



BANK OF GREECE  
Economic Analysis and Research Department – Special Studies Division  
21, E. Venizelos Avenue  
GR-102 50 Athens  
Tel: +30210-320 3610  
Fax: +30210-320 2432

[www.bankofgreece.gr](http://www.bankofgreece.gr)

Printed in Athens, Greece  
at the Bank of Greece Printing Works.  
All rights reserved. Reproduction for educational and  
non-commercial purposes is permitted provided that the source is acknowledged.

ISSN 1109-6691

# LABOUR MARKET ADJUSTMENTS AND REFORMS IN GREECE DURING THE CRISIS: MICROECONOMIC EVIDENCE FROM THE THIRD WAVE OF THE WAGE DYNAMICS SURVEY

Theodora Kosma  
Bank of Greece

Evangelia Papapetrou  
Bank of Greece

Georgia Pavlou  
Bank of Greece

Christina Tsochatzi  
Bank of Greece

Pinelopi Zioutou  
Bank of Greece

## Abstract

The recession that followed the global financial crisis and the sovereign debt crisis resulted in large falls in output and rises in unemployment across Europe. In this context, many countries implemented significant reforms of their labour market. In order to analyse the impact of labour market reforms and, in particular, to investigate, how firms adjusted to the shocks affecting them, the European System of Central Banks (ESCB) conducted a third wave of the Wage Dynamics Network (WDN3) survey in 2014-15. This paper describes the main findings of the Greek WDN3 survey. The results show that the decline in economic activity, during the period 2010-2013, had a significant negative impact on Greek firms' activity. Greek firms reacted to the shocks affecting them by adjusting both labour input and wages and reforms seem to have made it easier for this adjustment to take place.

*Keywords:* Survey data, wage adjustment, employment adjustment, labour market reforms

*JEL Classification:* E24, J30, J50

*Acknowledgements:* We would like to thank Costas Kanellopoulos for his useful and constructive comments and suggestions during the initial phases of the preparation of this paper as well as for his valuable help in the organization and conduct of the survey. We would also like to thank Elli Nobeli for excellent research assistance as well as Konstantinos Kanellopoulos. Finally, we thank Juan Francisco Jimeno, Heather Gibson, Hiona Balfoussia and the participants of the Wage Dynamics Network meetings for their helpful comments. The views expressed in this paper are those of the authors and do not necessarily reflect those of the Bank of Greece.

## Correspondence:

Theodora Kosma  
Economic Analysis and Research  
Bank of Greece,  
21 E. Venizelos Ave.,  
10250 Athens, Greece  
Tel.: +30 210 320 2642  
Email: tkosma@bankofgreece.gr

## 1. Introduction

The recession that followed the global financial crisis and the sovereign debt crisis resulted in large falls in output and rises in unemployment across Europe. The large rises in unemployment led many countries to proceed to significant labour market reforms. In this context, the European System of Central Banks (ESCB) conducted a third wave of the Wage Dynamics Network (WDN3) survey in 2014-15.<sup>1</sup> The aim of the survey was to investigate how firms adjusted to the shocks affecting them and to what extent, according to their perceptions, labour market reforms made it easier for them to adjust labour input and wages.<sup>2</sup> In Greece, the third wave of the survey was conducted in the second half of 2014 and the beginning of 2015. The questionnaire was sent to firms with more than 20 employees in the manufacturing, trade and business services sectors. The final sample includes 402 firms.

This paper summarises the main findings of the Greek WDN3 survey. The results show that the decline in economic activity, during the period 2010-2013, had a significant negative impact on firms' activity and firms reacted to the shocks affecting them by adjusting both labour input and wages. The share of firms adjusting wages in Greece is the highest among the countries participating in the WDN3 survey. Furthermore, reforms seem to have made it easier for firms to adjust to the shocks affecting them. A significant share of firms report that it is now easier for them to adjust labour input and wages and attribute this flexibility mainly to the reform of labour laws. Regarding remaining inflexibilities in the Greek labour market and other obstacles that would influence the hiring of new employees with contracts of indefinite length, the survey shows that Greek firms consider economic uncertainty to be comparatively the most binding obstacle to hiring, followed by high payroll taxes. The regulatory framework, which has been significantly reformed in the recent period, is not frequently considered as a relevant obstacle to hiring employees with contracts of indefinite length.

The rest of the paper is organised as follows. Section 2 provides a short description of the main labour market reforms that took place during recent years. Section 3 describes the main features of the survey and the Greek sample. Section 4 describes the main shocks affecting Greek firms. Section 5 discusses how Greek firms adjusted labour input and their

---

<sup>1</sup> Denmark, Finland and Sweden are the only three EU countries not covered by the WDN3 survey.

<sup>2</sup> This was a follow-up to the two previous WDN surveys carried out in 2007 and 2009. The first wave was carried out in order to collect information on wage-setting practices at the firm level and the second to assess how firms reacted in the aftermath of the financial crisis of 2007/2008. For a summary of the main findings of the first and second wave of the Wage Dynamics Network Survey see Fabiani et.al. (2010) and Fabiani et.al. (2015), respectively.

wage bill. Section 6 analyses the flexibility provided to firms by the labour market reforms by focusing on firms' perceptions about the effectiveness of reforms. A final section concludes.

## **2. Developments in the Greek labour market between 2010-2013**

The sovereign debt crisis had a significant negative impact on the Greek economy that registered a cumulative reduction in output of 21% in real terms, over the period 2010-2013.<sup>3</sup> This led to an increase in the unemployment rate from 12.7% in 2010 to 27.5% in 2013, with the number of unemployed reaching 1.3 million in 2013 (from 639,400 in 2010). During the same period, employment declined from 4.4 million at the beginning of 2010 to 3.5 million at the end of 2013.<sup>4</sup> The fall in output and the increase in unemployment stand out when compared with the evolution of output and unemployment in the EU and in other southern European countries that were also much affected by the sovereign debt crisis (see Izquierdo et.al 2017). For instance, in Italy GDP fell by 9.4% in the period 2008-2014 and unemployment rose by 6 percentage points (see D' Amuri et. al. 2015). In Spain, output fell by 8% between 2010 and 2013 and unemployment rose by 7 percentage points (see Izquierdo and Jimeno 2015 and Izquierdo et.al 2017).

