Fiscal Convergence in the European Union in the Context of the Global Financial Crisis

Ioana-Laura Tibulca

Fiscal Convergence in the European Union in the Context of the Global Financial Crisis

Ioana-Laura Tibulca

Department of Finance, Bucharest University of Economic Studies, Romania
Email: tibulca.laura@gmail.com

Abstract
Fiscal convergence among the EU Member States has constantly been one of the most important objectives of the European Union. Consequently, debates regarding new tax directives and discussions on common tax policies are always in the limelight. In the current study, the overall tax burden was considered as a descriptor of the fiscal systems of the EU Member States and used to analyze the convergence trend of taxation in the European Union. After using both statistical analysis and sigma-convergence, the conclusion is that the global financial crisis has affected fiscal convergence in the European Union by reversing the tax convergence tendency which existed among Member States until 2008.
Keywords: Fiscal Convergence, Taxation, Sigma-Convergence, Tax Burden

Introduction

Taxation convergence within the European Union is one of economic and financial issues that have remained in the limelight in debates and discussions. One of the reasons why the interest in fiscal convergence is increasing is the fact that most of the budgetary revenues of all the Member States are collected from taxes.

Another reason is tax competition among Member States. This problem is accentuated by the existence of laws which facilitate the migration of companies from one Member State to another and by each country's struggle to attract foreign investors. Ensuring tax convergence in the EU represents a means of avoiding further controversies on weather tax competition among Member States is legal or moral. To complicate matters even more, in order to counteract the effects of the worldwide economic crisis, each Member State has resorted to changes in its' own taxation system.

It is my belief that a study on the effects of the economic crisis on tax convergence in the European Union is necessary as well as useful. Most studies on fiscal convergence use information for the EU-15 and are now only relevant as a basis for comparisons, but they are not satisfactory for decision making, policy analysis or discussions on the effects of the global financial crisis. This study is intended as a small step in filling the existing gap.

This article is structured as follows: after the first introductory section, section 2 describes the methods of research as well as the database, section 3 is dedicated to a detailed presentation of the results obtained and section 4 contains the general conclusions reached as well as their implications for the European Union.

Literature Review

The issue of tax convergence in the European Union has been the focus of attention for several researchers in recent years. The relevant scientific articles on tax convergence are mostly based on sigma or beta convergence, concepts which are presented in the economic convergence literature of the early nineties, the best known of which is (Barro and Sala-i-Martin, 1992). Among these, Esteve et al (2000) use sigma and beta convergence with Germany as a benchmark in order to conclude that there is evidence of convergence regarding total fiscal pressure in the European Union for the period between 1967 and 1994. In another study, Sosvilla et al (2001) conclude that tax convergence has not been continuous in the European Union and took place only in the periods between 1967-1974 and 1984-1995.

More recent approaches of the matter use the same two techniques mentioned earlier and add other analysis techniques such as gamma convergence. Rivero (2006), for example, states that his results suggest the existence of convergence regarding the tax structure and fiscal pressure in the European Union in the overall period during 1965-2003. Konceda, Kutan and Yigit (2008) use beta-convergence and focus on the ten Member States that joined the European Union in 2004. They define fiscal convergence in the EU as being convergence towards the Maastricht criteria for the public debt and the budget deficit and their results point towards a lack of fiscal convergence among the ten countries analyzed. Avi-Yonah (2010) explains the advantages of tax convergence and writes about the existence of tax convergence between 1980 and 2010 among the OECD member states, basing this on the fact that more and more countries have adopted the value added tax in recent years. In previous research we have used cluster analysis to determine the existence of tax convergence groups within the European Union and to define the characteristics of each fiscal cluster. The database included information for EU-27 and the time period we selected was 1965 to 2010.

This study aims to analyze fiscal convergence in the European Union as it is today, with all the 28 current member states. The research is based on the most recent data available and the technique of statistical analysis as well as sigma-convergence analysis in order to see if the fiscal systems of the Member States have been converging or not in the recent years. Croatia will also be included in our analysis, in order to see were the EU's newest member positions itself regarding taxation, by comparison to the other Member States and to the EU-27 average.

