

# Financialization, confidence, and sovereign debt markets: The role of Credit Default Swaps in the Southern European debt crisis

Matilde Massó , Rubén Fernández-Casal ,  
and Obdulia Taboadela   
University of A Coruña, Spain

## Abstract

This article analyzes the state-market nexus by examining the role played by sovereign credit default swap (CDS) derivative markets in the southern European debt crisis of 2010-2014. This nexus is conceived of as being part of a larger process of state financialization and, more specifically, of sovereign debt management. This article shows that the southern European debt crisis was triggered by the deterioration of fundamental macroeconomic variables—not self-fulfilling dynamics driven by speculation. Moreover, the financialization of public debt markets may generate opportunities for governments to manage their public financing needs, which illustrates the complex nexus between markets and governments.

## Keywords

Confidence, derivatives markets, economic sociology, financialization, public debt, Southern European Debt Crisis, speculation, state-market nexus

## Introduction

The 2007–2008 global financial crisis was exacerbated in southern European countries by a sovereign debt crisis set off by a loss of confidence in their solvency, in the sustainability of public finances, and in these states' capacities to live up to their obligations as debtors. According to Swedberg, “much of what has taken place after May 2010 has followed a similar pattern: deterioration of confidence in the bonds of individual member countries, followed by attempts by the EU to restore confidence and avoid a systemic crisis” (Swedberg, 2011: 3).

---

## Corresponding author:

Matilde Massó, Department of Sociology and Communication Sciences, University of A Coruña  
Email: m.mass@udc.es

Despite the heterogeneity of southern European countries, between 2008 and 2015 markets assessed Portuguese, Spanish, Italian, and Greek sovereign bonds in a very similar way. The attribution of a similar status to all the southern economies of the Eurozone raises several questions for researchers in comparative sociology and political economy: To what extent was the southern European sovereign debt crisis due to a fundamental deterioration of fiscal and economic conditions? Can we define the southern European debt crisis as a paradigmatic case that reflects market profit motives over the state? Did the financialization of southern European sovereign debt markets play a significant role in the higher cost of public debt in the 2010–2015 period? Was the European sovereign debt crisis a case of speculative attack?

This article analyzes these questions by examining the role the credit default swap (CDS) derivatives market played in the sovereign debt crisis of southern EU member states between 2010 and 2015. CDSs are financial derivative instruments that transfer credit risk from one party to another. They were heavily involved in the 2007–2008 global financial crisis and, more specifically, in the sovereign debt crisis that later affected southern EU countries in 2010–2014 (Grammatikos and Vermeulen, 2012; Ingham, 2010; Morgan, 2010). CDS markets, as well as more extensive derivative markets, are central elements of state financialization, “a rarely discussed topic, but [which is] widely assumed in the literature” (Karwowski and Centurion-Vicencio, 2018: 3).

The analysis of southern European government debt markets during the financial and debt crisis provides a significant opportunity to examine the relationship and mutual dependencies between financial markets and governments. This study shows that financial institutions may exert power over governments, and this influences the availability and costs of debt financing (Hardie, 2011). Nevertheless, governments can “exploit those very same constraints to realize political-strategic goals” (Lagna, 2016: 5).

At the same time, the state-market nexus is conceived as being part of a larger process of state financialization. The financialization of government debt impacts how and from whom governments borrow money (Trampusch, 2019). It also refers to a sense-making framework by which public debt is viewed as a portfolio to be optimized, similar to the asset-liability portfolio of a financial company (Fastenrath et al., 2017; Trampusch, 2019). The use of financial instruments such as CDSs exemplifies this process, whereby derivatives can be used to reduce borrowing costs, though not without the risk of speculative and opportunistic behaviors by market participants.

Analysis of the state-market nexus in sovereign debt markets is an emerging field of research (Fastenrath et al., 2017; Lemoine, 2013; Massó, 2016; Mosley, 2015). Despite the growing number of contributions on deregulation, globalization, privatization, and marketization, there has been insufficient development of the concept of state financialization. Most scholars in economic sociology and international and comparative political economy acknowledge there is a relationship between governments and the rise of financial markets that works by privatizing pensions, services, and public infrastructure (see Karwowski, 2019; Karwowski and Centurion-Vicencio, 2018; Lazzarato, 2012, 2015; Van der Zwan, 2014, 2019). However, little attention is paid to how governments borrow money, how derivatives markets can influence governments and the cost of borrowing, and what role governments and economic actors play in this process (Fastenrath et al., 2017; Lagna, 2015, 2016; Mader et al., 2020; Trampusch and Fastenrath, 2021).

This article contributes to filling these gaps in three ways. First, the concept of state financialization is examined and extended through an analysis of the CDS market. These derivative instruments are paradigmatic of current economic practices of financial innovation and are an unexplored area of research on the nexus between financial markets and governments. We argue that

financialized practices and incentives not only limit and constrain governments but also offer them opportunities to manage public debt through market channels.

Second, we suggest that the process of financialization of sovereign debt markets shows the complex interdependence between states and financial markets. The main results from this study reveal that the sovereign debt crisis in southern European countries was initially attributable to the deterioration of fundamental macroeconomic variables such as public debt, deficits, and gross domestic product (GDP). Subsequently, when macroeconomic indicators had deteriorated, confidence was paradoxically restored. In this phase, financialization practices helped governments to deploy their financing strategies and obtain liquidity through the growth of the CDS market, which offered investors a hedge for public debt risk.

Nevertheless, in this specific case it must be noted that the influence of context elements, such as the shift in the European Central Bank (ECB) position in 2012, was critical to restoring confidence in the Eurozone sovereign debt markets, particularly in southern European countries. An intervention by Mario Draghi in London in 2012 stating that the ECB “. . . is ready to do *whatever it takes* to preserve the Euro” is seen as a turning point in the Eurozone crisis. This was reflected in falling interest rates for public debt in European southern countries. This statement exemplifies the influence of the ECB’s communication policy on the formation of market expectations (Braun, 2015). Yet, ECB’s intervention was reactive and delayed, and it did not result in an explicit bond buying program until 2015 (Braun and Hübner, 2018). For this reason, it is relevant to analyze the precise role the CDS market played in managing the debt crisis in the period from January 2008 to December 2015.

Third, new data are provided on the obscure sovereign CDS market. As mentioned later in this article, CDS markets are still under-explored due to governments’ reticence to discuss their derivatives’ activities (Piga, 2001: 17–18). In addition, relevant public data are rarely available or presented in a disaggregated format. This fact is relevant to the ability of democratic institutions to exert control over public debt management practices.

The extent to which results from this article can be generalized to other contexts is part of a new comparative theoretical research agenda that will shed light on the relationship between the politics of public borrowing and the construction of confidence by financial markets.

