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The ECB, Austerity and the Fiscal Multiplier:
A meta-regression analysis of Fiscal Multiplier Estimates in ECB Policy
Recommendations

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Abstract

The primary aim of this thesis is to examine whether the policy recommendations made by the European Central Bank in response to the financial crisis of 2008 were biased towards fiscal consolidation. It posits that such policies, commonly known as austerity, were underpinned by estimates of the fiscal multiplier that were lower than those of international and independent researchers. To analyse this, it provides a systematic overview of the ECB's fiscal multiplier estimates by performing a meta-regression analysis on all ECB working papers making multiplier estimates published between 1992 and 2012, and comparing the results against those of a larger dataset containing multiplier estimates made. It finds that the multiplier estimates of the ECB are significantly lower than the norm, which is potentially suggestive of bias. This thesis contributes to the literature on ideational bias in economic policy-making by providing a systematic literature review that helps inform the discussion on austerity in the EU. It also servers as a replication and expansion of previous meta-regression studies on the fiscal multiplier, by being the first study that specifically examines the estimates of a specific institution.

Declaration of Authorship

1. The author hereby declares that he compiled this thesis independently, using only the listed resources and literature.

2. The author hereby declares that all the sources and literature used have been properly cited.

3. The author hereby declares that the thesis has not been used to obtain a different or the same degree.

Prague, July 2018   Caspar Brüsewitz

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Introduction

Ever since the outbreak of the financial crisis in late 2007, governments and scholars alike have fervently debated about the appropriate response to its attendant economic problems. While during the initial stages of the crisis many countries provided vast amount of stimulus to mitigate the worst excesses, most developed countries soon turned towards a policy of reducing government expenditure as much as possible. Such policies, commonly grouped under the label of austerity, were popular with both politicians and pundits. Nowhere was this more true than in the European Union (EU), where the draconian consolidations undertaken in many of the EU's weakest economies led many critics to decry the European focus on fiscal discipline.

A turning point in this discussion was a paper, first published in the October 2012 edition of the IMF's World Economic Outlook (WEO) report, written by then Chief Economist Olivier Blanchard and Daniel Leigh. In this paper, they contended that austerity programmes may have a much more limited effect, and may even be counter-productive, because fiscal multipliers may be much higher than previously expected. After this watershed publication, the debate surrounding austerity and the fiscal multiplier turned increasingly towards the merits of fiscal stimulus and away from the notion of fiscal consolidation as an appropriate policy in many situations.

While this publication would indeed lead to a reconsideration of the benefits of consolidation, the initial reception in European policy-circles was less than enthusiastic. The response of Olli Rehn, then Commissioner for Economic and Monetary Affairs and the Euro, is indicative of the attitude of the EU community to the IMF's new course. In response to the findings of Leigh and Blanchard and the renewed discussion about the

merits of consolidation, Rehn responded that it "has not been helpful and has risked to erode the confidence that we have painstakingly built up over the past years in numerous late-night meetings." And so while the EU would eventually come to adopt a more receptive stance towards stimulus as well, it is clear that this was done reluctantly and that austerity seemed more deeply embedded here than elsewhere.

This observation has led to much discussion about the underlying reasons for Europe's dedication to austerity. While many different explanations have been proposed, ranging from the purely political to the purely technical, a growing number of scholars have suggested that the preference may be in part ideologically motivated. This line of reasoning asserts that policy-making is not just a straightforward and objective response to existing problems, but that instead the formation of policy is fraught with potential biases. Policy is a response to a perceived problem, so consequently policy will be shaped by the perceptions about the nature, cause and appropriate range of solutions to the problem that needs to be remedied. Especially with complex policy problems, governments will rely on experts to provide them with their take on the cause and solutions of the problems they are facing. In the case of the EU, the research department of the ECB serves as one of the primary sources for economic policy research. It therefore plays a key role in defining how policy-makers in the EU think about economic issues and the appropriate policy responses.

While there has been a consistent debate stretching back many decades about the role that ideas and ideational bias play in economic policy, it has been difficult establishing the extent to which this has an impact. This is mainly due to the fact that much of the research on this topic has been descriptive and conducted through qualitative research

methods, which consequently led to issues with assigning significance to the ideas they describe. The fact there is something like a coherent set of ideas and corresponding policy that can be categorised as austerity has been well attested, but describing the precise impact this has on actual policy formation has been far more complicated.

The concept of austerity refers to a set of political-economic terms describing policy that seeks to reduce budget deficits by reducing government expenditure. Such policies can be undertaken for a variety of reasons, such as reducing the debt burden or restoring confidence, but many of its proponents also believe that fiscal consolidation causes the economy to expand because government expenditure crowds out private investment. This idea is what is known as the *expansionary fiscal consolidation hypothesis*. An important characteristic of the internal logical of austerity and expansionary consolidation, therefore, is that the government fiscal multiplier must be negative or low. High multipliers imply that government expenditure has a significant expansionary effect on the economy, and austerity can consequently only be justified when such effects are limited or negative. As such, examining the estimations that underpin fiscal policy proposals is a useful way of examining potential biases that lie at the root of such policies.

Since the outbreak of the crisis, there has been renewed interest of the fiscal multiplier and estimations of its size. There is no true consensus on the actual size of the multiplier, and estimations vary widely. It is indeed difficult to say anything meaningful about the *true* size of the fiscal multiplier, because the multiplier is not a fixed number. Instead, it is completely dependant on many different factors, differing over time and between places. It has therefore proved difficult to make different estimates comparable.

Important new research also indicates another important factor that determines the estimation of the multiplier. Not just the specific circumstances of the economy, but also the model used for the estimation and the implicit assumptions they make about the way the economy functions have an important impact on the final estimation of the multiplier size. Methodology can therefore play a deciding factor in ultimate outcome of any estimation made.

The implication of this is that the penchant for austerity in the EU may have a methodological bias at its root. If low or negative multipliers justify austerity policy, then the preference for austerity policy may be due to the fact that the multiplier estimates of the ECB were lower than elsewhere. This difference in size can in turn be explained by the difference in methodology used in these estimations.

Testing this hypothesis requires a systematic overview of the multiplier estimates made by the ECB. Because the multiplier estimate is a concrete figure, it lends itself to quantitative analysis. A useful method for such a systematic overview that is steadily gaining ground in economic research is meta-regression analysis. By performing meta-regression on all the ECB publications making multiplier estimates, and comparing the outcome to those of previous meta-regressions on the fiscal multiplier, it becomes possible to examine whether the ECB estimates are indeed lower, and if so, whether this is due to an overreliance on certain methodologies. To accomplish this I have performed meta-regression analysis on a dataset of 147 studies making multiplier estimates published between 1992 and 2012, and accounted for which of these were published by the ECB.

The primary aim of this thesis is, therefore, to test the hypothesis that the austerity policy in the EU was informed by estimations by low estimations of the multiplier. While it is important to note that saying anything meaningful about the true size of the multiplier is beyond the scope of this thesis, it asserts that low or negative multiplier estimates provide a rationale for fiscal consolidation, and that it can therefore be expected that such estimates may have played a role in shaping the EU's policy response to the crisis.

This thesis will contribute to the literature in several ways. Firstly, it will contribute to the literature on ideational bias in economic policy making by providing a quantitative analysis on a subject that has previously been dominated primarily by qualitative research. Specifically, by conducting a meta-regression analysis of the fiscal multiplier estimations it allows us to see whether there is a significant difference in the multiplier estimates that supported the EU's policy response to the crisis, and whether this difference is caused by methodological factors.

This thesis also contributes to the growing body of work on systematic literature reviews in economic research. While this method has become increasingly commonplace in academia, this thesis is the first to provide such a systematic analysis of the fiscal multiplier estimations of the European Central Bank (ECB). It will therefore serve to inform future discussions on a wide range of topics, such as the fiscal multiplier, austerity and economic policy-formation in the EU.

The thesis is structured as follows: It will start with a literature review that is divided into three distinct sections. The first of these will give an overview of the discourse and attempts made to measure the impact of ideas on economic policy. Specifically, it will provide an overview of the different perspectives through which this topic has been analysed, and it will discuss the merits of qualitative versus quantitative methods in ideational economic research. The second section will be dedicated to the discourse on austerity, particularly its trajectory from the academic community into policy circles. It will also provide more detail on the interplay between the fiscal multiplier and the logic of austerity.

The final section of the literature review will then concern itself with the discourse on fiscal multiplier. It will give a definition of the concept of the fiscal multiplier as well as an overview of how it has been treated in the academic discourse. Particular attention has been given to the way that the policy publications of the ECB have engaged with the fiscal multiplier and their estimation of its size. The premise that this section will try to substantiate is that the austerity narrative rests on the assumption of low fiscal multipliers, and that an analysis of the estimations made by the ECB, and particularly the methods they rely on for these estimations, can allow us to glean insight into their possible epistemological bias. It will then continue to propose the methodology of meta-regression as appropriate to examine this.

The methodology section will then be fully dedicated to the specifics of the meta-regression analysis. The first part will explicate the basic tenets of the methodology and substantiate why this type of analysis is appropriate for this type of research. The second section deals with the methodological issues associated with meta-analysis, and

outlines the steps that have been taken to overcome then. Following this I will provide a detailed set-up of the research, including an overview of the dataset and the variables used, as well as give some preliminary expectations. Finally I will supply the results of the meta-regression analysis and provide these results with the necessary context to be able to place them appropriately in the larger discourse.

Literature Review

The first section of the literature review contains a discussion of the literature related to discourse on the political power of economic ideas. It will dissect the different ways in which academics have attempted to measure the effect that ideas have on policy prescriptions. As will become apparent from this chapter, the majority of this research has conducted through qualitative methods. While these methods have been convincing in their assertion that ideas and narratives do indeed play some role in shaping policy outcomes, their descriptive nature has often led to these studies being unable to quantify the significance and extent of the role such ideational bias plays. This section will also include discuss the relative merit of qualitative and quantitative approaches in analysing this phenomenon.

The second section will go on to provide a practical definition of austerity, and trace the origins of this narrative from their origins in academia to their introduction as an important epistemological logic in policy circles. An important observation made is that austerity is not purely an economic narrative. It has also been a compelling narrative strategy for politicians, and this fact complicates its analysis even further. Because it is nigh impossible to separate the political deliberations and economic arguments underpinning any given policy, this section will instead propose a shift of focus. Instead of providing a descriptive deliberation of bias towards austerity in ECB policy, I will attempt to quantify such biases by analysing a related concept that underpins the logic of austerity.