Research Methodology

The research is organized into two parts: the first one is a statistical analysis of the evolution of the tax burden in the EU over two different time periods (2001 – 2011 and 2008 – 2011); the second parts is a study of fiscal convergence in the EU using sigma-convergence for a time period starting in 1965 and ending in 2011.

The database used for the first part of the study was extracted from the Eurostat database, using the online publication *Taxation Trends in the European Union - Data for the EU Member States, Iceland and Norway*. Annual data was used for the years between 2001 and 2011. This data was used for the graphic representation of the evolution of the total tax burden in each Member State of the EU for two time periods, 2001 to 2011 and 2008 to 2011. A graph was drawn for each time period, following the same steps.

First, a base year was chosen: 2001 for the first time period and 2008 for the second one. Then the 27 Member States were separated into two groups: countries with a higher fiscal pressure than the average for the base year and countries with a lower fiscal pressure than the average of the base year. After that, the evolution of the fiscal pressure for each

country was calculated (in percentage points of GDP) using the value of the total tax pressure in 2011 and in the base year. Croatia was also included in this part of the research, as it became a member of the EU on the 1st of July 2013. Information for Croatia was collected from the website of the Croatian Bureau of Statistics and the online versions of the Annual Statistics posted.

For the second part of our research, the sigma-convergence analysis, information regarding the fiscal system and total fiscal pressure in the 27 member states of the European Union was used, starting from 1965 and ending in 2011. Data from 2011 is the most recent information currently available. The data is based on the OECD Revenue Statistics for 2011 and as well as on the Eurostat database. The OECD statistics did not include six of the European Union's Member States (Cyprus, Malta, Latvia, Lithuania, Bulgaria and Romania) which forced me to combine the two databases.

The total fiscal pressure (or tax burden) is calculated as the percentage of total revenues from taxation in GDP. This was considered to be a representative trait for the fiscal systems of each Member State of the EU.

For the sigma convergence analysis I considered a less conventional approach. It was necessary since I chose such a wide time period (1965 – 2011) during which the current Member States joined the EU during different "waves" of enlargement. However, I believe this approach to be more relevant for the purpose of the research: for each year in the time period (1965-2011) I only considered the data for the official member states of the EU at that moment and adjusted the calculus accordingly. The results are based on the following equation for the coefficient of variation (CV):

$$CV_t = \frac{\left(\frac{1}{n} * \sum_{i=1}^{n} (y_{it} - \overline{y_t})^2\right)^{1/2}}{\overline{y_t}} \qquad (1)$$

Where n is the number of objects (member states), t represents the year, i represents each of the member states considered in turn, y is the total fiscal pressure.

Research Results
Statistical Analysis of the Tax Burden

The results of the first part of the research are presented in the two charts below. Both charts serve the purpose of analyzing the evolution of the tax burden (tax-to-GDP ratio) in each of the 27 EU Member States, even if in 2001 some of them were not yet officially part of the Union and were still undergoing accession procedures.

Graph no.1 presents the total fiscal pressure in each of the Member States of the European Union in 2011 by comparison to 2001. The aim is to show the changes in the overall rate of taxation during the last decade in the EU.