This article is divided into six sections. After the introduction in the first section, the second section contains a theoretical discussion of state financialization and the characteristics of the sovereign CDS market. The third section explains the political dimension of confidence in markets and the concept of debt sustainability. A detailed comparative analysis of southern European countries, the specific nature of semi-peripheral financialization, and the sovereign debt crisis are presented in the fourth section. The fifth section contains the discussion of the main hypothesis, as well as the methods employed to explain the changes in the cost of borrowing. As is well known in sociological research (see the classic contribution made by Mason and Brown, 1975), linear models are susceptible to high correlations between the explanatory and independent variables, which may cause poor performance or generate unstable solutions. Due to a high correlation between the explanatory variables, an alternative to the classic linear regression model was used. The PLS package for model fitting (Wehrens and Mevik, 2007) was employed, as it is resistant to strong correlations among the explanatory variables. The advantages of this technique are explained in this section, and, then, the main results of the analysis are discussed in the sixth section. The article concludes by highlighting the relationship between confidence, financialization, and the complex relationship between governments and financial markets.

## State financialization: sovereign debt markets, derivatives, and the rise of finance

In the last few years, there has been renewed interest in analyzing the impact of financial markets on the social, political, and business spheres. Financialization is often broadly defined as the “increasing role of financial motives, markets, actors, and institutions in the operation of domestic and international economies” (Epstein, 2005: 3). In approaches from comparative and international political economy, the concept of financialization capitalizes on various visions of the evolution of world market economies (Lapavistas and Powell, 2013; Nolke, 2016; Stockhammer, 2011). Concepts such as the financial turn of the economy (see Krippner, 2011), financial capitalism (Ertuk et al., 2008), subordinated (Lapavistas and Powell, 2013), or semi-peripheral financialization (Becker, 2014; Gambarotto and Solari, 2015; Gambarotto et al., 2019; Rodrigues et al., 2016) emerged in scholarly literature, shedding light on how different national institutional systems and growth regimes interact with the expansion of finance and public/private indebtedness.

From a meso-level analysis, financialization is also the category used to represent transformations in corporate structure and behavior, as well as provide a broad map of privatization models for public infrastructure, services (Davis and Cartwright, 2019; Lazzarato, 2012, 2015), and the management of public finances (Fastenrath et al., 2017; Karwowski, 2019; Lagna, 2016).

Similarly, from a micro-level analysis, this concept exemplifies the expansion of financial market norms and methods of valuation for non-market spaces, such as intimate relationships or professional fields (Chiapello, 2015). Approaches to financialization have channeled attention toward the everyday life of individuals and households, focusing on the way that their life cycles (health, old age, housing and education) are steadily being eroded by global economic processes (Langley and Leyshon, 2012).

The complexity of the term and its measures, together with the growing area of analysis it encompasses, causes financialization studies to focus increasingly on several areas of research, such as non-financial corporations (Davis, 2016; Soener, 2015), individual subjectivities (Chiapello, 2015), and the state, which is the object of our analysis. Each of these areas developed specific definitions of financialization, how it works, and appropriate empirical measures.

Financialization of the state is an emergent field of research (Davis and Walsh, 2016; Fastenrath, 2019; Lagna, 2016; Trampusch and Fastenrath, 2021). Analysis of state financialization is centered on the transformation of core state functions, such as the provision of public services and infrastructure, monetary policy, public finances, and sovereign debt management practices (Hendrikse and Lagna, 2017; Karwowski, 2019; Karwowski and Centurion-Vicencio, 2018).

Even though the number of contributions to the study of pension privatization (Anderson, 2019; Van der Zwan, 2019, 2020) and new models of finance for public infrastructure and services is growing (Engelen et al., 2014; Mulligan, 2016), to date, insufficient attention is paid to the analysis of sovereign debt markets and the conceptualization of the role, functions, and structure of the state and public administrative bodies in managing sovereign debt securities (Fastenrath et al., 2017; Karwowski and Centurion-Vicencio, 2018; Lemoine, 2013; Massó, 2016; Mosley, 2015; Streeck, 2013, 2015).

The steady rise in government debt began in the 1980s in most Organization for Economic Cooperation and Development countries (Green, 1993; Hager, 2016; Streeck, 2013, 2015). The mechanisms employed by states to finance deficits fostered the development of government debt markets and debt instruments that aim to provide liquidity.

The financialization of sovereign debt management is associated with an intense process of public indebtedness, deregulation and financial innovation. This process has been achieved through the adoption of active positions in financial markets by the state, the elimination of legal

restrictions to perform certain types of operations related to the commercialization of risk through financial instruments, and the existence of a variety of authorized transactions ensuring liquidity and reducing credit risk.

### *Financialization: structural and instrumental power*

Studies on financialization regularly investigate public debt management as a paradigmatic case to explore the state-market nexus. The concepts of structural and instrumental power articulate this nexus in areas such as regulatory reforms, policy implementation, decision-making processes, and, more recently, sovereign debt management (Culpepper, 2015; Konings, 2005; Trampusch and Fastenrath, 2021). The analysis of instrumental power generated a vibrant debate in the social sciences in the 1970s and 1980s (Lindblom, 1977; Vogel, 1987). The structural power of financial businesses is derived from their privileged position in the economy (Trampusch and Fastenrath, 2021), that is, their structural prominence in the economic system measured by their magnitude or strategic importance. According to Culpepper (2015), structural power results from the fact that firms control the investment decisions the economy depends on for growth. In its classical formulation, certain businesses exert structural influence on politics, often unintentionally, precisely as a consequence of their magnitude or strategic importance.

Differently, instrumental power is derived from lobbying activities. That is, it emanates from the potential to alter the behavior of other state-actors, such as policymakers, regulators, or public administrators (Culpepper, 2015). Instrumental power is exercised by those non-core functions of firms that are used to attain certain outcomes, such as resources or advantages. Relevant examples are campaign donations, lobbying, or firm associations.

However, even if the conceptual differences between structural and instrumental power are clear, in practice, disentangling them is more difficult. Structural and instrumental power usually work together and reinforce each other. According to Trampusch and Fastenrath (2021), businesses' structural power may enhance their instrumental power by increasing the effectiveness of their lobbying activities. This results in an augmented power mechanism. In addition, research on structural power faces the problem of how to include agency in explanatory mechanisms to avoid deterministic outcomes. Similarly, research on instrumental power faces the problem of how to avoid mechanistic explanations resulting in a "lean state" model that is receptive to market pressures from banks, investment funds, and market participants.

Recent contributions to financialization understand structural power as a set of mutual dependencies between the financial industry and the state (Bell and Hindmoor, 2015; Culpepper, 2015; Dutta, 2020; James and Quaglia, 2017; Trampusch, 2019; Trampusch and Fastenrath, 2021). These dependencies create advantages as well as vulnerabilities for the actors involved, avoiding deterministic models of influence. In other words, the structure of the current market economy creates opportunities for some companies and states, but not for others. In keeping with Trampusch and Fastenrath (2021), an analysis of state behavior is also essential to understanding the financial industry's capacity to influence. The power that vested financial interests are able to exert depends on the financial and monetary interests of states and on the responses of governments to the preferences of financial markets.

All in all, the nexus between states and markets is a complex one. Neither does it solely involve an intentional and deliberate financial strategy to influence governments, nor vice versa. Rather, it is related to a model of mutual dependencies between states and financial interests that may lead to different models of governance through financial markets.

In this context, an emerging research agenda on how sovereign debt securities are managed and how sovereign debt markets work is gaining prominence among financialization studies and power

research and literature (Dutta, 2020; Lemoine, 2013, 2017; Lagna, 2016). Understanding the process of sovereign debt management—how sovereign debt securities are sold, how sovereign markets work, and what actors are involved—provides visibility to a state’s capacity to implement policies and to the institutional constraints that render market governance possible.

