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ECONOMIC POLICIES DURING THE 'GREAT RECESSION' IN THE UNITED STATES AND THE EUROPEAN UNION: A COMPARATIVE AND CRITICAL VIEW

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ABSTRACT

The paper analyzes the main structural features and the different responses to the recent 'great recession' in the United States and the European Union.

In the crucial years 2008-2010 the United States used a combination of expansionary monetary and fiscal Keynesian policies and a rather vigorous industrial and innovation policy. The European Union, constrained by its austerity bias and by strict EU rules, followed a fully anti-Keynesian policy and this contributed to a longer and deeper recession, particularly in the most financially vulnerable countries. However, in both areas the recession had been also fuelled by long-standing problems, which were exacerbated by weak institutional features and economic policy errors.

Keywords: US Economy, EU Economy, Comparison US-EU, The Great Recession 2008-14, Economic policy.
JEL codes: E63, O51, O52.

1. Introduction

This paper tries to explain why the recovery of the US economy after the great recession that started in the United States in 2007 has been more rapid and more solid than in the EU. The explanation is based on a mix of structural and short-term conditions, but one of the most important reasons concerns the great difference in economic policies. In 2008-10, the United States substantially relied on a Keynesian policy, using a mix of monetary and fiscal tools, supplemented by complex industrial and innovation measures and a temporary devaluation of the dollar *vis-à-vis* the euro.

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The EU, where several countries were burdened by a heavy public debt and encapsuled in rigid EU austerity policies, was unable to react vigorously to the crisis and was doomed to return to stagnation in the financially weaker countries after the explosion of the Greek crisis in 2010. The recovery of a part of the EU was thus delayed until 2014, and it is still very fragile, contributing to the modest growth of other EU countries. The dismissal of Keynes' teachings, perverse stock-flow relations, very poor industrial and innovation policy, and rapid aging of the population, have contributed to deepening and prolonging the recession.

However, also in the US there remain several critical problems. There has been the explosion of income and wealth differentials,[1] the too timid and incomplete reform of the financial system, and the populist wave associated with social unrest and foreign policy errors. All these factors contributed to Trump's victory in the 2016 presidential election and are likely to darken the post-Obama future.

2. Differences

There is a striking difference between the economic evolution of the United States and the European Union since the outbreak of the 'great recession' in 2007.

In the United States, the recession for real GDP began in the fourth quarter of 2007[2], some months earlier than in the EU, but the recovery started relatively soon, at the beginning of 2009. In the European Union, the recovery was highly differentiated, starting in 2010 in most EU countries with the exception of Greece, Croatia, Latvia, and Romania. However, after 2011-2012 also in several other financially vulnerable countries, like Ireland, Portugal, Spain, Italy, Slovakia, and Finland, there was another severe slump, which prolonged and deepened the great recession until 2013 or 2014.[3] Hence, on average, in the EU the crisis was more prolonged and much deeper than in the United States, and in several EU countries it was also a veritable double-dip recession.

Table 1 and Figure 1 provide an idea of the poor economic performance, in the 2007-16 period, in the European Union, and in particular in

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[1] In the US the top 1% fiscal income share rose from 8.3% in 1977 to 22.6% in 2007 and 22% in 2015; the top 1% net personal wealth share rose from 21.6% in 1977 to 38.9% in 2012 (WID 2017).

[2] The financial unrest, initially due to the sub-prime crisis and the fall of housing prices, had been followed by a real crisis and in some countries, also by a public debt crisis.

[3] See, for example, De Grauwe P. 2011, Pisani-Ferry J. 2012, Dallago 2013, Marelli E. and Signorelli M. 2017.

the euro area, in comparison with the US and, even more so, in comparison with a great emerging power such as China.

In 2008-10 the great recession led also to a severe fall in employment and a sharp increase in the unemployment rate (Table 2) both in the US and the European Union, but the consequences in the labor market were particularly devastating in countries such as Greece, Spain and Italy, which had experienced a severe double-dip recession.

Tab. 1. *Average rates of growth of real GDP in selected countries or areas*.

Area or country	2007-14	2007-09	2009-14	2015	2016 (p)
EU 28	0.1	-2.0	1.0	2.2	1.8
Euro Area 19	0.0	-2.1	0.9	2.0	1.7
United States	1.1	-1.6	2.2	2.4	1.8
Japan	0.1	-3.3	1.5	0.5	0.7
China (a)	8.8	9.4	8.6	6.9	6.5

Notes: (a) including Hong Kong; (p) provisional estimates.
Sources: Eurostat 2016 and OECD 2016a for 2015 and 2016 forecasts.