Graph 1. Fiscal pressure in 2011 (tax revenue to GDP ratio) – base year 2001
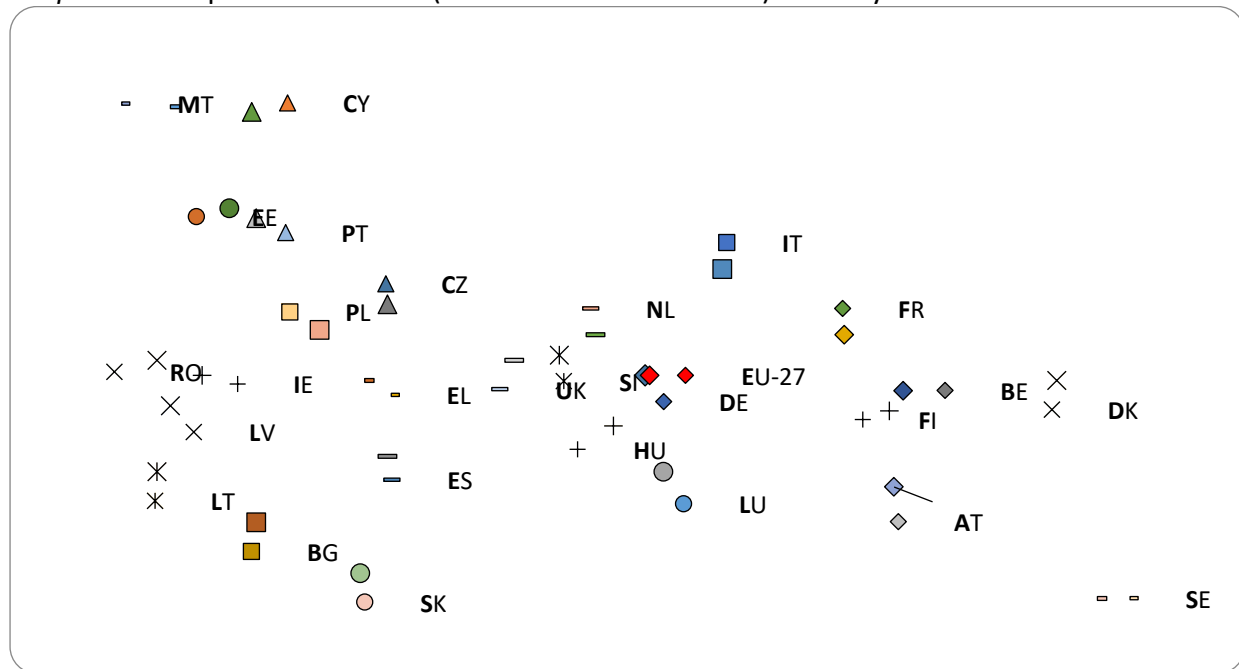
Source: Results of our calculus and Eurostat provided data

In 2011, most countries that had an above average fiscal burden have reduced it compared to 2001. The only exceptions are Italy, the only EU Member State with an above average tax burden that has increased it in the last decade, and France, where the overall fiscal pressure has remained much the same over the last ten years. Another fact worth noticing is that of all the countries with an above average tax burden, Sweden has registered the greatest decrease, of almost 5% points of GDP. Also, Germany's fiscal pressure evolution is the closest (almost identical) to the evolution in overall tax burden of the EU-27 as an entity.

When it comes to the group of countries with below average fiscal pressure in 2001, the evolution over the last decade is less uniform. Seven Member States have increased their overall tax burden, with the largest increases in Mediterranean countries: Malta (4.6% points of GDP), Cyprus (4.5% point of GDP) and Portugal (2.4% points of GDP). Poland and the Netherlands have maintained almost the same fiscal burden since 2001 (Poland increased the fiscal pressure with 0.2% points of GDP and the Netherlands registered an increase of 0.1% points of GDP).

The rest of the Member States with a below average tax burden have further reduced it over the last ten years. The most remarkable decrease has been registers in Slovakia (4.6 points of GDP). Bulgaria and Lithuania have also decreased their already low overall fiscal pressures (from 30.8% to 27.2% in Bulgaria and from 28.6% to 26% in Lithuania). All the evolution trends for individual Member States, point to a lack of convergence regarding the overall tax burden in the European Union during the last ten years.

Graph no.2 presents the evolution of the overall tax burden in the EU during the worldwide economic crisis that started in 2008. This is the reason why I chose to consider 2008 as the base year for this next chart.

In 2011, most EU Member States have increased their overall tax burden compared to 2008, as a result of the effects of the economic crisis. Most of the countries with an above the average fiscal pressure in 2008 have further increased it by 2011. Hungary has registered the most noticeable increase of 3.3% points of GDP. Denmark, Belgium and Italy have maintained

almost the same fiscal pressure (with small increases of 0.1% points of GDP in Denmark and Belgium, and 0.2% points of GDP in Italy). Over the last three years, the evolution in taxation in Germany and the Netherlands is the closest to the evolution of the EU-27 as an entity. Moreover, Germany has also maintained almost the same tax burden during the considered time period (with only a slight increase of 0.2% points of GDP). The only exceptions are Finland and France, where the tax burden was reduced since 2008 (from 43.4% to 42.9% in Finland and from 43.9% to 43.2% in France).