As will be shown in this article, government debt markets are the main arena for markets to pressure states, influencing the availability and costs of debt financing (Hardie, 2011). Nevertheless, governments can engineer financial markets as instruments of statecraft to realize political-strategic goals at minimum fiscal cost (see Braun et al., 2018; Lagna, 2016).

### *Sovereign debt markets and state financialization*

Since the 1970s, the financialization of sovereign debt markets encompassed a number of new organizational, mathematical, and technological developments that resulted in an unprecedented expansion of debt instruments, operations, and competitive primary and secondary markets in most Western countries. Derivatives markets are one of the main financial innovations of the last two decades. Particularly, derivative instruments and the corresponding markets were intended to facilitate hedging the risks associated with public debt portfolios during the 1990s by bankers at JP Morgan (see Morgan, 2010).

According to mainstream economics, CDS markets are important vehicles for the reallocation of risk in financial markets. These views advocate a financial market that is free and efficient, depoliticized, and predominantly shaped by private actors rather than states and regulators (Morgan, 2010; Preda, 2009).

CDS markets aptly exemplify the financialization process of government debt markets based on the trading of risk. CDSs are derivative instruments traded on over-the-counter markets, which are unregulated and lack transparency. Sovereign CDSs provide protection against payment default risk or noncompliance by public debt issuers. Specifically, a “CDS is a financial contract whereby a protection buyer pays a fixed regular premium to a protection seller for cover in the event of the default of a reference organization” (Galán, 2012: 6). Typical sovereign CDS credit events are bailouts, debt restructurings, and repudiations or moratoriums, that is, postponing debt payments.

CDSs allow for the transfer—not the elimination—of credit risk from one actor to another. These instruments provide credit protection for buyers in the event of a default, which may take a number of forms and varying degrees of intensity, such as the collapse of the underlying bond issuer, the occasional default on bonds, a debt restructuring, or a financial bailout.

Consequently, CDS buyers obtain credit protection against the risk of non-payment on an underlying asset, although they also assume a certain degree of risk regarding the contract seller, since effective CDS protection depends on the seller’s capacity to meet their obligations (Arce et al., 2010). In this sense, CDSs are considered not only a means of dispersing financial risk, but also of replicating it among a myriad of buyers and sellers. However, as Ingham (2010) showed, dispersing the risk does not mean eliminating it. On the contrary, risk is higher for the country that issues the underlying asset, as it raises the cost necessary to pay for credit.

In this way, CDS contracts stem from a possible default on predetermined interest or principal payments of an underlying asset—in this case, a sovereign bond (Chaplin, 2005). As a result, the very characteristics of CDSs that enable investors to obtain protection against the risk of their operations are also their greatest risk, since they allow for speculation regarding the credit worthiness of the entity issuing the underlying asset or share package (Galán, 2012). An analogy using health insurance is instructive: the worse the health condition is (the higher the default risk is), the higher the price of health insurance (the greater the CDS spread). This also allows CDS traders to speculate on the underlying asset (the price of sovereign bonds) precisely because when CDS

markets assess the possibility of default as being very high, the price governments pay for credit in sovereign debt markets increases as well. This dynamic of increasing borrowing costs may lead to a crisis of confidence in the sustainability of public finances.

During the sovereign debt crisis in southern Europe, speculation on CDSs was rampant, as having an “insurable interest” in the underlying asset was not required to purchase CDSs. The CDS market was not simply a way of hedging risks; it was also a way of speculating on the price movements of the underlying asset—the interest rate of the sovereign bond—and on the changing spread of CDS contracts (Lagna, 2016; Morgan, 2010).

## **The social construction of confidence by markets**

Debt sustainability, as reflected in CDS spreads, is related to the debtor’s capacity to repay the creditor. Essentially, the key problem surrounding the securing of public debt is the message that CDS buyers send out to the markets regarding the lack of collection guarantees. As far as governments are concerned, the way politicians manage confidence becomes an important topic that may influence investors’ decisions and trigger financial crises (Swedberg, 2011).

Analyzing the factors that influence the cost of public borrowing is a complex socio-political issue, not merely based on the outcome of a mathematical formula. Some questions are key to understanding the political dimension of confidence: How much debt is too much debt? How much can a deficit negatively influence the price of financing in markets? (Beckert, 2014). The issue of public finance sustainability cannot be constrained to an analysis of macroeconomic indicators such as the debt-to-GDP ratio; rather, it is a dynamic factor that must take other variables into account in relation to economic and fiscal structures and confidence in political institutions (Rodríguez-Díez, 2013). Therefore, although the debt-to-GDP ratio is an important factor of sustainability, it is not possible to set a universal threshold of indebtedness above which a particular country’s debt is confirmed to be unsustainable. This issue adds a new, complicated challenge, namely, establishing a method to define how high the debt ceiling should be set in a particular country.

Debt sustainability is, therefore, an ambiguous concept in that it cannot be measured directly. The impossibility principle (Wyplosz, 2007) refers to the unforeseen nature of debt sustainability and, therefore, the infeasibility of assessing it with any degree of certainty because it is based on mere assumptions about a country’s future solvency and labor and economic policies.

Existing procedures are subject to significant limitations when analyzing public debt sustainability given the “impossibility principle,” which relies on the uncertainty inherent in predicting the future (Beckert, 2014; Beckert and Bronk, 2019; Wyplosz, 2007). Accepting the “impossibility principle” involves recognizing the importance of credibility when it comes to explaining the future evolution of interest rates for government bonds (see Adkins, 2017 for the relationship between time and individual debt). As there is no support for the view that added complexity allows for more precise assessment, credibility becomes an important component that can trigger vicious and virtuous cycles.

At high levels of debt, governments’ borrowing needs are also significant. However, their sustainable borrowing capacity depends on how much lenders will finance, at what cost, and under what conditions. Private lenders “will obviously lend only when the debt will be repaid” (Hardie, 2011: 142). But what are the implications if this condition is framed in the context of a stable fiscal system, a solid democracy, and membership in the European Union, as is the case for Spain, Italy, Portugal, or even Greece? As noted, high debt is not necessarily unsustainable if markets consider it acceptable; in other words, debt is sustainable if it is not excessive in terms of future solvency assessments, the evolution of budget balances, GDP, and interest rates. As there is no official

procedure to determine whether debt is excessive (Wyplosz, 2007: 27), convincing lenders that debt will be repaid is a question of ensuring political credibility through policymaking.

At the same time, paying down public debt when current levels are considered excessive can be costly in terms of employment and growth because governments usually implement macroeconomic policies designed to compress demand, reduce public spending, cut wages, and lower taxes in hopes of reducing borrowing requirements. This may have negative effects on employment and economic activity, which may worsen the financing conditions markets impose on countries whose debt is considered excessive (Streeck, 2013). For this reason, a lack of credibility can trigger a vicious cycle and lead to speculation on government debt securities. For instance, the mere existence of a CDS market allows investors to increase the risk of a credit default on the basis of a future estimation that involves a significant subjective component, even though the present situation is characterized by a lower objective probability of default. Therefore, the fear of a potentially unsustainable situation makes insolvency more probable, and this is reflected in higher sovereign debt borrowing costs and a worsening of public finances.

