government savings, and therefore massive inward foreign investment would be necessary.

The present paper first assesses various ideas about getting growth started, and what might be hampering that. It does so by assessing the growth effects of OECD's prescription on "How to Get Growth Going" [OECD (2013a)]. The discussion draws extensively from the case of the *Finnish Great Depression*, an episode in Finland's recent economic history [Gorodnichenko *et al.* (2012)]. That episode is, all things considered, quite similar to the Greek crisis, which could well justify the term *Greek Great Depression*. It was precipitated by the shock of the collapse of the Soviet Union, Finland's greatest trading partner at the time, but was also accompanied by a banking and credit crisis [Honkapohja *et al.* (2009)]. It was followed by an admirable period of economic growth, which I argue is a rich source of lessons for the Greek crisis. In particular, I also discuss the role of the Finnish educational system for the successful Finnish model and contrast it with critically growth-hampering features of the Greek educational system. I also examine the significance and magnitude

[7]See Dustmann and Frattini (2013) who argue that, contrary to popular belief, immigrants who have arrived in the UK since 2000 have contributed far more in taxes than they have received in benefits. Compared with natives of the same age, gender, and education level, recent immigrants are 21% less likely to receive benefits.

of the contribution of market deregulation to productivity growth. This is particularly important, because market deregulation and structural reforms is a standard prescription for countries that are, like Greece, under IMF-inspired stabilization programs. Finally, the paper turns to the international competitiveness of the Greek economy. In the immediate aftermath of fiscal stabilization, the problem of the Greek trade deficit, which some consider as the principal cause of the crisis[8], remains acute. The Greek economy wishes to buy more goods from the rest of the world than the rest of the world wishes to buy from Greece. The considerable improvement in unit labor costs that has taken place has not been followed by a commensurate improvement in the trade deficit. I emphasize that recapturing and realizing gains in foreign markets is in part a problem that Greece shares with other "peripheral" EU countries, and to a degree not sufficiently appreciated and widely discussed. Indeed, research by Chen *et al.* (2012), which is discussed in more detail below, shows that the chief source of real exchange rate appreciation is nominal exchange rate appreciation rather than domestic costs (measured via either unit labor costs or the consumer price index). This in turn suggests that in order for Greece to improve its advantage in international markets it needs to accelerate its effort at productivity improvements and just as much at product market reforms. Finally, I use some findings by little known research on knowledge content of output [Haussmann *et al.* (2013)] to argue that although Greek exports are currently not very knowledge-intensive, relative to its per capita income, such comparisons also contain some good news. Greece ranks second only to India in terms of how easy it would be to move to exporting more complex goods. I conclude with some thoughts regarding the relevance of economic policy for overcoming a society's serious problems in the context of the public's understandable demand for immediate effects and the need for versatility and inventiveness for maintaining long run growth.

[8]See Galenianos (2014).

2 Growth Effects of OECD's "Going for Growth" Prescriptions

Some of the discussion in the press associated with the several recent rounds of negotiations with the Troika have featured OECD's prescriptions for "How to Get Growth Going", which are discussed at length in OECD (2013). As of October 2013, the official Troika projections for Greek GDP had a real contraction of 14.2% through the end of 2013, with growth resuming at 0.6% in 2014. Instead, the outcome was much more dramatic, with cumulative contraction of 22.2%. According to the IMF's own projections [Debt Sustainability Analysis IMF (2013)], Greece will not be able to return to its real income of 2008 until after 2030![9]

The contraction is not only reflecting the mass suffering of the Greek population, but accentuates the perceived un-sustainability of the public debt. If, for example, GDP were 25% higher, then the debt to GDP ratio of 175% would go down to 140%. Against this dramatic background, it behooves us to think seriously about the growth prospects of the Greek economy, as they have developed since the stabilization program has been adopted and with associated reform processes not necessarily having taken hold.

The Greek economy has been characterized by dramatic variations in its growth performance. Growth sustainability is quantitatively very important in the long run. According to the Maddison data base (2013), at a rate of 1.43%, Indian GDP per person has grown by 6.1 times from 1884, 27 years after India became a crown colony, till 2010. At a rate of 1.72%, US GDP per person has grown by 12.9 times since 1865, the end of the US Civil War. Greek real GDP per capita has grown during 1864 to 2009 from 1243 to 15,244 in terms of 1990 constant international dollars, in other words, at 12.3 times since the accession of King George I to the Greek throne. This translates to 1.69% per year, considerably better than India's but just short of that of the US. Over 1950–2009, the growth rate of Greek GDP per capita has been, at 3.24% per year, remarkably high, allowing living standards to rise by 6.97 times. Thus, small differences result to huge changes over long periods of time.

[9]The sum of growth rates of real GDP, 2014–2030 is: 20.6%, with a cumulative increase of 122.6%. Table AI.1, p. 65, IMF (2013)

Greece needs to sustain steady growth performance to recover the ground lost. How can that be attained? Can the OECD prescriptions, that have been virtually incorporated into the Troika's requirements, do the trick?

So, here I want to have a real hard look of the growth outcomes that are likely to be associated with the faithful adoption of these reforms. I also want to compare with other growth performers in Europe, in addition to the natural ones, namely other eurozone countries that have gone through support programs. When Greece entered the EEC in 1981, Ireland's GDP per capita was virtually the same as that of Greece, 8716 against 8896 in terms of 1990 international dollars, with Finland considerably richer at 13,134, by 47.6%. By 2009, Ireland has grown richer than Greece by 51.9%, and Finland even slightly more so. Greece was richer than Finland in 1865, by 30.7%, and continued to be so by 4.4% at the end of WW I, right after Finland gained its independence from Russia. Such long-run comparisons are tricky, but the implied numbers are suggestive, as we look at the growth prospects of Greece after the expiration of the latest memorandum of understanding.

Between 2010 and 2012, annual real income contraction in Greece has been almost 3 percentage points below the OECD and Troika forecasts on average, while nominal GDP contraction was 3.5 percentage points lower (Table 1.2). Output also declined more than in other countries under stabilization programs. In early 2013, GDP was one quarter below its early 2008 level in sharp contrast to the 10% or less in the other countries (Figure 1.2). At purchasing power parity, Greek GDP per capita in 2012 had fallen almost to its level in 2002. This decline is even greater when measured against the European Union average: between 2009 and 2012, Greek income per capita fell from 96% to 75% of the average, below its level in 1995. Much of the gain made since Greece's eurozone accession has been lost. (Figure 1.2)

According to the OECD 2013 Survey, p. 53, the adjustment program has so far failed to restore price competitiveness, growth and public debt sustainability. Furthermore, "The fiscal contraction has deepened the depression. Economic recovery has been held back by the inability of the banking sector to supply credit and by persistent uncertainties related to the large public debt. Given the time it takes for structural reforms to bear fruit, robust

and sustainable growth would be underpinned by faster product market reforms to accelerate price adjustment and foster the reallocation of resources towards more productive and export sectors. Moreover, a more efficient and modernized civil service is essential to improve the quality of and trust in public services, increase willingness to pay taxes, and to strengthen the rule of law, competitiveness, and foreign investment." While the consequences of some of these gaps are harder to quantify, other ones are less so. But, it is worth trying. I start by a discussion of the obstacles that have held back growth and are attributable to the stabilization program.

To start with, a much smaller fiscal multiplier has been assumed for Greece in the design of the program than might have been at work, 0.5 instead of numbers above 1, that are are assumed to be relevant now, especially during recessions and in particular during times of financial crisis.[10] Greece is much more of a closed economy than Portugal and Ireland,

[10]Bi *et al.* (2013) recognize that the original projections for the GDP path in Greece under the stabilization program while off the mark by a lot would not have been very different if substantially different multipliers had been assumed. The latest projected output path had a trough 20% below the original projection. Instead, they say that the error was in the forecast of potential GDP, which resulted in anticipating a very modest contraction of about 7%. See p. 26. As they put it, " However, moving to a higher multiplier assumption would have done little to improve the accuracy of the GDP projections. Instead, by far the more significant factor was the dramatic revision to potential growth, both to its original level and its projected growth. This reflected a number of developments, including large data revisions following the start of the program, weaker than anticipated program implementation and payoffs from reform, political and social dislocation, and other factors contributing to a far weaker underlying economic performance than hoped for in the original program." It is of academic significance what caused the forecast to be so off the mark. Arguably, it is more important to examine errors in policy design. See Zonzilos (2012; 2014) who argues that the extraordinary increase in unemployment is due to the fact that in the Greek economy with its many frictions, with excess supply of labor and of output, decrease in aggregate demand that is brought about by wage decreases translates into contraction of aggregate and thus employment. As early as January 2012, he emphasized that wage decreases did not improve competitive, as expressed in prices, although they did, when expressed in unit labor costs. Wage reductions were reflected in greater increases in profit margins rather than reductions in prices. The high elasticity of aggregate supply caused the decrease in aggregate demand to be reflected in output and employment declines. The fiscal and external adjustments were due to the contractions of aggregate output rather than improvement in external competitiveness. He advocated targeting first and foremost product market reforms which along with labor market reforms would improve

which readily leads to smaller leakages and thus to larger effective multipliers. Large Greek government arrears to the private sector, at 4.5% of GDP at the end of 2012, has accentuated the liquidity problem and increased the multiplier. The fiscal adjustment was much more rapid for Greece, at 14% between 2009–2012 of GDP amounted to more than 50% of the magnitude originally planned in the first program. The fiscal drag will continue to be an issue, as Greece faces the need of repayment of its loans, even at the vastly improved terms following the restructuring phases of 2012 and 2013.