Graph 2. Fiscal pressure in 2011 (tax revenue to GDP ratio) – base year 2008
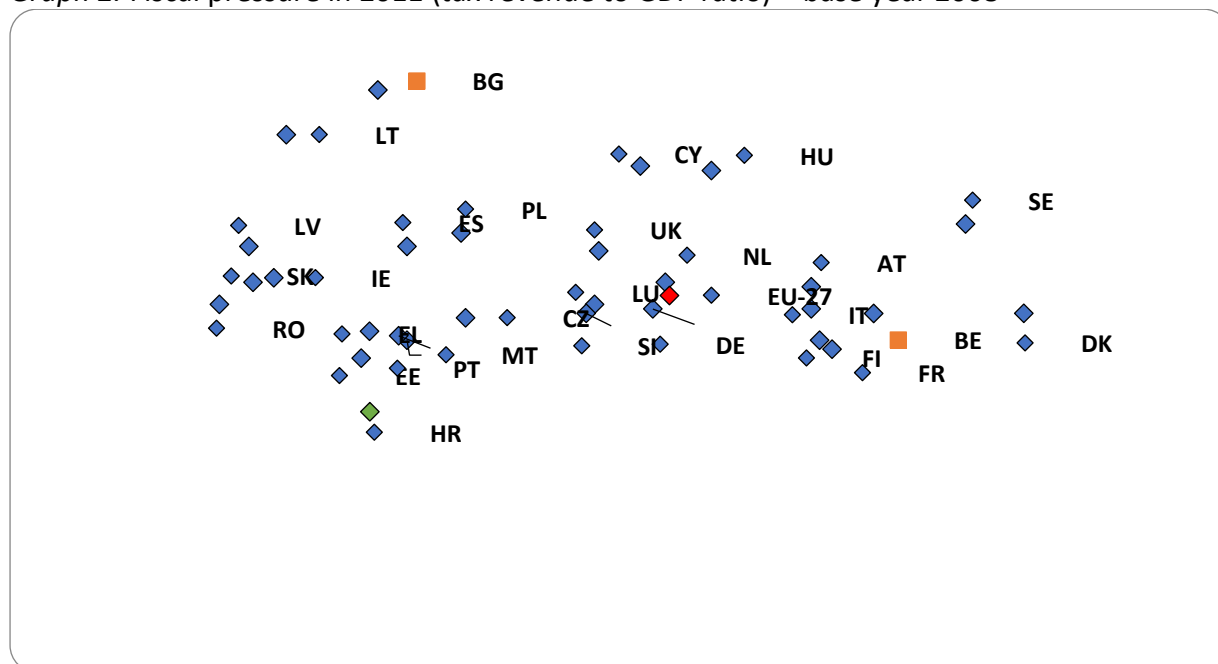
Source: Results of our calculus and Eurostat provided data

As far as the group of countries with below average fiscal pressure in 2008 is concerned, the evolution over the last decade is similar to that of the previous group. Most of the EU Member States included in this group have increased their overall taxation rates during the last three years. The most noticeable increases have occurred in Bulgaria and Lithuania (with rises in fiscal pressure of 5.1% points of GDP in Bulgaria and 4.1% points of GDP in Lithuania). Other countries have registered only a small increase in tax burden, such as Slovenia (0.1% points of GDP), Luxembourg (0.3% points of GDP) and Romania (0.3% points of GDP). The situation of the Czech Republic deserves to be mentioned as it is the only country in the EU that has maintained the exact same tax burden in 2011 as in 2008.

Only four Member States with a below average fiscal pressure in 2008 have decreased it further over the last three years: Estonia, Malta, Poland and Greece. Croatia, the newest member of the European Union as of the 1st of July 2013, was also included in the graph above. In 2008 its' tax burden was below the average for the EU and it has decreased even more during the years from 2008 to 2011, by 2.1% points of GDP[1]. It is the most significant drop in fiscal pressure among all the Member States of the European Union. All the evolution trends for individual Member States, point to a lack of convergence regarding the overall tax burden in the European Union during the years of the economic crisis, which explains the lack

---

[1] The data for Croatia was collected from the Croatian Bureau of Statistics and the Annual Statistics for 2011, online version (www.dzs.hr/default_e.htm)

of fiscal convergence in the EU which I have already mentioned for the period between 2001 and 2011.