The third section, then, concerns itself with this concept, the fiscal multiplier, and the discussion surrounding this topic. It will give a definition of the concept of the fiscal

multiplier as well as an overview of how it has been treated in the academic discourse. Subsequently I will focus on the way that the policy publications of the ECB have engaged with the fiscal multiplier and their estimation of its size. The premise that this section will try to substantiate is that the austerity narrative rests on the assumption of low fiscal multipliers, and that an analysis of the estimations made by the ECB, and particularly the methods they rely on for these estimations, can allow us to glean insight into their possible epistemological bias.

Additionally I will also provide arguments for the supposition that, due to their quantifiable nature, analysing the estimations of the fiscal multiplier allows for overcoming some of the limitations of qualitative methods that were previously mentioned.

Before I begin the discussion proper, it is prudent to give a primer on some of the terminology used in this thesis. In this thesis, terms such as *policy-institutions* and *policy-circles* are used interchangeably to mean the collection of different institutions (ranging from independent think tanks to universities to the research departments of government and non-government institutions) as opposed to policy-implementers and decision-makers in the legislative and executive branch. In this context, the Research Department at the ECB is classified as a policy-institutions, in that it performs research that serves to understand and provide solutions for economic policy problems.

1.1 The Political Power of Economic Ideas

A foundational assumption this thesis makes is that ideas matter. Policy, in its most basic form, is an attempt to address and overcome a perceived problem. While it is true that in certain cases the adopted policy is a straightforward result from the material and political considerations surrounding the given problem, this is not always the case. This is especially true in situations where there is considerable uncertainty about either or both the root-causes of the problem as well as the perception of appropriate solutions. What the policy-maker believes, not just about the root-cause of any given problem but also the ways in which effected solutions are measured, matters a great deal in shaping the final policy response. While this basic premise is easily contended, measuring the ways in which, and extent to which, ideas have a tangible impact on policy can be rather more difficult.

This chapter will attempt to answer the following questions: to what extent do ideas influence and constrain the policy options of politicians? What are the mechanisms by which such ideas are disseminated from the academic discourse into policy circles? How does one measure the significance and extent of the effect of ideas on policy? To answer these questions I will first start with a literature review on the political power of economic ideas. I will start with a discussion of Peter Hall's 1989 book, as one of the first serious works on the subjects, before touching on some of the other ways academics have approached this matter.

Of particular relevance is Haas' work on "epistemic communities", which is a useful framework for analysing the impact that policy circles have on decision-makers. Following this, I will discuss the various pitfalls and obstacles that measuring the role of ideas entails. In conclusion I will discuss the consequences these insights have for my research, as well as propose a strategy to overcome them.

One of the first comprehensive discussions of the impact of ideas on policy is "The Political Power of Economic Ideas" by Peter A. Hall (1989). This book examines the rise of Keynesian ideas from academic circles into the political mainstream. At the beginning of this analysis, Hall distinguishes three perspectives through which scholars have analysed the impact of ideas: the economist-centred, state-centred and coalition-centred approach. The economist-centred approach sees the academic community as the primary agent in disseminating ideas. Through the discourse, economists discuss different ideas, and those that rise to prominence will then be "pushed" onto policymakers. In this approach, ideas are primarily seen as tools to help academics solve economic puzzles.

The second, state-centred, approach is an institutionalist approach that is primarily concerned with the institutional make-up of policy-making institutes. The ability of any given idea to permeate these institutions is dependant on the relative openness of these institutions to outside input, and the bureaucratic capacity in turning new ideas into policy. Ideas are primarily judged by their ability to solve policy problems.

Lastly, the coalition-centred approach primarily see ideas as tools to forge coalitions and consensus for political actors, and ideas are judged to the extent that they can aid a political actor in building coalitions. Hall (1989) argues that any good analysis of the impact of ideas should aim to combine the prescriptions of all three frameworks. Consequently, for an idea to rise to prominence and have an impact on policy it must 1. Be considered an appropriate solution to an economic problem, both to academics and to policy-makers, 2. Be able to permeate the policy-institutions and 3. Allow policy makers to build a coalition to implement their policies.

For the purposes of this thesis, the last prescription will be mostly disregarded, not because it is less important than the other two, but because the coalition-based approach is outside the scope of this thesis. We are primarily interested in the way that policy is shaped and informed by ideas, so the political context is irrelevant to this analysis.

1.2 Epistemic Communities

To understand the interplay between economic ideas and economic policy, and to underline the narratives can have on the ways in which policy-makers conceive of solutions to policy problems, it is worthwhile to turn to the concept of *epistemic communities.* Epistemic communities are a paradigm that seeks to understand how policy is shaped and transmitted to the decision-making level from the academic community. Peter M. Haas (1992), who wrote extensively on the subject, defines it as follows: an epistemic community is a concrete collection of individuals who share the same worldview (or episteme), or more specifically a group of individuals that share four distinct characteristics:

1. They share a value-based foundation for the actions of its members.
2. All members of an epistemic community also share casual beliefs about the effects and outcomes of policies.
3. They also share notions of validity, or what constitutes valid knowledge about their field of research.
4. They also have a common set of practices associated with a set of problems towards which their professional is directed.

According to Haas, the infiltration of a certain epistemic community into governing institutions allows their episteme to directly influence the type of policy that governing body produces. Crucial in this process is the notion of uncertainty. Uncertainty here is defined as "those under which actors must make choice without "adequate information about the situation at hand" or in the face of "the inadequacy of available general knowledge needed for assessing the expected outcomes of different courses of action

(George 1980)". In such situations where policy-makers do not possess all the relevant knowledge to make an informed decision about the preferred policy option taken, they will turn to the epistemic communities for guidance. Consequently, the more complex and issue, the more influence an epistemic community is able to exert over the policy. Haas did however stress that questions pertaining to the mechanisms of why certain ideas emerge or change were left unanswered, and it is therefore difficult to unequivocally state that ideas are independent rather than intervening variables.

An epistemic community then, is a closed community that shapes the way its members conceive of policy problems and solutions for the problems they are faced with, and influence their influence on policy by informing policy-makers at times of uncertainty. The greater the uncertainty surrounding a certain problem, the larger the influence an epistemic community is able to exert.

Because most economic policy problems are complex by nature, and perhaps none more so recently than financial crisis, it is not unreasonable to suggest that the influence of the epistemic communities informing the decision-making process was large. Whether one can classify the research department of the ECB as an epistemic community is a much more contentious matter, and one that lies outside the scope of this thesis. In reality there is usually some degree of pluralism in every policy-institution, and to presuppose that there is a consensus on all matters that all researchers subscribe to would be a severe misrepresentation.

Nevertheless, the epistemic community approach provides a good framework for demonstrating how a policy-institute can influence the policy-making process, and how such a policy-institute can have a homogenising effect on research conducted there. For the purposes of this thesis, it is merely important to establish that an institution such as the ECB could have an epistemic bias that informed the method in which research was conducted there. This assumption can then consequently rendered subject to analysis.

1.3 Measuring the Impact of Ideas

While the tangible effect of ideas shaping and constricting policy has become a commonly accepted notion, actually assessing the precise nature of this effect is an entirely different matter. According to Chwieroth (2007)., analysis of the impact of ideas on political outcomes runs into two distinct problems, that is of assigning causal weight to the impact of ideas (the "how much" problem) and one of measurement (the "how to" problem) Most scholars in the field have circumvented these problems by denying them and rejecting the notion of an objective context that can be assessed and measured. Political scientists in particular have generally relied purely on qualitative research when analysing the impact of ideas (Chwieroth 2007). Chwieroth argues that the application of quantitative methods may help ideational researchers overcome the aforementioned problems in two ways. Firstly, while evaluating the bias-efficiency trade off in qualitative research may be quite difficult, quantitative methods can account for it. This allows researchers to gauge the bias and efficiency gains of one model versus another.

Quantitative methods also offer the advantage of helping ideational researchers overcome objections by sceptics about the importance of social factors for a particular outcome. By controlling for other variables included in the model specification which presumably encompasses all relevant variables that opposing theories suggest and specifying the effect of varying a single variable, quantitative methods can provide a means to assess the causal weight of ideas net of other factors. Quantitative methods thus offer precise estimates of how much ideas matter through the parameter estimates.

One particular problem ideational research faces is how to isolate the causal effect of ideas on political outcomes and to assign appropriate weight to this factor. Most existing research employ qualitative methods to address this problem, but it has two notable drawbacks. One such drawback concerns the trade off between bias and efficiency. Ideally, a researcher aims for a method that is both unbiased and efficient, but since this is not always possible, decisions need to be made. King et al argue that it is unclear how to make such an evaluation for qualitative methods, and consequently the qualitative methods used by ideational researchers often tend to overemphasize providing unbiased estimates at the expense of efficiency (King, Keohane, and Verba 1994:71).

Quantitative methods, on the other hand, offer the benefit of providing formal estimates of how much ideas matter relative to other factors via the parameter estimates. By controlling in the model specification for variables opposing theories suggest and specifying the effect ideas exert on outcomes, quantitative methods can serve as a powerful tool for overcoming the objections of sceptics (Chwieroth 2007). Not all questions concerning ideational economics can be answered satisfactorily by using quantitative methods, for instance those relating to ideational diffusion and compliance.

Because of this, it appears that any fruitful analysis of the impact of ideas should strive to combine quantitative and qualitative research methods.

1.4 Conclusion

As becomes apparent from the above, the main drawback of most attempts to measure the impact of economic ideas is that they typically rely on qualitative methods. While these have been convincing in arguing for the various ways in which ideas have an impact on policy, they are much less effective in answering how and to what extent this influence occurs. While quantitative methods will potentially lead to far more significant results, the intangible nature of the question means that this research has not received as much scholarly attention.

One way of overcoming this obstacle is to focus on one a key assumption that informs the narrative that underpins the policy recommendations made by the ECB. According to the epistemic communities approach, one way in which ideas influence policy is that an epistemic community will moderate the way in which its members view the appropriateness of a given methodology. In order to assess whether a certain episteme has had a tangible impact on policy outcome, it is possible to analyse whether there is indeed a high degree of homogeneity in the methodology that the ECB uses, but one that is not necessarily prevalent outside of the EU policy circles. If it is possible to establish that there is indeed a methodological bias present in the EU policy circles, it can be inferred that there may be an ideational bias at the root.