Financial conditions have hit Greek banks hard. The loss of deposits, the erosion of the capital base due to the PSI, and Greek banks' being excluded from the capital markets has forced them to rely on ECB's ELA at 2% above the Eurosystem's funding rate, which raised their funding costs by more than 2 billion euro per annum. Their non-performing loans, including restructured loans, increased 5% in 2008, to 23% in 2012, with loan write-offs staying at about 0.5% per annum. The share of Greek non-performing loans were more than twice those of Portugal, nearly twice that of Italy and six percentage points higher than Ireland, where the crisis was a banking crisis par excellence. Following the Great Recession, the Financial Conditions Index [Fig. 1.7] decreased from being more favorable in Greece than the other euro zone countries that entered programs, and Germany and Spain, became most unfavorable by the end of 2011. Greek enterprises were being rejected for loans at 31% [October 2012–March 2013], a much higher rate than Ireland (17%) and Portugal (9%), well above the EZ average of 11%. We know from Reinhart and Rogoff (2009) that recovery is much slower following a downturn that is also associated with a a credit crisis, which is of course the case of Greece. Thus, the performance of the Greek banking sector should not be surprising.

Weak export performance has been an important break on growth. Since 2008, Greek export market shares have shrunk, with exports of services driving the adverse performance, due to tourism and maritime services contraction. However, both factors may be changing, and we should expect improvements: tourism, because of the change in the domestic political climate which makes the country look more attractive trough the international media, and

the structural competitiveness of the Greek economy.

the takeoff of global shipping as the global economy is picking up.

The impressive decline in unit labor costs, in effect reversing over 2009–2012 the increase during 2000–2009, has not been fully reflected in improvement in competitiveness, due to product market non-competitiveness, which prevents labor cost improvements from being translated to exports competitiveness [OECD (2013), 67–69]. A study by the National Bank of Greece [NBG (2012)] estimates that prices will decline by 5.2% between Q3:12 and the end of 2014. Given a cumulative estimated increase in consumer prices in the eurozone of 4.5%, Greece should return to relative price competitiveness of 2002. As Figure 1.13 in OECD (2013), p. 69, indicates, tax increases have been a factor in the slow improvement in competitiveness. The domestic HICP-based price level in Greece increased by almost 11% in the 3.5 years to June 2012 (about 7.7% excluding energy and seasonal food components) together with the average nominal wage declined by almost 20% over the same period [NBG (2012)] imply a dramatic nearly one-third decline in the real wage, which is reflected in an equally dramatic increase in profits. However, NBG (2012) also finds that prices adjust to wages in Greece with a 5-quarter lag, implying that further declines in prices are on the way.

Unfortunately, the decline in the real wage itself is one of the factors contributing to the contraction. This would have been lessened if not completely avoided, had product market reforms received immediate priority in the design of the stabilization program. This point has been made forcefully by Zonzilos (2012; 2014). This has also meant that relative export prices (relative to labor costs) increased over 2000-2009 more than three times those for Ireland and Portugal, and the profitability of exports continued to increase steadily even after the onset of the crisis, while those for Ireland and Portugal remain stagnant.

Slow foreign direct investment is, In part, at fault here: foreign direct investment into Greece, as a share of GDP, has gone down to 9.95% in 2012, from 13.12% in 2009. In contrast, for Ireland it has gone up, to 161.62% from 111.64%, and so has for Portugal, to 55.2% from 49.01% [OECD (2013), Fig. 1.9]. Greece is a laggard in the EU in investment in knowledge-based capital, as of 2009 or latest available data: with 2.19% share of GDP of investment, as against Great Britain (the EU leader), with 9.64%, which is close to the US, with 11.00% [OECD (2013), Fig. 1.10].

As of 2005, the most productive firms in the Greek manufacturing sector did not account for the greatest share of sectoral employment, in contrast to the average for the OECD. With Sweden and Finland as leaders in the EU, Greece does worse than all other countries in the EU except Poland, according to this measure of allocative efficiency. The figure for the US suggests that efficient allocation boosts manufacturing productivity by 50%.

However, there is some anecdotal evidence of emergence and growth of new firms in the innovative niche agricultural goods, pharmaceuticals and ITC, all firms that may have suffered from adverse financing conditions. Although product market reforms are essential, so are flexible labor markets in reallocating labor to "higher-end" exports, in order to counter competition from lower cost countries. I return to this further below, when I discuss the dramatic change in market shares of peripheral EU countries.

Greek export competitiveness is suffering when one compares in terms of the real exchange rate based on unit labor costs versus the consumer price index. Whereas labor costs have fallen, prices have not full adjusted, in part because of non-competitive structures persisting and in part because the fixed costs of small and medium size enterprises, which dominate Greek manufacturing, have not fallen as much as labor costs have fallen. Total inflation has reversed in favor of mild deflation since late 2012, which is more pronounced for services and especially tourism services (especially relative to Greece's competitors).

Total real investment has steadily declined by 58% cumulatively since the first quarter of 2008 [OECD (2013), Fig. 1.17]. So have expectations about the economic situation. Many factors have contributed to that development, including uncertainties about implementation and results of reforms, perception of unsustainability of the public debt burden and slow appreciation of the expected benefits of reform.[11] Interestingly, real investment declined

[11]However, a quantitative analysis by Schneider and Giorno (2013) suggest that only a small part, 2.5%, which is just a 10% of the decline of GDP since 2010, can be explained by these factors, and only half of that by Greek-specific factors. These authors claim that the effect of contagion from global uncertainties has been weaker in Greece and Portugal than in Ireland. The effect of the economic cycle on uncertainty has played a more important role in Greece than in the other countries. The country-specific factors that have increased uncertainty have been more prominent in Greece than in Ireland and Portugal since 2009. On average, these country-specific shocks have been the main source of rising uncertainty in Greece over

in Finland from 1990, the onset of the Finnish Great Depression, to its trough by 55% [Gorodnichenko *et al.* (2012), Fig. 1, A, p. 1620; Honkapohja *et al.* (2009), Fig. 2.3].

How about the role of expectations? The assessment made by Schneider and Giorno (2013) is in great contrast to Eggertsson (2008). In studying the end of the Great Depression in the US, Eggertsson estimates that a large shift in expectations originated in the elimination by Roosevelt of several policy dogmas that Hoover had subscribed to.[12] were responsible for 70–80% for the recovery in output and prices from 1933 (the depth of the Depression) to 1937. According to Eggertsson, Roosevelt became credible when he initiated policy regime changes. "In the absence of the regime change, however, the economy would have continued its free fall in 1933, and output would have been 30 percent lower in 1937 than in 1933, instead of increasing 39 percent in this period" [Eggertsson (2008), p. 1506].

The design of the fiscal adjustment was unfavorable to growth, aiming as it was in immediate increase in tax revenue instead of rationalization and modernization of the tax code and administration. The most important factor was the cutback on public investment, which was de facto used by the government to make up for tax receipts and to meet deficit targets. Improved efficiency of the public sector would have been pro-growth, as would improved efficiency in the provision of public services.

