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A world of low interest rates

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&
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CEE-M Working Paper 2019-06

A world of low interest rates

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March 2019

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Abstract. The interest rates have remained low in recent years, after long decline over the past thirty-five years in OECD countries. This evolution is associated to a slowdown of output growth, while inflation stabilized around its two percent target. In trying to provide a better understanding on how we got there, we review the macroeconomic developments during almost sixty years. Conventional analysis of the role of macroeconomic policy does not provide a satisfactory explanation of the observed long-term trends. In particular, large fiscal deficits and growing debt ratios did not lead to higher interest rates, except in a few countries, whose governments were facing serious fiscal troubles. Conservative monetary policy can explain the low level of inflation that have prevailed since the middle of the eighties, but not the continuous decline of the real interest rate. Based on a few stylized facts we suggest a direction for a plausible characterization of a low growth / low interest rate regime.

Keywords: interest rates, growth, inflation, macroeconomics, long term, public debt, fiscal policy, monetary policy.

Résumé. Les taux d'intérêt sont restés bas ces dernières années, après une longue décrue de trente-cinq ans dans les pays de l'OCDE. Cette évolution est associée à un ralentissement de la croissance de la production, tandis que l'inflation se stabilisait autour de son objectif de deux pourcents. Pour essayer de mieux comprendre comment nous en sommes arrivés là, nous revenons sur les évolutions macroéconomiques durant ces soixante dernières années. L'analyse conventionnelle du rôle de la politique macroéconomique n'explique pas de manière satisfaisante les tendances observées à long terme. En particulier, les importants déficits budgétaires et les ratios d'endettement en augmentation n'ont pas entraîné de hausse des taux d'intérêt, sauf dans les quelques pays où les gouvernements étaient confrontés à de graves problèmes budgétaires. La politique monétaire conservatrice peut expliquer le faible niveau d'inflation qui prévaut depuis le milieu des années 80, mais pas la baisse continue du taux d'intérêt réel. Sur la base de quelques faits stylisés, nous suggérons une direction pour caractériser de manière plausible, un régime de faible croissance / faible taux d'intérêt.

Mots-clés : taux d'intérêt, croissance, inflation, macroéconomie, long terme, dette publique, politique budgétaire, politique monétaire.

Introduction

Long-term interest rates reached their lowest level in 2018 in OECD countries, and were probably negative in real term. This occurred occasionally in the past, whereas in the recent case, real interest rates have stayed close to zero for years. If such unusual conditions persist, we may fear worrying consequences for the future. To address the simple question: “why are the interest rates so low?” to which we would add “and for how long?”¹, it is important to reconsider the current developments in a longer historical perspective. In this paper we review the long-term macroeconomic developments with a particular attention to the interest rates, we identify some relevant stylized facts that helps to retain or exclude some interpretations. In the first section, we first analyze the trends and cycles of real activity, inflation and interest rates. In the second section, we consider the effects of macroeconomic policy on the interest rates. A third section contains a suggested interpretation and some indications for more analytical investigations.

I Interest rates and macroeconomic developments in developed countries.

In this section, we review the major macroeconomic trends and cycles in OECD countries from the sixties up to the latest available data, and we discuss the salient features of growth, inflation and the rate of interest. Arguably, these variables constitute the core of most theoretical models. Our intention is to achieve a better understanding of the persistence of low interest rates at the time of a recovery, an unusual conjunction that has not received, so far, a satisfactory elucidation. For that purpose, we believe that going back to the facts is the first step to take, the second being confronting theories to empirical evidence. Obviously, one cannot restrict to only three variables to achieve an (even though simplified) picture of the macroeconomic reality, and additional variables, including financial, political and structural factors, will be introduced in due course.