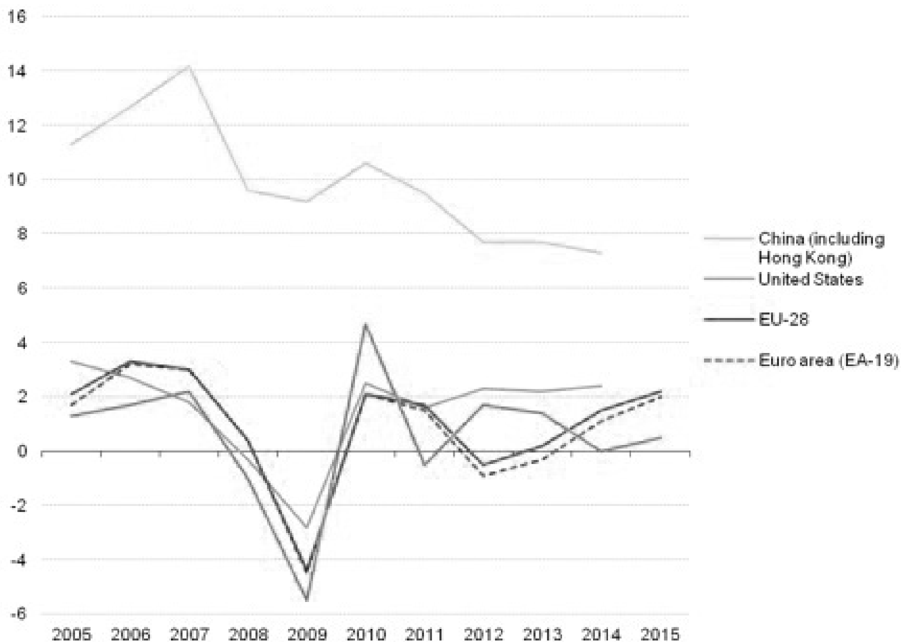

Fig. 1. *Real GDP rate of growth in the US, EU, Euro Area, China*.
Source: Graph retrieved from Eurostat, 2016, *National accounts*.

Tab. 2. *Unemployment rates: United States, EU and the Eurozone (a).*

Countries	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
USA	4.6	5.8	9.3	9.6	8.9	8.1	7.4	6.2	5.3	4.9
EU 28	7.2	7.0	9.0	9.8	9.7	10.5	10.9	10.2	9.4	8.6
Euro area	7.5	7.6	9.6	10.2	10.2	11.4	12.0	11.6	10.9	10.1

(a) Forecasts for 2016; Euro Area 19 countries. *Source*: EUROSTAT 2016.

Tab. 3. *Youth unemployment rates: United States, EU and the Eurozone.*

Countries	2007	2008	2009	2010	2011	2012	2013	2014	2015
USA	10.5	12.8	17.6	18.4	17.3	16.2	15.5	13.4	11.6
EU 28	15.5	15.6	19.9	21.0	21.7	23.2	23.7	22.2	20.3
Euro area 19	15.0	15.5	20.0	20.9	21.2	23.4	24.4	23.7	22.4

Source: OECD (2016 b, EUROSTAT 2016 for the years 2013-15.

In the US, the unemployment rate more than doubled from 2007 to 2010, but returned to almost the 2007 level in 2016, while in the European Union, where the starting 2007 unemployment level was already higher than in the US, in 2016 the rate had risen to a level almost 20% higher than at the beginning of the crisis.

Moreover, in the EU the youth unemployment rate (15-24 years of age) rose from 15% in 2007 to over 20% in 2015, somewhat better than in Eurozone, but almost twice the level of the US (see Table 3). In the first quarter of 2013 youth unemployment had indeed risen to dramatic levels especially in Greece (60%), Croatia (58.3 %), Spain (56%), Portugal (42.5%), Italy (41.9%) and Slovakia (34.4%), decreasing only partially in the following years.

3. Structural and Institutional Differences

The United States and the EU have important long-standing structural and institutional differences, which have heavily influenced their different responses to the crisis.

In 2015 the United States was the largest economy if the comparison is based on Purchasing Power Standards (PPS). It is true that in 2015 in terms of PPS the European Union had a larger total GDP than the US (see Table 4); [4] but the single EU countries had only a fraction of the GDP of

[4] See Eurostat 2016, Economy and finance. National accounts and GDP.

the United States, varying from the 21.4% of Germany to the 0.08% of Malta.

The US is also the world technological leader, the top military, political and financial world power, the third most populous country, the largest country for merchandise imports and the second largest exporter after China, the top net investor in stock of FDI, etc. Moreover, the US has control over the key world currency, the dollar, and has a much lower energy dependence than the European Union.

If we consider, not the single EU countries but the EU as a whole, we can see that in 2015 the European Union had a level of population and GDP in PPS larger than those of the US, a better balance in the current account, a larger share of industry in total employment, but a considerably lower per capita GDP (see Table 4). However, in the years 2005-2015, both the EU and the Euro area had a much lower rate of growth of real GDP than the US, but a quite similar rate of growth of per capita real GDP, due to the much slower population growth. Moreover, in 2015 the EU invested in R&D as a percentage of GDP considerably less than the United States and had a higher level of exports and imports than the US both in absolute terms and in % of GDP, although almost two thirds of its external trade was directed to other EU countries. Globally, the European Union had more limited financial, military and political power than the United States.

To be stressed is that the euro area comprises only 19 of the 28 EU countries [5] and the importance of the euro in international trade and financial transactions is much less than that of the US dollar.

Finally, the European Union has a much more severe aging problem than the United States. Germany and Italy have, for example, among the highest median population ages in the world.

The EU's recovery was also hindered by the austerity policies and the rigidity of EU parameters and directives for fiscal policy and other tools of economic policy. For example, in the crucial 2008-9 years the United States could dramatically increase its money supply and its public debt and devaluate the dollar *vis-à-vis* the euro, giving oxygen to its firms and exporters and supporting their aggregate demand, while the EU austerity policies contributed to reducing GDP, consumption, investment, exports and employment in EU countries, although to varying extents.

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[5] After completion of the Brexit process, the EU will be reduced to 27 countries, losing the United Kingdom.