Except for Zonzilos (2012), the investment impacts of privatizations has not been assessed. In principle, privatizations that are as massive as originally envisioned by the stabilization program [Ioannides (2013)] may act as a Big Push. In order to be fully utilized, they require investments by the owners of privatized assets and induce hopefully complementary private and public investments. Since many of the privatized assets are in the form of real estate, complementary public investments in the form of infrastructure are likely to yield wider effects, though not on manufacturing productivity, the form of spillover effects that

the last three years, together with abrupt disruptions of the climate of confidence between mid-2009 and mid-2010, at the end of 2011 and in mid-2012. It is possible to identify the causes. They coincided with the discovery of irregularities in the Greek public accounts, the negotiation of the first and second economic adjustment programs, and the dual general elections, May and June 2012, that led to the formation of a coalition government.

[12]They were the gold standard, a balanced budget, and "small government."

Kline and Moretti (2013) found to endure.

3 A Comparison with Finland

During 1991–93, Finland experienced the deepest economic contraction in an industrialized country since the 1930s as of that time. As illustrated in Gorodnichenko *et al.* (2012), Panel A of Figure 1, between 1990 and 1993 real GDP declined by 11 percent (14%, according to Honkapohja *et al.* p.), real consumption declined by 10 percent and investment fell to 55 percent of its 1990 level. The declines are even more dramatic when measured as deviations from trend. Associated with the crisis, unemployment quadrupled, from 3.5% to a peak of 16.5%, and the stock market lost 60% of its value. After 1994, rapid economic growth set in, at 3.3% per annum, until the global slowdown in 2001. However, the decrease in unemployment has been slow, and reached only 7.5% by 2012. This is blamed on the lack of labor market reforms, following the recovery from the Finnish Great Depression. In addition to the collapse of Finland's trade with the Soviet Union, caused by the Soviet Union's own collapse — "From Russia with Love" — Honkapohja *et al.* also blame a banking crisis along with the depression for the severity of the contraction.

A remarkable feature of the crisis is that Finland, starting from an industrial base that it had built up after World War II, emerged as an affluent high-tech economy. During 1990–2000, Finnish high-tech exports rose from 7–8% of its total exports to 30%. The successful recovery is credited to better economic policy, success in riding the information technology revolution and the successful internationalization of the Finnish economy.

Some of the problems facing Finland at that time are very similar to those facing Greece now (but arguably, at a different degree): structural unemployment, aging population, pressure from globalization for location of production, labor market dysfunctionalities and public finances. The combination of the real shock from the collapse of the trade with the Soviet Union with the financial shock from the banking crisis amount to circumstances somewhat similar to those facing Greece, especially in their severity and suddenness. Thus, the total shock in Finland is comparable to that in Greece, but Greece had limited tools. Finland

suffered export decline and after-effects of financial crisis, but it had control over its own currency. The collapse of the close economic relationship with and dependence on the Soviet Union were both a curse and a blessing, but at the same time, it must have ushered in uncertainty.

How will labor market reforms favor investment? By making it easier for investment to go to where it is most productive. See OECD study chart. Compare with Finland book and papers. Finnish crisis, massive shock, combining real effect (Soviet Union collapse) with financial effect. Crisis genuine and deep. Is it comparable to Greek crisis internally? Psychologically, socially? The end of dependence on the Soviet Union must have been a relief,

Interesting lessons from the Finnish crisis that apply to Greece is the likely restructuring of employment. The bad news is many jobs have been destroyed. The good news could be if we could turn them into creative destruction. See discussion by Honkapohja et al. What we can learn from Finland? P. 68–: firm productivity, when firms were able to reorganize production.

Total employment in Finland declined by 18%, during its Great Depression, which is less than that for Greece. Most losses were in construction, 50%, followed by 25% decreases manufacturing, retail trade, hotels and restaurants and financial services. When jobs returned after 1994, the largest increase were in services. Fig. 4.9, *ibid.,* p. 67, make it clear that when jobs returned, they were not evenly spread across industries; instead they were more specialized. Such natural restructuring is to be expected when jobs do return in Greece, too. It would, of course, be important to forecast where the new jobs would go and to think of policies which could influence investments so as to maximize growth prospects.

Another notable aspect of the Finnish recovery is that most of the growth in labor productivity was in the form of TFP growth, which allowed for productivity to grow while the capital intensity declined. Also particularly notable is the ensuing internationalization of the Finnish economy. Inward and outward foreign investment, mainly by engineering and metal industries, increased massively during 1990–2005, by 1100% and 700% in nominal terms. Along with those changes, employment with foreign affiliates of Finnish firms, as a

share of total employment in Finnish manufacturing, nearly doubled 18% to 35%. In this connection, one wonders whether the expansion of Greek firms in other EU countries in Greece's immediate vicinity would be repeated, and this would likely have an impact on domestic employment. Another relevant consideration here is whether merger policy should be encouraged, so that following the Depression the industry could be made up of larger, healthier firms.

The Finnish recovery of the mid 1990s was associated with the emergence of Nokia. However, several analysts emphasize that the successful recovery was not only due to Nokia. As Honkapohja *et al.* emphasize, [*ibid.,* T 6.2, p. 93], of the output growth of 4.1% of Finland, 1995–2004, 0.9% from the ICT industries. Finland's investment in ICT as a share of gross fixed capital formation rose 3.9% in 1980 to 17.5% in 2000, from some of the lowest to the fifth largest in the EU, but short of the US, 15.5% in 1980 to 29.6%. The share of the ICT industry in the value added of the market sector in Finland rose from 4.7% in 1990 to 10.6% in 2003, which made it in per-capita ICT trade surplus, surpassing Sweden and with Ireland a distant third. Finland spent in 2004 about the same share of its GDP on ICT goods and services, 7%, as Sweden with 8.7%, with the EU at 6.5% and the US at 7.8%.

Nokia is a tremendous success for Finland, but not the only factor in Finland's successful recovery. Nokia has spent a lot on R&D domestically and internationally, has a large network of suppliers, has cooperated closely with universities in engineering and technology). Still, the linkages to other firms in the economy is not a strong as one might expect[13] Such a big firm relative to the domestic part of a small open economy must relay on imported factors of production and must export most of their output. Nokia grew to become the number one firm in its industry in terms of market share globally, surpassing Ericsson and dwarfing Motorola. At its peak, it employed 2% of private sector employees, accounted for 2.8% of Finnish GDP, paid about 2% of all government revenue, and contributed more than 1.6 percentage points to Finnish annual growth. So, how did such a tiny country succeed in growing such an impressive firm?

Nokia originated in a very old firm, established in 1865; its current form originated

[13]See Daveri and Silva (2004), who use input-output methods to examine the linkages.

in a series of merger of firms producing industrial metal and rubber products. It currently employs around 90,000 people across 120 countries, conducts sales in more than 150 countries and reported annual revenues of around Euro 12.7 billion. Its 2013 revenue was about Euro 13 billion and its assets about Euro 27 billion. Its success can be attributed to several factors. First and foremost, is a favorable policy environment, indeed not only in Finland, but throughout the Nordic countries. The adoption of a common mobile telephony standard in the Nordic countries increased the market, even though Nokia's huge success came with the adopting of GSM as an international standard. Second, the Finnish higher education system put heavy emphasis on engineering. Third, the government's substantial subsidy to Nokia's R&D spending, at 10% in 1991, although it has reduced since then, to 0.4% by 2004. Fourth, one must credit business acumen and Nokia's flexible non-hierarchical management style, that allowed it to produce flexible products for a massive, ever-growing international market. Fifth, Nokia has a large network of suppliers and subcontractors, and its R&D spending has contributed to the rise of other ICT firms. Daveri and Silva (2004) find, however, that the domestic linkages were relatively small in quantitative terms. This is of course consistent with the fact that such a large firm operating in a small open economy depends on an international network of suppliers, and exports most of its output.

Nokia recently sold its mobile manufacturing division to Microsoft, after having suffered losses during the last few years. Like IBM once upon a time, the decline of what was once the world's largest mobile telephone manufacturer is natural in the global business world. But it has left behind a vibrant company in the ICT area, along with a tradition of expertise and an abundance of pride associated with global success. Within a culture that aims at capturing business opportunities and a smart and highly educated labor force this model will sooner or later give birth to other successful companies, in other industries. Relatedly, Finland has also invested in biotechnology, and it is possible that that would be its next growth area. Investment in R&D, a highly skilled labor force and a business model aiming at a massive global market are the key lessons from this experience.