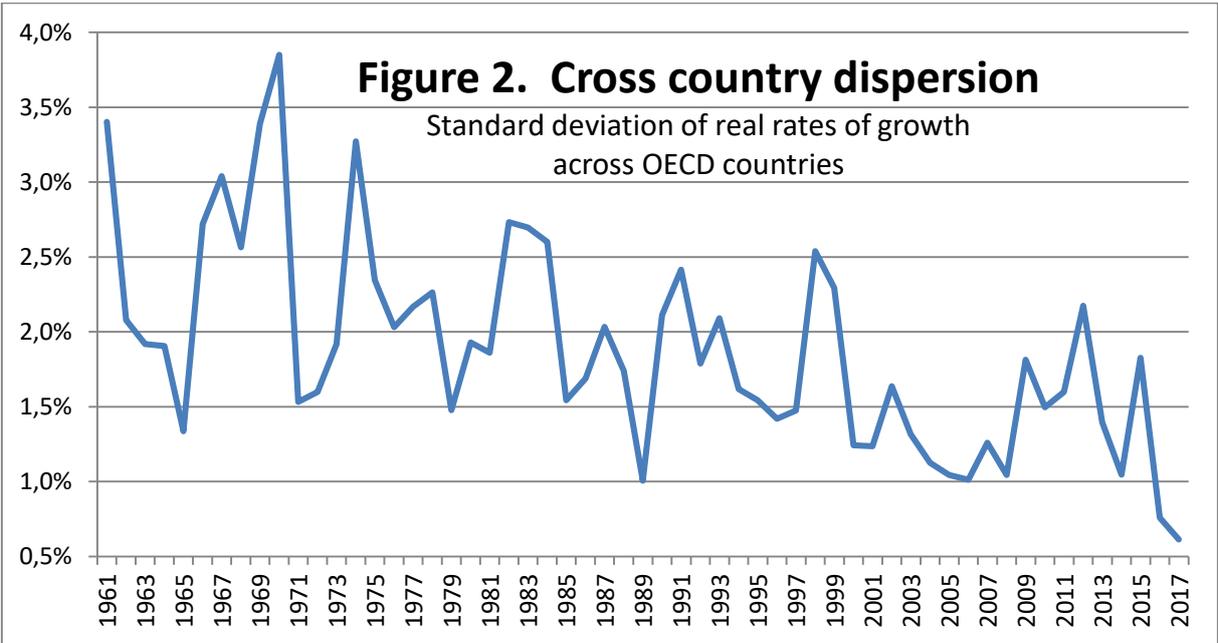
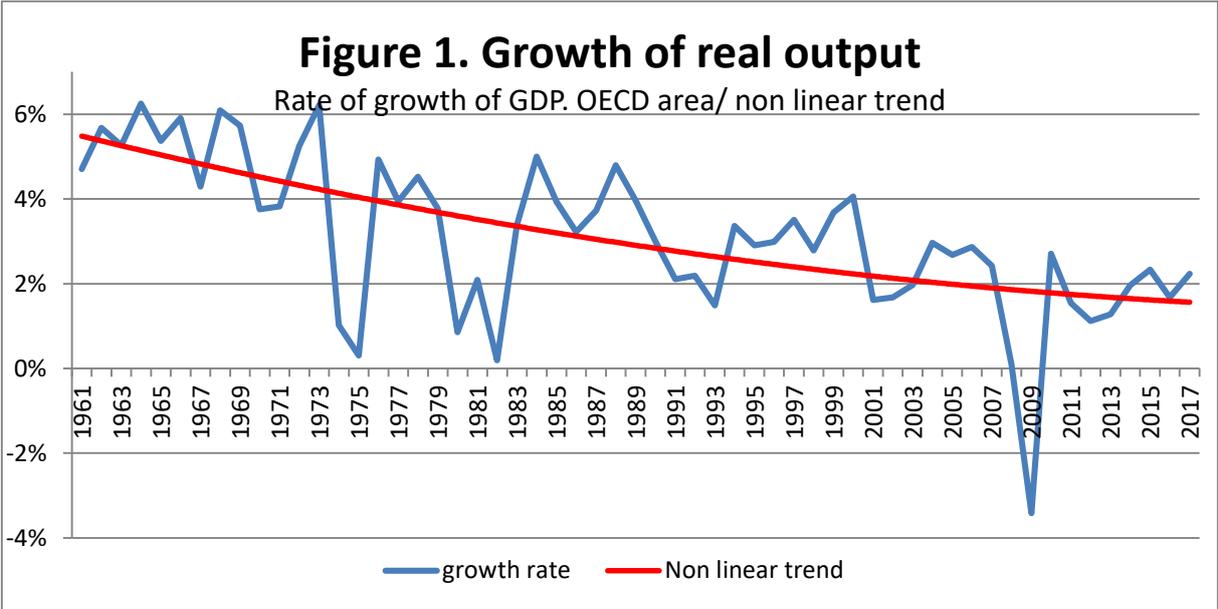
1 Real growth: long term slowdown and more synchronized cycles

Real growth in OECD area has fluctuated around an indisputably declining trend over sixty years (figure 1). The growth rate trend was around 5% at the beginning of the sixties. During the seventies it fell below 4% , below 3% in the nineties, and it has stayed under 2% since the early 2000s. Among the ups and downs of the economic cycles, major symmetric shocks are easy to identify, including the two oil shocks in 1974 and 1981, and the recessions in 1993 and 2009. It is worth noting that, if we put aside these two major shocks, the real volatility, measured by the deviation of the rate of growth from its time trend has reduced. Two episodes of fast growth are identified in second half of the eighties and the nineties.

Another aspect, although less known, is the continuous reduction in the real growth variability across countries during the same period (figure 2). In the OECD area, output growth cycles

¹ See. Bean et al. who addressed the question already four years ago. Conversely, the question of unusually high interest rates fueled intense discussions more than thirty years ago (see Blanchard and Summers 1984). See also Bismut (1993) on the episode of the 80s.

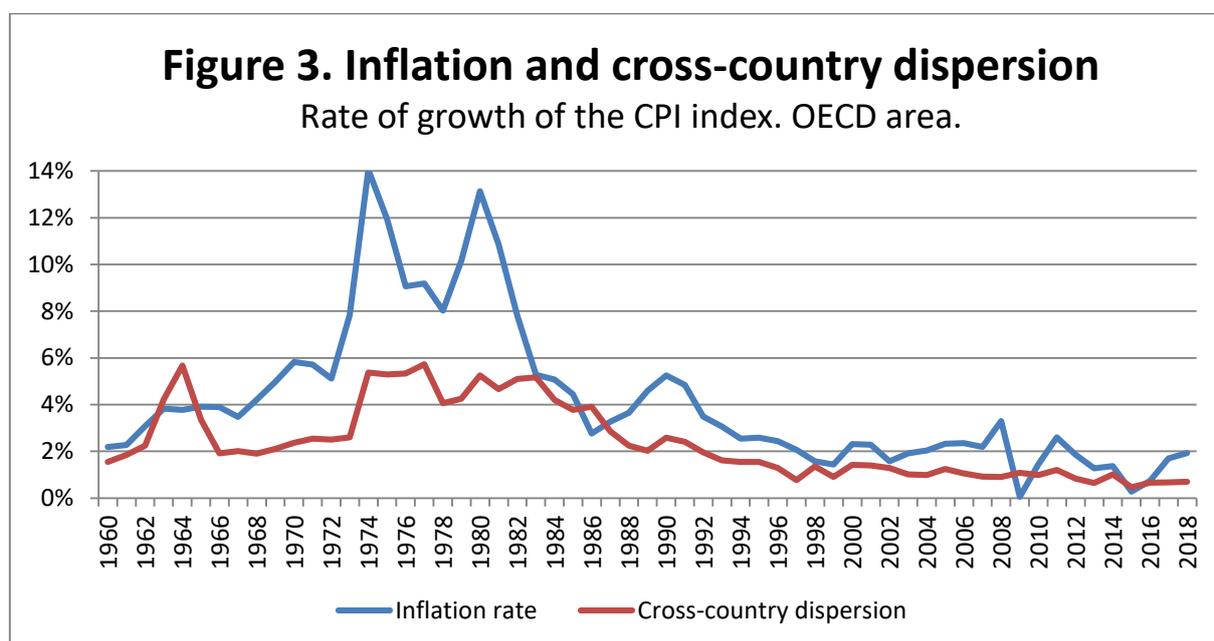
have tended to be more and more synchronized. Contrary to a common belief, this trend has not been reversed since the last recession. Real output growth rates fell sharply and in the same time, in almost every country around the world, during the trough of 2009. There is probably not a single reason for that, but rather a succession of factors that have worked in the same direction. One reason often put forward is the progress of globalization, but other structural causes are sometimes invoked. It is noteworthy that the breakdown of the fix exchange rate system and the general float in 1973, the financial deregulation starting from the beginning of the eighties and the introduction of the euro in 1999, have produced a reduction of real variability, not an increase. ²