Austerity

In the following section, I will provide an overview of the academic debate surrounding austerity. To this end, this section of the literature review has been divided into the following sub-sections: Firstly, I will provide a discussion of the definition of austerity and the related concept of the expansionary fiscal consolidation narrative. Secondly, I will discuss the origins of these concepts within the academic literature, and outline their trajectory from their origin in academic circles to their spread into policy circles. I will then discuss the extent to which the EU crisis response can actually be classified as adhering to austerity or the expansionary fiscal consolidation narrative. Finally, I will draw attention to a further concept that is related to the austerity debate: the fiscal multiplier. As will become apparent, the fiscal multiplier and its associated discussion in the literature may provide a way to assess quantitatively whether the EU response was biased towards austerity.

2.1 What is austerity?

Before we can begin to discuss whether the EU policy response to the recent crisis was actually influenced by austerity, we need to have a clear definition of what we mean when we say austerity. To put it very briefly, austerity here means any policy advocating for or undertaken under the premise that reducing government expenditure with the expectation of bolstering economic growth. In the words of Mark Blyth *"Austerity is a form of voluntary deflation in which the economy adjusts through the reduction of wages, prices, and public spending to restore competitiveness, which is (supposedly) best achieved by cutting the state's budget, debts, and deficits. Doing so, its advocates believe, will inspire "business confidence" since the government will*

neither be "crowding-out" the market for investment by sucking up all the available capital through the issuance of debt, nor adding to the nation's already "too big" debt." (Blyth 2013). Such a *crowding-out* effect is described by pro-austerity advocate John Cochrane as follows: *"As pro-austerity advocate John Cochrane of the University of Chicago put it, "Every dollar of increased government spending must correspond to one less dollar of private spending. Jobs created by stimulus spending are offset by jobs lost from the decline in private spending. We can build roads instead of factories, but fiscal stimulus can't help us to build more of both"* (Cochrane 2009).

A related concept that is often used interchangeably with "austerity" is the "*fiscal consolidation hypothesis".* As the name suggests, this hypothesis assumes that fiscal consolidation will have an expansionary effect on the economy, and is therefore functionally the same as what is commonly understood as austerity. In the rest of this chapter, as well as the remainder of this thesis, the two terms will therefore be used interchangeably.

Now that we have a clear definition of what constitutes austerity, we can next turn our attention to the ascendancy of this narrative from the academic fringe into the forefront of economic policy.

2.2 A History of Austerity

The fiscal consolidation hypothesis in academic discourse

The first charge for the Expansionary Fiscal Consolidation hypothesis was made in 1990 by Giavazzi and Pagano in their seminal article "Can Severe Fiscal Contractions be Expansionary? Tales of Two Small European Countries" (Giavazzi and Pagano, 1990). They examined two cases of fiscal stabilization, Ireland and Denmark, and found evidence to support the view that fiscal consolidations may have positive rather than negative effects on employment and growth. A second development that undermined the prevailing logic of both deficit spending as well as high expenditure was the combined challenge of supply-side economists stressing the negative incentive effects of high taxes and the contestation of the expansionary effects of budget deficits on aggregate demand (Barro 1974, 1989). The consequence of these efforts was the ascendancy of the idea that governments could neither borrow nor spend their way out of a recession. Instead, the prevailing knowledge became that fiscal consolidations were actually growth-friendly.

While this shift in perspective by itself constituted a significant departure from what was the prevailing wisdom of the time, another development helped cement the influence of the expansionary fiscal contraction paradigm even further. As discussed, what matters for an idea to become policy is not just that it is economically feasible; effective ideas must also be politically attractive. And that is precisely what another article written by Alesina, Perroti and Tavares "The political economy of fiscal adjustments" (Spilimbergo, Schindler, and Symansky 2009), found: "We find no evidence of a systematic electoral penalty or fall in popularity for governments that

follow restrained fiscal policies. If anything, the opposite is the case: when deficits are reduced, governments that follow a 'cold turkey' approach and focus on spending cuts may be rewarded at the ballot box. Moreover, cabinets that are willing to cut transfers and the government wage bill-traditionally considered the two most politically charged components of spending-are not punished by the voters (Alesina et al. 1988)

Spread to Policy Circles

During the latter of half of the 1990's and the beginning of the 21st century, the ideas surrounding expansionary fiscal contraction began to spread from the academic world into the policy circles of national and international institutions. In 1996 the ideas featured in several IMF Staff Papers and the OECD Economic Outlook. In 2000 the first publication of Public Finances in EMU reported started with the following line: "Achieving and sustaining sound positions in public finances is essential to raise output and employment in Europe'. The Stability and Growth Pact (SGP) is the concrete manifestation of the shared need for fiscal discipline (European Commission 2000)." During the following decade, the ideas became increasingly embedded in policy-circles, including notable publications such as 'Can fiscal consolidations in EMU be expansionary?' (European Commission 2003), *Economic Reactions to Public Finance Consolidation: A Survey of the Literature* (Briotti 2005) *Expansionary Fiscal Consolidations in Europe. New evidence* (A. Afonso 2006), *Lessons from Successful Fiscal Consolidations* (EC 2007), 'Fiscal consolidations: Lessons from past experience' (OECD 2007), 'Fiscal adjustments: Determinants and macroeconomic consequences' (Kumar et al 2007), 'Received wisdom and beyond: Lessons from fiscal consolidations in the EU' (Larch and Turrini 2008).

This literature aimed both at discerning the factors governing successful fiscal consolidations as well as drawing lessons from past examples. These articles were highly effective at framing the debate, leading to a rapid shift in discourse. Where the 2003 Public Finance in EMU report is concerned with investigating w*hether* expansionary fiscal consolidations can be successful, the 2007 report seems to take this for granted and is merely concerned with the underlying factors of what makes such consolidations so successful, a marked shift in tone. Larch and Turrini (2008) confirm this assessment, stating that at the time of writing, expansionary fiscal contractions are now considered to be the received wisdom.

Something that becomes apparent when reviewing the literature is that the debate surrounding expansionary fiscal contractions has almost exclusively been conducted by economists, with hardly any reference to political science research. As Gourevitch (1986) argued, "policy requires politics", but the failure of political scientists to meaningfully engage with the debate has meant that the political side the debate has been neglected. Because of this, many of the more dubious claims about the political expediency of expansionary fiscal contractions have gone unchallenged. An example of this is the omission of counter-evidence on the electoral cost of budget cuts, such as those presented in Mulas-Granados (2004) from most policy publications. It appears that most of the evidence against the benefits of expansionary fiscal contractions has been unsuccessful in penetrating policy-circles.

Another important observation is that the analysis of the conditions facilitating fiscal consolidations has also been self-serving. To most economists, consolidations are only successful under specific conditions. The Irish case, often hailed as the role model of expansionary austerity, was only made possible by "benign external conditions and

leveraged by key policy interventions, including a sharp devaluation". It also crucially relied on legitimization through social partnership, which is a factor that is often omitted from discussions in the literature. As Dellepiane-Avellaneda (2015) points out, the question of how expansionary consolidations are supposed to work under different conditions is one that has not received the proper attention.

2.3 EU Crisis Response

From "Emergency Keynesianism" to Consolidation

But no idea, no matter how compelling, can transcend the academic discourse and permeate the political arena without actually offering a solution to problems perceived by policy-makers. The reason that austerity ideas were received so well by policy-makers is because they offered appealing political solutions to the policy-problems of the time. As Giavazzi and Pagano pointed out, "in most European countries, the high real interest rates of the early 1980s combined with the large stock of public debt inherited from the 1970s to create a potentially explosive debt problem" (Giavazzi and Pagano, 1990). What made expansionary fiscal contractions particularly appealing in this context is that it claimed to reconcile two conflicting objectives, "austerity without pain", and provide politicians with a narrative that allowed them to avoid political backlash while fulfilling their objective of debt-reduction. To conservative politicians, expansionary fiscal consolidations provided them with a vocabulary to underpin their ideological objectives of reigning in government expenditure, and third-way social-democrats could use the narrative to signal economic competence. As such, the expansionary-austerity narrative increasingly turned from a solution to an economic

problem into a powerful discursive weapon for accommodating electoral and coalitional imperatives.

2.4 Conclusion

While the preceding section provides compelling insight into the discourse on austerity, this analysis still remains subject to the same pitfalls that were outline in the chapter on ideational bias. While the case for a comprehensive set of assumptions that together make up the austerity narrative is solid, it nevertheless runs into problems answering the question of the extent to which such ideas actually ended up shaping the crisis response. The austerity narrative is not simply an economic one, but also provides a compelling narrative political strategy. Considering this, it appears very difficult to assess its impact through qualitative analysis.

However, there may yet be a way to assess this impact quantitatively. The key may lie in yet another economic concept: the fiscal multiplier.

Simply put, the fiscal multiplier is the rate of change in national income to the government expenditure that caused it. When the rate exceeds 1 there is said to be a multiplier effect. It is therefore fundamental to the austerity debate, as the austerity narrative necessarily expects a consolidation of government expenditure to increase economic performance and therefore logically assumes a fiscal multiplier below unity. Because of this intrinsic relationship between austerity and the size of the fiscal multiplier, it is possible to assess the attitude of the EU policy community towards the fiscal multiplier as a *pars pro toto* of their attitude towards austerity. The advantage of such an approach is that the fiscal multiplier is a quantifiable figure. It is, at least theoretically, possible to assess the manner in which the ECB assessed the fiscal

multiplier in its publications and derive some meaningful insight from these estimations. Before we arrive at such methodological deliberations, however, we will first need to engage with the fiscal multiplier debate in some more depth.

The Fiscal Multiplier

A key concept that is closely related to the discussion on fiscal consolidation is the fiscal multiplier. Simply put, the fiscal multiplier is the rate of change in national income to the government expenditure that caused it. When the rate exceeds 1 there is what is known as a *multiplier effect* (Spilimbergo, Schindler, and Symansky 2009). This concept and the academic discussion on this subject is closely related to the narrative underpinning the expansionary fiscal consolidation hypothesis. Multiplier estimates below unity reinforce the argument for fiscal consolidation, as fiscal stimulus will be expected to have a limited effect.

Up until quite recently, a significant part of the literature concerning the fiscal multiplier typically regarded fiscal multipliers to be low, and consequently this reinforced support for austerity policy. In this section I will provide an overview of the academic discourse surrounding the fiscal multiplier during the crisis, particularly focusing on how the ECB regarded the fiscal multiplier during this time and its notable disagreement on multiplier estimates with the IMF from 2012 onwards. Furthermore, there will be some discussion of the different ways in which the multiplier can be calculated, and the effects that different assumption about the economy have on these methods.