The increase in unemployment and the need to deal with various structural inefficiencies of the Greek labour market led to the adoption of significant labour market reforms. Labour market reforms aimed at reducing labour costs, as a key to boosting competitiveness, and at increasing the ability of firms to adjust to shocks.<sup>5</sup> The main reforms involved measures that made the wage bargaining system more decentralized and reduced employment protection for permanent employees by lowering firing costs. Also, the setting of the minimum wage was turned over to the government away from the social partners.

With respect to collective bargaining, to increase flexibility and firms' ability to adjust to the decline in economic activity, procedures for the conclusion of firm level agreements were simplified and firm level agreements can now allow for remuneration and working conditions that are less favourable than any sectoral/occupational agreement. In relation to procedures, there is now no restriction regarding the size of the firm in which a firm level agreement can be signed and there is no need for a trade union to exist in the firm. A firm

---

<sup>3</sup> National accounts, seasonally adjusted data (ELSTAT).

<sup>4</sup> Labour Force Statistics (LFS), Hellenic Statistical Authority (ELSTAT).

<sup>5</sup> For an extended discussion of labour market reforms during the period 2010-2013 see, among others, various issues of the Bank of Greece, Annual Report of the Governor and the Monetary Policy Report (BoG 2012, 2013) as well as the European Commission – Labour Markets Reforms Database (<https://webgate.ec.europa.eu/labref/public/>).

agreement can now be signed between firm representatives and an association of staff as long as the association comprises of at least three-fifths of the firms' employees. Finally, the extension of occupational and sectoral collective agreements to non-signatory parties was suspended and recourse to arbitration to solve disputes is allowed only if both parties agree and it is limited to basic pay issues. The above limits to the extension of agreements were introduced in order to reduce further the centralization of wage bargaining while the new framework for recourse to arbitration aimed at a faster conclusion of agreements.<sup>6</sup> As a result, the number of firm level agreements has risen significantly. Firm level agreements have allowed for wage freezes and the downward adjustment of wages of between 10% and 40% (BoG, 2013).

Regarding firing costs, there was a reduction in severance pay on dismissals without prior notice. The notice period for the termination of employment contracts was also reduced and the minimum threshold for activating rules on collective dismissals increased.<sup>7</sup>

Finally, in the area of the national minimum wage, a new system was introduced. Previously, the minimum wage was the outcome of a bargaining process between the social partners. Following the changes, the minimum wage is set by law after consultation with social partners and sub-minimum wages for workers under the age of 25 apply. Moreover, in 2012, in an attempt to reduce labour costs, a new national minimum wage was legislated, lower by 22% (and 32% for those under 25). This downward minimum wage adjustment along with the abolition of various allowances (such as those for the use of computers or foreign language skills) is reflected in the evolution of wage costs as the index of wages declined from 114.5 in 2009 to 89.9 in 2013.<sup>8</sup>

---

<sup>6</sup> To further increase the ability of firms to adjust to shocks, some measures that made the adjustment of working hours easier were also introduced. For instance, firms were permitted to extend working hours per day in periods of high employment on the condition that the weekly working hours were reduced at another time (of low employment). Working time cannot, however, deviate from regular hours for more than six months in a period of twelve months.

<sup>7</sup> For dismissals with prior notice the severance pay is half of that for dismissal without prior notice. The reduction in the notice period increases firms' flexibility and reduces firing costs.

<sup>8</sup> ELSTAT, Index 2012=100

### 3. Survey design and description of the Greek sample

In Greece, the third wave of the Wage Dynamics Network survey was conducted in the second half of 2014 and the beginning of 2015. The questionnaire was sent to firms with more than 20 employees in the manufacturing, trade and business services sectors.<sup>9</sup>

The questionnaire included a set of questions collecting information on<sup>10</sup>:

- a) the firm (i.e. ownership structure, number of employees, distribution of employees according to skills and type of employment contract etc);
- b) the type of shocks affecting firms;
- c) whether firms adjusted wages and employment and how this adjustment was achieved (i.e. whether firms had frozen and/or cut wages, flexible wage components, whether they adjusted employment by lay-offs, adjustment of hours, freeze of new hires, non-renewal of temporary contracts etc);
- d) the effectiveness of reforms by asking firms whether they perceived it easier or more difficult to adjust employment and wages in 2013 compared to 2010;
- e) firms' price-setting strategies and whether price-setting strategies changed during the crisis.

Looking at the composition of our sample, almost 70% of firms have between 20 and 200 employees. A significant share of firms though (19%) are firms with more than 200 employees (Chart 1). As to the sectoral coverage, the sample is almost evenly split among manufacturing, trade and business services. Specifically, 39% of firms belong to the manufacturing sector, 35% to the trade sector and 26% to the business services sector (Chart 2).

The majority of firms in the sample (75%) are mainly domestically-owned, 66% represent the parent company and around half of them are multi-establishment firms. Interestingly, 77% of firms have some exporting activity and on average 30% of their revenues are generated in foreign markets. For 18% of firms foreign markets are the main market (i.e. they generate more than 50% of revenues) and on average 79% of revenues are

---

<sup>9</sup> Since firms adjusted their labour input during the crisis, the sample also includes some firms with less than 20 employees. The sample does not include the financial sector. The final sample includes 402 firms and the response rate was 8%. The survey was conducted by email and the response rate is comparable to the response rate of countries conducting the survey by email or traditional mail (see Izquierdo et.al 2017).

<sup>10</sup> As in the previous two waves, the countries conducting the survey used a harmonised questionnaire that contained a core set of questions asked in all countries and a set of non-core questions asked only in some of them. The harmonised design of the survey allows the creation of a cross-country data set that provides comparable information on firms' adjustment during the crisis.

generated there. The significant share of multi-establishment and exporting firms in our sample is consistent with the size distribution of our sample. Bigger firms are more likely to have premises in more than one location and are also more likely to be able to bear the initial sunk costs that are related to selling products in foreign markets.

#### **4. Main shocks as perceived by firms**

In this section we analyse the main shocks affecting Greek firms in the period 2010-2013. Firms were asked to assess the impact and expected duration of the various shocks affecting their activities in the period 2010-2013. In particular, they were asked to provide answers regarding the impact of the following factors: a. the impact of changes in demand; b. volatility of demand; c. access to external finance; d. customers' ability to pay; and e. availability of supplies from the usual suppliers. Answers on the impact were provided for each factor on a 5-point scale (1= strong negative impact, 2= moderate negative impact, 3= no impact, 4=moderate positive impact, 5= strong positive impact).