² There is no slowdown in the world economy as a whole, as developing and emerging countries grew enough faster than developed countries.

2 Inflation: no more

Inflation has not been an issue for more than three decades in advanced countries (figure 3). After a decade of wage-price pressure in the sixties, inflation surged with the two oil shocks in 1974 and 1981 and receded along the eighties. Since the end of eighties, inflation (as measured by the rate of growth of the CPI) has remained low, around 2%, a figure which is retained as a target for monetary policy by most central banks. Another important feature is that, after the two oil shocks, convergence of the inflation pace was achieved, despite floating exchange rates, and with the help of the European Economic and Monetary Union and the introduction of the Euro. One important implication for our analysis is that inflation has become more predictable, and therefore inflation surprises have played a lesser role than in the past. The inflation expectations of private agents have been successfully anchored to the inflation targets of central banks which have gained credibility.

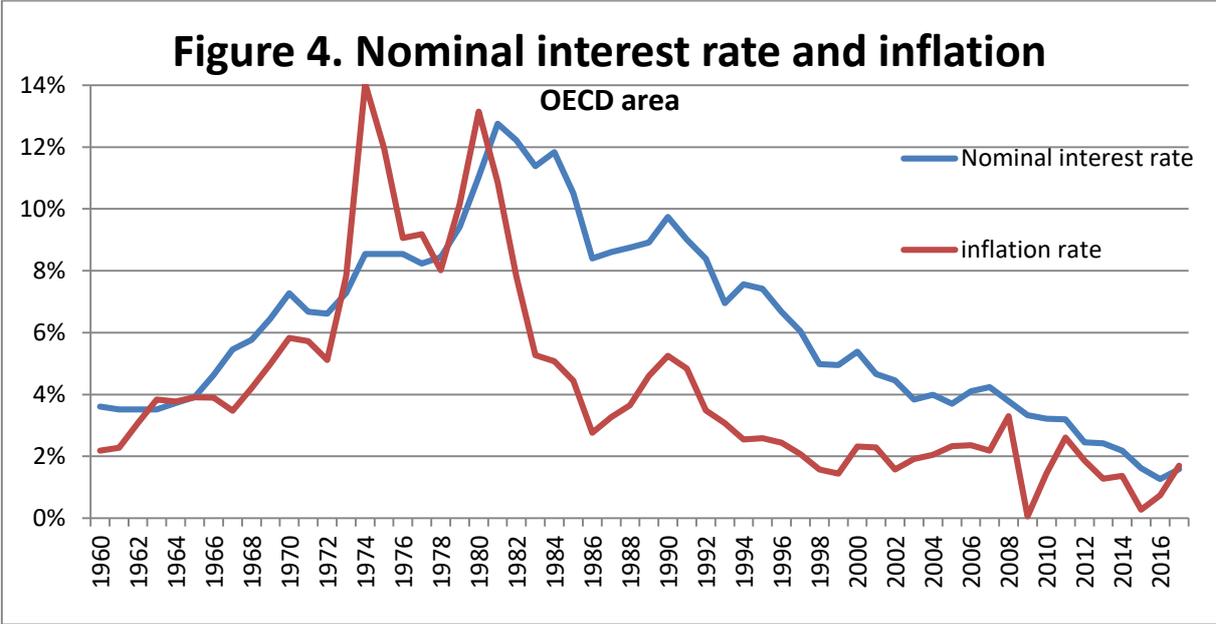


3 Nominal interest rates: historical lows

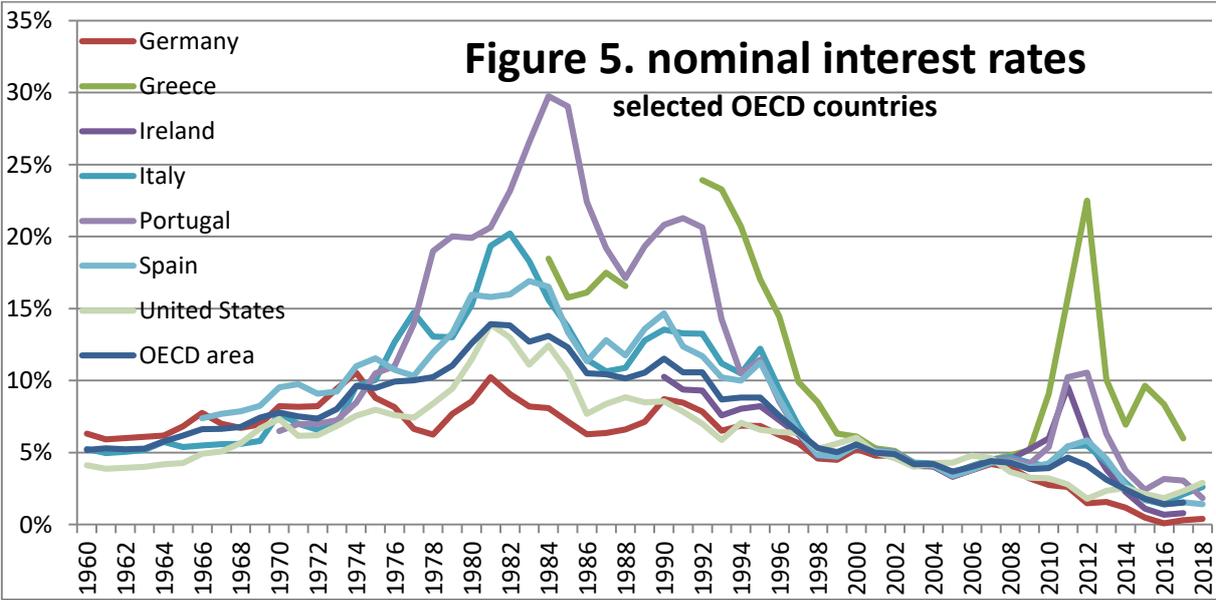
Unsurprisingly, nominal interest rates reflect to a large extent the evolution of the rate of inflation (figure 4). Ten-year interest rates on government bonds³ rose almost continuously from 1960 to a pic in 1982, the second oil shock, then they fluctuated around a downward trend. However, after a closer look, some differences can be identified between the evolutions of the two variables. First the interest rates underreacted to the rise in inflation following the oil shocks, particularly the first one with one-year lag. Second, while