Most of this section will be a descriptive discussion of the state of the multiplier literature, but since the fiscal multiplier is a quantifiable figure, it is possible to review the literature from a statistical angle as well. One method that accomplishes this is meta-regression analysis, and offers a compelling avenue to analyse the multiplier estimates of the ECB in further depth.

3.1 The Fiscal Multiplier Debate at the ECB

In this section I will provide an overview of the way that the fiscal multiplier has been treated in research conducted by and for the ECB. This will not be an exhaustive list but rather a discussion of some of the more notable publications made that provide some insight in what the consensus regarding the size of the fiscal multiplier was at the ECB during the crisis. Some attention will also be dedicated to the shift in the discourse on the fiscal multiplier that was precipitated by the IMF in 2012, and the way in which the ECB responded to this shift.

While the discussion on the fiscal multiplier stretches back decades, there was a resurge in interest in the topic after the outbreak of the global financial crisis. One of the first treatments of this topic at the ECB was "New Keynesian versus old Keynesian government spending multipliers" by Cogan et al (2009). This paper was written as a response to findings written in the context of the American Recovery and Reinvestment Act, which concluded significant fiscal multiplier for the stimulus package. Cogan et al, while stressing that the quantitative effects on fiscal policy are quite difficult to estimate due to both empirical and methodological problems, found that the fiscal multiplier was significantly lower – below unity. Concretely this means that the rate of increase of the economy was lower than the fiscal stimulus.

The second relevant paper is "Fiscal policy and growth: Do financial crises make a difference?" by Afonso et al (2010) which primarily examined the question of whether fiscal stimulus and the multiplier had different effects in times of crisis. Using data from various countries between 1981 and 2007, they estimated that the fiscal multiplier was, on average, between 0.6 and 0.8, which supported the assessment made by Cogan et al that the fiscal multiplier was below unity. They were also unable to reject the hypothesis that crisis spending has the same impact as regular spending, which means that it remained uncertain whether fiscal stimulus during a crisis actually had significantly higher impact.

The estimation of the fiscal multiplier and the effect of the 2009-2010 spending package for the Euro area were done by Cwik and Wieland (2010). Following their research, they concluded that the stimulus would actually have severely detrimental effects on the economy due to crowding out of private consumption. Instead, they advocated for government savings packages (i.e. fiscal consolidation), which they argued would provide a significant short-run stimulus and crowding-in of private spending provided that such consolidation was given sufficient lead time.

In its December 2012 monthly bulletin, the ECB weighed in on this debate and responded to some of its criticism it had received regarding the impact of consolidation efforts conducted in EU Member States. Primary among those was the IMF's October 2012 "World Economic Outlook 2012" (International Monetary Fund, 2012) report that suggested that the short-term fiscal multipliers that were used to generate growth forecasts for the years 2010 and 2011 were systematically underestimated. According to the report the real multiplier could be as high as 1.7, a significant difference to the 0.5

that was used in the IMF's own growth forecasts. This publication constituted a significant shift in the discourse on the fiscal multiplier, and the critical self-reflection of the IMF led them to subsequently lessen their support for fiscal consolidation.

The ECB countered this policy shift by referring to the 2012 economic forecast report of the European Commission, which cautioned against using past forecasting errors as evidence of the "true size of the fiscal consolidation multiplier" (European Central Bank 2012). This same report also concluded that the lower fiscal multiplier was consistent with the consensus in the empirical literature. Particularly interesting is the conclusion of the bulletin, which implicitly acknowledges that short-run fiscal multipliers may be higher, but argues that the focus on such short-run multipliers is too narrow a focus. Consolidation may lead to temporary economic deterioration, but the improvements in the structural balance are permanent.

This conclusion does not so much amount to a defence of the expansionary fiscal consolidation hypothesis – the authors admit that, in the short term at least, consolidation will have a negative impact on economic growth – as it is a prioritisation of long-term financial stability over short-term growth. The primary argument is then that the loss of economic growth due to consolidation is justified by the objective of reducing debt levels. The outcome of this meant that the European response to the crisis was now beginning to differ markedly from the preferred policy response elsewhere. Where other policy bodies and government were becoming more receptive to the appeals of fiscal stimulus, the EU remained adamant in their defence of fiscal consolidation.

The next relevant ECB working paper gives supporting evidence for this policy. In "fiscal stimulus in times of high debt: reconsidering multipliers and twin deficits" (2013) Nickel and Tudyka use an Interacted panel VAR framework with data from 17 European countries from 1970 to 2010 to analyse the impact of fiscal stimuli at different levels of government indebtedness. They conclude that, while the overall cumulative effect of a spending shock on real GDP is positive and significant at moderate debt-to-GDP ratios, this effect turns negative as the ratio increases. Their conclusions support increased fiscal prudence at high public debt ratios, because in these circumstances the effects of fiscal stimuli may be overstated.

Additional discussion on the relationship between the short-term fiscal multiplier and the medium to long-term impact of fiscal consolidation on public debt sustainability comes from Warmedinger et al (2015). They conclude that there is still considerable uncertainty concerning the actual size of the fiscal multiplier. In reviewing the literature, they find that while there is a consensus that fiscal multipliers may be large during a financial crisis, the negative effects of fiscal consolidations are mitigated when public finances are weak. Simulations seem to suggest that any increase in debt-ratio. In this context, they argue that a "frontloaded" fiscal consolidation is preferable even in a macroeconomic situation with high fiscal multipliers, because this reduces the total consolidation effort and leads to a faster stabilisation of the debt ratio.

In conclusion, it appears there has been a nuanced shift in the appreciation of fiscal multipliers in the working papers of the ECB in the last decade. While there was an initial and persistent under appreciation of the size of the fiscal multiplier, more recent papers seem to admit the actual multiplier may be considerably higher.

Nevertheless, this change in perspective on fiscal multipliers has not led to a change in perspective on the benefits of fiscal stimulus. While most authors contend that fiscal multipliers can be significant, especially in times of crisis, they still advocate fiscal consolidations.

3.2 Measuring the Fiscal Multiplier

One striking aspect of the fiscal multiplier literature is that the actual estimates of the multiplier vary widely. This is not surprising, given that the multiplier is not static. As Caroll (2009) puts it: 'asking what the government spending multiplier is, [...] is like asking what the temperature is. Both vary over time and space". Multipliers do not just vary from country to country and from time to time, they are dependent on a wide variety of factors such as type of fiscal stimulus, time frame and expectations about economic behavior. In terms of fiscal impulse type, Gechert et al (Gechert 2015) identified such types, namely public consumption, public investment, military spending, direct public employment, transfers to households and tax cuts. Another conclusion that Gechert et al (2015) arrives at is that not just the physical circumstances will lead to different multipliers, but that the way in which the multiplier is calculated, the model class that is used, also influences the estimation.

The different model classes that are used to calculate the fiscal multiplier all make different assumptions about how the economy works and how agents within it behave. These assumptions that are intrinsic to the models have themselves a tangible effect on the multiplier estimate. This means that the model class used by any given research will have an impact on the final reported size of the multiplier. This is a significant conclusion, because it means that a preference for a model class may lead to multiplier estimates that are significant higher or lower than they would be if a different method

were used. Before going into more depth about the implications of this, I will provide a
brief overview of the different model classes that are commonly used to calculate the
fiscal multiplier.

3.2.1 Model Classes

RBC

The first model class is the new classical Real Business-Cycle (RBC) model. Basic
RBC models assume a utility maximizing, representative household for whom
Ricardian Equivalence holds. This means that these models are based on the assumption
that consumers are forward looking and therefore internalize the government's budget
constraint when making their consumption decisions. RBC models also assume fully
competitive labour and goods markets. These models imply a full crowding out of
private consumption, and expansionary fiscal policy does not increase GDP through a
Keynesian demand effect, but rather via a neoclassical negative wealth effect that
results in increased labour supply (Baxter and King 1993).

DSGE-NK

The second model class, the New Keynesian Dynamic Stochastic General Equilibrium
(DSGE-NK) model, is the one most commonly used to calculate the fiscal multiplier in
contemporary studies. They are an extension of the RBC model, adding monopolistic
competition that produces sticky wages and prices. These additions allow for an output
gap in the short run and possible demand side effects on fiscal policy even if Ricardian
Equivalence holds. Multiplier effects in these models depend largely on the reaction
function of the monetary authority, more specifically on the reaction of the real interest
rate (Gechert 2015a).

Estimations of the multiplier in these models usually fall in the range of $0 < k < 1$ for public spending, although current developments in the literature tend to broaden this range somewhat. This is mainly due to the inclusion of so-called non-Keynesian effects due to distortionary taxation, a wage-level increasing effect of public employment or risk premiums on interest rates for high government debt.

These modifications in these models may imply results that support the idea of expansionary fiscal consolidation (Briotti 2005: 10-11). On the other hand, introducing a share of non-Ricardian consumers (Galí, López-Salido, and Vallés, 2007) (Cwik and Wieland 2010), or a central bank that operates at the zero lower bound (ZLB) (Woodford 2011) (Freedman et al. 2010). DSGE-NK models yield higher multiplier values, comparable to those of structural macro econometric models. These models assume high individual discount rates or liquidity constraints for households, thereby breaking Ricardian equivalence. This characteristic is often alluded to by multiple different synonyms, such as non-Ricardian agents, hand-to-mouth consumers, liquidity constrained households etc. In this analysis these are all covered under the heading of "Keynesian agent", because they all share the characteristic of matching their spending to their current income.

At the ZLB the nominal interest rate is fixed, and thus expansionary fiscal policy lowers the expected real rate of interest due to increasing inflation expectations, i. e. a Fisher effect.

MACRO

The third type of model class is the *structural macroeconometric model* (MACRO). While currently micro-founded models dominate the literature, MACRO models are still somewhat common in political consulting. MACRO models differ from the previous models in that they do not assume utility maximising households, but instead estimate macroeconomic consumption and investment functions. These models typically combine Keynesian reactions in the short-term with neoclassical features in the long term. Because fiscal multiplier measures are usually short-term in nature, the Keynesian features of the MACRO models are more prominent here, which leads to multipliers above unity due to a crowding-in effect of private consumption or investment dependant on the monetary and foreign trade regime (Gechert 2015a).

VAR

Another method used in many of the studies is the Vector Auto-regression model (VAR). These models measure the impulse-responses of fiscal shocks. Based on the analysis of Gechert, the multiplier estimates from VAR models vary significantly, which may be due to divergent databases, difference in type of fiscal shock, and the way exogenous fiscal shocks are identified. There are five different identification approaches for VAR models, two of which rely on additional historic information, and three that identify exogenous fiscal shocks from the time series directly (Caldara and Kamps, 2008). Gechert describes the different identification strategies as follows:

 "(1) The war episodes approach focuses on a few periods of extraordinary US military spending hikes, which are deemed to be orthogonal to business cycle fluctuations (Ramey and Shapiro, 1998).