Tab. 4. *Structural differences between the US, EU, Euro area (a).*

Indicators	USA	EU	Euro area
1. Population, millions, 2015	322.0	509.2	339.4
2. GDP in PPS (as % of EU 28), 2015	93.5	100	69.7
3. Per capita GDP in PPS (as % of EU 28), 2015	148	100	106.3
4. Real GDP, % rates of growth, 2005-2015	1.4	0.9	0.8
5. Population, % rates of growth, 2005-2015	0.8	0.2	0.3
6. Real per capita GDP, % rates of growth, 2005-15	0.6	0.7	0.5
7. % of agriculture on total employment, 2010	2	5	3
8. % of industry on total employment, 2010	17	25	25
9. % of services on total employment, 2010	81	69	71
10. Exports of goods and services as % of GDP, 2015	12.6	42.9	44.6
11. Imports of goods and services as % of GDP, 2015	15.5	39.7	40.5
12. Balance of current account, % of GDP, 2001-15 (a)	-2.9	-2.7	0.7
13. % of public debt on GDP, 2015	105.2	90.4	85.0
14. % of people 65+ years on total population, 2015	15	18.9	…

Notes: (a) adjusted values for EU and EU area. The non-adjusted estimates were instead positive.
Sources: Conference Board 2016 and EUROSTAT 2016 for population (line 1); EUROSTAT 2016 for lines 2-6 and 10-14; World Bank 2016 for lines 7-9, IMF 2017 for the US (line 13).

The European Union depends much more on foreign imports than the United States as regards raw materials, and in particular primary energy sources such as oil and gas, while in recent years the US has been increasingly able to exploit domestic shale-gas and shale-oil extraction. Thus, the United States has been able to reduce its energy dependency rate considerably, though worsening its environment. Some of the most important economic features of the United States since the 1980s have been the continuous structural deficit in the current account of the balance of payments and the consequent passage, since 1987, from the status of a net creditor country to that of a huge and growing net debtor; the early and rapid process of de-industrialization; the incessant involvement in smaller (Grenada, etc.) and larger wars (Iraq I, Afghanistan, Bosnia-Serbia, Iraq II, Syria, Libya); rapidly growing inequalities in income and wealth.

In some European countries, too, there have been periods of heavy deficits in the balance of current accounts, but for the overall Eurozone they have been partially off-set by the huge surpluses of countries such as Ger-

many and Netherlands. The EU has also had a less important and delayed de-industrialization trend than the US and a more limited involvement in several international conflicts. Finally, most EU countries have suffered a substantial rise in inequalities, though to a lesser extent than in the US, and a sharp increase in the level and diffusion of poverty.

It is important to observe that periods of severe difficulties in the balance of payments contributed to worsening economic crises in several European countries, while the United States was partially sheltered by the dominant role of the dollar in the international monetary system.

As regards *economic institutions*, there are profound differences between the US and the EU. The United States is a solid Federation, while the EU is

Tab. 5. *Main economic institutional differences*.

	United States	European Union
Federal or EU budget as % of GDP	Large (> 20%)	Very small (about 1%)
Monetary policy.	a) FED can directly buy public bonds. b) FED's main objectives are inflation and employment.	a) ECB cannot directly buy public bonds. b) ECB's main objective is inflation. Only 19 countries belongs to Eurozone.
Social cohesion among states.	Relatively good.	Precarious, given the persistent large differentials in economic conditions among EU countries and regions.
Response to economic or financial crisis.	Rather rapid in the US through direct Treasury and FED interventions.	Very slow and complex, being subject to difficult and time-consuming negotiations among the member countries.

a work-in-progress Union with weak and baroque institutions and growing nationalistic and regionalist tensions. Common economic policy is particularly weak in the EU because of the four main institutional reasons summarized in Table 5. In particular, the US federal budget is about 20 times the EU budget, and the Federal Reserve (FED) has much wider powers than the European Central Bank (ECB) and can effectively act as a lender of last resort.

4. Stock-Flow Problems

Many analyses of the great recession do not adequately consider stock-flow relations, which are essential in order to understand the genesis of the crisis and the differences of its impact between countries.

Five stocks are of paramount importance: a) real wealth (buildings etc.); b) financial wealth; c) the stock of knowledge embodied in the employed labour force; d) the stocks of public and private debt; e) the stock of non-performing loans of the banking system.

A severe fall in net total wealth, as happened in the United States in 2006-8 and then more gradually and to different extents in most EU countries, powerfully contributes to generating a heavy fall in real investment, consumption, GDP and employment, a severe worsening of public finance, a further reduction of wealth, etc., through a series of complex feedbacks that I have already described in previous papers [6].

Tab. 6. *Household net worth in % of net disposable income: 2006-2014 in the US and in selected EU countries.*

	2006	2007	2008	2009	2010	2011	2012	2013	2014
USA	545.6	542.5	450.5	474.7	502.8	488.2	503.2	574.6	582.2
Germany	378.9	403.2	390.5	409.8	415.9	414.0	425.7	439.4	449.6
Netherlands	516.6	491.5	531.9	542.5	578.1	597.8	622.0	604.5	678.9
Sweden	483.2	464.5	420.3	444.3	472.6	436.6	441.7	470.4	516.0
Belgium	631.5	622.7	571.0	600.1	619.0	628.6	640.4	660.8	677.8
France	459.5	463.3	435.0	454.4	466.2	468.9	488.8	502.5	514.1
U. K.	452.8	449.6	416.7	427.3	445.0	476.4	478.9	486.6	537.6
Italy	533.8	498.5	480.7	495.7	495.0	485.1	525.5	544.3	551.2
Greece	385.3	376.7	321.0	320.3	314.3	319.6	350.2	411.0	
Slovakia	244.6	229.2	222.9	227.8	229.6	229.1	225.8	226.7	228.5

Source: OECD 2017.