Tables 1a and 1b provide information regarding the impact of changes in demand. As expected, given the general macroeconomic picture of the Greek economy, 71% of firms reported that demand negatively affected their activities (40% noted that the negative impact was very strong).<sup>11</sup> It appears that the evolution of domestic demand exerted the most pressure on firms, with 75% of firms reporting that domestic demand decreased. By contrast, foreign demand appears to have supported firms' activities since most firms (73%) noted that foreign demand was either unchanged or positive. The share of firms reporting a decrease in foreign demand is comparatively lower (27%).

Credit constraints were also prevalent in Greece in 2010-2013 and this is confirmed by firm replies in the survey.<sup>12</sup> In particular, regarding the impact of access to external financing, the majority of firms (66%) report a negative impact on their activities with 46% reporting a strong negative impact (Chart 3). Regarding the source of financial constraints, firms reported that both cost and quantity constraints were important (Table 2). Cost and quantity constraints relating to working capital financing are considered as relevant or very

---

<sup>11</sup> The survey covers firms that survived the crisis, at least until the end of 2014 and early 2015, the period the survey was conducted. Therefore, the current survey is likely to underestimate the overall impact of the economic downturn on firms' activities as it is not able to account for firm closures.

<sup>12</sup> The growth of bank credit to non-financial corporations declined from 4.3% year-on-year in January 2010 to -5% year-on-year in December 2013 (Source: Bank of Greece).

relevant by half of the firms.<sup>13</sup> Cost and quantity constraints relating to investment financing and debt refinancing are also important as they are considered to be relevant or very relevant by over 40% of firms. Constraints relating to working capital appear, however, to be slightly more binding compared to the other options.

Concerning other shocks, 78% of firms report that they were negatively affected (strongly or moderately) by the volatility of demand and 61% that they were negatively affected by the availability of supplies from the usual suppliers. Interestingly, 85% of firms report a negative impact of the customers' ability to pay. Customers' ability to pay could be considered as a factor influencing firms' liquidity. Considering that constraints in accessing external finance were also prevalent, the survey shows that financial pressures have had a negative impact on the activities of a significant share of firms during the survey reference period.

There appear to be no significant differences of the impact of the various shocks across different sectors and size classes. Size and sector dummies are insignificant in a simple probit regression where the incidence of negative shocks is the dependent variable and size and sector dummies the independent variables (see Table A1 in the Appendix). It appears that since the shocks that hit Greece were so pervasive they influenced firms in all sectors alike. Interestingly, firms that are mainly foreign owned are less likely to have been negatively affected by credit constraints and the availability of supplies. Therefore, domestic credit conditions and the availability of supplies do not seem to constitute a significant problem for foreign firms that most probably rely on their parent companies for funding and supplies.

Regarding the duration of shocks, firms were asked for each shock to indicate whether they considered it to be transitory, partly persistent or long-lasting. 71% of the firms reporting a negative impact of demand perceive that the shock to demand is partly persistent. The corresponding share is 74% for the volatility of demand, 71% for the access to external finance, 72% for the customer's ability to pay and 59% for the availability of supplies from the usual suppliers. Therefore, the majority of firms reporting a negative impact of the shocks on their activity consider the shocks to be partly persistent.

---

<sup>13</sup> Firms were asked to rank each option in terms of relevance (1=Not relevant, 2= of little relevance, 3=Relevant, 4=Very relevant).

## 5. Main channels of firm adjustment during the crisis

The survey provides detailed information on the evolution of the various components of firms' costs allowing the extent to which Greek firms reacted to the various shocks affecting their activity by adjusting labour input and wages to be explored. We start by analysing the evolution of total costs so as to assess overall cost developments and then we advance to a detailed analysis of the various cost categories.

Regarding total costs, firms were asked to indicate how total costs and their main components evolved during the period 2010-2013.<sup>14</sup>

Table 3 shows that 60% of firms reported that their total costs decreased (moderately or strongly). With respect to cost components, 68% of firms indicated that they experienced a decrease in labour costs while the share of firms indicating a decrease in other cost components is much lower. In particular, only 16% of firms indicated that they experienced a decline in financing costs and 32% a decline in the cost of supplies. By contrast, a significant share of firms (57%) indicated that they actually experienced an increase in financing costs, an answer consistent with the analysis of credit constraints in the previous section.

The high share of firms indicating a decline in labour costs is also consistent with the labour market reforms that took place and made it easier for firms to adjust both wages and labour input. Interestingly, in other southern European countries, also affected by the crisis and taking steps towards reforming their labour markets, the share of firms experiencing a decline in labour costs is comparatively lower i.e. 29% in Spain and 23% in Italy. The low response of labour costs in these two countries can be attributed to the moderate response of wages, since a significant share of firms in these two countries seem to have adjusted their labour input instead (see D' Amuri et. al. 2015 and Izquierdo and Jimeno 2015).

The analysis so far has revealed that a significant share of firms experienced a decline in demand and total costs. It is therefore interesting to see whether prices followed a similar path. Firms were asked to indicate how their prices in the foreign and domestic markets evolved during the period 2010-2013.

Table 4 shows that 66% of firms experienced a decline in domestic prices (27% of which report a strong decline). The share of firms indicating that prices increased is comparatively lower, 11%. Regarding, foreign prices, 52% of firms indicate that prices remained unchanged and 36% report that foreign prices declined. The evolution of domestic

---

<sup>14</sup> Firms were asked to indicate whether their costs: 1= decreased strongly 2=decreased moderately 3=remained unchanged 4=increased moderately 5=increased strongly.

prices seems to be consistent with the intensity of the demand shock and the decline in costs. In foreign markets, Greek firms did not experience, as noted in the previous section, a comparable decline in demand. The evolution of foreign prices is therefore consistent with the evolution of foreign demand. Further, Greece is a small country and may in some markets be a price-taker.

## 5.1 Adjustment of employment

The decline in labour costs reported by many of the surveyed firms can be achieved by changing either the labour input and/or wages. Next, we provide a detailed analysis of the evolution of labour cost components and start by analysing the extent to which firms adjusted labour input and the margins they used for this adjustment.

In particular, firms were asked to indicate whether during the period 2010-2013 they needed to significantly reduce labour input or alter its composition. Firms which answered that they did were then prompted to indicate to what extent they had altered their labour input through lay-offs (collective, individual, temporary), subsidised reduction of working hours, non-subsidised reduction of working hours, non-renewal of temporary contracts at expiration, early retirement schemes, a freeze or reduction of new hires, a reduction of agency workers, external consultants and others. They were asked to indicate the use of each of the above margins on a 4-point scale 1=not at all, 2=marginally, 3=moderately, 4=strongly.