(2) The so-called narrative record, established by Romer and Romer (2010) follows a similar idea, but employs real time information such as government announcements or economic forecasts, and is not limited to military spending.

(3) The recursive VAR approach (Fatas and Mihov, 2001) uses a Choleski decomposition with imposed zero restrictions to implement a causal order of the VAR variables and to rule out contemporaneous reactions of the fiscal variable to business cycle variations.

(4) The Blanchard and Perotti (2002) SVAR approach builds on the recursive VAR approach, but additionally allows for non-zero restrictions such as imposing estimated elasticities of automatic stabilizers.

(5) The sign restricted VAR approach (Mountford and Uhlig 2009) identifies exogenous fiscal shocks by imposing sign restrictions to the impulse-response functions of the fiscal shocks and then distinguishing them from a business cycle shock.

Some VAR studies additionally distinguish multiple regimes in order to separate effects of fiscal policy in upturns and downturns, pointing out the relevance of downturn regimes when it comes to evaluating fiscal stimuli (Auerbach and Gorodnichenko 2012).

SEE

The final model class consists of various single equation estimations (SEE), including OLS, IV, GMM and ECM approaches. Similar to the VAR model, the estimations from these methods vary widely. Comparing the results from these estimations with the others may be problematic, because the multiplier estimations from these models usually appear in the coefficients of the (lagged) fiscal variables.

As has become apparent, there is no single answer to the question of the actual size of the fiscal multiplier, as a wide variety of factors impact the estimation and consequently multiplier estimates vary widely as well. There is a considerable body of work concerned with reviewing the literature to catalogue the different estimations, but much of this work is descriptive in nature, compiling a list of the different estimations and describing them qualitatively. But since the fiscal multiplier is a quantifiable number, it is also possible to approach such a review statistically. Such an approach can be accomplished by performing a meta-regression analysis on all the publications that make multiplier estimates. This allows one to derive stylised facts about the interplay and effects these different factors have on the fiscal multiplier estimation.

3.3 Conclusion

The case that this thesis makes is not that low estimations of the fiscal multiplier are the sole deciding factor that prompted the countries of the European Union to regard fiscal consolidation as an appropriate response to the crisis. A wide variety of different and overlapping deliberations and concerns lie at the root of any policy decision, and it is outside the scope of this paper to enumerate all of them. What this thesis argues is that low estimations of the fiscal multiplier could have served as a justification for such policy. If it is indeed the case that the multiplier estimates calculated by the ECB were significantly lower than those of other policy institutes, the ECB's tacit support for fiscal consolidation resulting from these estimations could have had an added impetus on the fiscal policy direction within the EU. Furthermore, as evidenced by Gecherts research, the outcome of any given fiscal multiplier estimate is dependant on the method used to estimate it. This conclusion makes it possible to analyse whether there is an *epistomoligical bias* or significant preference or overreliance on any single multiplier calculation method present at the ECB.

Methodology

4.1 Meta-Regression Analysis

A primer on meta-regression analysis

A review of the relevant literature is instrumental to any form of academic research. They allow a researcher to get an overview of the myriad views expressed and research conducted on a given topic, and allow one to find fertile new ground for new research. A recurring problem of literature reviews is, however, one of *specification*. As Leamer and Leonard (Leamer and Leonard 1983: 306) contend:

"Empirical results reported in economic journals are selected from a large set of estimated models. Journals, through their editorial policies, engage in some selection, which in turn stimulates extensive model searching and prescreening by prospective authors. Since this process is well known to professional readers, the reported results are widely regarded to overstate the precision of the estimates, and probably to distort them as well. As a consequence, statistical analyses are either greatly discounted or completely ignored (Leamer and Leonard, 1983: 306)."

Although this problem is well known, for a long time little effort was undertaken to remedy or control for such distortions. This is, until the introduction of a more systematic approach to literature reviews was designed, the *meta-regression analysis*.

In the words of Stanley and Jarell, one of the first to write an in-depth article on the subject, meta-regression analysis is "the analysis of empirical analyses that attempts to integrate and explain the literature about some specific important parameter

(Stanley and Jarrell, 2005: 301)." Simply put, meta-regression analysis is the regression analysis of regression analyses, a quantitative method of reviewing literature about a given topic that allows one to control for the influence of several factors, such as model specification.

Meta-regression has been applied in a wide range of different fields, and it has also increasingly become a mainstay in empirical economic research. One important characteristic of meta-regression analysis is that effect size, which is a standard measure of empirical effect, which is assumed to be constant across the literature.

Effect size, as defined by Glass et al. (1981) is usually formulated as follows:

$$g = (\mu_e - \mu_c)/\sigma,$$

Where μe is the mean of the experimental group, μc is the mean of the control group, and σ the standard deviation of the control group. By assuming effect size is a constant, one can render the results of highly individualized studies concerning a given phenomenon as comparable and therefore suitable for analysis.This allows for the combination of a wide range of disparate results and of the analyses of the processes used to generate those results. This is particularly useful for research of an explanatory nature, aimed at identifying determining factors of economic phenomena, interrelations between economic phenomena or for the purposes of testing a particular hypothesis.

Given this, meta-regression analysis is suitable for this particular research. As the objective is to study whether multiplier estimations made at ECB – or rather, the methods used to make those estimations – was a determining factor in the outcome of the estimations, meta-regression will allow us to do so by making a systematic review of the estimations made in the whole of the empirical literature.

4.2 Data and Variables

This section contains an overview of the dataset used for the meta-regression analysis. It is was compiled by Gechert et al for their meta-regression analysis of the fiscal multiplier, and is used here without modification apart from an additional variable indicating whether a study was published by/for the ECB. A detailed description of how this variable and its crossproducts for model classes and fiscal impulses were constructed is included below.

The Dataset

The dataset used includes 147 papers published between 1992 and 2012 with a total sample of 2468 observations of multiplier values. Most of these studies were published after 2007, which is expected given the resurgence of fiscal policy as a subject of academic discussion since the onset of the Great Recession. The observations are derived from different multiplier estimation methods: 400 observations using the DSGE-NK models, 62 from RBC models, 92 from MACRO models, 1636 from VARs and 278 from SEE. All papers included necessarily either included multiplier estimations or enough information to calculate the multiplier independently.

Variables and Classification

Gechert et al. formulated several characteristics to explain the variability of the different multiplier values, which are derived from discussions in the literature. Of particular importance are the specifications of the type of fiscal impulse and the model class. However, since not every characteristic applies to every model class, only those characteristics that apply to every model class are included. In the analysis of subsamples further characteristics are included.

The type of fiscal impulse assumed by the method of calculation is recorded on a nominal scale. Each observation must belong exclusively to one value in this group. The fiscal impulses used in this dataset are

GSPEND, SPEND, CONS, INVEST, MILIT, TRANS, EMPLOY, TAX

SPEND applies to a situation in which a paper reports the effect of public spending without specifying the type of public spending, such as public consumption (CONS), public investment (INVEST) or military spending (MILIT). Together these 4 types of public spending constitute the variable (GSPEND). The remaining fiscal impulses covered are transfers to households (TRANS), public employment (EMPLOY) or lowering taxation (TAX). An additional variable was set up for spending in general (GSPEND), which consists of the observations from (SPEND, CONS, INVEST, MILIT) to serve as a robustness check.

The studies were further divided by indicating the model class specification used by the study. The different model classes are described in detail in section 3.2. Since a

multiplier observation must exclusively belong to only one model class, they are grouped according to these values (RBC, DSGE-NK, MACRO, VAR, SEE), so that a given observation from a VAR method has dummies that read (RBC, DSGE-NK, MACRO, VAR, SEE). For example, an observation that stems from a VAR has dummies (RBC=0, DSGE-NK=0, MACRO=0, VAR=1, SEE=0).

The dataset also include several control variables. Multipliers are calculated either as the peak response of GDP with respect to 6 the initial fiscal impulse or as the integral of the response function of GDP divided by the integral of the fiscal impulse or as the impact response divided by the impact impulse. For this reason, a control variable for peak (PEAK) and cumulative (CUM) is also included. Furthermore, research also shows the multiplier calculations differ concerning the time horizon of measurement. Because peak multipliers are usually recorded on a shorter horizon than cumulative multipliers, by adding a variable (HORIZON) measured in quarters after the fiscal shock we can account for this difference in timing and separate it from the method specific effect.

In addition to the variables devised by Gechert, this meta-regression analysis adds a key additional variable. As mentioned at the outset, the purpose of this research is to analyse whether there exist significant differences between the general outcomes of the dataset as a whole and of the restricted dataset that only includes papers published by/for the ECB. Consequently, a variable indicating as much has been constructed and added to the database. With this added variable, it is possible to gain insight about the effect of studies published by the ECB has on the size of the multiplier estimate. As such it becomes possible to examine whether the multiplier estimates of the ECB were indeed lower than the norm, and discern whether such a discrepancy can be accounted for by

methodological differences. As mentioned previously, such results would say little about the *actual* size of the multiplier, as meta-regression analysis is not suitable to say anything meaningful on this subject, but it will provide insight into the estimates that underpinned the policy recommendations of the ECB.

This variable was constructed by indexing the studies included in the dataset according to whether they were published by the ECB in their working paper or occasional paper series or referenced as a source in any substantive ECB publication. This was accomplished by using the online database of ECB publications. In total, 300 publications were found to belong to this category, with 52 of the samples estimated with DSGE_NK, 23 samples with MACRO, 223 with VAR, 2 with SEE and no samples with RBC method.

4.3 Methodological Issues

There are certain methodological issues associated with meta-regression analysis that need to be addressed. As mentions previously, a premise of meta-regression analysis is the normalization of effect size. For the purposes of this study, normalization is not an issue since the fiscal multiplier is already dimensionless. However, as multipliers are not measured in a standardized way, there still needs to be control for the calculation method and time horizon to extract comparable multiplier values.

Another problem with meta-regression is double counting (Goldfarb and Stekler 2002), as meta-regression studies should only use distinct observations. When several studies use the same dataset to estimate the multiplier, you run the risk of using clones of existing studies. However, since we are mainly concerned with the influence of the effect of different calculation methods, this is not a problem because the same dataset does not imply the same calculation method. Therefore these observations should be included in their entirety, as they help to discriminate between model specifications.