3.1 The Role of the Educational System

Underlying the successful Finnish model is a very successful educational system. Finland spends on education a share of its GDP which about the average in the OECD. Aside for the fact that it has traditionally emphasized engineering and technology, there are many other features why it is regarded as a model worldwide, especially given the fact that the resources allocated to it do not exceed the OECD average [Honkapohja et al. (2009), Ch. 5].[14] Instead of touting its success in terms of PISA, IALS and TIMSS scores,[15] it is more intuitive to think of the impact of improving education and cognitive skills on economic growth. A simple regression analysis by Hanushek and Woesmann (2012), who use OECD data on average annual growth rates of GDP per capita for 1960–2000, starting GDP per capita in 1960, a PISA-based composite measure of cognitive skills, and years of schooling, shows that cognitive skills to be extremely important: an one-half standard deviation improvement in mathematics and science performance (50 points on the PISA scale) would by historical experience yield an increase of annual growth rates of income per capita by 0.93 percentage points. This is where Finland stood during the study period related to the OECD average.

Simulations by these researchers show that once "higher achieving students start becoming more significant in the labor market, an one-fourth standard deviation improvement in cognitive skills will cause GDP to increase by more than 3% higher than what would be expected without improvements in human capital by 2041. The impact rises to a 5.9% improvement in 2050 and 15.3% in 2070. By the end of expected life in 2090 for the person born in 2010, GDP per capita would be expected to be about 26% above what it would have been without any change. Such dynamic improvements in the economy yield on-going gains to society, and the appropriate summary of the impact of educational improvements accumulates the value of these annual gains. After the educational improvement has taken hold in the labor force (by 2070), annual growth will be 0.47 percentage points higher. For

[14] "We don't have oil or other riches. Knowledge is the thing Finnish people have," says Hannele Frantsi, a school principal; quoted in Gamerman (2008).

[15] These abbreviations stand, respectively, for Program of International Student Assessment, International Adult Literacy Survey (both of which are administered by the OECD), and Trends in International Mathematics and Science Study.

the average country, the cumulative impact on the economy through 2090 would be equal to 288% of current year GDP. According to Honkapohja *et al.,* the improvement in the quality of the Finnish labor force has had a significant impact on productivity growth. These authors estimate its contribution to the average TFP growth as much as 0.5 percentage point.

4 Thoughts on the Greek Educational System

A skilled labor force, equipped with general and specific skills, is a *sine qua non* of economic growth. After many setbacks, administrative reforms at the Greek higher education level seem to be taking hold slowly. But it should not be forgotten reform is needed throughout the Greek educational system. For example, extensive vocational training has been singled out as a factor in the improved unemployment performance of OECD countries with rich vocational education and training programs. An editorial in OECD (2013) *Education at a Glance* promotes the concept as an important factor in fighting the rise, in particular, of youth unemployment.[16]

From the OECD (2013) Education at a Glance, we have that Greece is below the OECD average both in the percentage of 25-64 year-olds and of 25-34 year-olds who attained tertiary education, 21.1% versus 32.5% [OECD, ibid., Chart A1.1]. Those with below upper secondary education, and especially the younger ones among them, suffered much greater proportional increase in unemployment.

[16] "Countries with relatively high numbers of 25-34 year-old graduates from vocationally oriented programs succeeded in reducing the risk of unemployment among young people with upper secondary education as their highest level of attainment. Countries that have a higher-than-average (32%) proportion of graduates from vocational programmes, such as Austria, the Czech Republic, Germany and Luxembourg, were all able to keep the increases in unemployment rates among this age group to below 8 percentage points. Conversely, countries such as Greece, Ireland and Spain, where less than 25% of young adults graduate from vocational upper secondary education, saw increases in unemployment rates of 12 percentage points or more among 25-34 year-olds with only secondary education. For young people who do not continue into tertiary education, vocational education clearly offers better prospects for their employability than general, more academically oriented upper secondary education." This is particularly important at times when firms have fewer resources to devote to employee training.

In redesigning the Greek educational system there is one important observation from international comparisons that cries out for attention. That is, Greece stands out as almost an outlier with respect to students not working in groups while teachers mainly lecture [Algan *et al.* (2013), Fig. 1], to students not working in groups and mainly taking notes from the board [Algan *et al.* (2013), Fig. 2], and to gap between vertical and horizontal teaching being highest with generalized trust being lowest. Generalized trust in a society is strongly correlated with such attributes. Examining the consequences of values inculcated at home shows that a distrust index is negatively correlated with the importance parents assign to children's being taught "tolerance and respect," Aghion, Algan, Cahuc and Shleifer (2010) Fig. 28, show that Greece is an outlier, lowest on tolerance and respect, and highest in distrust.

While we cannot reconfigure Greeks to be more like Finns or Germans, and perhaps we do not want to, the international macroeconomic evidence points to trust as a very important factor is stimulating economic growth. This is complemented by micro evidence, with Nokia being a case in point, but also by industrial evidence. For example, the computer industry was vibrant around Boston, but rather hierarchical. It lost out to Silicon Valley, and one of the factors credited for it is, perhaps in addition to the weather, the informality of the Silicon Valley setting. Scientists working for different firms, while sharing a parking lot, had very cooperative attitudes towards one another.[17] Dustmann *et al.* (2014) credit trust in the setting of wage and other aspects of employment and attribute to Germany's labor market institutions, already in place in the early 1990s, for its extraordinary improvement in competitiveness. They argue that the Hartz reforms, which came much too late to have had an impact. The specific feature that they stress is that the governance structure of the German system of industrial relations is not so much rooted in legislation and is not governed by the political process. Instead it is laid out in contracts and mutual agreements between the three main labor market parties: trade unions, employer associations, and works councils (according to the *Mitbestimmung* system). Germany found itself exceptionally well

[17]When they would run out of materials in the middle of the night they would borrow from their colleagues in other firms. Such anecdotal evidence may be found in Saxenian (1994).

prepared to react to the challenges of the early 1990s and to extend its economic activities in several former communist eastern European countries.

5 Market Deregulation and Economic Growth

There are two important senses in which product market deregulation can affect growth and they are typically not clarified in public debates. One is abolishing monopolistic and monopsonistic structures and eliminating barriers to entry which restrict output and therefore total income. Enactment of and adherence to such deregulation can be associated with a stream of benefits to the economy, which presumably can be estimated.[18] A second sense, which is sometimes alluded to but rarely quantified is attributing to market deregulation TFP growth. Barkbu *et al.* (2012) do not distinguish TFP growth.

The first sense has served as a key objective of efforts to deregulation EU economies and break barriers to competition throughout the Union, which served as an important part of the Programme of 1992. The second sense is an important component of EU's *Agenda 2020*, which includes a *Digital Agenda for Europe.*

A few notable studies clarify and quantify this second sense, which is crucial for long-run growth. This is admittedly a hard problem to tackle. Nicoletti and Scarpetta (2003) use sectoral data for 18 OECD countries to show that reforms that promote private corporate governance and competition boost TFP growth. They also show how product market regulation and productivity growth are linked. In manufacturing, the productivity gains from liberalization are greater the further a given country is from the technology leader. This indicates that regulation that limits entry may hinder the adoption of existing technologies, possibly by reducing competitive pressures, technology spillovers, or the entry of new high-tech firms. These results offer an interpretation of poor EU (or Continental) performance relative to the US. Continued regulation and absence of reforms appear to underlie the weak

[18]See Zonzilos (2014) for such an estimation using the IMF's GIMF model [Anderson (2013). Varga et al. (2014) use a different model. Such work often has to rely on qualitative indicators, in which case comparability across countries is quite tricky.

productivity performance of some European countries, especially in those industries where Europe had accumulated a technology gap, as of the time of the study, that is, industries producing or using information and communication technologies.

Nicoletti and Scarpetta (2003) show that the lower entry barriers and state control the faster the process of catch-up to best-practice technologies in manufacturing industries. This in turn implies that countries that are laggards in both technology adoption and reform are likely to reap the largest productivity gains when they implement reforms and liberalize markets that are potentially competitive. They also find evidence that lowering entry barriers involves productivity gains in all countries, regardless of their position with respect to the technology frontier.

They find that changing governance structures, as by privatization, bring along improved competitive pressures and entrepreneurial incentives, especially if competition is promoted in the markets where privatized industries operate, such as energy, telecommunication and transport companies in Europe. In particular, they argue that a gradual (over ten years) move to the OECD-wide average share of state-owned firms in total value added is estimated to boost annual TFP productivity growth by about 0.7 percentage points in Greece and in other European countries, such as Finland, Austria, France and Italy that still have a large stake of business activities in public hands. Such an acceleration in productivity growth could last as long as the privatization process continues and the economy has not yet reached the new steady-state productivity growth path.