### **Case study. A semi-peripheral model of capitalism: the status of southern European countries**

Our analysis focuses on the cases of Portugal, Italy, and Spain. Greece was excluded due to an overall lack of data available for CDS markets. These southern European countries do not constitute a homogeneous model in economic, cultural, or institutional terms. However, they share the same peripheral position within the European Union (Rodrigues et al., 2020). Following Rodrigues et al. (2016), the term semi-periphery takes on a dual meaning. On one hand, it accounts for the particular combination of characteristics of developed and developing countries such as a late industrialization and backward economic development compared with core European countries from continental Europe. On the other hand, the financial systems of southern European countries share similar characteristics. They are mainly based on bank credit, with underdeveloped securities markets, and are still characterized, in large part, by speculative investments (Gambarotto et al., 2019).

As Molina and Rhodes (2007) pointed out, the production system of southern European market economies is more fragmented than either liberal or coordinated market economies along large-firm/small-firm, public-private, and territorial divides. The internal heterogeneity of the production regimes and welfare systems in the south of Europe makes it difficult to address one production model with a single form of comparative advantage (Molina and Rhodes, 2007). This heterogeneity is precisely a characteristic of the Mediterranean model of capitalism affected by an unequal form of regional growth and an absence of economic convergence (Gambarotto et al., 2019).

The southern European periphery faces similar challenges and integration strategies posited by the European Union and adopted by socioeconomic agents (Bruszt and Vukov, 2017). The process of European integration forced these countries to address important structural transformations in a short time span in numerous and varied institutional fields. Since the 1980s, southern European countries experienced an intense process of privatization, liberalization, and deregulation in different sectors of activity, including finance (Gambarotto and Solari, 2015; Rodrigues et al., 2020). The creation of the single European market and the adoption of the Maastricht convergence criteria, in force since 1993, imposed strict fiscal and monetary discipline on these countries. In turn, this resulted in important restructuring costs and weaknesses in the production system (Pataccini, 2017).



European integration involuntarily induced a further phase of peripheralization in southern countries (Gambarotto and Solari, 2015). This was further accentuated by a process of deindustrialization and speculative foreign investment in real state that was accompanied, more recently, by a boom in the tourism sector (Rodrigues et al., 2020).

The Economic and Monetary Union created a favorable context for the process of financialization that assumed a subordinated or peripheral form in southern European countries (Gambarotto and Solari, 2015; Gambarotto et al., 2019; Lapavitsas and Powell, 2013; Rodrigues et al., 2016, 2020). Contrary to core European countries, who are export oriented and strongly based on the enlargement of the financial dimension of their economies, southern European countries are import oriented and centered on their domestic markets (Gambarotto and Solari, 2015). They lack the services of financial innovation that core countries benefit from, are more dependent on foreign capital investment and advanced credit-based finance, and have a stronger tendency toward deindustrialization (Perez and Matsaganis, 2018; Stockhammer, 2016). These characteristics increase the fragility of growth regimes in southern European countries, reinforcing their consideration as part of the periphery.

In sum, structural similarities of southern European countries, together with heterogeneous work regimes, and fiscal and macroeconomic situations pose the question of how subordinated financialization actually works in the context of public debt crisis.

### *From a banking crisis to a sovereign debt crisis in southern Europe*

Southern European economies have been experiencing a drastic increase in indebtedness for more than a decade, particularly in the period following the creation of the euro (Lapavitsas et al., 2014). The largest percentage of this debt in terms of GDP corresponds to the private sector, and specifically the case of financial and non-financial entities. While the 2007 crisis initially stemmed from a crisis in the financial system, in 2009 it presented as a sovereign debt crisis in Greece and gradually spread to Portugal, Italy, and Spain—the Eurozone’s southern member states—highlighting the shortcomings of Europe’s political and fiscal integration.

The institutional design of debt markets in southern European countries has largely been intended to promote liquidity through notable innovation in public debt instruments (see Fastenrath, 2019). However, at the same time, this financialization process allows investors to take speculative positions based on their perception of sovereign risk (Hardie, 2011).

A pattern common to the three countries analyzed here is the transformation of the 2007–2008 banking crisis into a sovereign debt crisis (see Lapavitsas et al., 2014), when some years after the outbreak of the global financial crisis, southern European states could no longer refinance themselves on international markets due to increasing sovereign bond spreads (Rodrigues et al., 2020). This process culminated in the request for financial bailouts from the European troika (the European Commission, the ECB, and the International Monetary Fund). Mario Draghi declared that the ECB “is ready to do *whatever it takes* to preserve the Euro,” signaling a shift in market perception. It was the start of a new ECB monetary policy, which would be communicated and developed at a later time through complex regulatory policy instruments and state-led financialization solutions as market governance instruments (Braun and Hübner, 2018).

Quantitative easing policies were applied from the beginning of the sovereign debt crisis to avoid an immediate euro area break-up. ECB bond purchases were subject to the acceptance of austerity programs imposed by the official lenders on southern European countries. Notwithstanding, ECB intervention through quantitative easing was especially important as of 2015, when the ECB compensated for the absence of lenders of last resort in Eurozone economies with large-scale purchases of financial assets from banks (mainly bonds, some toxic). These purchases were

widespread and caused a rise in bond demand and, consequently, prices to increase and interest rates to drop (Braun et al., 2018). This bond-buying program resulted in a renewed convergence of interest rates (close to zero) between the core and periphery, making it easier for the periphery to pay back their loans.

The sovereign debt crisis experienced by southern European member states in 2012 had different roots and causes given the internal heterogeneity of the European periphery. In Spain, public debt was among the lowest in Europe at the end of 2008 (see Table 1) at around 40 percent of GDP. In 2014 it increased to 99.3 percent of GDP. Public debt for Italy and Portugal was already among the highest in Europe in 2008, and it increased as the crisis worsened.

The growth of Spanish public debt from 2010 onward was closely linked to the use of public funds for banking bailouts—mainly for savings banks—connected to the real estate bubble from the previous decade. Consequently, through highly complex mechanisms and state aid for saving and restructuring the financial sector, private debt, fundamentally financial institutions' debt, gradually became public debt.

Paradoxically, financial industry bailouts were designed to prevent insolvency, but at the expense of plunging the state administration into a sovereign debt crisis. As stated by Stiglitz, “if the Spanish government bails out banks, and the banking industry bails out the government, the system becomes a voodoo economy” (Expansión, 11 June 2012).

Portugal had neither banking solvency problems nor a housing bubble that could pose a threat to its financial situation. However, Portugal's average economic growth over the previous decade was quite slow, it had relatively low levels of competitiveness, relatively high family indebtedness, and a strong dependence on external financing. As a result, the fiscal situation rapidly deteriorated: in 2009, the crisis pushed the deficit up to 9.8 percent and the public debt-to-GDP ratio to 93 percent. In this context, an early election was called, and the country was bailed out in 2011. For its part, Italy did not have high public deficit levels; it deteriorated less than average and remained more depressed after the crisis. Private debt, one of the lowest in the EU, did not represent a problem either. However, Italy had very high levels of public debt—the highest in the EU. At over 100 percent of GDP in 2008 and in excess of 115.35 percent in 2010, this triggered extremely high interest payments. In addition, Italy experienced one of the highest GDP contractions during the crisis, which revealed its structural growth problem.