The fall in wealth also contributes to worsening the stock of knowledge, sterilizing the human capital of many young unemployed people and of the formerly employed people who had lost their jobs because of the crisis. During the 'great recession' the loss in knowledge was much

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[6] See Valli 2013 and 2017, paragraph 2.2.

greater in several EU countries than in the United States. Indeed, in the years 2008-14, the closure of firms and the rise in youth unemployment were proportionally much higher in countries like Greece, Spain, Croatia, Italy, and Portugal than in the US. Moreover, the expenditure on R&D and higher education was very low in those countries, while it was substantial in the United States. During the crisis some EU countries therefore experienced a sharp increase in 'brain drain', while the United States continued to attract a large number of foreign researchers, experts, and start-uppers.

Finally, wealth inequalities, the stocks of public and private debt in percentage of GDP and the stock of non-performing loans are also very important in the relations between financial and real crises and in the depth and duration of the recession.

5. Keynesian plus industrial and innovation policies vs. anti- Keynesian austerity policy

Why was the recovery anticipated and much more solid in the United States than in most EU countries? Differences in economic, financial and political power and in certain structural conditions were important, but also financial, economic and demographic policies mattered greatly.

After the outbreak of the crisis, the United States pursued a *Keynesian policy,* based on a strong expansionary policy*, plus an effective industrial and innovation policy*. The expansionary policy, aimed at recovering total demand, was based – in large part of the Obama presidencies – on a combination of monetary, fiscal and budgetary tools. The industrial and innovation policy strongly contributed to the rescue of major banks, insurance companies, and of some great non-financial corporations. It also helped the expansion of new modern economic activities, and thus powerfully contributed to reducing the initial fall in aggregate demand and then to relaunching investment, production and employment.

In the years 2008-13 in several European Union countries there was instead the dominance of an *anti-Keynesian austerity policy* under the constraints of initial deficits in the balance of current accounts, of the fragile public finance situation in several countries, and of the severe restrictions imposed by EU rules and policies. Moreover, there was a weak and erratic industrial and innovation policy. A few, albeit partial, exceptions were countries like the United Kingdom, Denmark, Sweden, and in the Eurozone, Germany, Netherlands, Belgium, and Poland, which before 2008 had a more solid financial foundation and a better situation in the balance of current accounts. Hence they could more easily save their ailing banks dur-

ing the great recession, and they had more public funds available to sustain their productive systems.

As regards demography, it is important to note that the United States had in the years 2007-2015 an annual rate of population growth of about 0.8%, while EU had a mere 0.2%, entirely due, in several countries, to net immigration. In the United States, the aging of the population has been proportionally much less important than in the EU. According to World Bank and Eurostat data, in 2015 the percentage of people aged 65 years or above in the total population was almost 19% in the EU, while in the United States it was 15%.

6. The United States

While most of the economic literature and the mass media have concentrated on the monetary policy of the Federal Reserve and on the vigorous quantitative easing policy started in October 2008, they have somewhat overlooked the fact that in 2008-11 the American government also pursued a strong fiscal expansionary policy and a robust industrial and innovation policy. It was the combination of all these policies that enabled a recovery less difficult than in most European countries.

A) Financial and Monetary Policy

In the last months of the Bush administration and during the first Obama administration, the United States was able to save almost all the main ailing banks and financial institutions, with the exception of smaller banks and Lehman Brothers, which had collapsed in September 2008, while in Europe several banks were saved through incorporation into more solid institutions, bail-out or bail-in practices and the EU's financial support.

The US's main intervention was based on a law, the *Troubled Assets Relief Program) (TARP)*, initiated by the Bush Administration on 3 October 2008, which permitted the US Treasury to purchase or insure up to 700 billion dollars of toxic or troubled assets. The total amount was reduced to 475 billion dollars by Obama's *Dodd-Frank Wall Street Reform and Consumer Protection Act*. The program ended in 2014 after disbursing about 427 billion dollars, but, taking account of the sums then returned to the Treasure, its final cost is estimated at about 37 billion dollars.

With TARP the US government not only saved most major US banks and a giant insurance company (AIG), but also two of the three US largest automobile corporations, General Motors (GM) and, with the help of Fiat, also the Chrysler Group, thus preserving almost a million jobs and an important industrial sector.

The TARP program was accompanied and powerfully supported by the expansionary monetary policy pursued by the Federal Reserve after the summer of 2007 and widely strengthened after November 2008 through a non-conventional policy called *Quantitative Easing (QE)*.[7] This policy basically consisted in the purchase by the FED of agency or Treasury bonds and mortgage-backed securities (MBS). QE helped to rescue two giant agencies – Fanny Mae and Freddie Mac – which operated in the housing sector by buying huge amounts of mortgages from banks and other financial institutions and issuing mortgage-backed securities (MBS). The two firms had been private GSE (government sponsored enterprises), but due to their enormous outstanding debt ($ 4.5 trillion in March 2007), since 6 September 2008 they had been placed under the direct supervision of the federal government (conservatorship). QE also contributed to further reducing interest rates, which were pushed down to almost zero from November 2008 until January 2016. The first round of QE lasted from November 2008 to March 2010 and FED bought $ 100 billion of public debt and $ 1250 of MBS. In the second round (November 2010-June 2011) FED bought $ 600 billion long-term treasury bonds, while from September 2011 to June 2012, with Operation Twist, the FED bought $ 400 billion long-term treasury bonds selling short-term bonds. Finally, in the third round (September 2012-October 2014) the FED bought $ 40 billion per month worth of MBS.

However, the US intervention in the banking and financial system was not devoid of important critical aspects.