The productivity gains to be obtained through reduction of the public role in the economy are bounded, naturally, by the size of the public enterprise sector. Perhaps more importantly, Nicoletti and Scarpetta found that entry liberalization aimed at moving the level of barriers to entry in some European countries towards the OECD average over a ten-year time horizon might have a two-fold effect. First, entry liberalization in service industries is estimated to boost annual TFP growth in the overall business sector by about 0.1–0.2 percentage points in countries like Portugal, Greece and Italy. Second, there is also an indirect additional effect of the removal of trade and administrative barriers to entry in excess the average OECD country in such countries as Germany, France, Italy and Greece. This effect depends on the particular

technology gap that countries have accumulated in some heavily regulated manufacturing industries and are estimated to boost manufacturing-wide annual productivity growth by 0.1–0.2.

Kent and Simon (2007), in an unpublished study, examine in addition to the effects of deregulation of product also the effects of labor markets deregulation. Against the background of some OECD countries showing, over 1975–2003, impressive TFP growth performance and others the opposite changes in TFP growth are positively correlated with ICT spending as a share of GDP, that that share is negatively correlated with the level of product market regulation, and changes in TFP growth are positively correlated with the change in product market regulations over 1983–1993. For example, the improvement in deregulation of Norway over that of Germany is associated with 0.3 percentage points in TFP. They also find that labor and product market deregulation have more of an effect in combination, although the significance and magnitude of these effects depends on the measure of labor market regulation used in the regressions. They do experiment with several measures of labor market flexibility (such as days lost to disputes, EPL, and union density). Given the different measures used, it would be difficult to translate accurately to actual improvements in TFP.[19]

The macroeconomic effects of labor market deregulation have been studied in the context of the several waves of Hartz reforms[20] in Germany. As Krebs and Scheffel (2013) argue, the reforms Hartz I–III and Hartz IV, can be credited for improving the flexibility of German labor markets by reducing the frictional unemployment in Germany by 1.5% and 1.4% re-

[19] Storm and Naastepad (2009 derive cotradictory results for labor productivity, but as they acknowledge, they work with average labor productivity growth not TFP growth.

[20] "In response to the dismal labour market performance, in 2003-2005 the German government implemented a number of wide-ranging labour market reforms, the so-called Hartz reforms. The first three parts of the reform package, Hartz I–III, were mainly concerned with creating new types of employment opportunities (Hartz I), introducing additional wage subsidies (Hartz II), and restructuring the Federal Employment Agency (Hartz III). The final part, Hartz IV, was implemented in 2005 and resulted in a significant cut in the unemployment benefits for the long-term unemployed. Overall, the Hartz reforms constitute one of the most ambitious attempts in recent history of restructuring the labour market of an advanced economy." Krebs and Scheffel (2013a).

spectively, for a total reduction of 3.1%, for improving the welfare of the employed workers, and blamed for worsening that for unemployed workers. The latter depends, of course, on assumptions made about welfare support to the unemployed. But the German public has been very critical of the reforms. Not surprisingly, they are blamed for reducing the real wage between 2003 and 2008 by 4%. See Krebs and Scheffel (2013b) for details.

Dustmann *et al.* (2014) argue that the major impact to improved competitiveness of the German economy originated not in the Hartz reforms, which were implemented starting in 2003, hence nearly a decade after the process of wage decentralization and the improvement in competitiveness had begun in Germany. In their view, it was the specific governance structure of the German system of industrial relations — activated under extreme duress during the reunification process— is what paved the way for the remarkable decentralization of wage determination from the industry level to the level of the single firm or single worker, while keeping workers' representatives involved to secure that employees benefit again when economic conditions improve. That along with a significant increase in productivity ultimately improved Germany's competitiveness.

Ironically, the *Economist* has chided Germany, and Chancellor Merkel in particular, for lapses in the reform process. "When it comes to fiscal prudence, Mrs Merkel is a paragon. Indeed, this newspaper wishes she were a little less austere, and spent more to boost Europes demand. But on structural reform, her record is weak. The credit for Germanys rebound should really go to the"Agenda 2010" reforms started by her predecessor, Gerhard Schröder, in 2003. Since then Mrs Merkel has had the odd flourish-she bravely raised the normal retirement age to 67 in her first term — but overall Germany comes a lowly 28th out of 34 countries ranked by the OECD in terms of reforms since the financial crisis hit."[21]

A more recent study by Dawson and Seater (2013) also finds substantial effect of US federal regulations on US TFP growth, but it uses an expanded set of regulations, those issued by the US federal government, which are similar in spirit an intent to regulations that the EU itself also regularly issues.

[21]http://www.economist.com/news/leaders/21601256-angela-merkel-preaches-pro-growth-reforms-her-neighbours-implements-anti-growth-ones. April 26, 2014.

Generally, the data[22] show that the share of income that goes to labor is lower in Greece than many other EU countries, although it is close to that of Spain. It has generally decreased slowly since 1990. Seeing it in relation to the degree of non-competitiveness in the product markets and the bargaining power of workers, greater product market non-competitiveness decreases the share that goes to labor, while an increase in the bargaining power of workers increases. As indicated earlier, the incompleteness of the reform process in Greece, with product market reforms lagging behind labor market reforms has resulted in an enormous decrease in the real wage.

6 The Competitiveness Problem of the EU Periphery

Ricardo Hausmann and his colleagues have calculated that Greek exports are not sufficiently complex relative to those of other countries.[23] The Greek economy does not mobilize enough knowledge, as expressed through the composition of the country's output which reflects the structures that emerge to hold and combine knowledge, relative to the rest of the world. Among 128 countries, the bad news is that Greece has the largest gap between its level of income and the knowledge content of its exports. This is an outcome that has taken hold over a long period of time. The good news is that the same set of calculations suggest that Greece ranks second only to India, an emerging giant in global manufacturing in terms of how easy it would be to move to exporting more complex goods. It would be appropriate to lure potential investors by means of infrastructure investment, labor training and research and development.

[22] Conference Board (2014)

[23] The calculations by Hausmann and Hidalgo (2013) explore economic development in relation to the extent in which people and firms specialize in different activities, suggesting that development is associated with an increase in the number of individual activities and their complexity. Complexity for a country's economy is defined by interpreting trade data flows as a bipartite network in which countries are connected to the products they export. Using graph-theoretic measures of such networks they show that a country's level of income and deviations from this relationship are predictive of future growth. So, the complexity of different countries' productive structures are related the level of income. This indicates that development efforts should focus on enriching countries' economic complexity.

Chen *et al.* (2013) challenge the conventional perspective on the origins of external imbalances of the net debtors in the eurozone (Greece, Ireland, Italy, Portugal and Spain). The mainstream view is that those countries have accumulated external liabilities due to loss of competitiveness following relative increases in their unit labor costs. Instead, Chen *et al.* points to factors that are external to those countries. First, there has been, among European economies, an asymmetric trade interaction with emerging Europe, fast-growing China and oil exporters. Germany has been been able to capture fast-growing markets for its exports, such as China, and to integrate its production chains with central and eastern Europe, a factor that was also decisive in its ability to expand production without incurring domestic wages increase.[24] Second is the argument that during 2000–2009, that real exchange rate appreciation in those eurozone periphery countries has been mainly driven by nominal exchange rate appreciation [*ibid.* Table 2]. This claim is substantiated in terms of both unit labor costs and the Consumer Price Index. In spite of the nature of the imbalances, the deficits were financed by capital inflows mainly from France and Germany rather than from outside the eurozone. France and Germany benefited from capital inflows, which helped them to indirectly finance eurozone periphery external account deficits.

There are several interesting policy implications of these findings. For one, a more accommodative ECB policy would "lift all boats" in the eurozone periphery. A second is that to the extent that the debtor countries are affected by the changing terms of trade in roughly the same manner, they could also benefit from eurozone-wide policies to further improve their competitiveness. That is, infrastructure investments and R&D spending aimed at improved competitiveness will benefit from spillover effects, while such spending will benefit from larger multipliers than there were typically assumed by the design of stabilization programs in the eurozone periphery.[25] This brings to mind the need for accelerated investments

[24]This point is also emphasized by Dustmann et al. (2014). The similarity of the educational forces, including the availability of vocationally-trained workers, was also an important factor. See *ibid.*, p. 182.