## Data and methods

For operational purposes, financialization will be defined following Hardie's approach: “the ability to trade risk; both taking and trading the risk on the performance of an asset” (Hardie, 2011: 143). The breadth and depth of financialization depends on the characteristics of national market structures, the financial instruments traded in that market, and the type of investors participating in it. It relates to a particular configuration of financial markets that enables market participants to buy and sell different types of risk in substantial quantities. A highly financialized market structure involves a market design that promotes the trading of risk, such as CDSs, through debt policy innovations that make the market more attractive to foreign investors.

The claim that financialization is a function of market structure and investor type and behavior suggests it is connected to a particular market design that may more readily prompt the emergence of speculative bubbles (Massó, 2016). According to this idea, financialization allows investors to speculate on sovereign risk.

However, as mentioned earlier, financialization has an enabling character that not only limits and constrains governments, but also enhances the power of states to deploy their political and fiscal strategies through financialized practices (Lagna, 2016). Thus, an additional alternative

**Table 1.** Public debt and deficits for Italy, Portugal, and Spain (2008-2014).

GEO/TIME	Gross debt % GDP							Deficit						
	2008	2009	2010	2011	2012	2013	2014	2008	2009	2010	2011	2012	2013	2014
EU-17	68.8	78.6	84.0	86.2	89.6	91.4	92.4	-2.1	-6.2	-6.2	-4.1	-3.7	-3.0	-2.6
Germany	65.0	72.5	81.0	78.4	79.7	77.4	74.9	-0.2	-3.2	-4.2	-1.0	-0.1	-0.1	0.3
Ireland	42.4	61.8	86.8	109.3	120.2	120.0	107.5	-7.0	-13.8	-32.3	-12.5	-8.0	-5.7	-3.9
Greece	109.4	126.7	146.2	172.0	159.4	177.0	178.6	-10.2	-15.2	-11.2	-10.2	-8.8	-12.4	-3.6
Spain	39.4	52.7	60.1	69.5	85.4	93.7	99.3	-4.4	-11.0	-9.4	-9.5	-10.4	-6.9	-5.9
France	68.1	79.0	81.7	85.2	89.6	92.3	95.6	-3.2	-7.2	-6.8	-5.1	-4.8	-4.1	-3.9
Italy	102.3	112.5	115.3	116.4	123.2	128.8	132.3	-2.7	-5.3	-4.2	-3.5	-3.0	-2.9	-3.0
The Netherlands	54.5	56.5	59.0	61.7	66.4	67.9	68.2	0.2	-5.4	-5.0	-4.3	-3.9	-2.4	-2.4
Portugal	71.7	83.6	96.2	111.4	126.2	129.0	130.2	-3.8	-9.8	-11.2	-7.4	-5.7	-4.8	-7.2
United Kingdom	51.7	65.7	76.6	81.8	85.3	86.2	88.2	-5.1	-10.8	-9.7	-7.7	-8.3	-5.7	-5.7

**Table 2.** List of variables.

Variables that measure macro-economic fundamentals	Variables that measure the CDS market as a proxy of market financialization	Variables measuring the cost of borrowing as a proxy of market confidence.
Gross domestic product (GDP)	Gross notional volume:	Benchmark (country risk premium)
Deficit	Net notional volume	
Government debt	Number of CDS contracts:	

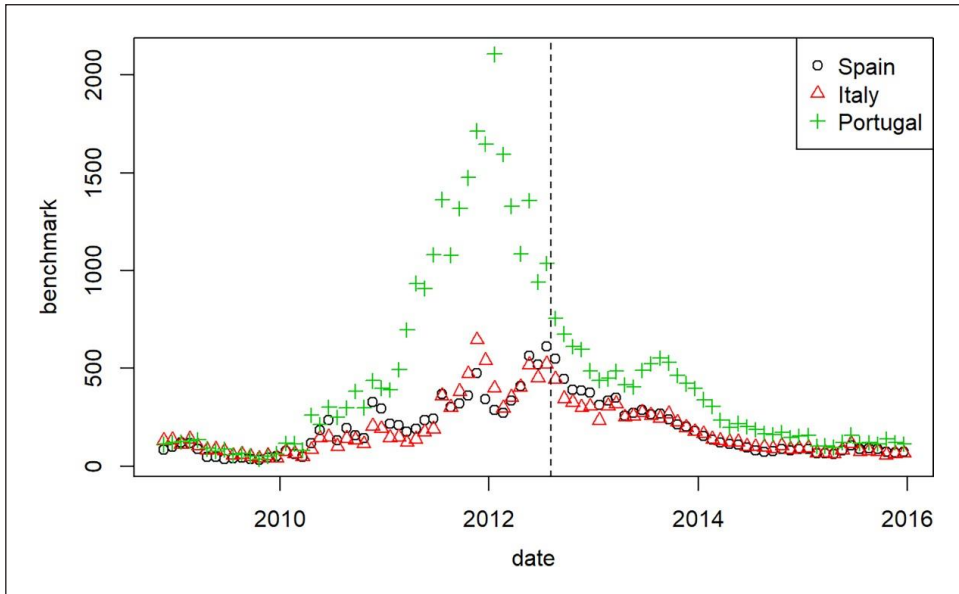
position highlights the enabling dimension of the state-market nexus. This article seeks to empirically examine this idea by analyzing the role played by the financialization of southern European public debt markets in the evolution of the sovereign debt crisis that affected southern countries between 2010 and 2015. We argue that debt market financialization played an enabling role as a way of attracting investors and liquidity to sovereign debt markets to rebuild confidence and reduce uncertainty about the solvency of southern European countries (see Morgan, 2010). Methodologically, this article considered the monthly values of two groups of variables between January 2008 and December 2014 for Italy, Spain, and Portugal. Our aim was to determine the extent to which market confidence in southern European governments’ sustainability—measured by the benchmark variable—may depend on proxy signs indicating the real economic situation, rather than on the financialization of government debt markets, measured by CDS market variables. The two variable types capture macroeconomic fundamentals and government debt market financialization (see Table 2). A further definition of these variables and sources is included in Supplemental Appendix 1. The “Time periods in the southern European debt crisis” section shows a descriptive table of these variables for the countries examined in this article over the periods in question.

As shown next, a distinction was made between two periods: before (P1) and after (P2) the height of the financial crisis. The justification for this distinction was to take the particular behavior of the benchmark variable into account, and to find an operative methodological model.

The descriptive analysis of the benchmark variable shows a clear change in the pattern of the data in the middle of 2012 (see Figure 1). This was due to external interventions in Europe and the rest of the world, which sought to lessen the impact of the increased cost of borrowing on southern European countries, as well as the knock-on effects of these increased costs (see Swedberg, 2011). Including these external factors to explain this change would undoubtedly enrich the analysis, but it exceeded the aims and scope of this article.