A related problem is whether to include multiple observations from a single study, as for instance when several different models, countries or fiscal impulses are referred to. In these instances it is advised (Stanley 2001: 138) to use only one observation per study or taking an average as a precautionary measure against emphasis of a single study.

However, Gechert outlines several arguments against this procedure. First, there is a clear trade-off between variability and degrees of freedom. Furthermore, when selection one is faced with the problem of which observation to select. Additionally, while taking

an average may be suitable for the multipliers, it is not possible to take the average of categorical variables such as the type of fiscal impulse. And while it is true that not taking an average might give undue weight to a single study that is over-emphasized, taking an average has to converse problem of possibly giving undue prominence to non-comprehensive studies. Because of these reasons, many authors (Gechert 2015);(Grauwe and Storti 2004); (Nijkamp and Poot 2004);(Card et al. 2010);(Rusnák et al. 2013) prefer to include multiple observations from a single study, which is a stipulation this study follows.

Another common practice in meta-regression analysis is to control for publication bias; the tendency for researchers to preferentially select results that are statistically significant or those that comply with expectations (Stanley, 2008) . Gechert argues that they do not expect a systematic preference for significantly positive or negative multipliers, since the different methods used all provide varying arguments for a wide-range of outcomes. The results of his meta-regression bear this out.

4.4   Study Set-up

In order to assess the impact of publication at the ECB on the size of the multiplier, the
analysis is set-up in the following way. A regression was performed on 12 models, each
including distinct combinations of variables to account for the influence of each on the
multiplier. The models are as follows:

- Model 1 and 2 serve as the base model, and are mostly
  the study conducted by Gechert et al. It includes the
  impulses and model classes, and additional control variables
  horizon as well as for the regime-type. Model 1 includes
  and model 2 does not.
- Models 3 and 4 add the additional ECB variable indicat
  was published at the ECB. Model 3 includes the paper dummi
  does not.
- Models 5 and 6 include the base model alongside the
  ECB fiscal impulses. Models 7 and 8 include the model
  for the ECB papers.
- Models 9 and 10 include specific crossproducts for
  papers.
- Models 11 and 12 include the base and all ECB variabl

The odd-numbered models (1, 3, 5, 7, 9, 11) are those that include the paper-specific dummies. Because these account for paper specific factors, they present the largest explanatory power and will therefore be refered to primarily in the interpretation of the results. The remaining models (2, 4, 6, 8, 10, 12) are included in the appendix.

The regressions also corrected for some outliers. As the mean of reported multipliers is around 0.85, all observations outside the interval [-2; 4] are dropped. This is in line with the study performed by Gechert and serves to make the two studies more readily comparable. In total, 62 observations out of a total of 2468 observations were dropped, leading to the number of observations in the models to be 2406.

5.   Results

In this section the main findings of the analysis are presented. Table 1 and 2 provide descriptive statistics of reported multiplier values for the different model classes and fiscal impulses, for the total sample and the ECB papers respectively.

In general, the reported multipliers in table 1 correspond largely with the findings in Gechert, with minor differences being attributable to a larger sample size. General spending multipliers are significantly higher than those reported for tax cuts and transfers. When dividing up spending into non-specific spending, public consumption, investment and military spending it appears that investment multipliers are highest. Both deficit and public employment multipliers are considerably lower than the rest. In terms of model classes, highest multipliers are reported for the MACRO and VAR models. In general, the multipliers for the different fiscal impulses and model classes vary widely.

Table 2 outlines the reported multipliers for the papers published at the ECB. It is apparent that the multipliers are lower across the board. For the total ECB sample the reported mean multiplier is around 0.68, considerably lower than the 0.8 for the total sample. Transfers and tax cuts, which were already lower in the total sample, are considerably lower still in the ECB sample. The same goes for consumption and military expenditure, while employment is surprisingly higher, about twice the size of the total sample. Reported multipliers for the model classes are consistent with this change, all reporting slightly lower multipliers with the exception of the SEE models, which remain roughly equal.

Figures 1 and 2 display histograms for each category. These generally support the evidence from table 2 that multipliers for the ECB papers are generally lower. It is also important to note that, in general, neither the results from the total sample nor the ECB papers are normally distributed.

Descriptive statistics

Table 1: Descriptive statistics of reported multiplier values for model classes and fiscal impulses

-	Total	Gspend	Trans	Tax	Deficit
Mean	0.8026	0.93667	0.50499	0.42178	0.35354
Median	0.71	0.9	0.4	0.29	0.211
Std. Dev	0.87089	0.91142	0.61722	0.61709	0.50238
Max	3.9	3.9	2.31	3.7	17880
Min	-1.8	-1.8	-1.29	-1.5	-0.4
N	2406	1773	105	449	79

	Spend	Cons	Invest	Milit	Employ
Mean	0.93646	0.91233	1.1281	0.98394	0.34638
Median	0.875	0.99	1.1	0.85	0.25
Std. Dev	0.79261	0.93751	1.0824	0.94744	1.1786
Max	3.9	3.79	3.88	3.56	3.5
Min	-1.7	-1.8	-1.77	-0.64	-1.32
N	831	560	227	97	58

	DSGE_NK	RBC	MACRO	SEE	VAR
Mean	0.73986	0.5159	1.049	0.8383	0.80902
Median	0.665	0.43	1	0.67	0.75
Std. Dev	0.65089	0.74048	0.47981	0.86423	0.936223
Max	3.9	2.5	2.5	3.7	3.88
Min	-0.83	-1.5	0.2	-1.29	-1.8
N	398	61	92	269	1586

*Table 2: Descriptive statistics of reported multiplier values for model classes and fiscal impulses for ECB papers*

-	Total	Gspend	Trans	Tax	Deficit
Mean	0.68717	0.87216	0.27833	0.284	0.24938
Median	0.6	0.8	0.25	0.22	0.2055
Std. Dev	0.78948	0.84555	0.1603	0.56576	0.13209
Max	3.7	3.7	0.49	1.9	0.657
Min	-1.75	-1.75	0.1	-1.5	0.074
N	297	206	6	45	40

	Spend	Cons	Invest	Milit	Employ
Mean	0.9939	0.5635	1.0046	0.1955	0.62
Median	0.9	0.65	1.3	0.055	0.62
Std. Dev	0.80227	0.66049	1.1801	0.43853	0.43841
Max	3.7	1.5	2.665	1.1	0.93
Min	-1.7	-1.75	-1.623	-0.25	0.31
N	141	20	23	20	2

	DSGE_NK	RBC	MACRO	SEE	VAR
Mean	0.69904	-	0.83565	0.85	0.66736
Median	0.66	-	0.87	0.85	0.5285
Std. Dev	0.65924	-	0.45076	0.35355	0.84691
Max	3.7	-	1.62	1.1	3.5
Min	-0.5	-	0.2	0.6	-1.75
N	52	-	23	2	220

Figure 1: Histograms of multipliers for various fiscal impulses
(Left: Total Dataset, Right: ECB Papers)

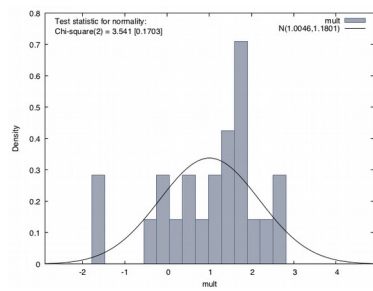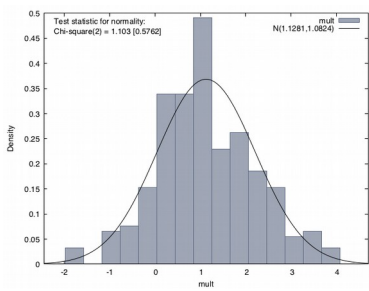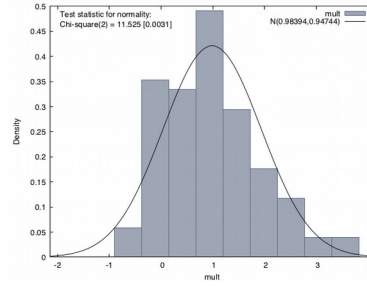*Total*
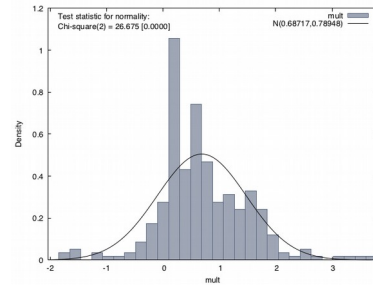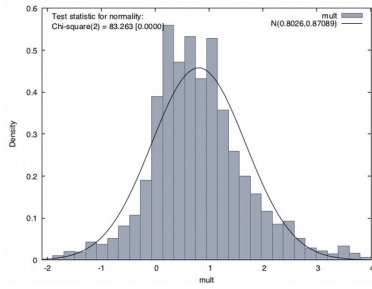
Consumption
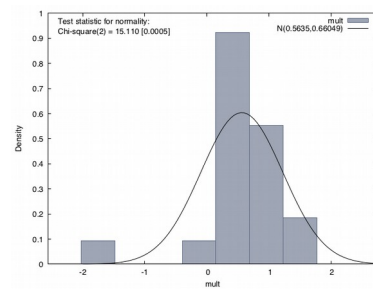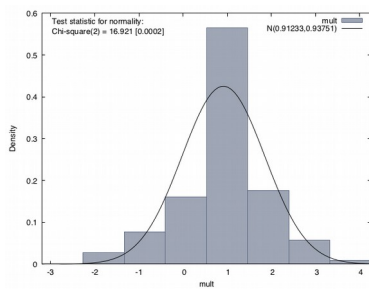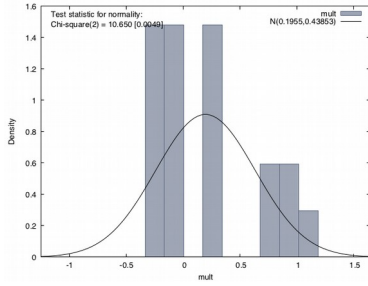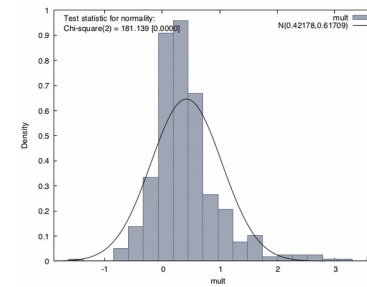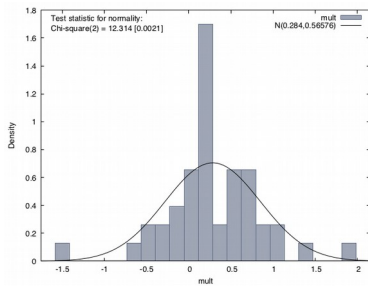