Interestingly, 55% of firms indicated that they needed to significantly reduce their labour input or alter its composition. The share is higher among firms experiencing one or more shocks. For instance, 67% of firms experiencing a demand shock said that they needed to adjust their labour input. The share is even higher among firms experiencing a demand shock and financial constraints, i.e. 71%.<sup>15</sup>

It would also be interesting to examine whether the need to adjust the labour input depends on the type of shocks affecting firms. Table A2 in the Appendix shows that there is some indication that firms negatively affected by a demand shock are more likely to have adjusted labour input or alter its composition. By contrast, a significantly different response is not observed for firms negatively affected by credit constraints. However, these results

---

<sup>15</sup> Firms experiencing a demand shock are those reporting a (strong or moderate) negative impact of demand on their activities. Firms experiencing a demand shock and financial constraints are those reporting a (strong or moderate) negative impact of demand and access to external finance on their activities.

should be interpreted with caution. Most firms in the sample are influenced by more than one shock and it is therefore difficult to distinguish the impact of each shock. Furthermore, it appears that firm characteristics such as size or sectoral affiliation are not related to firms' need to adjust labour input (Table A2 in the Appendix).

Table 5 shows the margins these firms used in order to achieve the required adjustment of their labour input. Specifically, the margin used significantly (moderately/strongly) by more than half of the firms is a freeze or reduction of new hires. A non-subsidised reduction of working hours, individual lay-offs, a reduction in the employment of agency workers and others and the non-renewal of temporary contracts were also used to a large extent by firms to adjust their labour input. By contrast, collective lay-offs and early retirement schemes were not used much.<sup>16</sup>

The question analysed in Table 5 focuses on the intensity of use of the various margins firms used to adjust labour input. Another question allows us to quantify the actual adjustment of employment and hours and to link the use of these margins to the adjustment of permanent and temporary employment as well as hours.<sup>17</sup> Particularly, firms were asked to indicate how permanent and temporary employment, as well as hours, have evolved.<sup>18</sup> The share of firms reporting a decrease (moderate or strong) in the employment of permanent workers is 47%; the share of firms reporting a decline in the employment of temporary workers is 23%; and the share of firms reporting a decline in hours per employee is 18%. Interestingly, smaller firms are less likely to reduce permanent or temporary employment (Table A3 in the Appendix). In smaller firms employees and employers interact closely and have personal relationships and therefore lay-offs may be avoided if other alternatives exist. Furthermore, firms in the trade and business services sectors are less likely to have reduced hours compared to manufacturing. Shift work is more prevalent in manufacturing and this is probably the reason why manufacturing firms were more likely to reduce hours.

---

<sup>16</sup> There is a higher intensity of use of most measures of labour input adjustment across firms experiencing a demand shock or a demand shock and financial constraints. The ranking of measures, however, in terms of intensity of use does not change.

<sup>17</sup> The question on the evolution of permanent employment, temporary employment and hours is asked independently and is not directly linked to the question analysed in Table 5. The joint analysis of both questions could however provide an indication of the impact of the use of these margins on the actual evolution of employment and hours.

<sup>18</sup> They were asked to indicate whether temporary, permanent employment and hours have: 1=decreased strongly, 2=decreased moderately, 3=remained unchanged, 4=increased moderately, 5=increased strongly.

Therefore, during the period under investigation, more than half of the firms surveyed needed to adjust their labour input or change its composition. Firms used a combination of measures in order to make the necessary adjustments and these led to a decrease in both permanent and temporary employment as well as a reduction in hours per employee. Employment adjustment seems however to have been higher than hours adjustment.

## **5.2 Adjustment of wages**

Prior to the global financial crisis wage cuts in Europe were very rare and firms, when faced with shocks, adjusted the wage bill by using other measures of labour cost adjustment such as pay and non-pay benefits, promotion freezes, etc. (see Babecky et.al. 2012). The rarity of wage cuts is well documented in the literature and is attributed mainly to concerns about the retention of productive staff and the impact of wage cuts on workers' effort and moral (see Bewly 1995 and Campel and Kamlani 1997). However, during 2010-2013 the intensity and duration of shocks were strong and extended. As noted in the previous section, 71% of Greek firms reported that the evolution of demand had a negative impact on their activities. It remains interesting therefore to examine whether during the recent recession Greek firms adjusted their wage bill by a downward adjustment of wages.

The WDN3 survey allows us to investigate this question as it asked firms to indicate whether they froze and/or cut base wages in each of the years 2010, 2011, 2012 and 2013. As Table 6 shows, 63% of firms indicated that they kept wages constant at least once in the period 2010-2013. As regards the timing of wage freezes, 51% of firms indicated that they froze wages in 2010, 46% in 2011, 42% in 2012 and 43% in 2013. Concerning wage cuts, 55% of firms stated that they cut wages at least once.<sup>19</sup> As to the timing, the share of firms cutting wages was low in the initial phase of the crisis, 8% in 2010, and gradually increased to 18% in 2011 and 35% in 2012, before falling to 28% in 2013. The timing is consistent with the time pattern of reforms. Most reforms that allowed firms to adjust labour costs took place in 2011-2012, i.e. the possibility for firm level agreements to undercut sectoral/occupational agreements, the suspension of the extension of occupational and sectoral collective agreements to non-signatory parties and the reduction in the minimum wage.

---

<sup>19</sup> The share of firms cutting wages is higher among firms experiencing a demand shock and firms experiencing a demand shock and credit constraints, i.e. 62% and 71% respectively.

The fact that downward wage flexibility is associated with the labour market reforms implemented during the recent years is also confirmed by the probit regression results presented in Table A4 in the Appendix. For instance, firms applying firm level agreements are less likely to keep wages constant. By contrast, firms applying firm level agreements are more likely to cut wages.<sup>20</sup>

Interestingly, if one looks the at the timing of freezes and cuts, one observes that in the first years of the crisis the share of firms freezing wages was significantly higher than that of firms cutting wages. As the crisis progresses, the difference between the two shares is reduced. Of course, the timing of reforms is important. However, firms being aware of the negative impact of wage cuts on employees' moral appear to have exhausted all alternatives before cutting wages. As unemployment increased and options for moving jobs decreased, employees may have become less reluctant to accept wage cuts if this were to secure their jobs.