A decision was made to differentiate between two distinct periods and to find the simplest possible linear models to study the effects of the two groups of explanatory variables—macroeconomic indicators and CDS market variables—on the dependent variable. However, as the explanatory variables were highly correlated, the use of classic linear multiple regression was not viable. As an alternative, principal components regression (Fennesey and D’Amico, 1980; Mason and Brown, 1975) was initially employed. This method was used to construct latent variables, called components, which were linear combinations of the explanatory variables; their purpose was to prevent the problem of collinearity. Nevertheless, this method implies selecting components that can explain the variability of the predictive or explanatory variables, under the assumption they will be useful to explain the dependent variable.

While this method is well known in the field of sociology, the previously mentioned limitation prompted the search for a more suitable approach. The partial least squares (PLS) method operates in nearly the same way, although it is possible to select those components that more adequately



**Figure I.** Benchmark for Italy, Spain, and Portugal, 2008-2015.

explain the dependent variable. PLS regression (PLSR) behaves similarly to the ridge regression and shrinkage methods, which are more widely known in sociology (see Friedman et al., 2001; Mason and Brown, 1975, for example). However, PLS also has a distinct advantage: it is easier to interpret. Therefore, regression analysis was selected as the best fit for this case. Model fit is discussed in the “Final models” section.

### *Time periods in the southern European debt crisis*

As discussed above, rather than taking political and economic factors into account, the values of the risk premium were used to differentiate between the two periods in the data analysis. Specifically, the turning point employed was the date when the risk premium for all three countries initiated a downward trend:

- P1 ranges from January 2008, when the benchmark began to rise, until July 2012, the height of the financial crisis.
- P2 ranges from August 2012, which followed the peak of the crisis, to December 2015, marking the start of the recovery.

In comparing the periods before and after the height of the crisis, major differences are visible, primarily between Portugal, and Spain and Italy. Table 3 shows descriptive statistics, the mean, and the standard deviation for the different variables in each country and time period.

Regarding the key variables, Italy and Spain had the highest values of GDP and also experienced the most abrupt drops in the second period, respectively. Portugal’s production value underwent a much more moderate decline. As shown in the sixth section, the deficit for Spain, Italy, and Portugal decreased in the second period as a result of austerity policies aimed at rebuilding

**Table 3.** Mean and standard deviation for the variables (obtained from a period of 45 months for P1 and a period of 41 months for P2).

Period	P1	P1	P1	P2	P2	P2
Country	Spain	Italy	Portugal	Spain	Italy	Portugal
Benchmark	206.26 (153.5)	204.00 (162.87)	598.16 (585.6)	182.57 (127.85)	170.60 (102.28)	308.53 (190.51)
GDP	0.41 (0.022)	0.62 (0.018)	0.07 (0.004)	0.36 (0.006)	0.56 (0.013)	0.06 (0.001)
Deficit	-9.10 (1.71)	-4.25 (1.66)	-8.37 (2.12)	-7.29 (1.78)	-2.68 (1.25)	-5.71 (0.70)
Debt	50.02 (8.99)	108.27 (4.06)	93.75 (15.70)	83.49 (5.59)	124.83 (3.99)	129.78 (2.49)
Net notional volume:	123,445.75 (40,367.17)	251,140.46 (57,494.46)	58,104.05 (14,190.29)	170,748.10 (35,243.82)	389,644.28 (27,514.96)	66,307.09 (10,981.33)
CDS gross notional	14,753.87 (2250.07)	22,870.33 (2842.42)	7141.63 (3056.02)	9413.83 (2097.87)	19,215.61 (1981.06)	2922.88 (986.70)
CDS contracts	5183.00 (2294.14)	6919.60 (2433.45)	2815.89 (1105.11)	7703.63 (1810.84)	12,950.68 (1391.33)	4250.51 (828.92)

confidence, precisely due to the significant increase of public indebtedness starting in 2007 in all three countries (see Streeck, 2013).

As far as the CDS variables are concerned, the number of contracts together with the gross notional volume significantly increased in all three countries from P1 to P2. This indicates a relevant increase in the number of transactions in the CDS market to provide liquidity. However, likely due to the change in the ECB stance regarding the sovereign debt crisis, the net insured volume decreased in P2, that is, the amount of money that would ultimately end up changing hands in the case of a credit event. Italy had the largest CDS market, followed by Spain, while Portugal trailed, both in terms of the number of contracts and the total insured amount. This is in contrast to the key variables, where Portugal had a comparatively much worse debt profile and a relatively larger deficit. However, the insured amount was higher in all three countries in the first period at the beginning of the crisis and before the European bailout. This explains the drop in the second period, together with improved deficit and risk premium levels.

Major differences were also found in the correlations between the variables, as shown in Tables 4 and 5 (significance levels were calculated using the traditional approach assuming independent data). Table 4 displays a high degree of correlation between the GDP and the CDS market variables. These correlations increased in the second period, while values for the three CDS market variables decreased; likewise, the correlation between debt and risk premium decreased. Nevertheless, using the correlation coefficient to measure the strength of the relationship between any two of these variables could yield misleading results, due to the high degree of association between the variables. For instance, although GDP might appear to be the most adequate to explain the benchmark variable response, as will be seen later on, the debt variable in fact seems to be the most useful when considering multiple linear regression models.

It is clear from the above-mentioned results that notable differences exist in the joint distribution of the variables between the two periods, which justifies their separate analysis. It is important to note that the correlations between the dependent variable and the explanatory variables shown in Tables 4 and 5 measure the total information captured by the explanatory variables, and despite the high correlations, a cause-and-effect relationship between them is not necessarily implied. This

**Table 4.** Correlation coefficients in P1 and approximate significance codes.\*\*

	Benchmark	GDP	Deficit	Debt	CDS notional volume	CDS volume protection
GDP	-0.45***					
Deficit	-0.10	0.53***				
Debt	0.41***	0.07	0.49***			
CDS gross notional volume	-0.16	0.81***	0.57***	0.44***		
CDS net notional volume	-0.45***	0.90***	0.52***	0.21*	0.86***	
Contracts	0.07	0.59***	0.29***	0.29***	0.89***	0.66***

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Table 5.** Correlation coefficients in P2 and approximate significance codes.