[25]Bi *et al.* (2013) seek to cast doubt on claims that very large multipliers have been operating in countries like Greece. For example, for different "plausible" potential output assumptions, multipliers significantly exceeding unity would imply a large positive contribution to growth from purely private-sector factors in Greece in 2010–11, which appears counterfactual. After working with alternative potential output paths are tested, all pointing to the same conclusion, they argue that GDP forecast errors for Greece were due more

in new technologies especially in conjunction with the Lisbon Agenda. Finally, policies being advocated with the European Commission itself would help reduce the upward pressure on the euro exchange rate and help easing access to global markets for exporters in the periphery.[26]

There are also counterarguments, due to Galenianos (2014) and a private communication, which suggest that the Chen *et al.* findings are a matter of degree, at best. The countries of the European Southern periphery suffered, to varying extents, negative export shocks, associated with the massive entry of cheaper competitors from Asia. Consequently, they would normally experience, in varying combinations, declines in exports, increases in the trade deficit (which would have to be financed externally), and losses of output. These predictions appear to be true to some extent for Portugal, although there were other causes of its "Great Depression" since 2000, and perhaps Italy. But Greece and Spain experienced borrowing financed economic booms and increasing exports. For Greece, in particular, exports increased at the fastest rate than almost any other Eurozone country in 1999-2007, but imports increased even faster, hugely outrunning exports. Current account balance, as a share of GDP, averaged nearly 9%, 8% and 6%, for Portugal, Greece and Spain, respectively, over 1999–2008. Since current account deficits and capital inflows some up to zero, capital inflows financed high growth and high trade deficits, which is generally accepted as an explanation. Still, for Greece, substitution among imports hurt the Greek manufacturing

to over-optimism on potential growth than to underestimating fiscal multipliers.

[26] "For while a rise in demand in Germany might not lead directly or immediately to a large rise in exports from southern Europe, the reforms the EU is advocating for Germany would facilitate a genuine and mutually beneficial rebalancing in the eurozone economy. Crucially, a rise in domestic demand in Germany should help to reduce upward pressure on the euro exchange rate, easing access to global markets for exporters in the periphery. To profit fully from this opportunity, there should be no easing of the drive to boost competitiveness through structural reforms... . Of course, Germany is not the only country whose policies have spillover effects on the rest of the eurozone. As the two largest eurozone economies, Germany and France together hold the key to a return to growth and employment in Europe. If Germany can take steps to lift domestic demand and investment, while France embraces reforms to its labour market, business environment and pension system to support competitiveness, they will together do a great service to the entire eurozone providing stronger growth, creating more jobs and reducing social tensions." See Rehn (2013).

base during the ten years or so between accession to the Eurozone and eruption of the crisis. The recent nominal depreciation of the euro might help Greece vis-a-vis its non European Union trading partners, but its competitiveness problem vis-a-its European Union trading partners is still an issue.

The good news is that Greece is economic neighbor of some of the world's most advanced countries, which we know is important for diffusion of innovations and technologies. While geographic distance is a handicap [Bahar, Hausmann, and Hidalgo (2013)], Greece's overall connectedness in an increasingly globalized age is holding up, relatively speaking, with its rank according to the MGI index having fallen only 2 steps during 1995–2012 [MGI, p. 7]. Greece's knowledge curiosity is also being high. E.g., Greece accounted for 1% of all `Coursera` downloads in 2013 [McKinsey Global Institute (2014), Exhibit 16].

The fact that the time of writing coincides with ECB's announcement of its "Expanded Asset Purchase Programme," [ECB (2015)] (commonly known as quantitative easing) prompts me to speculate that while principally aiming at offsetting deflationary pressures within the Eurozone it will also improve competitiveness Eurozone wide. That is, because of decrease in euro interest rates the resulting downwards pressure on the international demand for the euro will likely bring about its nominal depreciation. Furthermore, by reducing borrowing costs of Eurozone members it would help reduce the cost of fiscal policy in all Eurozone countries, with important EU wide effects. As the EU as an entity is not very open, fiscal multipliers suffer less leakage than normally thought, which is an argument that Paul Krugman has forcefully made in criticizing Eurozone austerity policies. This effect could arguably be sufficiently significant on Eurozone GDP so as to offset alleged adverse effects from the implied mutualization of risk. The ECB's Expanded Asset Purchase Programme is likely to be particularly beneficial for improving Greece's external competitiveness for two main reasons. One is that offsetting deflationary pressures throughout the Eurozone would suppress Greece's real exchange rate vis-a-vis its EU trading partners, especially while it remains under its stabilization program. A second is through reducing the borrowing costs of the Greek sovereign when it returns to the international markets.

7 Conclusions

Several members of my generation, as well as many younger economists, academics with affiliations in Greece and abroad, felt compelled to enter the public domain and participate in the debate about diagnosing the Greek crisis and proposing ways to deal with its onslaught. Greek media were not originally very welcoming, while the international media were hungry for people with something to say especially at the time when it looked like the end was in plain sight. Some Greek media, and notably *Kathimerini* and *Skai TV*, soon enough recognized there was a value to what several of us had to say. Several of us, typically individuals without prior presence in government and often little known by the broad public (though not for lack of scientific credentials) felt a strong urgency to talk, as we felt that the destructiveness of the crisis was robbing us of our childhoods and pride as ethnic Greeks. We have not always been correct in our predictions (although, sadly, we were on several occasions), nor in our prescriptions (although it was often recognized that there was quite one thing to propose something and quite another to see it working properly).

Some of us chose to emphasize the particular weaknesses of Greece at the onset of the crisis. Others engaged more with the difficulties posed by the design of the Eurozone itself, which also led to such unpopular prescriptions as exit from the Eurozone.

It is time that we take stock of this presence in the press. For me, a real worry is whether the Greek public, having become all too painfully familiar with the imprecision of economic policy formation and the extraordinarily important role of politics in it, will become too cynical regarding what economic science can contribute to Greece's current problems. Many policy prescriptions offered can be unpleasant, painful and not just unpalatable. There is certainly something to be said about the wisdom of Thomas Carlyle's famous dictum about economics as the "dismal science." Economic policy prescriptions lack the precision that allows doctors to treat patients, and is hampered by uncertainties of all kinds. There is no single parameter, a simple trick that would solve our economic problems. At the end of the day, the hard reality is that there is no magic, that patience along with trust are needed to guide us forward, provided that we are capable of reforming and coping with the future. After

all, the alternative is to accommodate to a lower level of welfare in the foreseeable future. Yet, even that is easier said than done; will such an accommodation be peaceful? And above all, structural reforms are not only a necessary condition for helping launching Greece into a long run growth path, they are an important requirement for Greece's participation in the Eurozone. As Draghi (2014) eloquently argues, slow-adjusting countries within the Eurozone are likely to suffer higher unemployment, which can more likely become entrenched and structural.[27]

Greece shows up as a laggard in unsettlingly many comparisons. But the fundamentals are there for a full recovery and accelerated growth, if only we let free the forces that produce and sustain economic growth. These forces are human capital and good institutions.

Let me give an example about the city where I live, Boston. It is now wealthy and prosperous. It was not always like that in its four hundred year history. It reinvented itself three times during the last two hundred years, most recently starting in 1980. During much of the 1900s, its population fell by 26%, from 758,000 in 1920 to 563,000 in 1980, as it was losing out from competition with other US metropolitan areas. Loss of population implies decline of property values, which in turn undermine the tax base of local governments. As Glaeser (2005) states, Boston real estate values in 1980 implied that three fourths of its homes were worth less than the bricks and mortar cost of construction. The city was riddled by crime and its center was ruled by gangs. My university's medical school, which is located downtown Boston, had acquired unique expertise in murders from knife wounds. But more generally, Massachusetts (the state whose capital is Boston) had lost its industries to other

[27] "If some countries in monetary union perpetually adjust more slowly than others, they are likely to have consistently higher unemployment. And if they also have lower growth potential, then that unemployment is more likely to become entrenched and structural. In other words, lack of structural reforms raises the spectre of permanent economic divergence between members. And insofar as this threatens the essential cohesion of the Union, this has potentially damaging consequences for all EMU members.

Seen from this perspective, euro area countries cannot be agnostic about whether and how others address their reform challenges. Their own prosperity ultimately depends on each country putting itself in a position to thrive within the Union. And for this reason, there is a strong case for sovereignty over relevant economic policies to be exercised jointly. That means above all structural reforms" [Draghi (2014)].

US states and became an unattractive place to live.

Yet, Boston has reinvented itself in the last 25 years, with education being its dominant economic sector and entrepreneurship of all kinds, but nowadays especially in the biomedical area. It is now ranked fifth in the share of population above 25 years of age with college degrees. Its previous two reinventions, in early 19th century as a seafaring city and in late 19th century as a factory town, were also built on human capital, of different forms, of course, but it was human capital the secret of its three reinventions.