Investment

Figure 1 continued: Histograms of reported multiplier values for various fiscal impulses

Military Spending

Tax Cuts

Deficit Spending

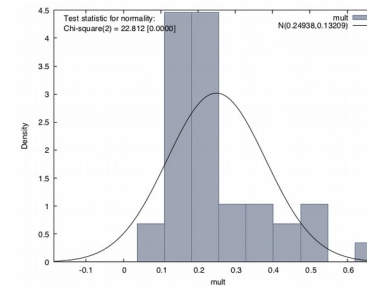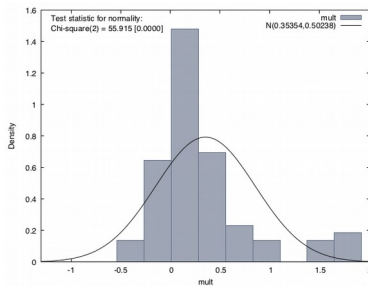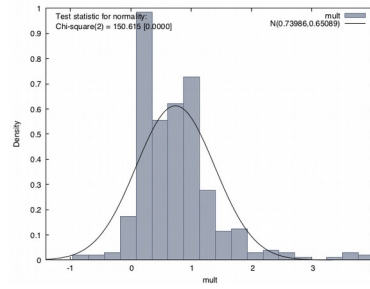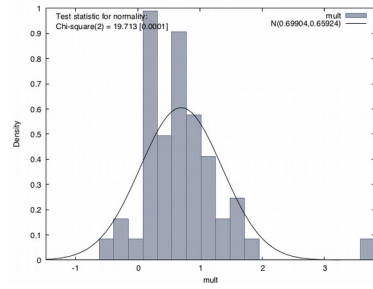*Figure 1: Histograms of multipliers for various model classes*
(Left: Total Dataset, Right: ECB Papers)

DSGE_NK

MACRO
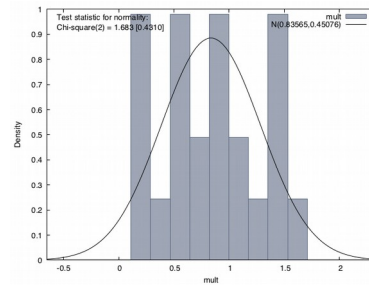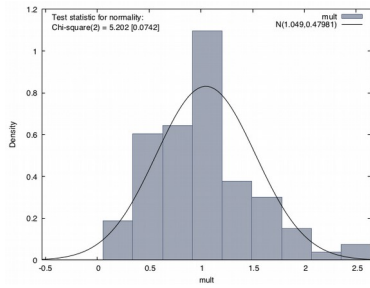
VAR
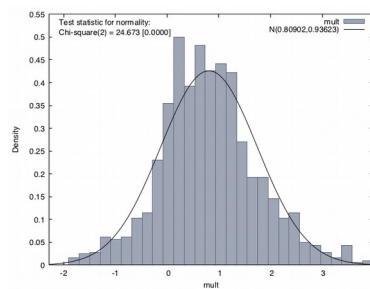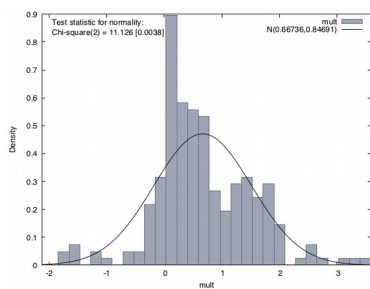
Results

Let us first take a look at the base model. The constant lies around 0.9, and from the fiscal impulses investment returns the highest results. The other fiscal impulses of significance are all negative, with employment being considerably low at -0.8. For the model classes, SEE models return the highest coefficients, and RBC the lowest. As expected, peak multipliers are higher than baseline as well, since it is based on cumulative, which tends to be lower. All in all these results do not deviate much from the findings of Gechert, apart from the employment multiplier.

Model 3 adds the ECB variable to the base model. It is notable that in this model, as well as all the other models, the results stay surprisingly consistent. There are no deviations in the results for any of the other variables, but the results for the ECB multiplier are remarkable. The analysis suggests that the ECB papers report multipliers significantly lower than in the total sample, being negatively significant at -0.8.

Models 5 and 7 distinguish between the fiscal impulses and model classes in the ECB papers. They largely confirm the findings of models 1 and 3 and there are no large deviations. Of the fiscal impulses consumption, military expenditure and deficit spending are all negatively significant for the fiscal multiplier. For the model classes, DSGE_NK models and VAR models report the lowest multipliers.

Table 3: Results meta-regressions

Variable/Model	Model 1	Model 3	Model 5	Model 7	Model 9	Model 11
Constant	0,916409*** (6,6399)	0,916409*** (6,6399)	0,917688*** (6,654316)	0,916222*** (6,637543)	0,915181*** (6,6506)	0,917494*** (6,6519)
CONS	0,091345 (1,4039)	0,091345 (1,4039)	0,105513 (1,576973)	0,092635 (1,423245)	0,091422 (1,4092)	0,106657 (1,5936)
INVEST	0,315642*** (4,6044)	0,315642*** (4,6044)	0,299885*** (4,229634018)	0,316359*** (4,634018)	0,316751*** (4,6342)	0,300397*** (4,2363)
MILIT	-0,222084 (-1,1219)	-0,222084 (-1,1219)	-0,220251*** (-1,111567)	-0,218428 (-1,10122)	-0,22254 (-1,1275)	-0,216668 (-1,0913)
EMPLOY	-0,828302*** (-7,195)	-0,828302*** (-7,195)	-0,855313*** (-7,263213)	-0,827799*** (-7,189462)	-0,825766*** (-7,194)	-0,85489*** (-7,2584)
TRANS	-0,492436*** (-4,8226)	-0,492436*** (-4,8226)	-0,505433*** (-4,756144)	-0,493062*** (-4,827887)	-0,491829*** (-4,8308)	-0,506217*** (-4,7627)
TAX	-0,466353*** (-9,1489)	-0,466353*** (-9,1489)	-0,463016*** (-8,485012)	-0,468023*** (-9,173845)	-0,46606*** (-9,1701)	-0,464837*** (-8,5108)
DEF	-0,266154 (-1,3239)	-0,266154 (-1,3239)	-0,265438 (-1,320091)	-0,277117 (-1,373003)	-0,265774 (-1,3259)	-0,276438 (-1,3693)
DSGE	0,055538 (0,2989)	0,055538 (0,2989)	0,05751 (0,309754)	0,105054 (0,431341)	0,052756 (0,2848)	0,107508 (0,4417)
RBC	-0,758771*** (-3,7609)	-0,758771*** (-3,7609)	-0,757902*** (-3,75939)	-0,736566*** (-3,406168)	-0,761448*** (-3,7852)	-0,735462*** (-3,4036)
MACRO	0,383255 (1,3893)	0,383255 (1,3893)	0,384064 (1,39287)	0,048146 (0,104431)	0,38046 (1,3832)	0,049754 (0,108)
SEE	0,475829*** (2,8)	0,475829*** (2,8)	0,475467*** (2,799250)	0,49795*** (2,792744)	0,474252*** (2,7989)	0,497879*** (2,6044)
RSW1	-0,207892*** (-3,2297)	-0,207892*** (-3,2297)	-0,207411*** (-3,224757)	-0,207639*** (-3,225187)	-0,23255*** (-3,6049)	-0,207156*** (-3,2202)
RSW2	0,711166*** (10,8919)	0,711166*** (10,8919)	0,711154*** (10,900227)	0,711447*** (10,894099)	0,73777*** (11,2669)	0,711438*** (10,9024)
PEAK	0,400662*** (6,8801)	0,400662*** (6,8801)	0,397023*** (6,818578)	0,401255*** (6,788436)	0,407323*** (7,0119)	0,397635*** (6,8272)
HORIZON	0,012003*** (4,861)	0,012003***	0,011925*** (4,831673)	0,012003*** (4,864) (4,859763)	0,01198*** (4,866)	0,011925*** (4,8305)
PEAK*HOR	-0,003074 (-0,4725)	-0,003074 (-0,4725)	-0,00259 (-0,397834)	-0,003085 (-0,474093)	-0,004245 (-0,6537)	-0,002603 (-0,3997)

*T-ratio in parentheses; *, **, *** indicate significance at the 10, 5, 1 percent level respectively*

Table 3 continued

Variable/Model	Model 1	Model 3	Model 5	Model 7	Model 9	Model 11
ECB	-	-0,821237*** (-3,2531)	-	-	-0,820303*** (-3,259)	-1,048386*** (-2,8079)
ECB*CONS	-	-	-0,680114** (-2,002375)		-	-0,678208** (-1,9964)
ECB*INVEST	-	-	0,24104 (0,822849)		-	0,244095 (0,8331)
ECB*MILIT	-	-	-0,723214** (-2,516427)		-	0,3215 (0,7456)
ECB*EMPLOY	-	-	0,870866 (1,440599)	-	-	0,87013 (1,4392)
ECB*TRANS	-	-	0,296039 (0,737551)	-		0,296697 (0,7391)
ECB*TAX	-	-	-0,019613 (-0,128453)	-	-	-0,018482 (-0,121)
ECB*DEF	-	-	-1,139285*** (-4,11193)	-	-	-0,080465 (-0,1901)
ECB*DSGE	-	-	-	-0,928262** (-2,049997)	-	-0,107693 (-0,2874)
ECB*RBC	-	-	-	-	-	-
ECB*MACRO	-	-	-	-0,404867 (-0,627519)	-	0,41529 (0,7004)
ECB*SEE	-	-	-	-0,612188 (-1,111344)	-	0,435313 (0,6832)
ECB*VAR	-	-	-	-0,821753*** (-3,254621)	-	-
RSW*ECB	-	-	-	-	-	-
RSW1*ECB	-	-	-	-	0.121099 (0.3579)	-
RSW2*ECB	-	-	-	-	-745456** (-2.207)	-

*T-ratio in parentheses; *, **, *** indicate significance at the 10, 5, 1 percent level respectively*

Model 9 largely reports similar coefficients for the ECB papers, but it also highlights an interesting discrepancy. It appears to suggest that low regimes in ECB papers report significantly low multipliers, which is counterintuitive and not in line with either conventional wisdom or the findings of recessionary multipliers in the total sample.