Sigma-convergence analysis of the tax burden

In order to reach a more refined conclusion regarding fiscal convergence in the European Union, I have used sigma-convergence. The results obtained are illustrated in Graph no.3 below.

Graph 3. Coefficient of variation for fiscal pressure in the EU (1965 - 2011)

$y = 0.0009x + 0.1299$
$R^2 = 0.3413$
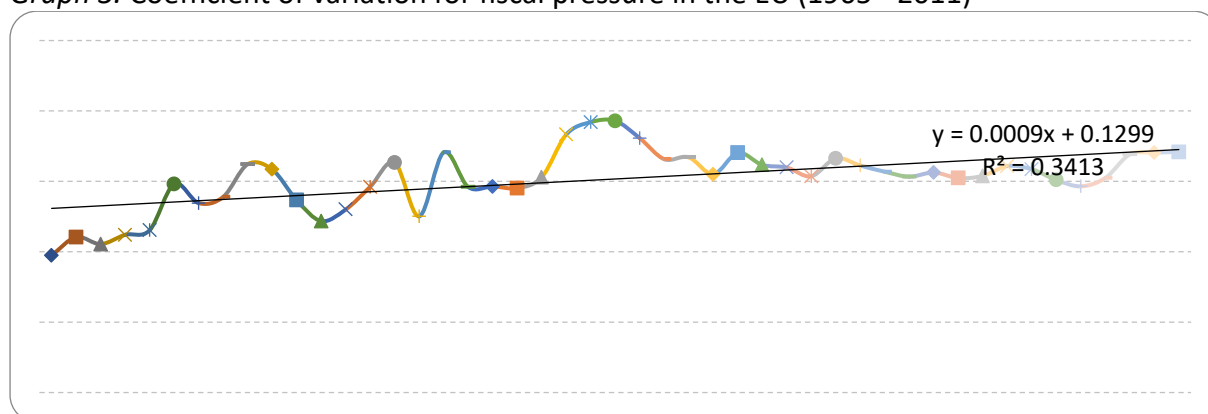
Source: Results of our calculus

Overall, for the time period considered and using sigma-convergence as a method for analysis, it can be said that as far as taxation is concerned, there does not appear to be a clear convergence trend in the European Union. The coefficient of variation (CV) for the total fiscal pressure in the EU shows an ascending trend line, as shown in the graph. The maximum values for the CV was in 1988 (0.1929) and the minimum value for the CV was in 1965 (0.0975). The annual rate of convergence is 1.748%, the positive value showing a tendency to diverge for the fiscal systems of the EU Member States rather than a tendency towards convergence.

However, if we split the main time period into three shorter time periods, we can notice more specific trends for taxation in the European Union. The three time periods chosen were 1965 to 1988, 1989 to 2007 and 2008 to 2011. The results for sigma-convergence for each period are presented in Table 1 below.

Table 1

σ – Convergence for fiscal pressure in the EU

Time period	1965 - 1988	1989 - 2007	2008 - 2011
Annual rate of convergence (σ - convergence)	3.90%	-1.33%	4.02%
CV Max (Year)	0.192954　(1988)	0.180656　(1989)	0.170891　(2011)
CV Min (Year)	0.097472　(1965)	0.146472　(2007)	0.152360　(2008)

Source: Results of our calculus

For the period between 1965 and 1988 there is no convergence trend regarding the total fiscal pressure in the European Union. The annual rate of convergence is 3.9%, very close to the annual rate of convergence for the last time period considered (2008 to 2011). Therefore, during the 2008 – 2011 time period, when the effects of the financial crisis were

felt in most European countries, each Member State focused on its' own fiscal policy and this lead to divergence at the level of the tax burden in the EU. This also confirms the conclusions of the statistical analysis for the years 2008 – 2011 presented in the previous subsection.

However, the interesting find is that for the time period between 1989 and 2007 there is a clear fiscal convergence tendency in the EU, illustrated by the value of the annual rate of convergence (-1.33%).