Not all analogies would fall into place here, but are there reasons why can't Greece reinvent itself, why can't we reinvent ourselves, too?

8 Bibliography

Aghion, Philippe, Yann Algan, Pierre Cahuc, and Andrei Shleifer. 2010. "Regulation and Distrust." *Quarterly Journal of Economics* 125(3):1015-1049.

Algan, Yann, Pierre Cahuc, and Andrei Shleifer. 2013. "Teaching Practices and Social Capital." *American Economic Journal: Applied Economics* 5(3):189-210.

Anderson, D. *et al.* 2013. "Getting to Know GIMF" IMF working paper WP/13/55.

Atkinson, Anthony B. 2012. "EU Social Policy beyond the Crisis. 11–22. In Bank of Greece. *Social Policy and Social Cohesion in Greece during the Crisis.*

Bi, Ran, Haonan Qu, and James Roaf. 2013. "Assessing the Impact and Phasing of Multi-year Fiscal Adjustment: A General Framework." IMF working paper, June. 20–26.

Ball, Laurence. 2014. "Long-Term Damage from the Great Recession in OECD Countries." NBER Working Paper No. 20185. May.

Barkbu, Bergljot, Jesmin Rahman, Rodrigo Valdés, and a staff team. 2012. "Fostering Growth in Europe Now." SDF/12/7. IMF Staff Discussion Note.

Campos, Nauro F. et al. 2013. "Economic Growth and European Integration: A Counter-factual Analysis." Brunel University and IZA, March.

Chen, Ruo , Gian Maria Milesi-Ferretti, and Thierry Tressel. 2013. "External Imbalances in the Euro Area." *Economic Policy* 28: 101–142.

Daveri, Franceso, and Olmo Silva. 2004. "Not Only Nokia." *Economic Policy*, April: 117–163.

Draghi, Mario. 2014. "Stability and Prosperity in Monetary Union." Speech, University of Helsinki. November 27.

`https://www.ecb.europa.eu/press/key/date/2014/html/sp141127_1.en.html`

Dustmann, Christian, and Tommaso Frattini. 2013. "The Fiscal Effects of Immigration to the UK." Voxeu.org, November.

http://www.voxeu.org/article/fiscal-effects-immigration-uk

Dustmann, Christian et al. 2014. "From Sick Man of Europe to Economic Superstar:" *Journal of Economic Perspectives* 28(1): 167–188.

Eggertsson, Gauti. 2008. "Great Expectations and the End of the Depression." *American Economic Review*. 90(4).

Elsby, Michael W. L., Bart Hobijn, Aysegul Sahin (with comments by Laurence F. Katz and Robert Shimer. 2010. "The Labor Market in the Great Recession." *Brookings Papers on Economic Activity*. Spring:1–69.

European Central Bank. 2015. "22 January 2015 - ECB Announces Expanded Asset Purchase Programme." Press Release. January 22.

http://www.ecb.europa.eu/press/pr/date/2015/html/pr150122_1.en.html

Galenianos, Manolis. 2014. "The Greek crisis: origins and implications." Working paper, Department of Economics, Royal Holloway College. March. London

Gamerman, Ellen. 2008. "What Makes Finnish Kids So Smart". *Wall Street Journal*. February 29.

Glaeser, Edward L. 2005. "Reinventing Boston: 1630–2003. *Journal of Economic Geography* 5:119–153.

Greek Society for Demographic Statistics. 2012. *Bulletin*, September.

http://grdemography.files.wordpress.com/2013/11/bu-08-20121.pdf

Gorodnichenko, Yuriy, Enrique G. Mendoza, and Linda L. Tesar. 2012. "The Finnish Great Depression: From Russia with Love." *American Economic Review* 102(4): 1619–1643.

Greek Government Gazette. 2014. "2011 Census Results." 699, March 20.

Hanushek, Eric A., and and Ludger Woessmann. 2012. "The Economic Benefit of Educational Reform in the European Union." *CESifo Economic Studies.* 58(1):73-109.

Hausmann, Ricardo, Cesar Hidalgo, et al. 2013. *The Atlas of Economic Complexity: Mapping Maps to Prosperity.* MIT Media Lab and Kennedy School of Government, Harvard.

Honkapohja, Seppo, Erkki A. Koskela, Willi Leibfritz, and Roope Uusitalo. 2009. *Economic Prosperity Recaptured: The Finnish Path from Crisis to Rapid Growth.*. CESIfo–MIT Press.

Honkapohja, Seppo, 2014. "The Euro Crisis: A View from the North." *Journal of Macroeconomics.* 39(B):260–271.

IMF. 2013. "Greece: Fourth Review Under the Extended Arrangement Under the Extended Fund Facility and Request for Waiver of Applicability and Modification of Performance Criterion." Country Report No. 13/241, July.

`https://www.imf.org/external/pubs/ft/scr/2013/cr13241.pdf`

IMF. 2013. "Greece: Ex Post Evaluation of Exceptional Access under the 2010 Stand-By Arrangement." IMF Country Report No. 13/156. June.

`http://www.imf.org/external/pubs/ft/scr/2013/cr13156.pdf`

Ioannides, Yannis M. 2015. "Large versus Small States in The Eurozone, The Democratic Deficit, and Future Architecture." In: Michaelides, Alexander, Athanasios Orphanides, and Christopher A. Pissarides, eds. *The Cyprus Bail-in: Policy Lessons from the Cyprus Economic Crisis.* Imperial College Press, forthcoming.

Kamps, Christophe. 2006. "New Estimates of Government Net Capital Stocks for 22 OECD Countries, 1960–2001." *IMF Staff Papers.* 53(1):120-150.

2007. Kent, Christopher, and John Simon. 2007. "Productivity Growth: The Effect of Market Regulations." Reserve Bank of Australia Research Discussion Paper 2007-04.

`http://www.rba.gov.au/publications/rdp/2007/pdf/rdp2007-04.pdf`

Kline Patrick, and Enrico Moretti. 2014. "Local Economic Development, Agglomeration Economies, and the Big Push: 100 Years of Evidence from the Tennessee Valley Authority. *Quarterly Journal of Economics.* 129:275–331.

Krebs, Tom, and Martin Scheffel. 2013a. "Macroeconomic Evaluation of Labor Market Reform in Germany." IMF WP/13/42 February. *IMF Economic Review.*

http://www.imf.org/external/pubs/ft/wp/2013/wp1342.pdf

Krebs, Tom, and Martin Scheffel. 2013b. "German Labour Reforms: Unpopular Success." September 20.

http://www.voxeu.org/article/german-labour-reforms-unpopular-success

Maddison Historical Statistics, Maddison Project Database. 2013.

http://www.ggdc.net/maddison/maddison-project/home.htm

McKinsey & Company. 2012. "Greece 10 Years Ahead."

http://www.mckinsey.com/locations/athens/greeceexecutivesummary_new/

McKinsey Global Institute. 2014. "Global flows in a digital age Global flows in a digital age: How Trade, finance, People and Data Connect the World Economy."

National Bank of Greece. 2012. "Rapid Labor Cost Adjustment versus Consumer Price Inertia: The Asymmetric Adjustment Puzzle Reflects Once-off Factors as well as Structural Rigidities." Greece: Economic and Market Analysis, Strategy and Economic Research Division, November.

Nicoletti, Giuseppe, and Stefano Scarpetta. 2003. "Regulation, Productivity and Growth: OECD Evidence." *Economic Policy* 18(36):9–72.

OECD. 2013. *OECD Economic Surveys: Greece 2013.* OECD Publishing.

http://dx.doi.org/10.1787/eco_surveys-grc-2013-en. November

OECD. 2013. *Education at a Glance 2013: OECD Indicators.* OECD Publishing.

http://dx.doi.org/10.1787/eag-2013-en

Oreopoulos, Philip, Marianne Page, and Ann Huff Stevens. 2008. "The Intergenerational Effects of Worker Displacement." *Journal of labor Economics.* 26(3):455–483.

Papadakis, Michael, Manolis Kogevinas, and Dimitrios Trichopoulos. 2012. "The Population of Greece." Greek Society for Demographic Studies, *Greek Demographic Bulletin* BU 08 2012, September.

https://grdemography.files.wordpress.com/2013/11/bu-08-20121.pdf

Pissarides, Christopher A. 1992. "Loss of Skill During Unemployment and the Persistence of Employment Shocks." *The Quarterly Journal of Economics.* 107(4):1371–1391.