As mentioned earlier, prior to the crisis the adjustment of base and non-base wage components were substitutes. Firms did not cut wages but adjusted pay and non-pay benefits instead. During the current crisis, along with base wage cuts, Greek firms adjusted flexible wage components as well. Indeed, 51% of firms report a decline (moderate or strong) in flexible wage components.<sup>21</sup> Therefore, in the current crisis in Greece the adjustment of base and non-base wage components were compliments and this is confirmed by the positive correlation of the variable measuring wage cuts and that measuring the decrease in flexible wage components (0.3280).

In conclusion, in Greece, during 2010-2013 there appear to be no rigidities regarding wage and labour input adjustment. A significant share of firms adjusted both. Labour input adjustment (hours and employment) was still the main adjustment channel in many EU countries but wage cuts appear to have been more frequently used in the EU in this recession. Yet, the share of firms adjusting wages in other countries is comparatively lower, i.e. 37% in Cyprus, 25% in Croatia, 23% in Ireland, 12% in Estonia, 16% in Latvia (see Izquierdo et. al 2017).

---

<sup>20</sup> Another interesting result that emerges from the regression analysis is that foreign owned firms are less likely to cut wages (Table A4 in the Appendix). This may be related to the skill mix of these firms as well their different wage policies.

<sup>21</sup> Firms were asked to indicate whether flexible wage components have: 1=decreased strongly, 2=decreased moderately, 3= remained unchanged, 4=increased moderately, 5=increased strongly.

## 6. The impact of reforms – changes in the institutional framework

As discussed earlier, during the period 2010-2013, wide-ranging reforms took place in Greece that made it easier for firms to adjust their labour input and wages and indeed, many of the firms surveyed indicated that they adjusted both. The share of firms adjusting labour input and wages is, however, only partially informative about the flexibility provided to firms by labour market reforms. The WDN3 survey enables us to directly assess the flexibility provided to firms by asking them to indicate whether they found it easier or more difficult to perform a set of actions in 2013 compared to 2010. This is a potentially useful alternative source of information as it is based on the perceptions and actual experience of firms and can supplement more objective indicators (i.e. the OECD Employment Protection Legislation index) that are created by classifying the changes in the underlying legislation.

Specifically, firms were asked to indicate whether it has become easier or more difficult to:

- lay off employees (collectively, individually, temporarily and for disciplinary reasons);
- adjust working hours;
- hire employees;
- move employees to other job positions or locations;
- lower the wages of incumbent workers and offer new hires a lower wage.

Firms were asked to provide a response on a five point scale: 1=much less difficult, 2=less difficult, 3=unchanged, 4=more difficult, 5=much more difficult.

As Table 7 shows, a significant number of firms indicate that they find it less difficult or much less difficult to adjust the labour input and wages. In particular, 63% of firms report that it became easier to lower the wage of incumbents and 80% of firms report that it became easier to offer new workers lower wages. Regarding labour input adjustment, half of the firms indicate that it became easier to lay-off employees individually and to adjust working hours as well as to hire employees.

Firms were also asked to indicate the factors making it easier or more difficult for them to adjust. They were prompted to indicate whether their answer to the above question was due to: a. reform of labour laws; b. law enforcement; c. a change in the behaviour of the trade unions; and d. a change in the behaviour of the individuals. Table 8 shows the most frequently cited reason indicated by firms for each margin of labour cost adjustment. For firms reporting that it has become easier to adjust labour input and wages, the reform of labour laws is the most frequently cited reason in all cases except for the easiness to move

employees to other locations and positions. In these two cases, the most frequently cited reason is changes in individual behaviour.

Finally, the survey allows us to assess the impact of reforms on the structure of the bargaining system as many of the measures taken involved changes in this direction. The survey shows that there is a trend towards lower centralization of wage bargaining as the share of firms applying agreements concluded outside the firm declined while the share of firms applying firm-level agreements increased. Indeed, the share of firms with agreements signed outside the firm stood at 43% in 2013, compared to 86% in 2007 while the share of firms applying firm-level agreements increased from 21% in 2007 to 26% in 2013. Accordingly, the share of workers covered by a collective pay agreement declined to 71% in 2013 from 91% in 2007 (see Izquierdo et. al. 2017).

We have seen so far that, following the significant labour market reforms that took place, a significant share of Greek firms find it easier to adjust both their labour input and the wage bill. However, it is also crucial to gauge how employment is likely to evolve as the country comes out of the crisis. The WDN3 questionnaire asked firms about their perceptions regarding obstacles to hiring employees with contracts of indefinite length, in an attempt to evaluate the relative importance of impediments emanating from the regulatory framework (i.e. payroll taxes, hiring and firing costs) and the environment in which the firms operate (i.e. uncertainty, skill shortages etc.).

In particular, firms were asked to rank in terms of relevance (i.e. not relevant, of little relevance, relevant, very relevant) the following nine factors: a. uncertainty about economic conditions; b. insufficient availability of workers with the required skills; c. access to finance; d. firing costs; e. hiring costs; f. high payroll taxes; g. high wages; h. risks that labour laws will change; and i. costs of other inputs complementary to labour.

Table 9 shows that economic uncertainty is the only reason cited most frequently as 'very relevant' by Greek firms. The other impediment that is most frequently ranked as 'relevant' is the high payroll taxes. The other obstacles presented in Table 9 are most frequently considered by Greek firms as 'not relevant' or 'of little relevance'. Interestingly, high wages, hiring and firing costs are most frequently considered obstacles of no or little relevance, which is consistent with the fact that firms find it easier now to adjust labour input and wages. Thus, for Greek firms, the most binding obstacle to hiring employees with contracts of indefinite length appears to be economic uncertainty and, to a lesser extent,

payroll taxes and not the regulatory framework, which in any case has been significantly reformed in the recent period.

## **7. Conclusions**

This paper summarizes the main findings of the third wave of the WDN Survey in Greece. The survey has allowed us to investigate how firms have adjusted to these shocks and, to what extent, according to their perceptions, labour market reforms have made it easier for them to adjust labour input and wages.

The survey shows that the decline in economic activity, during the period 2010-2013, had a significant negative impact on firms' activity. Firms reacted to the shocks by adjusting both labour input and the wage bill. Interestingly, the share of firms adjusting wages in Greece is the highest among the countries participating in the WDN3 survey.