Although the vigorous monetary expansionary policy contributed to the macro-economic recovery, it also provided an enormous liquidity that was only partly used to expand credit to the production system and real investment, but was also largely devoted to financing massive financial speculations at very low cost, favouring a return to high banking leverage and to big wages and bonuses for the top managers of financial and non-financial corporations

The great problems of the US financial system in the wake of the crisis were:

a) An enormous and undue weight of sub-prime loans and of speculative finance on the economy. The excessive financial exposure of the economy had been favoured by disproportionate leverage, over-permissive rules and practices for mortgages, the almost complete deregulation of shadow banking, and the end of the separation between commercial banks and investment banks due to the abolition in 1999, during the Clinton administration, of the 1933 Glass-Steagall Act. Finally, there was the rapid increase in

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[7] See Trefis Team 2015.

the market of risky or toxic derivatives, and thus the beginning of a severe financial crisis.

b) The persistence of vast conflicts of interest among rating agencies, financial actors and some regulators, and of the practice of 'sliding doors', including passages from government roles to lucrative top banking positions.

c) The partial 'capture' of politics by big finance through its heavy financing of politicians and parties and its strong influence on major mass-media.

After the outbreak of the crisis, the response to all these problems was timid and partial.

The Dodd-Frank Act, signed by President Obama on 31July 2010, re-regulated the financial system, including part of the shadow banking sector, and protected consumers a little more against financial frauds. But it did not separate commercial banks and investment banks, and although it extended the capital requirements, it did not fully avert the dangers of excessive leverage and the problems of banks "too big to fail".[8] J.P. Morgan Chase's colossal 2012 'London Whale' financial loss in speculative activities, and the return to very high leverages for the main US banks revealed some of the serious limitations of the Dodd-Franck Act.

B) Fiscal Policy

Fiscal policy in the US principally depends on Federal government activities (about 2/3) but also on State and local policies.

in 2007-9 both Federal government and State and local authorities tried to counter the crisis through a sharp rise in public expenditure and their budget deficits. In 2009 the Obama administration obtained the passage of a large Keynesian stimulus package (the *American Recovery and Reinvestment Act*).[9] The stimulus package of about $787 billion[10] included selected tax incentives, an increase in unemployment compensations and other relief

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[8] While most Wall Street interest groups opposed the Dodd-Frank law, Paul Krugman (2014) gave a rather positive evaluation of it. Joseph Stiglitz (2011) was more critical and insisted on higher capital ratios and more effective regulations in order to reduce financial leverage and the excessive size of big banks. Luigi Zingales (2016) stated his preference for the return to the Glass-Steagall Law, also denouncing the complexity and implementation difficulties of the Volcker Rule as inserted in the Dodd-Frank Act. The Volcker Rule was intended to restrict banks from making too risky investments, but the convoluted and vague way in which the rule was formulated in the Dodd-Frank Act almost completely reduced its practicability.

[9] The stimulus package had been advocated by economists such as Stiglitz, Acemoglu, Feldstein, Summers, etc., but opposed by 200 economists, including Buchanan and Prescott.

[10] The total amount was later increased to $831 billions for the 2009-2019 decade.

measures, massive expenditures on infrastructures, education, research, health, energy, renewables, etc.

The Federal budget deficit increased from -1.1% of GDP in 2007 to -9.8% in 2009 (see Table 7), while the State and local budget deficit in % of GDP rose from about -0.5% to about -2%. In those years both civilian and military public expenditure continued to increase, notwithstanding the sharp decline in total public receipts. As a consequence, from 2007 to 2009, the public debt/GDP ratio rapidly increased and continued to rise more gradually in the years 2011-15, surpassing the 105% public debt/GDP ratio. This provoked strong political reactions in the Congress, and in particular in the House of Representatives, in which the Republican Party had conquered a large majority in the 2010 general elections.

The new Republican delegates forcefully opposed a further rise of debt

Tab. 7. *Federal receipts, outlays, deficits and debt as percent of GDP.*

Fiscal year	Receipts	Outlays		Deficit	Federal debt (end of year)	
		Total	Defence		Gross	Held by public
2007	17.9	19.1	3.8	-1.1	62.5	35.2
2008	17.1	20.2	4.2	-3.1	67.7	39.3
2009	14.5	24.4	4.6	-9.8	82.4	52.3
2010	14.6	23.4	4.7	-8.7	91.4	60.9
2011	15.0	23.4	4.6	-8.5	96.0	65.9
2012	15.3	22.1	4.2	-6.8	100.1	70.4
2013	16.8	20.9	3.8	-4.1	101.3	72.6
2014	17.6	20.4	3.5	-2.8	103.6	74.4
2015	18.2	20.7	3.3	-2.5	101.8	73.6
2016 (estimate)	17.9	21.1	3.2	-2.3	106.0	77.1

Source: White House (2017), Economic Report of the President, February, p. 585.

and finally this led to repeated 'debt ceiling crises' in 2011, 2013 and 2015.[11] Even if Obama's administration was able to avoid in these crises dangerous defaults or the suspension of payments to public employees,

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[11] The US Congress can impose a ceiling on total public debt and Treasury borrowing. This may provoke defaults in the case of exceeding the upper limit. Usually, there is a hot confrontation on this issue between the republican party and the democratic party, which can be solved making selected reductions in public expenditures.

it had to accept a more restrictive fiscal policy and hence a sharp weakening of Keynesian policies. There were, therefore, selected cuts in public spending in the years 2012-14, and a return to some growth stimulus only in 2015-16. To be noted is that the QE policy provided oxygen to fiscal policy through the enormous purchase of public bonds and MBS made by the FED and the strong reduction in interest rates. However, since the end of 2015 there has been a reduction in the FED's expansionary monetary policy, with a consequent increase in interest rates.

C) Industrial and Innovation Policy

In the United States terms like 'state intervention', 'socialism' or 'industrial policy' are often banned, since they are not easily accepted by a large part of the population deeply influenced by neo-liberal views. Hence industrial policy has often been called *innovation policy* or *technology policy*, or, in some sectors of activity, 'defence policy', 'green policy', 'trade policy', 'health policy'.