inflation stabilized around 2% from the mid-nineties onwards, the interest rates kept declining with no signs of picking up so far. The sluggish adjustment of the interest rates during the oil shocks may be attributed to the fact that the surge of inflation was unexpected and/or that high inflation was not expected to persist (see Bismut (1993)). On the contrary the recent diverging evolutions between a stable

³ Talking about the interest rate in general is of course an issue. For our discussion we chose the interest rate on ten year government bond consistently with the macroeconomic analysis and for the sake of simplicity. See further discussion on this issue in appendix.

inflation and still, a decreasing interest rate, can hardly be explained by an expected negative inflation. This suggests that the change in the interest rate has not been purely nominal.



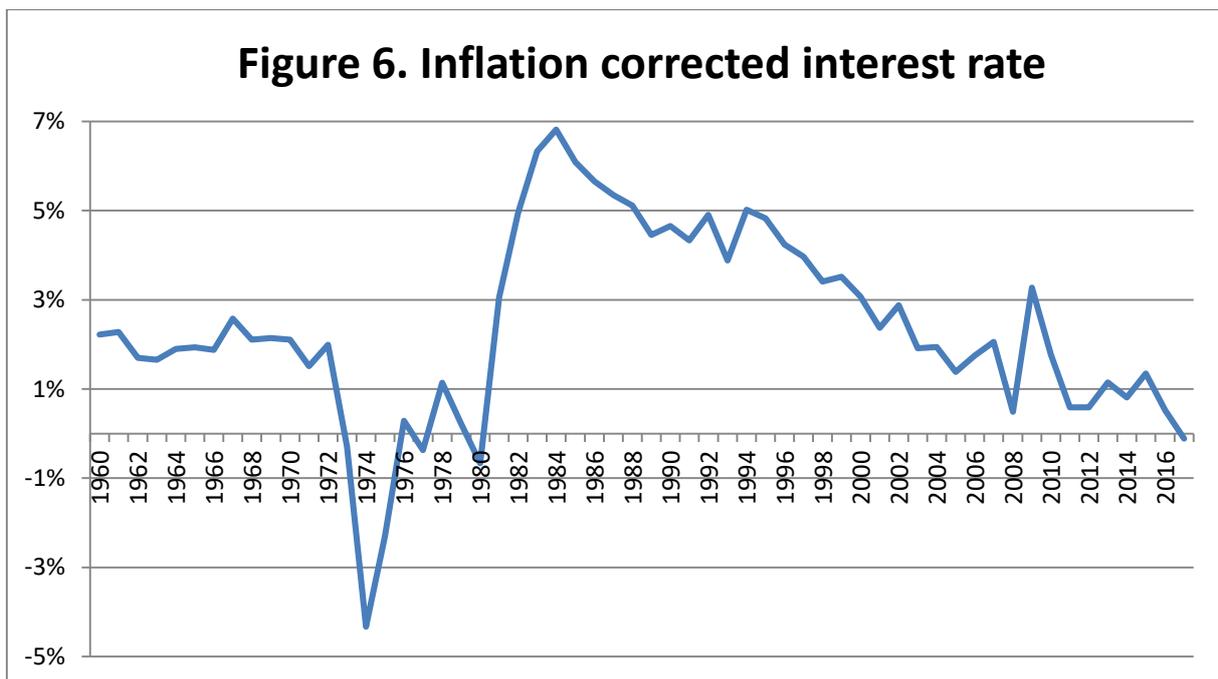
There is ample evidence that interest rates tend to diverge across countries when macroeconomic shocks occur. Since 1960, there have been two cases of widening difference between national interest rates across country (figure 5). The first one is the oil shocks episode, where interest rates adjusted to very different price increases from country to country. The second one occurred with the great recession and is clearly linked with the increase in the risk premia after a sharp deterioration of fiscal conditions in some countries.⁴ The Greek crisis offers a case study for this kind of adverse development. Similar cases can be found in Ireland, Portugal and Spain, the so call GIPS (for Greece, Ireland, Portugal, Spain). However, although important for the government faced with it, this problem concerns a few small countries with a limited impact on the OECD area as a whole.