Furthermore, reforms seem to have made it easier for firms to adjust to shocks. A significant number of firms report that it was easier for them to adjust labour input and wages in 2013 compared to 2010. Firms attribute this flexibility mainly to the reform of labour laws.

Regarding remaining inflexibilities in the Greek labour market and other obstacles that could influence the hiring of new employees with contracts of indefinite length, the survey shows that Greek firms consider economic uncertainty to be the most binding obstacle to hiring. By contrast, the regulatory framework, which has been significantly reformed in the recent period, is not frequently considered a relevant obstacle to hiring employees.

## References

Babecký, J., Du Caju, P., Kosma, T., Lawless, M., Messina, J. and Rõõm, T. (2010), "Downward Nominal and Real Wage Rigidity: Survey Evidence from European Firms", *Bank of Greece, Working Paper*, No. 110.

Babecký, J., Du Caju, P., Kosma, T., Lawless, M., Messina, J. and Rõõm, T. (2012), "How do European firms adjust their labour costs when nominal wages are rigid?", *Labour Economics*, Vol. 19, No 5, pp. 792-801.

Bank of Greece (2013), *Annual Report 2012*, Athens.

Bank of Greece (2012), *Monetary Policy -Interim Report 2012*, Athens.

Bank of Greece (2012), *Annual Report 2011*, Athens.

Bewley, T. F. (1995), "A depressed labour market as explained by participants", *American Economic Review*, Vol 85, No. 2 pp 250–54.

Campbell, C. M., and. Kamlani, K. S., (1997), "The reasons for wage rigidity: Evidence from a Survey of Firms", *Quarterly Journal of Economics*, Vol. 112, No. 3, pp. 759–89.

D'Amuri F., Fabiani S., Sabbatini R., Polcini R. T., Venditti F., Viviano E. and Zizza R., (2015), "Wages and Prices in Italy during the Crisis: the Firms' Perspective", *Bank of Italy, Occasional Paper*, No. 289.

Fabiani, S., Galuscak, K., Kwapil, C., Lamo, A. and Rõõm, T., (2010), "Wage Rigidities and Labour Market Adjustment in Europe", *Journal of the European Economic Association*, 8(2-3), pp. 497-505.

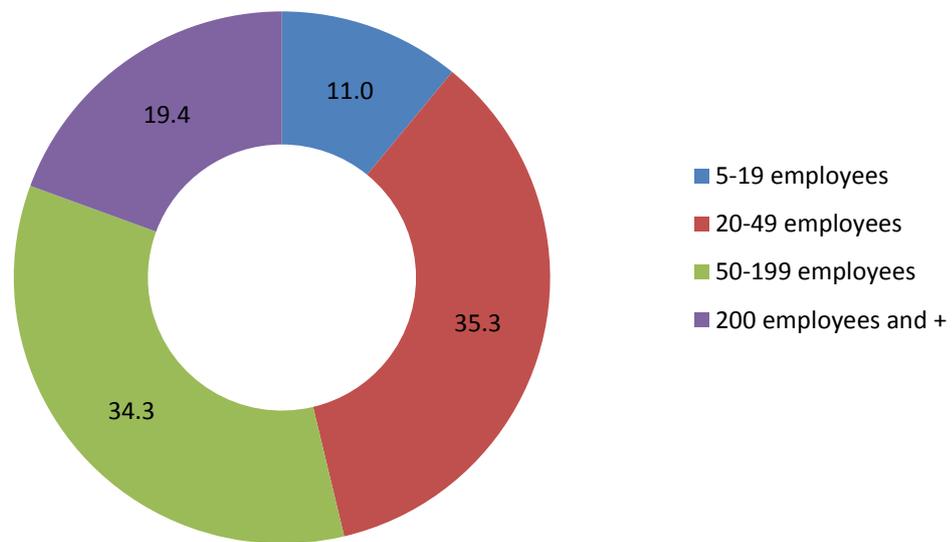
Fabiani, S., Lamo, A., Messina, J. and Rõõm, T., (2015), "European firm adjustment during times of economic crisis", *European Central Bank Working Paper*, No. 1778.

Izquierdo, M. and Jimeno J.F., (2015), "Employment, Wage and Price Reactions to the Crisis in Spain: Firm-Level Evidence from the WDN Survey", *Bank of Spain, Occasional Paper*, No. 1503.

Izquierdo, M., Jimeno J.F., Kosma T., Lamo A., Millard S., Room T. and Viviano E., (2017), "Labour Market Adjustment during the Crisis: Microeconomic Evidence from the Wage Dynamics Network", *European Central Bank, Occasional Paper*, forthcoming.

## Tables and Figures

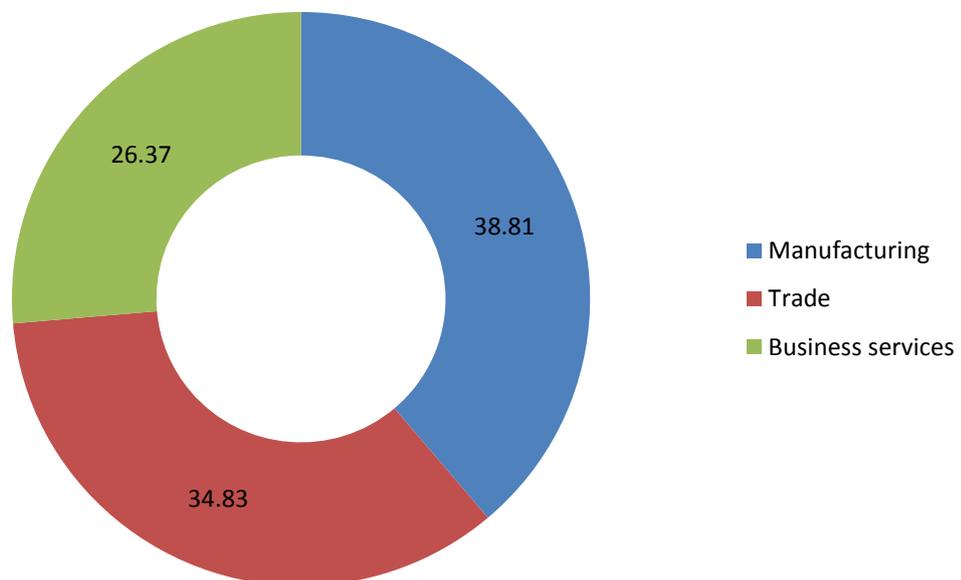
**Chart 1: Distribution of sample by firm size**