However, during the Obama administration there were also very effective industrial policies, such as Obama's 2010 health-care reform and the temporary, but crucial, massive public financial aids conceded to ailing banks and AIG and to great non-financial firms close to failure such as General Motors and Chrysler (automobiles), etc.

But industrial policy has been principally administered under the umbrella of *technology or innovation policies* by several government departments (Defense, Energy, Health, etc.) and a large number of decentralized federal agencies or programs. Mariana Mazzuccato and other authors have shown how public agencies such as DARPA (Defence Advanced Research Projects Agency), SBA (Small Business Administration, with its SBIR (Small Business Innovation Research) program, Nni (National nanotechnology initiative), NSF (National Science Foundation), NHI (National Institutes of Health), NASA, etc., have been essential for supporting the technological and economic growth of a number of US big corporations, smaller firms and start-ups.[12]

In particular, one of these agencies, the Defence Agency DARPA, and its spin-offs, like Fairchild Microelectronics, drove the rapid growth of microelectronics in the United States. Moreover, the NHI gave immense support to the research in the health sector, the 1983 Orphan Drug Act powerfully contributed to the rise of the bio-chemical industry, and the

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[12] See Mazzuccato 2013 Ch. 4-6, Block 2008 and Block, Keller 2011. See also Di Tommaso, Schweizter 2013 for a general overview of US industrial policy.

provisions in favour of the green economy greatly supported the rapid growth of environment-friendly economic activities.

Firms like Apple have greatly benefited from state-financed research, which has contributed some of the most important basic components of IOS and of I-pods, I-pads, I- phones, such as extended internet networks, touch screen technology, GPS, SIRI, etc.[13]

It is important to note that most of these agencies could act in a countercyclical way, obtaining a substantial rise in their budgets in the most critical years of the crisis (2007-9), and that afterwards some of them received large additional funding through Obama's 2009 great stimulus package. But even more important has been the medium-long run developmental support that the State has constantly given to innovation and growth through tax credit, public demand, and generous funding to research departments, agencies, firms and universities.

D) Trump's Revolution?

In his electoral program, in his inauguration speech, and in several other declarations, Donald Trump promised to profoundly change economic policy in six main directions. First, he promised to limit globalization by stopping international treaties such as the Trans-Pacific Partnership Agreement (TPP) and the Transatlantic Trade and Investment Partnership (TTIP), reducing imports from China and inducing US multinationals to limit off-shoring and to invest more in the US. Secondly, he suggested limiting immigration through the completion of the wall at the US-Mexican border and other means. Thirdly, he would reduce environmental protections favouring, among other things, shale oil and shale gas extraction and in general the interests of the oil industry and of the building industry. Moreover, he would try to demolish, or drastically curtail, the health reform (Obamacare) introduced during the previous administration. Finally, he would increase public expenditure on weapons and infrastructures, but reducing the US expenditure in NATO, while asking the other Nato countries to increase their contributions.

To be noted is that the major interest groups which supported Trump's presidential campaign were the military-industrial complex, the oil industry, the construction industry, a large part of the health and insurance system. These groups will most probably be rewarded by his economic policy. Big finance, which had mainly supported Hillary Clinton, but also partially Trump, has obtained a large influence on Trump's government through

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[13] See Mazzuccato 2013, ch. 5.

the appointment of former bankers or financial tycoons to important roles in his administration.[14]

Some early decisions by the Trump administration have been the ban on the entry of refugees from certain Islamic countries and the huge increase in expenditure on defence and a decrease in social expenditure, and they seem to be in line with Trump's controversial nationalist-populist electoral program.

7. European Union

A) Long-term Problems

Economic growth and development theory generally concludes that a good development process is based on an adequate rate of growth of physical capital and of knowledge, sound economic institutions, and reduced economic inequalities among households, regions and generations.

In the years 1957-1992 the progenitor of the EU, the European Economic Community (EEC), had a relatively high rate of growth, considerably higher than that of the United States in terms of both real GDP and per capita real GDP. However, in the following years, the rate of growth of the gradually enlarged European Union fell to below that of the United States.

In fact, however, even in the period of rapid growth (1957-1973) and then of decent economic performance (1973-92), the EEC had not solved, but only slightly attenuated, its more fundamental structural problems, such as the wide disparity in per capita GDP and employment opportunities between a substantial part of the Southern Mediterranean countries and regions and the Centre–North, between young people and adults, between men and women. Moreover, the less economically advanced countries of the European Union had not significantly improved their economic institutions, and had continued to invest very little in innovation and R&D activities. The 2004, 2007 and 2013 enlargements of the EU to Eastern European countries amplified these phenomena.

Beginning in the 1990s the major determinants of growth – increases in physical capital and in knowledge – progressively weakened. Hence most EU economies gradually declined if compared with the United States and other industrialized and emerging countries, losing positions

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[14] Trump appointed, for example, Steven Mnuchin (former Goldman Sachs executive) as Treasury Minister, Gary D. Cohn (Goldman Sachs president) to the National Economic Council, Carl Icahn as special advisor on Regulatory Reform.

in several high tech sectors, such as microelectronics and software production.

Finally, a rough indicator of 'learning by doing', the employment rate, has been considerably lower in the EU 28 than in the US, although the gap diminished from 1995 to 2014. The low employment rate of young people and of women in some countries or zones has severely exacerbated the crisis.

Table 8 sets out a comparison between the US and EU as regards some of the principal indicators of physical capital formation and knowledge.