⁴ See : Haug et al. OCDE, 2009 and Schuknecht 2010 et al. for a discussion on the risk premia in Europe.

4 Real interest rates: falling to zero or negative

One simple way, albeit very crude, to excerpt the real component of the interest rate, (i.e. the real interest rate) is to adjust the interest rate from current inflation, a resulting measure sometimes (incorrectly) referred as the *ex post* real interest rate⁵ and that we will call herein : “inflation corrected interest rate (or ICIR)”. The ICIR for the OECD was approximated as a weighted average of the countries ICIRs. These calculations lead to the evolution shown in figure 6. The ICIR was around 2% in the sixties, fell to negative figures during the oil shocks especially during the first one, then surged to 6% in the beginning of the eighties. What happened in the later years is striking: the ICIR steadily declined from 1983 to 2017. As we will show later, this finding is robust to the correction used for calculating the real interest rate.



II Macroeconomic policy

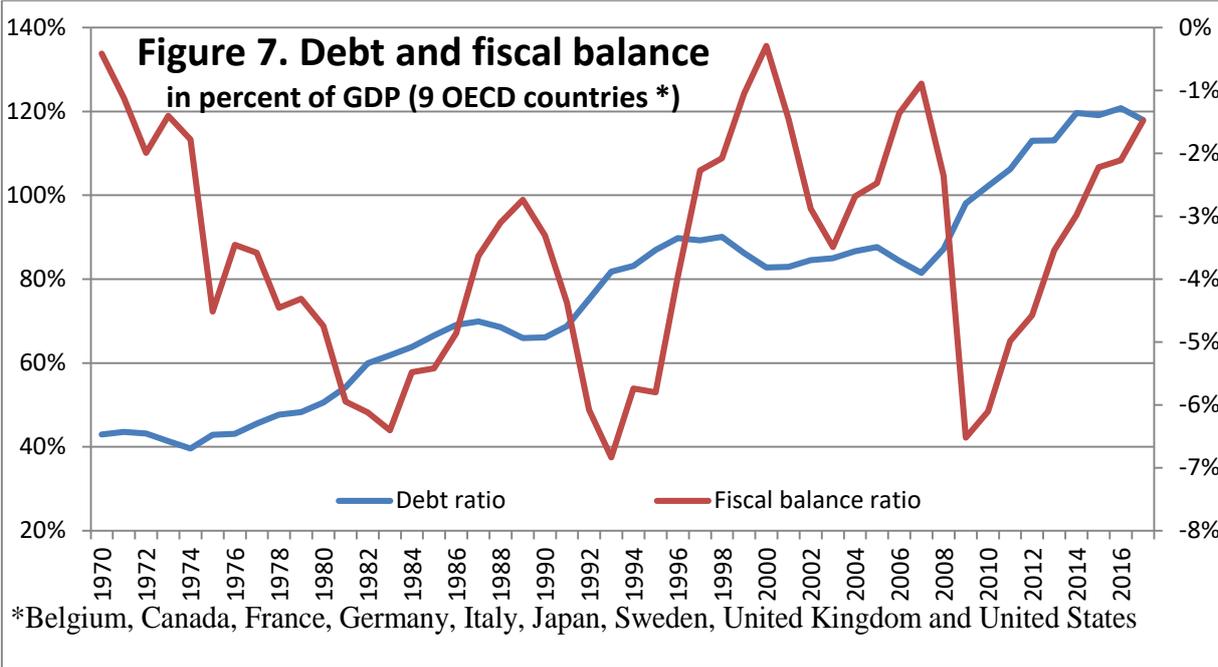
Fiscal and monetary policy have, presumably, an influence on the interest rate as well as on growth and inflation. In this section we confront some implications of basic macroeconomic theories. In particular, we discuss the relation between the real interest rate and government deficits and/or public debt. We also try to determine whether the data provide evidence on the influence of monetary policy on the real interest rate, (i.e. non-neutrality).

5 Fiscal deficit and debt. High debt is not associated to high interest rates

The government debt/GDP ratio (more shortly: debt ratio) of OECD countries grew almost continuously from 1970 to 2016, due to recurrent public deficits (figure 7). A short glance at

⁵ This term does not fully fit to the variable defined here. The real ex-post interest rate is the nominal interest rate correct by the actual change in the general price level between the issuance to the maturity of a fix income security. This means that for a ten-year bond the interest rate should be corrected by the average annual price increase over 10 years, not by the current rate of inflation.

the debt ratio over 5 decades suggests, as expected, a countercyclical behavior of the fiscal authorities but the upward trend raises questions. The evolution seems generated by some kind of ratchet effect and could be described as follow. Before the oil shocks, the debt ratio stayed stable at 40%. It rose to 60% and stabilized at the end of the eighties. It rose again to 80% during the 1992-94 recession, stayed stable at 80% until 2008, then rose to 120% as a consequence of an unprecedented fiscal expansion in response to the great recession of 2008-09. This evolution is the straightforward consequence of the general government balance and reflects the fact that government failed to run during surpluses during the upward phase of the cycle. Most of the time, governments used to increase expenditures during recessions but were reluctant to cut them during expansion.