---

Source: Third wave of the WDN survey - Sample of Greek firms

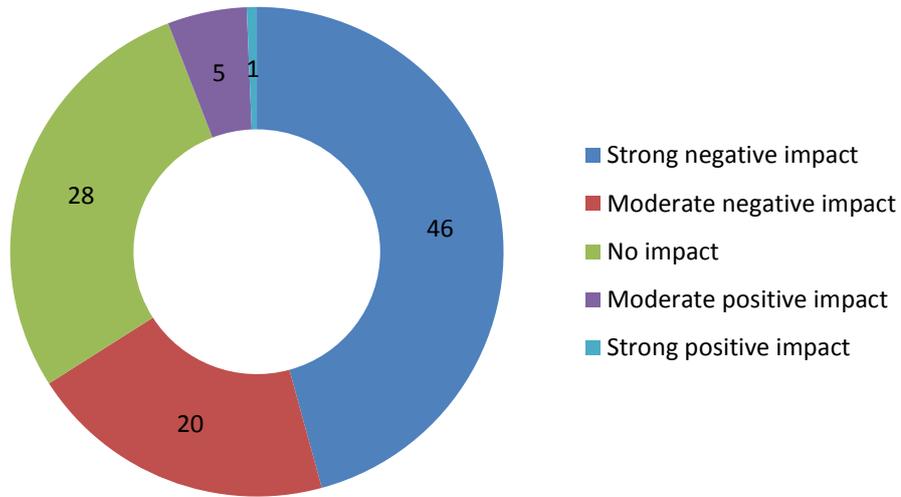
**Chart 2: Distribution of sample by sector**



---

Source: Third wave of the WDN survey - Sample of Greek firms

**Chart 3: : Impact of changes in access to finance in the period 2010-2013 (% of firms)**



---

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response  
Source: Third wave of the WDN survey - Sample of Greek firms

**Table 1a: Impact of changes in demand in the period 2010-2013 (% of firms)**

	Strong negative impact	Moderate negative impact	No impact	Moderate positive impact	Strong positive impact
Demand	40	31	4	17	8

Source: Third wave of the WDN survey - Sample of Greek firms

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response. The employment-adjusted weights account for the unequal probabilities of receiving and responding to the questionnaire across strata as well as for the average firm size (measured on the basis of number of employees) in the population in each stratum. For a brief description of how these weights are calculated see, Babecky et. al. (2010).

**Table 1b. Evolution of demand for the main product (% of firms)**

	Strong decrease	Moderate decrease	Unchanged	Moderate increase	Strong increase
Domestic demand	41	34	3	18	4
Foreign demand	9	18	43	24	6

Source: Third wave of the WDN survey - Sample of Greek firms

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

**Table 2: Difficulties in access to finance in the period 2010-2013 - % of firms replying that the channel is relevant or very relevant.**

Credit was not available to (quantity restrictions)	Credit was available but conditions were too onerous (cost restrictions)
Finance working capital	53
Finance investment	49
Refinance debt	43
	Finance working capital 54
	Finance investment 45
	Refinance debt 45

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 3: Evolution of firms' costs in the period 2010-2013 (% of firms)**

	Strong decrease	Moderate decrease	Unchanged	Moderate increase	Strong increase
Total cost	12	48	8	24	8
Labour cost	20	48	15	15	2
Financing costs	3	13	27	27	30
Cost of supplies	6	26	25	37	6

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 4: Evolution of prices during the 2010-2013**

	Strong decrease	Moderate decrease	Unchanged	Moderate increase	Strong increase
Domestic prices	27	39	23	10	1
Foreign prices	6	30	52	11	1

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 5. Labour input adjustment (% of firms)**

	Not at all	Marginally	Moderately	Strongly
Collective layoffs	87	9	1	3
Individual layoffs	24	42	24	9
Temporary layoffs	94	3	2	0
Subsidised reduction of working hours	95	3	1	1
Non-subsidised reduction of working hours	42	26	22	10
Non-renewal of temporary contracts	61	20	14	5
Early retirement schemes	80	14	4	3
Freeze or reduction of new hires	19	21	24	36
Reduction of agency workers and others	56	18	17	10

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 6 : Share of firms having cut/frozen wages**

	Wage cuts	Wage freezes
2010	8	51
2011	18	46
2012	35	42
2013	28	43

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 7: Share of firms indicating that it has become less difficult/much less difficult to perform the following actions**

Lay-off employees collectively	43
Lay-off employees individually	53
Lay-off employees for disciplinary reasons	24
Lay-off employees temporarily	34
Hire employees	54
Adjust hours	53
Move employees to other locations	34
Move employees to other positions	43
Adjust the wage of incumbents	63
Offer new hires a lower wage	80

Note: Figures are weighted to reflect overall employment and rescaled to exclude non-response.

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 8: Most frequently cited reason why it has become easier to perform the following action (Modal answer)**

Lay-off employees collectively	Reform of labour laws
Lay-off employees individually	Reform of labour laws
Lay-off employees for disciplinary reasons	Reform of labour laws
Lay-off employees temporarily	Reform of labour laws
Hire employees	Reform of labour laws
Adjust hours	Reform of labour laws
Move employees to other locations	Changes in the behaviour of individuals
Move employees to other positions	Changes in the behaviour of individuals
Adjust the wage of incumbents	Reform of labour laws
Offer new hires a lower wage	Reform of labour laws

Source: Third wave of the WDN survey - Sample of Greek firms

**Table 9: Obstacles to hiring - Most frequent ranking of reasons (Modal answer)**

---

Economic uncertainty	Very relevant
Insufficient availability of required skills	Not relevant
Access to finance	Not relevant
Cost of other inputs	of little relevance
Firing costs	of little relevance
Hiring costs	Not relevant
High payroll taxes	Relevant
High wages	Not relevant
Risk that legal framework will change	Not relevant