Conclusions

The overall conclusion is that the financial crisis has affected the fiscal convergence trend that was clearly outlined in the European Union prior to 2008. Member States dealt with the effects of the crisis by adjusting their fiscal policies according to their own immediate necessities and with less regard to the common goal of fiscal convergence in the EU. This was revealed by both research methods employed.

Using the method of statistical analysis for the total fiscal pressure, we may conclude that the diverging fiscal tendency present in the 2008 – 2011 time period was so strong that in outweigh the converging trend of the previous year. As a result, it yielded a lack of overall tax convergence in the European Union during the last decade.

The results of the sigma-convergence analysis confirmed the above mentioned conclusion. A clear tax convergence trend was discovered for the years between 1989 and 2007, with a negative annual rate of convergence for the entire period. However, the annual rate of convergence for the last four years (2008 – 2011) was a positive one, showing a reversing trend in taxation in the European Union for the recent years. I also believe that this trend will shift towards tax convergence again once the effects of the financial crisis are no longer apparent.

All in all, both research methods used in the current study have lead to the same general conclusions regarding fiscal convergence in the European Union. Still, the sigma-convergence results seem to render a more in-depth perspective that the statistical analysis. The conclusions are in line both with my expectations when I began the research process and with other results previously presented in relevant published research articles.

References

Avi-Yonah, R. S. (2010) 'Tax Convergence and Globalization', University of Michigan Law & Economy, Empirical Legal Studies Center, Working Paper No. 214, [Online], [Retrieved March 4, 2012], http://ssrn.com/abstract=1636299

Barro, R. J., and Sala-i-Martin, X. (1992) 'Convergence', *Journal of Political Economy*, 100 (21), 223-251

Browning, E. (1978) 'The Burden of Taxation', *The Journal of Political Economy*, 86 (4), 649-671

Rivero, D. F. (2006) 'Are the tax mix and the fiscal pressure converging in the European Union?', Instituto de Estudios Fiscales, working paper, [Online], [Retrieved December 18, 2011], http://econpapers.repec.org/paper/hpewpaper/y_3a2006_3ai_3a11.htm

De Novelis, F., and Parlato, S. (2003) 'Reducing fiscal pressure under the stability pact', Italian Society of Public Economy, working paper, [Online], [Retrieved January 12, 2012], http://www3.unipv.it/ websiep/wp/202.pdf

Esteve, V., Sosvilla, S., and Tamarit, C. (2000) 'Convergence in fiscal pressure across EU countries', *Applied Economics Letters*, 7, 117-123

European Commission. (2013) 'Taxation trends in the European Union - Data for the EU Member States, Iceland and Norway', Publications Office of the European Union, Luxemburg, [Online], http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-DU-13-001/EN/KS-DU-13-001-EN.PDF

Gee, M., Haller, A., and Nobes, C. (2010) 'The Influence of Tax on IFRS Consolidated Statements: The Convergence of Germany and the UK', *Accounting in Europe*, 7 (1), 97-122

Goodspeed, T. (2001) 'Tax competition and tax structure in open federal economies: Evidence from OECD countries with implications for the European Union', *European Economic Review*, 46 (2), 357-374

Kemmerling, A. (2010) 'Does Europeanization lead to policy convergence? The role of the Single Market in shaping national tax policies', *Journal of European Public Policy*, 17 (7), 1058-1073

OECD. (2011) Revenue Statistics, Paris, [Online], [Retrieved January 23, 2012, http://www.oecd.org/document/35/0,3746,en_2649_37427_46661795_1_1_1_3742 7,00.html

Sosvilla, S., Galindo, M. A., and Alonso, J. (2001) 'Tax burden convergence in Europe', *Estudios de Economia Aplicada*, 17, 183-191

Tanzi, V. (2011) 'Tax Systems in the OECD: Recent evolution, competition and convergence', The Eldgar Guide to Tax Systems, Edward Eldgar Publishing, Cheltenham, UK

Vintila, G., Tibulca, I. L. (2012) 'Fiscal Pressure and the Tax Mix Convergence in the European Union', *Journal of Eastern Europe Research in Business & Economics*, [Online] http://www.ibimapublishing.com /journals/JEERBE/jeerbe.html

Zodrow, G. (2003) 'Tax Competition and Tax Coordination in the European Union', *International Tax and Public Finance*, 10, 651-671