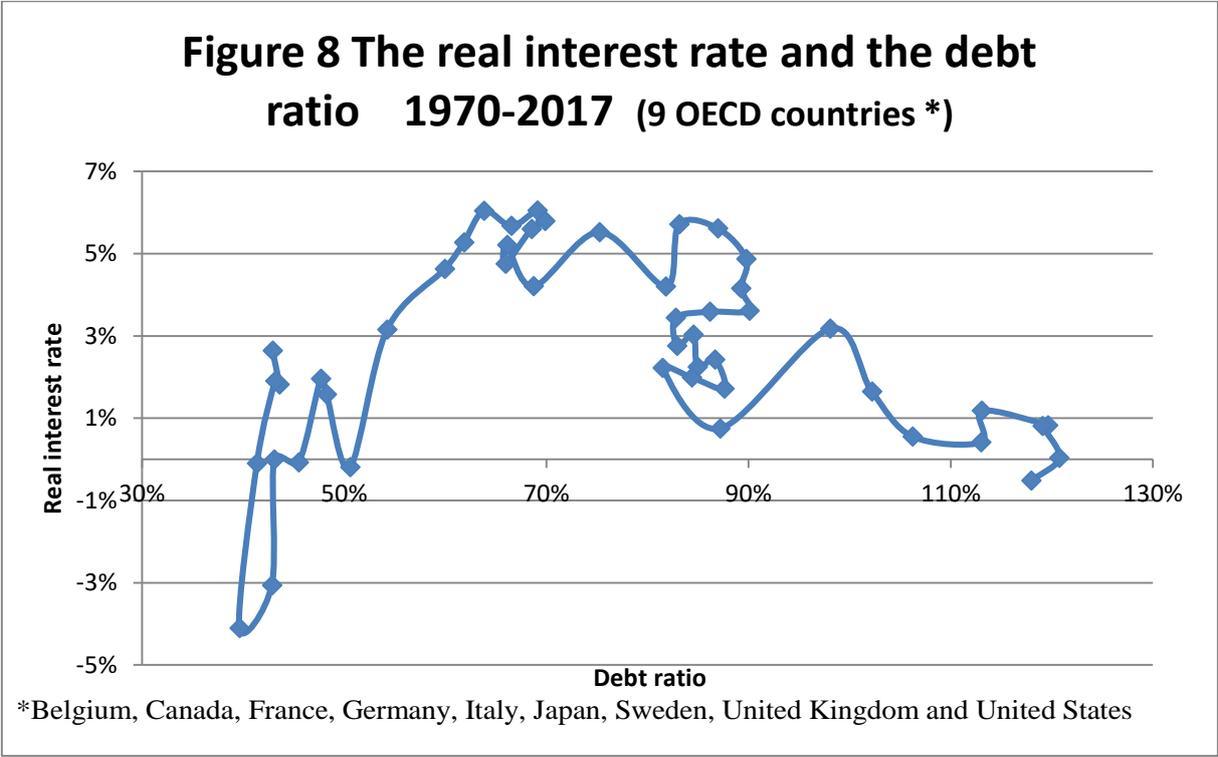
The consequences of a continuous increase in the debt ratio and consequently of high level of debt are intensely debated. Conventional Keynesian macroeconomics states that a fiscal expansion pushes output and the interest rate up. Though this may be correct in the short run, long run evidence of the post oil shocks period does not support these predictions as rising debt is associated to a slowdown and lowering interest rate corrected from inflation.

The negative impact of government debt to economic activity does not come here as a surprise, as it has been amply documented. The main reason behind this relation is that higher debt produces high interest charges, which in turn restrains the room for maneuver for (supposedly) productive government expenditures. Rogoff and Reinhart (2010) have produced a lot of works that indicate that an increase in the debt ratio from 60% to 90% would have reduced the rate of growth about 1% on average ⁶.

⁶ We retain the evaluation produced by the authors themselves, after having fixed an incorrect calculation left in the initial publication (2008). This error concerning a very sensitive issue the excessive public indebtedness led a very controversial debate. The correction did not reverse the qualitative conclusion but its magnitude. See also Nersisyan & Wray, (2013).

As for the interest rate, again, the conventional wisdom of a positive impact of higher debt on the interest evidences are mixed⁷. The reason behind this belief is that a higher indebtedness could make it harder for governments to repay their debt. As a result, savers will still be willing to lend to the government but at a higher rate, to offset the perceived default risk. In other words, a higher debt will raise a risk premium thereby increasing the interest rate. This does not fit to the observations reported on figure 8, where we have plotted the interest rate as a function of the debt ratio for each year.

What clearly appears from this presentation is that during the sixties and the seventies, there was no evidence of a relation between the debt ratio and the interest rate (or, if any, a positive correlation). From 1983 to 2017, the latest data, there exist, on average over the OECD countries, a strong negative correlation between the interest rate corrected from inflation (ICIR) and the debt ratio in the, post oil shocks period. However, the expected positive correlation is observed during the last recession for the countries that have faced serious fiscal situations, the so called GIPS.