---

Source: Third wave of the WDN survey - Sample of Greek firms

## Appendix

**Table A1: Probit estimates (marginal effects) - Probability of a negative impact (strong or moderate) of shocks**

	Demand	Access to finance	Volatility of demand	Customers ability to pay	Availability of supplies
<i>Reference category 200+ employees</i>					
5-19 employees	0.05100 (0.09454)	0.12002 (0.09416)	-0.04892 (0.09034)	-0.03427 (0.06672)	0.14408 (0.09685)
20-49 employees	-0.00401 (0.07232)	-0.01544 (0.08339)	-0.00203 (0.06176)	0.06597 (0.04152)	0.00277 (0.08187)
50-199 employees	-0.03984 (0.07227)	-0.13096 (0.08379)	-0.07126 (0.06507)	0.02043 (0.04321)	0.03708 (0.07939)
<i>Reference category: Manufacturing</i>					
Trade	0.08192 (0.05838)	0.03637 (0.06892)	0.10202** (0.04754)	0.04224 (0.04010)	-0.05330 (0.07154)
Business services	-0.01985 (0.06460)	-0.00574 (0.07215)	-0.02981 (0.05314)	-0.04787 (0.04530)	-0.06486 (0.07528)
Foreign-owned	-0.01263 (0.06060)	-0.46379*** (0.06695)	-0.07069 (0.05337)	-0.02302 (0.04234)	-0.34194*** (0.06993)
Observations	333	304	348	367	297

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Third wave of the WDN survey - Sample of Greek firms

**Table A2: Probit estimates (marginal effects)**

---

	Need to reduce labour input
<i>Reference category 200+ employees</i>	
5-19 employees	-0.19102 (0.12490)
20-49 employees	-0.14743 (0.09364)
50-199 employees	-0.09440 (0.09245)
<i>Reference category: Manufacturing</i>	
Trade	0.00288 (0.07599)
Business services	-0.11584 (0.08384)
Credit constraints	0.09258 (0.07250)
Demand shock	0.40746*** (0.06780)
Observations	270

---

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Third wave of the WDN survey - Sample of Greek firms

**Table A3: Probit estimates (marginal effects)**

	Reduced permanent employment	Reduced temporary employment	Reduced hours
<i>Reference category 200+ employees</i>			
5-19 employees	-0.23227** (0.11156)	-0.17241*** (0.04164)	0.06722 (0.10541)
20-49 employees	-0.06517 (0.09414)	-0.18209*** (0.05283)	0.03066 (0.06708)
50-199 employees	-0.13501 (0.09115)	-0.11740** (0.05525)	-0.02939 (0.06275)
<i>Reference category: Manufacturing</i>			
Trade	0.03745 (0.07684)	-0.04237 (0.05674)	-0.17321*** (0.04379)
Business services	-0.06803 (0.08403)	-0.01030 (0.06194)	-0.19752*** (0.03961)
Credit constraints	0.08932 (0.07357)	0.11371** (0.05064)	0.00699 (0.05520)
Demand shock	0.38050*** (0.06550)	0.10157* (0.05218)	0.20640*** (0.04140)
Observations	273	257	274

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Third wave of the WDN survey - Sample of Greek firms

**Table A4: Probit estimates (marginal effects)**

	Have frozen wages at least once	Have cut wages at least once	Have cut wages at least once
<i>Reference category 200+ employees</i>			
5-19 employees	-0.24684 (0.16496)	-0.19793 (0.17025)	-0.05819 (0.18936)
20-49 employees	-0.04495 (0.10278)	0.01973 (0.12680)	0.00584 (0.13390)
50-199 employees	-0.03391 (0.10309)	0.11612 (0.12571)	0.06725 (0.13520)
<i>Reference category: Manufacturing</i>			
Trade	-0.04277 (0.07772)	-0.15065 (0.09297)	-0.08319 (0.10254)
Business services	-0.09024 (0.09387)	0.07224 (0.10382)	0.12235 (0.10554)
Credit constraints	0.25986*** (0.07627)	0.34349*** (0.08042)	0.26974*** (0.09168)
Demand shock	0.07595 (0.08054)	0.29999*** (0.08753)	0.34013*** (0.08744)
Firm agreement	-0.21478** (0.09534)	0.29789*** (0.08946)	0.31182*** (0.09354)
Foreign owned			-0.26566*** (0.10078)
Observations	199	199	193

Note: Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Third wave of the WDN survey - Sample of Greek firms

## BANK OF GREECE WORKING PAPERS

210. Malliaropoulos, D., and P.M. Migiakis, "The Re-Pricing of Sovereign Risks Following the Global Financial Crisis", July 2016.
211. Asimakopoulos, I., P.K. Avramidis, D. Malliaropoulos, N. G. Travlos, "Moral Hazard and Strategic Default: Evidence from Greek Corporate Loans", July 2016.
212. Tavlas, S.G., "New Perspectives on the Great Depression: a Review Essay", September 2016.
213. Papapetrou, E. and P. Tsalaporta, "Inter-Industry Wage Differentials in Greece: Rent-Sharing and Unobserved Heterogeneity Hypotheses", November 2016.
214. Gibson, D.H, S.G. Hall, and G.S. Tavlas, "Self-Fulfilling Dynamics: the Interactions of Sovereign Spreads, Sovereign Ratings and Bank Ratings during the Euro Financial Crisis", November 2016.
215. Baumann, U. and M. Vasardani, "The Slowdown in US Productivity Growth - What Explains it and Will it Persist?", November 2016.
216. Tsionas. G.M., "Alternative Bayesian Compression in Vector Autoregressions and Related Models", November 2016.
217. Tsionas. G.M., "Alternatives to Large VAR, VARMA and Multivariate Stochastic Volatility Models", December 2016.
218. Balfoussia, H. and D. Papageorgiou, "Insights on the Greek Economy from the 3D Macro Model", December 2016.
219. Anastasiou, D., H. Louri and M. Tsionas, "Non-Performing Loans in the Euro Area: are Core-Periphery Banking Markets Fragmented?," December 2016.
220. Charalambakis, E., Y. Dendramis, and E. Tzavalis, "On the Determinants of NPLS: Lessons from Greece", March 2017.
221. Christou, G. and P. Chronis, Markups and fiscal policy: analytical framework and an empirical investigation, April 2017.
222. Papadopoulos, S., P. Stavroulias, T. Sager and E. Baranoff, "A Ternary-State Early Warning System for the European Union", April 2017.
223. Papapetrou, E. and P. Tsalaporta, "Is There a Case for Intergenerational Transmission of Female Labour Force Participation And Educational Attainment? Evidence from Greece during the Crisis, April 2017.
224. Siakoulis V., "Fiscal policy effects on non-performing loan formation", May 2017.
225. Hondroyiannis G. and D. Papaoikonomou, "The Effect of Card Payments on VAT Revenue in Greece", May 2017.
226. Mamatzakis E.C. and A.N. Vu, "The interplay between quantitative easing and risk: the case of the Japanese banking", May 2017.