	Benchmark	GDP	Deficit	Debt	CDS notional volume	CDS volume protection
GDP	-0.36***					
Deficit	-0.24**	0.45***				
Debt	0.06	-0.21*	0.62***			
CDS gross notional volume	-0.23**	0.93***	0.58***	0.08		
CDS net notional volume	-0.19*	0.95***	0.51***	-0.01	0.98***	
Contracts	-0.16	0.91***	0.45***	-0.01	0.98***	0.97***

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

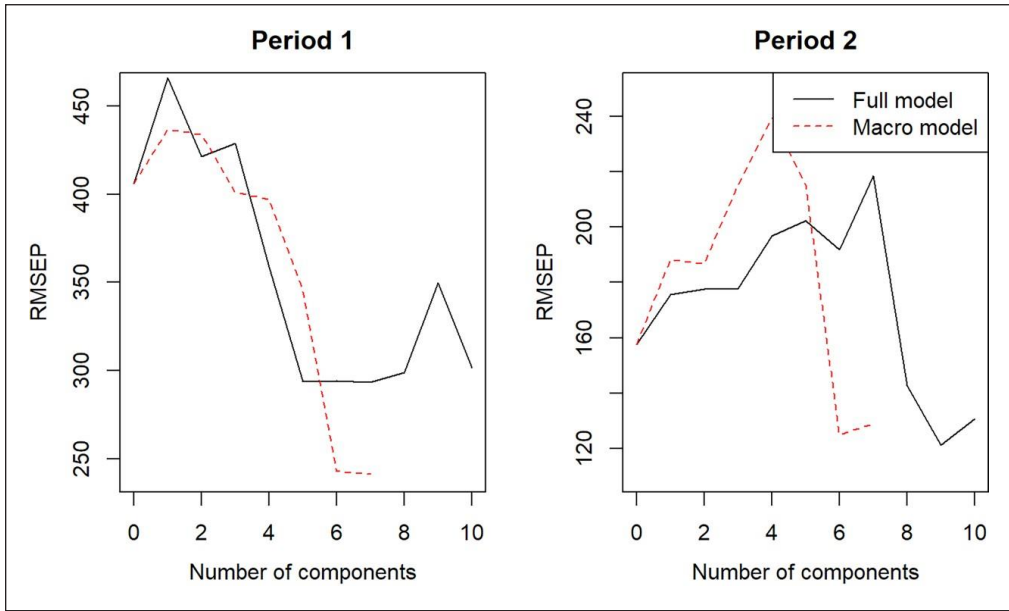
is because a part of that relationship is due to the correlation with the other explanatory variables. More importantly, what is of greater interest is measuring only the quantity of exclusive information contained in each explanatory variable. This can, indeed, be achieved by adjusting statistical models that account for the effects the explanatory variables collectively have on the dependent variable. As previously mentioned, PLSR was used to avoid the problem of collinearity in the model fit (see classical contributions of Fennesey and D'Amico, 1980; Mason and Brown, 1975; Rockwell, 1975).

## Main results and discussion

This section covers the main results and methodological discussion of the time series linear model used to explain the changes in the cost of borrowing measured by the benchmark variable.

After performing various goodness-of-fit and variable transformation tests, the final models included only those variables described in the previous section. The aim was to find the simplest model possible that jointly accounted for the variations in the cost of borrowing.

For each period (P1 and P2), two models were considered: a reduced version that included macroeconomic indicators as predictors (the "macro model"), and a full version that also included CDS market variables (the "financialized model").



**Figure 2.** CV estimates of the RMSEP by number of components, for the macro (solid) and financialized (dashed) PLSR models in both periods (P1 left and P2 right).

Both models included what was termed a “country effect,” whereby differences in the spread for each country could be taken into account in the analysis. In operational terms, a dummy explanatory variable was added for each country to explain the differences between the averages of the explained variable in each case. In addition, it was noted that the deficit effect depended on the country, that is, each country’s deficit had a differential effect on the spread variable. This interaction between the deficit and the country was accounted for by considering different coefficients for each country to measure the different effect the deficit had on the spread; using classical statistical terminology the result can be considered an analysis of covariance with an interaction effect (see, for example, Aiken et al., 1991).

The PLS package (Wehrens and Mevik, 2007) in R statistical software (R Core Team, 2018) was used for model fitting. The optimal number of components was selected taking prediction error into account. Specifically, this was determined using estimates of the root mean squared error of prediction (RMSEP) obtained by *k*-fold cross-validation (CV). Given the previously mentioned temporal dependence and collinearity, validation was achieved by partitioning the data into *k* = 10 consecutive segments (see, for example, Mevik and Cederkvist, 2004). Figure 2 shows estimates of the number of components obtained from the cross-validation of prediction error for the various models in both periods. As a result, we observed that a large number of components would be necessary, which would make it difficult to interpret the model. If the number of relevant components were smaller, for example, up to three, they could have been interpreted in a similar way to principal component analysis. For instance, biplot graphs could be generated to interpret their relationship with the explanatory variables. All of this suggests that the explanatory variables contribute only a limited amount of exclusive information, although each of them does indeed contribute some useful information to the model that is helpful in explaining the cost of borrowing.



Table 6 shows the number of selected components, the cross-validated estimate of the prediction error, and the adjusted  $R^2$  value (the estimated fraction of variance explained by the model) for both of the models. The macro model yielded slightly better results for the first period, with an explanatory power of 64 percent—16 points more than the model including the CDS variables—and a prediction error that was 50.92 points lower than the financialized model. This suggests that the CDS variables were ineffective in explaining risk premium performance. In the second period, the financialized model seemed to perform better, as it explained 41 percent of the response variability and an increase of 4 percent in the adjusted  $R^2$  value.

As previously mentioned, this approach takes into account the exclusive information that each of the independent variables contributed to explain the behavior of the dependent variable. The results obtained from the fitted models indicate that the CDS variables did not contribute additional information to explaining the risk premium in the first period; the correlation between the explained and the CDS variables seems to be due to their correlation with the other explanatory variables. However, the results indicate that the inclusion of these variables in the second period does contribute additional information to the model. In addition, these results were obtained using cross-validation, making them more reliable than those obtained using traditional hypothesis testing given its dependence on the validity of the model's structural hypotheses.

### *Final models*

Finally, the coefficients of each variable for the different models were estimated, and their standardized values were calculated to compare the relative importance of the variables. Table 7 shows the values obtained using the final models selected for each period.

The first coefficients, named "Intercept Spain," "Intercept Italy," and "Intercept Portugal," correspond to the individual effect of each country. The following three coefficients, named "Deficit Spain," "Deficit Italy," and "Deficit Portugal," correspond to the interaction between the country and deficit, as explained in the previous section. These coefficients allow for the use of a linear model to explain the dependent variable for each country, thus simplifying their interpretation. The resulting model is composed of these coefficients as well as those coefficients that are jointly estimated. For example, the fitted model in the case of Spain is as follows:

$$\text{Benchmark} = -668.666 + 81.579 \text{ Deficit} + 94.061 \text{ GDP} + 31.561 \text{ Debt}$$

Given the differences between the estimated coefficients, it can be seen that there was an interaction between deficit and country. Therefore, there was a country effect and a deficit effect on the behavior of financing costs, and the effect of one of these variables was dependent on the other (see, for example, Mason and Perreault, 1991).

Nevertheless, it is important to be cautious when interpreting the estimated coefficients of a linear model with high collinearity (Fennesey and D'Amico, 1980; Mason and Brown, 1975; Rockwell, 1975). For example, it could be interpreted that as Spain's deficit increased by one unit in the first period, the risk premium increased by 81.6 percentage points. However, this would only be the case if the rest of the explanatory variables remained constant, which is not a reasonable expectation under these circumstances. It is clear that if the deficit changed, other explanatory variables would also change, even though debt would experience the most direct change. Thus, rather than attempting to interpret the values, or even the signs of the coefficients, it was deemed more reasonable to comparatively analyze the magnitude of the standardized coefficients to study the relevance of the variables.

**Table 6.** Selected number of components, CV estimates of RMSEP, and adjusted  $R^2$ , multiple determination coefficients for the fitted PLSR models.