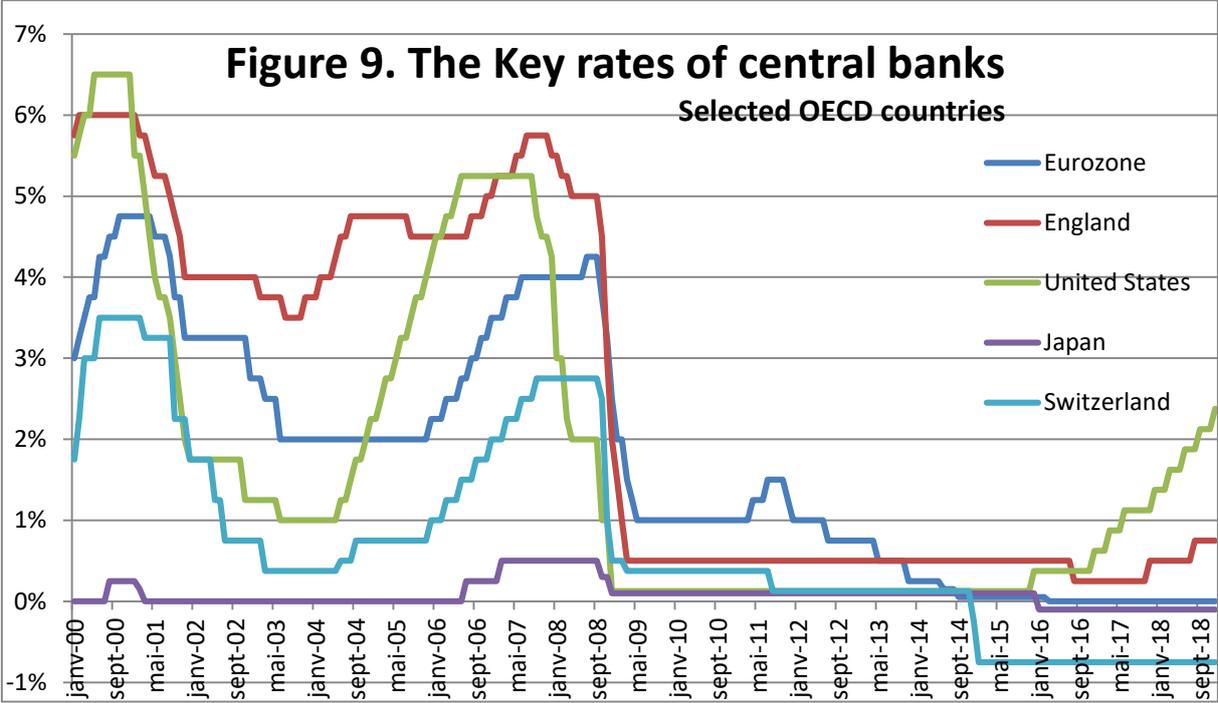


2 Monetary policy

Monetary policy has been subject to considerable change since the beginning of the sixties. In the past, monetary policy was essentially based on the control of monetary aggregates as intermediate targets. In the eighties a worldwide phase of financial deregulation and reforms of central banks toward more independence led to a complete reconsideration of monetary policy design. An objective of price stability was assigned to newly independent central banks and key monetary rates were overwhelmingly adopted as new monetary policy instruments. The disinflation after the post oil shocks and the stabilization of the inflation rate around the 2% (implicit or explicit) target, were seen as a major achievement of economic policy

⁷ See Corsetti & Rubini (1991) and Tanzi & Fanizza (1995)

specifically attributed to the central banks, before the last recession. In the years 2000s, criticisms grew, culminating with the subprime crisis, on the timing of the action of the FED on its key rates. This comforted the idea that interest rates in the economy were at least indirectly controlled by the central banks, a belief, strongly opposed by Ben Bernanke (2015).



When they realized that a recession of an unusual magnitude was occurring, central banks cut aggressively their intervention rates to almost zero, thereby dampening the recession for the private sector, but the impact on the cost of borrowing for the public sector was limited. The interventions of the central banks improved the liquidity of the commercial banks who could provide enough short-term credit to non-financial firms and households at affordable cost, The long run interest rates remained determined by the saving-investment balance rather than monetary conditions. While private investment was plunging, governments increased public spending substantially, affecting the interest rate in opposite directions. As a result, interest rates on public bonds did not increase substantially throughout the 2008-2009 trough of the recession, except for the governments who were subject to a deterioration of their credit rating (the GIPS) as discussed above.

Many officials and commentators argued that central banks did not enough, but central bankers have been unanimously reluctant to pull their key rates below zero and some resorted to “unconventional policies”. The so called “zero lower bound” has been pointed by some economists as an undesirable artefact limiting the room for maneuver of monetary policies and that one should simply get rid of it or find a way to circumvent the obstacle ⁸. In fact, major central banks, including the Fed and the EBC, decided to implement large programs of government bonds purchase which expanded the money supply. This policy has been labelled “unconventional” as opposed to the usual money market rates interventions, but it is quite similar to the old fashion open market policy. Incidentally, this suggests that central bankers have proved to be less rigid than some people feared.

⁸ see Blanchard and al. 2010, Summers 2014, Rogoff, 2017

This changing monetary policy framework makes our investigation uneasy. In absence of a unique indicator, we will adopt a pragmatically assume that in the medium term, money is neutral and then, monetary policy does not influence significantly the real interest rate ⁹. This means that the real interest rate is essentially affected by real factors, among which: determinants of the potential output, exogenous shocks and/or fiscal policy. Monetary policy affects the rate of inflation and thus the nominal interest rate.

III What do we know and what do we have to know? Concluding remarks

At this point, some clear stylized facts, and also no evidence in some cases emerge from our discussion.

1. The slow pace of real growth does not appear as a transitory phenomenon but is in line with a long-term slowdown of real activity.
2. Inflation has disappeared for decades and there are no reasons for an upsurge of inflation in a foreseeable future.
3. Interest rates are historically low after a decline of more than three decades and there are no signs of a pick-up so far.
4. The public debt ratios are still on an upward trend. The recent reduction might be cyclical and seems to replicate the evolution observed in past recovery phases.
5. There is no evidence of a pick-up of real interest. The interest rates corrected from inflation are negative in 2019. Inflation has been stabilized whereas nominal interest rates are still declining.
6. There is no evidence that higher public debt would be favorable to growth in the long term. In fact, higher debt is associated to declining growth.
7. There is no evidence that higher debt produces high real interest rates except when serious doubts exist on government solvency.

Is the low interest rate a monetary phenomenon? A situation in which the private sector believes that inflation will stay low and that interest rates will go up at a certain point cannot be ruled out. As a consequence, interest will pick up ultimately and it would be a good idea to keep a lot of cash and take advantage of a return to bonds as interest will go up. This is the liquidity trap argument that has been raised on discussion about Japan in the year 2000. However, this argument is less and less convincing as the outlook of rising interest rates drifts away. In addition, there is no evidence that potential growth will stop decelerating behind cyclical movements.