Rehn, Ollie. 2013. "Turning Germany's Surplus into a Win-Win for the Eurozone." November 11.

http://blogs.ec.europa.eu/rehn/turning-germanys-surplus

-into-a-win-win-for-the-eurozone/

Saxenian, AnnaLee. 1994. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128.* Cambridge, MA: Harvard University Press.

Storm, Servaas, and C.W.M. Naastepad. 2009. "Labor Market Regulation and Productivity Growth: Evidence for Twenty OECD Countries (1984–2004)." *Industrial Relations* 48(4): 629–654.

Varga, Janos, Werner Roeger, and Jan in 't Veld. 2013. "Growth Effects of Structural Reforms in Southern Europe: The case of Greece, Italy, Spain and Portugal." *European Economy.* Economic Papers 511. December.

Velculescu, Delia. 2010. "Some Uncomfortable Arithmetic Regarding Europe's Public Finances." IMF WP/10/177, July.

Young, Alwyn. 2001. "Demographic Fluctuations, Generational Welfare and Intergenerational Transfers." NBER WP 8530.

Zettelmeyer, Jeromin, Christoph Trebesch, and Mitu Gulati. 2013. The Greek debt restructuring: an autopsy." *Economic Policy* 28(75):513–563.

Zonzilos, Nikos. 2012. "Investment, Development, Unemployment: Proposals for Improving the Economic Policy Mix to Combat Unemployment and Improve Competitiveness." Presentation (in Greek). IOBE. January.

http://www.tovima.gr/files/1/2012/01/25/iobemeleti.pdf

Zonzilos, Nikos. 2014. "Assessing the Macroeconomic Impact of Structural Reforms in Greece." IOBE, March.

http://digilib.lib.unipi.gr/ket/bitstream/unipi/1691/1/macro_narrative_report_en.pdf

9 FIGURES

Figure 1: Greek GDP against Portugal's and Ireland's, since the onset of the crisis, and against Finland's Great Depression, Latvia's crisis, and US Great Depression. Source: Author's own.

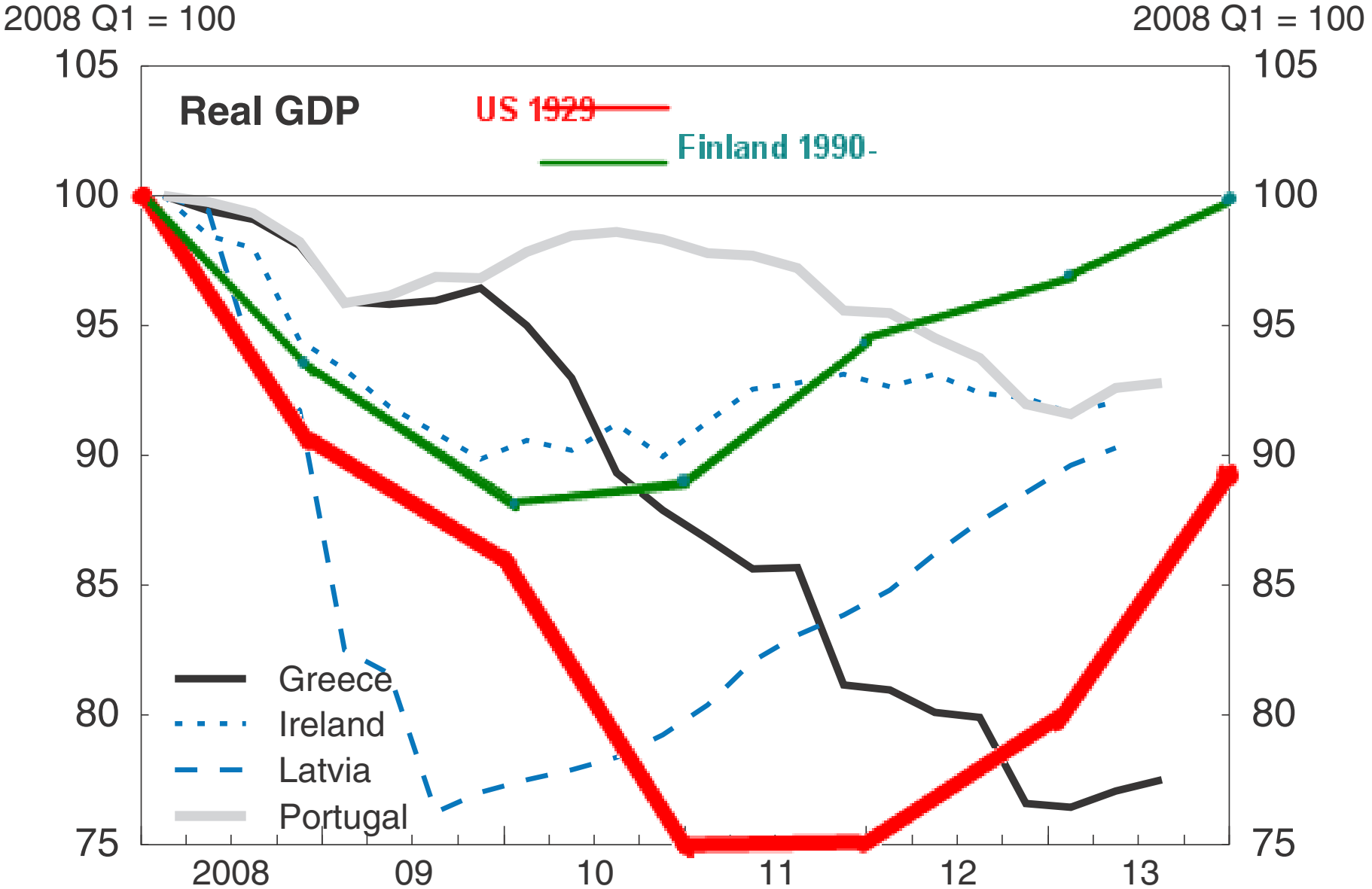
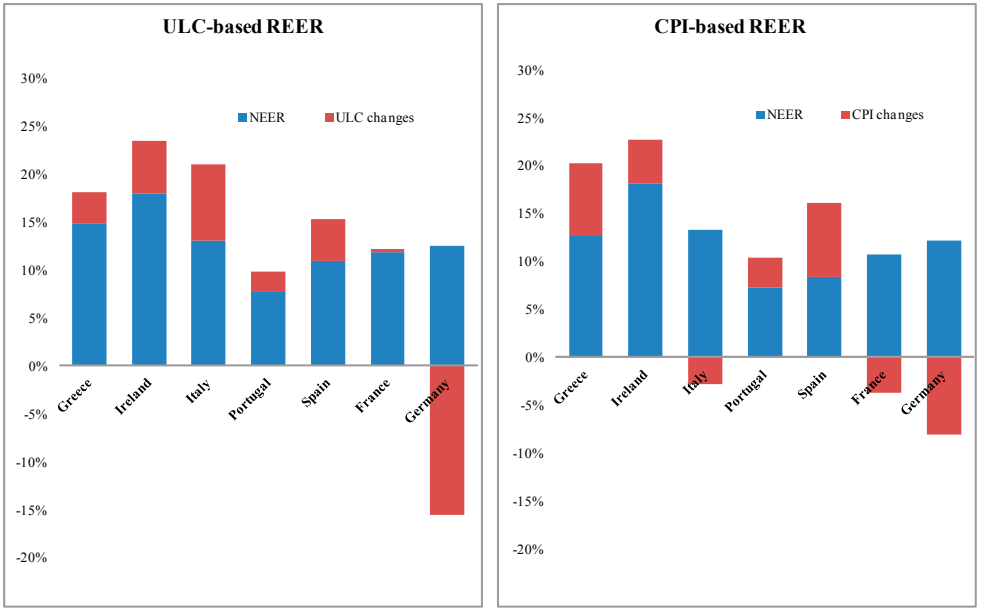

2008 Q1 = 100
2008 Q1 = 100
Real GDP
US 1929-
Finland 1990-
105
100
95
90
85
80
75
Greece
Ireland
Latvia
Portugal
2008
09
10
11
12
13

Figure 2: Decomposition of Real Effective Exchange Rates, Percentage Change 2000 to 2010. Source: Chen *et al.* (2012).

Figure 3. Decomposition of Real Effective Exchange Rates, Percentage Change from 2000 to 2010.



Source: ULC-based REER is from Eurostat, 36 trading partners; CPI-based REER is from INS.

Chen et al. Econ. Policy 2013

Why are Greek exports more expensive?