To conclude: since the 1990s less physical capital formation and a persistently weak level of knowledge in the EU have contributed greatly to the worse economic performance of several EU countries compared with that of the United States.

However, the use of the average or total values of the indicators regarding the EU and Euro area does not convey the great heterogeneity still existing within the two areas. Table 9 shows some aspects of this heterogeneity in the period of the crisis. Luxembourg, some Nordic countries and Germany have performances relatively close to that of the United States; other countries, such as the United Kingdom and France, are in an intermediate situation, while several other countries have various forms of long-standing weakness.

Tab. 8. *Capital formation and knowledge in EU and the US.*

Indicators	EU 28 (a)		United States	
	1992-2007	*2007-2015*	*1992-2007*	*2007-2015*
Real GDP (b)	2.9	0.4	3.2	1.2
Real gross fixed capital formation (b)	2.5	-1.5	4.7	0.4
	1995	*2014*	*1995*	*2014*
Tertiary education (c)	…..	40 (c)	34	47 (d)
R.& D. spending as % of GDP	1.6	2.0	2.4	2.7
R.& D. spending as % of US	66.7	69.6	100	100
Employment rate (15-64) (e)	63.4 (e)	64.0	72.5	68.1

(a) Euro area for the years 1992-2007; (b) % annual average rates of growth; (c) Population 25-34 years old with tertiary education in % of population in the same age group; (d) 2015; EU 22 (e) employment in % of working age population; 2005 instead of 1995 for EU. Sources. OECD 2016 a and b and Eurostat 2016.

Tab. 9. *Heterogeneity in the European Union in the great recession.*

Level of per capita GDP In PPS, 2012	Annual average % rate of change of real GDP (2007-15)	Financial vulnerability (a)
Well above the EU 28 average (> 110 % of EU 28) Luxembourg, Netherlands, Ireland, Austria, Sweden, Denmark, Germany, Belgium, Finland.	*Well above the average (> 0.5)* Ireland (3.7), Malta (3.6), Poland (3.3), Slovakia (2.2), Luxembourg (1.8), Romania (1,6), Bulgaria (1.4), Sweden (1.3), Lithuania (1.0), Germany (1.0), Czech Republic (0.9), U.K. (0.9) Belgium (0.8), Austria (0.6).	*Very low* Luxembourg, Germany, Denmark, Netherlands, Sweden, Austria, Estonia, Finland.
Around the average (90 %- 110%) United Kingdom, France, Italy, Spain, Cyprus.	*Around the average (0.4-0.5)* Hungary (0.5), France (0.5), Netherlands (0.4).	*Relatively low* France, Czech Republic, Slovakia, Bulgaria, Poland, United Kingdom, Malta, Lithuania, Latvia.
Below the average (70-89%) Malta, Czech Republic, Slovenia, Portugal, Greece, Slovakia, Estonia.	*Below the average (0- 0.3)* Denmark (0.3)	*Substantial* Belgium, Ireland, Spain, Italy, Slovenia, Hungary, Romania, Croatia.
Well below the average (40%- 69%) Lithuania Poland, Hungary, Croatia, Latvia, Romania, Bulgaria.	*Well below the average (< 0)* Estonia (-0.3), Slovenia (-0.3), Spain (-0.4), Finland (-0.4), Latvia (-0.5), Portugal (-0.6), Cyprus (-0.7), Italy (-1.0), Croatia (- 1.2), Greece (-2.6).	*High* Cyprus, Portugal, Greece.

(a) our estimates based on public finance, spread, net external debt, fragility of the banking system. Sources: Eurostat 2016, OECD 2016 a, ECB 2017.

B) Financial, Monetary and Fiscal Policy [15]

During the great recession, monetary policy in the Eurozone was initially much less expansionary than in the US, but various banks in financial difficulties were saved by bail-out operations or incorporation into more solid financial institutions. However, some banks, such as the British

Northern Rock in 2008 and some other European banks, went into bankruptcy. In 2008 under the impact of the US sub-prime crisis and the

[15] On EU monetary and fiscal policy see also the more detailed analysis by Francesco Saraceno in this issue of the Journal.

Lehman Brothers failure, there was finally in most EU countries a severe financial crisis that rapidly led to a real one, and then to a sovereign debt crisis in financially vulnerable countries.

Table 10. Real GDP growth and financial indicators in the EU: 2007-15

Indicators	2007	2008	2009	2010	2011	2012	2013	2014	2015
Real GDP	3.1	0.4	-4.4	2.1	1.7	-0.5	0.2	1.6	2.2
Public deficit/GDP,%	-0.9	-2.4	-6.6	-6.4	-4.6	-4.3	-3.3	-3.0	-2.4
Public debt/GDP, %	57.5	60.7	72.8	78.4	81.1	83.8	85.7	86.7	85.0
Interest rate EU (a)	4.57	4.56	4.15	3.82	4.27	3.65	2.95	2.20	1.44
Interest rate EA (a)	4.32	4.31	3.82	3.60	4.34	3.86	2.99	2.04	1.22
Inflation rate (b)	2.1	3.7	1.0	2.1	3.1	2.6	1.5	0.6	-0.1

Notes: (a) gross yields for 10 year-public bonds; EA = Euro Area; (b) consumer prices rates of change. Sources: EUROSTAT (2017) and OECD (2016 a).