⁹ This is not satisfactory. A consistent treatment would require some methodological elaboration should benefit from a number of studies and statistical works already available. We leave this question for further research.

We believe that Gordon's (2012) vision should be taken seriously, though not too radically. The long-term slowdown is a clear evidence for the developed countries ¹⁰ (not for the emerging countries). Gordon's original document lists several "headwinds", some of which are specific to the United States, others also apply to other countries. In particular, the reason of the slowdown of productivity in the third industrial revolution (the general development of ICTs in industries and services) may affect potentially every country. Another common "headwind" would be the following: high public debt in OECD countries have negative consequences on real activity because they generate interest charges, they are a promise of future taxes thereby reducing consumption today according to the Ricardian argument.

If we go further in the same direction, we can elaborate a story which is fairly consistent with the stylized facts. We suggest that a vicious circle might emerge, in which a slowdown of productivity and growing debt reduce potential growth and real returns, which drives real interest rates down, a condition which in turn would facilitate growing public debt, and so on.

Finally, a question remains open as to whether returns on the different assets are moving together. So far, we have assumed that the real interest rate on bonds reflects the real return in the economy which is essentially determined through the saving / investment balance. This is probably over simplistic. In particular, it has been suggested that the last recession has moved the preference of investors toward less risky assets (government bonds rather than equities). This may have increased the demand for bonds thereby pushing down long-term interest rates. This mechanism may have played a role as an additional cause of the observed decline in interest rates on bonds.

¹⁰ See also Summers 2013, 2014, 2015, for a prospective discussion and policy implication.

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Appendix

In this paper, we have conducted a statistical analysis on twenty OECD countries for which most macroeconomic annual data are available from 1960 to 2017. The list includes Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, United Kingdom and United States. The objective was to select the largest and the longest balanced panel.

The data come from (mostly) OECD Economic Outlook No 104-November 2018 (GDP in volume, CPI index, long-term interest rates on government bonds, general government gross financial liabilities in percent of GDP, general government net lending in percent of GDP). To complete the series, we have also used OECD Economic Outlook (No 73-June 2003) for a limited number of countries in order to have the largest samples as possible (data calibration between of two data sources, especially for real growth, where we have two different base years).

The OECD data for Unified Germany start in 1991 and in order to retain Germany in our panel we used the data available FRG (west Germany) before the unification. We connected the two sub periods and we estimated 91/90 rate of growth by the average rate of growth of GDPs 3 years before and 3 years after the reunification in order to avoid a jump in 1991 and smooth the series, as there is some overlap between the old national accounts for the FRG and new national account of the Unified Germany. This ad-hoc rule can be criticized but have a negligible impact on the econometric results.

The double dimension our database panel (years x countries) means that we have many observations for testing a theoretical assumption but if we want to draw conclusions for the OECD as an area, we need to proceed using weighted calculation. For some variables we computed a weighted average which tells something on the OECD as a whole and, a weighted standard deviation which gives a fair approximation on the cross-country dispersion within the area, as opposed to the unweighted dispersion which corresponds to the notion of variety of country cases. The formulas for weighted average (1) and weighted standard deviation (2) are:

$$\bar{x}^* = \frac{1}{\sum_{i=1}^n w_i} \sum_{i=1}^n w_i \cdot x_i \quad (1)$$

$$S^* = \sqrt{\frac{1}{\sum_{i=1}^n w_i} \sum_{i=1}^n w_i (x_i - \bar{x})^2} \quad (2)$$

The weight w_i for each country is as calculated as the share of the GDP of country i in OECD GDP, in volume, as constant purchasing power parities in US dollar (2010, same base

year for all countries, except for France, 2014) for the year 2010. The weight for the country is the level of national GDP divided by the sum of GDPs of our sample, detailed calculations in table 1 below.

Table 1

Countries	GDP in volume at constant PPP 2010 (US dollar, 2010)	w_i
Australia	906 199 520 623,16	2,39%
Belgium	436 790 169 722,09	1,15%
Canada	1 361 085 791 459,75	3,58%
Denmark	238 772 396 980,27	0,63%
Finland	207 942 600 830,63	0,55%
France	2 334 823 941 037,22	6,15%
Germany	3 200 656 838 994,76	8,43%
Greece	313 389 715 840,68	0,83%
Ireland	197 601 206 559,89	0,52%
Italy	2 074 917 032 961,91	5,46%
Japan	4 482 754 896 976,16	11,80%
Korea	1 505 136 498 023,30	3,96%
Netherlands	748 640 465 771,13	1,97%
New Zealand	134 744 891 697,94	0,35%
Portugal	289 013 472 066,47	0,76%
Spain	1 488 327 970 362,84	3,92%
Sweden	390 048 336 804,86	1,03%
Switzerland	415 127 912 809,37	1,09%
United Kingdom	2 262 551 679 151,65	5,96%
United States	14 991 485 697 625,10	39,47%
Overall	37 980 011 036 299,20	1

The definitions of the variables used in our paper to describe the economies are the following:

- Real growth is the annual growth rate of Gross Domestic Product in volume at 2010 market.
- Inflation is the annual growth rate of consumer price index (CPI).
- The nominal interest rate is the long-term interest rate on 10 years fixed government bonds,
- Debt ratio is the general gross financial liabilities as a percentage of GDP.
- Fiscal balance corresponds to the general government net lending as a percentage of GDP.
- The key rates of central banks correspond to monthly official interest rates of central banks (last day of the month). Depending of the country, we have the main refinancing rate or the average between the lower limit and upper limit of the range target for the rate (data of Swiss National Bank).

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