Model 11 is a composite of both model classes and fiscal impulses of ECB papers. It reconfirms the observation of the significant negative relationship between papers published at the ECB and the fiscal multiplier. The negative coefficient is even larger here, at -1 instead of -0.8.

6. Conclusion

Evaluating the effect that ideas have on policy is no small undertaking. Policy is not created in a vacuum, and it is not simply a technocratic process but one that is subject to many political considerations as well. Nevertheless, the ways in which policy problems and their solutions are perceived play a large role in the final policy outcome. As such, the research conducted by the policy community informs and shapes the array of appropriate policy responses available to policy makers.

The premise of this thesis is that the response of the European Union to the financial crisis can be explained, in part, by their perception of the fiscal multiplier. Austerity as an idea requires government spending to have a limited or negative effect on economic growth. As such, for austerity to be a compelling policy the policy maker needs to assume that the fiscal multiplier is small or negative, as high fiscal multiplier provide an argument for increased government spending. As such, the estimations of the fiscal multiplier at the ECB can provide greater insight in the reasons why the EU turned to austerity in response to the crisis.

There is no academic consensus on the actual size of the multiplier. Because the estimation of the multiplier depends on many different factors, not just on time and place but methodological considerations such as the type of fiscal impulse and the model used to for the estimation, reported multipliers vary widely across the literature. While it is therefore difficult to say anything meaningful about the true size of the multiplier, a systematic review of the literature can provide insight in the ways in which these underlying variables impact the final estimation. Additionally, it allows for an analysis of the multiplier estimates made by a specific institution, such as the European

Central Bank. Because of this, while it does not by itself provide a definitive explanation for the EU's dedication to budget consolidation, the finding regarding the multiplier estimates of the ECB is significant. This study finds that multiplier estimates in ECB publications are significantly lower than those made elsewhere. While the reported multiplier in the total range of publications analysed estimates the multiplier to be around 0.9, the ECB publications average around 0.1. This result supports the idea that the policy line advocated by the ECB was informed by their estimations of the fiscal multiplier, and helps explain why the European institutions stayed the course of austerity even when the consensus began to shift towards economic stimulus.

Many scholars have made compelling arguments that the root of austerity policy is political in nature. While assessing this claim is outside the scope of this thesis, the results presented here suggest that policy makers in the EU may have simply believed that government expenditure was ineffective in resolving the crisis.

Explaining this significant difference in multiplier estimates is harder. The analysis shows that multiplier estimates are lower across all fiscal impulses types and model classes. It is therefore difficult to attribute the difference to a methodological bias. Nevertheless, the findings documented in this study should serve as a foundation for further research in explaining the differences in multiplier estimates between different institutes, and the policy implications inherent in them.

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7. Appendix

Appendix 1: Descriptions of Models used in Meta-regression

Model Name	Description	Variables Included
1	Base Model with Paper Dummies	- Base: CONS, INVEST, MILIT, EMPLOY, TRANS, TAX, DEF, DSGE, RBC, MACRO, SEE, RSW1, RSW2, PEAK, HORIZON, PEAK*HOR - Paper Dummies
2	Base Model without Paper Dummies	Base
3	Base Model with Paper Dummies and ECB	Base ECB Paper Dummies
4	Base Model without Paper Dummies with ECB	Base ECB
5	Base Model with Paper Dummies and Fiscal Impulse Crossproducts	Base ECB, CONS_ECB, INVEST_ECB, MILIT_ECB, EMPLOY_ECB, TRANS_ECB, TAX_ECB, DEF_ECB Paper Dummies
6	Base Model without Paper Dummies with Fiscal Impulse Crossproducts	Base ECB, CONS_ECB, INVEST_ECB, MILIT_ECB, EMPLOY_ECB, TRANS_ECB, TAX_ECB, DEF_ECB
7	Base Model with Paper Dummies and Model Class Crossproducts	Base ECB, DSGE_ECB, RBC_ECB, MACRO_ECB, SEE_ECB, VAR_ECB Paper Dummies
8	Base Model without Paper Dummies with Model Class Crossproducts	Base ECB, DSGE_ECB, RBC_ECB, MACRO_ECB, SEE_ECB, VAR_ECB
9	Base Model with Paper Dummies and RSW Crossproducts	Base ECB, RSW1*ECB, RSW2*ECB Paper Dummies
10	Base Model without Paper Dummies with RSW Crossproducts	Base ECB, RSW1*ECB, RSW2*ECB
11	Base Model with Paper Dummies and ECB Variables	Base ECB, DSGE_ECB, RBC_ECB, MACRO_ECB, SEE_ECB, VAR_ECB, CONS_ECB, INVEST_ECB, MILIT_ECB, EMPLOY_ECB, TRANS_ECB, TAX_ECB, DEF_ECB Paper Dummies
12	Base Model without Paper Dummies with ECB Variables	Base ECB, DSGE_ECB, RBC_ECB, MACRO_ECB, SEE_ECB, VAR_ECB, CONS_ECB, INVEST_ECB, MILIT_ECB, EMPLOY_ECB, TRANS_ECB, TAX_ECB, DEF_ECB

Appendix 2: Regression results of Models without paper dummies

Variable/Model	Model2	Model4	Model6	Model8	Model10	Model12
Constant	0,720639***	0,753573***	0,731943***	0,7546***	0,742433***	0,7188***
	(17,3005)	(17,6367)	(17,5393)	(17,58632)	(17,21633)	(16,2015)
CONS	-0,000312	-0,024042	0,005552	-0,0238	-0,024259	0,0117
	(-0,0071)	(-0,5425)	(0,1258)	(-0,53593)	(-0,54881)	(0,2549)
INVEST	0,233523***	0,219674***	0,257493***	0,2211***	0,223453***	0,2642***
	(3,9614)	(3,725)	(4,2312)	(3,7418)	(3,79834)	(4,2509)
MILIT	0,082406	0,105896	0,339288***	0,1096	0,110589	0,3402***
	(0,9553)	(1,2261)	(3,5091)	(1,25891)	(1,2833)	(3,4981)
EMPLOY	-0,5861***	-0,621753***	-0,609129***	-0,6241***	-0,615456***	-0,5992***
	(-5,4305)	(-5,7447)	(-5,5887)	(-5,75743)	(-5,70062)	(-5,4415)
TRANS	-0,465501***	-0,47604***	-0,408768***	-0,473***	-0,46697***	-0,4078***
	(-5,5583)	(-5,6921)	(-4,7672)	(-5,63006)	(-5,58847)	(-4,6957)
TAX	-0,492288***	-0,504567***	-0,469283***	-0,5054***	-0,502308***	-0,4637***
	(-10,6216)	(-10,8749)	(-9,8651)	(-10,86469)	(-10,8533)	(-9,4205)
DEF	-0,755009***	-0,685086***	-0,492165***	-0,6786***	-0,536475	-0,4868***
	(-7,8605)	(-6,9819)	(-3,7136)	(-6,80955)	(-4,03584)	(-3,6591)
DSGE	0,035343	0,028938	-0,000459	0,0257	0,032083	0,0197
	(0,7386)	(0,6055)	(-0,0095)	(0,49886)	(0,67218)	(0,3807)
RBC	-0,411731***	-0,456152	-0,494545***	-0,4604***	-0,451319***	-0,4838***
	(-3,9019)	(-4,2976)	(-4,6823)	(-4,32325)	(-4,2607)	(-4,5494)
MACRO	0,316208***	0,329378***	0,307584***	0,2948***	0,328613***	0,2959***
	(3,6854)	(3,8429)	(3,5811)	(2,99139)	(3,84454)	(3,0161)
SEE	0,243139***	0,203713***	0,149779***	0,2005***	0,192595***	0,16***
	(4,1924)	(3,4485)	(2,5187)	(3,34452)	(3,24934)	(2,6514)
RSW1	-0,374759***	-0,394306***	-0,391107***	-0,3961***	-0,40273***	-0,3827***
	(-7,6088)	(-7,9659)	(-7,8089)	(-7,96628)	(-7,89521)	(-7,5317)
RSW2	0,573272***	0,553881***	0,558503***	0,5522***	0,598467***	0,567***
	(11,3657)	(10,9315)	(10,8991)	(10,85583)	(11,4599)	(10,91)
PEAK	0,312881***	0,32228***	0,336742***	0,3256***	0,329656***	0,3382***
	(5,8368)	(6,0164)	(6,2983)	(6,05075)	(6,16718)	(6,3031)
HORIZON	0,009707***	0,0104***	0,010178***	0,0105***	0,01041***	0,0102***
	(4,4846)	(4,7925)	(4,6388)	(4,81917)	(4,81023)	(4,6168)
PEAK*HOR	-0,00174	-0,001744	-0,001132	-0,0017	-0,001161	-0,0011
	(-0,264)	(-0,2651)	(-0,1705)	(-0,26471)	(-0,17482)	(-0,1595)

Appendix 2 continued

Variable/Model	Model2	Model4	Model6	Model8	Model10	Model12
ECB	-	-0,175628*** (-3,3291)	-	-	-0,14987*** (-2,73014)	0,0775 (0,9179)
ECB*CONS	-	-	-0,369967** (-2,082)	-	-	-0,429** (-2,2304)
ECB*INVEST	-	-	-0,24327 (-1,3903)	-	-	-0,3025 (-1,5896)
ECB*MILIT	-	-	-1,065475*** (-5,3412)	-	-	-1,1315*** (-5,3036)
ECB*EMPLOY	-	-	0,222968 (0,3982)	-	-	0,277 (0,485)
ECB*TRANS	-	-	-0,401451 (-1,2242)	-	-	-0,4252 (-1,2658)
ECB*TAX	-	-	-0,212284* (-1,7187)	-	-	-0,265* (-1,8302)
ECB*DEF	-	-	-0,495653*** (-2,6341)	-	-	-0,5757*** (-2,7838)
ECB*DSGE	-	-	-	-0,1717 (-1,46301)	-	-0,1489 (-1,0836)
ECB*RBC	-	-	-	-	-	-
ECB*MACRO	-	-	-	-0,0486 (-0,25685)	-	0,0338 (0,1647)
ECB*SEE	-	-	-	-0,147 (-0,26518)	-	-0,1469 (-0,2638)
ECB*VAR	-	-	-	-0,1911*** (-3,0674)	-	-
RSW*ECB	-	-	-	-	-	-
RSW1*ECB	-	-	-	-	0.126669 (0.5399	-
RSW2*ECB	-	-	-	-	-0768567*** (-3.291)	-