When in 2010 there was the beginning of the devastating Greek crisis, the lack of a prompt response by the EU and ECB authorities and the perception of inadequate solidarity within the Eurozone worsened the financial, real and debt crisis in Greece. But it also generated severe social and political tensions in the country and led to heavy financial attacks on other countries, such as Ireland, Portugal, Spain and Italy, which seemed particularly vulnerable. In June 2011 the ECB presidency passed from Jean-Claude Trichet to Mario Draghi. Then the ECB adopted a more expansionary monetary policy, granted massive loans at very low interest rates to the banks, introduced gradual, but drastic reductions in interest rates, made a strong defence of the euro through Draghi's famous 26 July 2012 declaration,[16] injected abundant liquidity into the financial market and finally, from March 2015, bought large amounts of public bonds from commercial banks. This final step was a limited form of quantitative easing, since the ECB was constrained by its statute and by the opposition of Germany and other Nordic or Eastern countries. Quantitative easing was possible only because the rate of inflation was then well below the 2% ECB medium-term target. However, In February 2017 the inflation rate had already returned to about 2%, principally because of the surge in energy prices since December 2016.

However, monetary expansion was far from sufficient for a vigorous recovery in most EU countries. Also necessary would have been a strong

[16] "The ECB is ready to do *whatever it takes* to preserve the euro, and believe me it will be enough."

expansionary fiscal policy, possibly based on public investments.[17] Instead, the austerity policies imposed severe cuts in public expenditures and increases in taxation, which aggravated the depth and duration of the real crisis in the financially weaker countries and even in countries like Finland or Estonia, which had rather good financial positions. The rigidity and anti-Keynesian aspects of the ill-designed Maastricht parameters and of the 'fiscal compact' rules proved to be detrimental during such a severe recession.

C) Industrial and Innovation Policies

In Europe the dominance of the neo-liberal approach has eroded the concept and praxis of industrial policy in several countries, but France, Germany and some Nordic countries have continued to support strategic sectors or projects in industry and modern services through massive spending on higher education and R&D, specialized research agencies and generous incentives for innovation.

Ireland and some Eastern European countries have tried to attract foreign industrial or tertiary investments through low taxes on corporate profits (Ireland) or the combination of relatively high education levels and relatively low wages. In some countries, such as Portugal, Greece and Italy, there has been an almost complete lack of strategic plans and of a feasible development policy based, as in South Korea and Nordic European countries, on the great importance given to a continuous rise in the level of knowledge of the country. Also the dramatic and complex problems of refugees and migrants have not been addressed with enough resources and a clear EU-wide approach.

The EU's industrial and innovation policies have been rich in documents and rather ambitious programs but rather poor, as compared to the US, in financial resources devoted to innovation and to the introduction of modern industrial and service activities. In 2000 the EU Council approved the 'Lisbon strategy' aimed at making the EU a 'knowledge economy' and sharply reduce in ten years the wide gap with respect to the United States in R&D, technology, productivity and employment rate. However, the strategy was not binding on the member countries and had inadequate EU-wide financial means, so that it resulted in an almost complete failure.[18] In 2010 several EU countries spent, for example, less than half of US expenditure on R&D as % of GDP, and the EU as a whole spent about 70%

[17] See, for example BLANCHARD 2016, p. 4, who considers that "the Juncker plan for investment in Europe, even doubled, is insufficient", See also the proposals advanced in the Pavia manifesto.

[18] See, for example, TABELLINI, WYPLOSZ 2006, BIANCHI, LABORY 2006, WYPLOSZ 2010.

of the United States R&D/GDP ratio. Only relatively small countries like Finland and Sweden continued to spend in percent of GDP more than the American giant, while even Germany, France and the UK spent less. Moreover, also in terms of physical investments incorporating new technologies, most EU countries did worse than the US in the 2000-2010 decade and in the following years.

Nor has the new 'Europe 2020' program significantly improved the situation, both because of the inadequacy of the EU-wide financial means allocated to achieving its new over-ambitious objectives and the negative consequences of the 2008-14 great recession and of Brexit.[19] In the meantime, Asian countries such as South Korea and Japan have continued to invest much more than the EU in R&D as percent of GDP, and the emerging economic giant, China, has recently surpassed the EU as regards this indicator, and much earlier as regards the total number of researchers and total physical capital formation.

Conclusions

The United States could react more promptly to the financial and real crises than the EU not only because it is a richer, more powerful, and more solid entity than the politically fragmented EU, but also because it issues the dollar, the leading currency in the world's international markets. But it could do so also because in the Obama period the US had not forgotten the teachings of Keynes and some of key findings of development economics. In 2008-10 the US thus combined anti-cycle expansionary monetary and fiscal policies with the continuation of an industrial, innovation and development policy.

The main weakness of the US approach is its inattention to the rapid increase in an enormous poorly-regulated mass of financial activities and the great long-run increase in the concentration of income and wealth in the hands of a small part of the population.[20] The Dodd-Franck Act has proved insufficient to cope with the former problem, while the latter problem derives from deep economic and political contradictions in the evolution of American society since the beginning of the 1980s.

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[19] On the EU policy see, for example, EU Parliament, Directorate General for Internal Policies (2015). For critical assessments see also Mosconi 2012, Pianta 2013, Rodrik 2014.

[20] The two problems are partly associated. The steep rise in wealth and income differentials depends also on the great expansion of the financial sector and on the huge amount of global financial operations made possible by increasing financial and economic globalization.

The EU's longer and deeper 'great recession' is partly due to the anti-Keynesian austerity policy followed under the constraints imposed by ill-designed EU rules, but also to economic policy errors and structural weaknesses of its institutions, whose impact has been particularly strong in Southern Europe. These weaknesses are largely due to the nationalist features still pervading EU institutions, the inadequate immigration policy, badly-regulated globalization and financialization processes, the progressive aging of the population, and very poor policy to enhance knowledge and good employment opportunities for young people, minority groups, and people living in economically depressed areas.

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