Period	Model	Number of components	RMSEP	Adjusted $R^2$
P1	Macro	6	242.76	0.64
	financialized	5	293.68	0.48
P2	Macro	6	124.97	0.37
	financialized	9	121.21	0.41

RMSEP: root mean squared error of prediction.

**Table 7.** Estimated coefficients and standardized values of the final models selected.

	Macro P1		Financialized P2	
	Estimated coeff.	Standardized coeff.	Estimated coeff.	Standardized coeff.
Intercept. Spain	-668.666	2742	3376.182	-6.146
Intercept. Italy	-3214.632	-1.926	4746.454	3.707
Intercept. Portugal	-1888.613	-0.334	4902.427	3.108
Deficit. Spain	81.579	0.588	52.477	0.816
Deficit. Italy	13.337	0.061	13.354	0.203
Deficit. Portugal	57.212	0.395	54.323	0.806
GDP	94.061	-0.296	-201.529	-0.718
Debt	31.561	2.077	-34.366	-4.664
CDS gross notional volume			-0.003	-2.196
CDS net notional volume			-0.014	-0.470
Contracts			0.101	2.229

In view of this, the deficit effect was elevated in Spain (0.59) and Portugal (0.4), while it was practically non-existent in Italy (0.06). Similarly, debt had the greatest effect among all the variables considered. As previously discussed, the variables related to the CDS market were not taken into account in the model for the first period on the basis that their inclusion did not contribute to explaining the behavior of the risk premium and, therefore, the financing costs of southern European countries in this period.

In the second period, both groups of variables—macroeconomic indicators and variables related to the financialization of the market—were included. In accordance with the standardized coefficients, the debt variable continued to have the greatest predictive weight. Note that, although the burden of debt worsened, the benchmark values and deficits improved precisely because of intervention by the European Union. Public indebtedness seemed to be the key factor in explaining lenders' confidence in southern European countries. Convincing lenders that debt will be repaid requires ensuring credibility through policymaking. In keeping with Streeck (2013: 14), the rise of austerity, in this context, should be interpreted as a political imperative for some debtor countries.

Moreover, in the second period, the CDS variables increased predictive capacity in terms of the behavior of the benchmark variable. The CDS variables with the highest coefficients in the second period were the number of contracts, followed by the gross notional volume of cover. Therefore, it

appears the effects of the CDS variables together with debt were greater than the effects of the deficit and GDP variables in the second period.

The low value of the coefficient for the CDS variable for net notional volume, which indicates the monetary value that buyers of coverage would receive in the event of a credit event, seems to suggest that this variable did not have an effect in this period. It is important to note that while the values for the remaining CDS variables increased in P2, indicating a greater density of transactions in the CDS market, the CDS net notional volume decreased after the European Union intervened and forced southern member states to prioritize reducing deficits and social spending to preserve their debt service.

The signs were negative for the coefficients that measure sovereign debt market financialization (gross and net notional volume), indicating that an additional unit of those variables adds an average of  $-2.196$  and  $-0.470$  of risk premium, respectively. This means that for a higher volume of protection, market uncertainty decreases. A positive sign for the coefficient for the number of contracts suggests the opposite relationship, that is, an increase in the number of contracts results in an increase in the risk premium and a decrease in market confidence in the sustainability of debt service in southern European countries. Ultimately, the data seem to show that as uncertainty over the sustainability of debt service in southern European countries decreases, the volume of debt insured increases. This is likely due to the fact that in the context of financial crisis and elevated indebtedness, credit needs are greater. That said, the number of contracts increases or decreases in the same direction as the benchmark value. This indicates that once a debt crisis is triggered, an improvement in market confidence (a decrease in the benchmark value) results in fewer contracts, while a decrease in market confidence leads to more contracts, albeit for a lower insured value.

As mentioned previously, predictors that are highly correlated might produce unexpected signs, which require they be interpreted cautiously. For this reason, our analysis focused on comparing the magnitude of the standardized coefficients, as shown in Table 7. To assess the impact of debt financialization as a whole, given the strong positive correlation between CDS variables, it would be reasonable to use the sum of the three standardized variables as an overall average of debt financialization. If this measure was used in the model in the place of the three individual variables, we would obtain a coefficient of  $-0.437$ . This suggests that the overall effect of debt financialization is negative in the second period (bearing in mind caution must be taken when interpreting these coefficients due to their elevated multicollinearity).

Ultimately, the results obtained indicate that the CDS variables contributed no additional information to explain the dependent variable in the first period; the correlation between the explanatory variable and the CDS variables is due to its correlation with other explanatory variables. However, the inclusion of these CDS variables in the second period does incorporate additional information to the model and seems to have a negative effect on the benchmark value. These results seem to confirm that the financialization of southern European public debt markets facilitated access to financial resources by decreasing borrowing costs between mid-2012 and 2015.

This framework clarifies the importance of the CDS market in explaining market confidence in southern European states as debtors. Thus, CDSs did not play a role in triggering the sovereign debt crisis. Yet, they did influence market confidence during the second period since the perception of risk diminished, paradoxically, when debt, GDP, and economic growth worsened. These results seem to reinforce the role of financialization not only as a manner of imposing market constraints on governments, but as a mechanism to enable governments to exercise statecraft through market-based channels that provide liquidity (Lagna, 2016). As Braun et al. (2018) show, the financialization of government debt markets in the European Union can be interpreted as a mode of governance in itself, a way to deploy fiscal and monetary policies promoted by European institutions.

## Conclusion

The 2007–2008 financial crisis and the subsequent sovereign debt crisis in southern European countries prompted a discussion on how markets can constrain governments and, inversely, on how governments can develop their own strategies by leveraging the expansion of financial markets (Lagna, 2015, 2016; Konings, 2010).

This study analyzed how the degree of financialization of public debt markets, measured by the CDS market, may have influenced the cost of borrowing, and as a result, fomented or impeded the financial crises that affected southern Europe between 2008 and 2015. This article presents a time series linear regression model with monthly data from the CDS market and its key variables from 2008 to 2015 for Spain, Italy, and Portugal. This study provides, for the first time in the academic literature on the subject, comparative data on the main characteristics of an opaque derivatives market to which some authors attribute responsibility for the recent financial crisis (European Commission (EC), 2010; Ingham, 2010). The data revealed the difficulties associated with measuring derivatives markets. These difficulties stem from political and methodological research issues regarding the opacity of these markets, their volatility, and collinearity.

The relationship between sovereign debt, the cost of financing it, and a country's economy is complex, multidimensional, and subject to change over time. Considering the acute internal heterogeneity of southern European countries in terms of the impact and consequences the crisis had on each of them, it was observed that the spread of the debt crisis in the first period (P1) was attributable to the deterioration of key macroeconomic variables (GDP, deficit and public debt) and not to speculation via CDSs in the absence of appropriate market regulations. In the period of recovery (P2), the inclusion of the CDS variables increased the explanatory power of the model by 4 points, while the risk premium decreased. In other words, market confidence increased, despite the noticeable increase of debt levels and the low expectations of growth in these three countries.

In this scenario, the explanatory power of the CDS variables showed how financialized practices and incentives not only limit and constrain governments, but also offer opportunities to manage public debt. In line with Lagna (2016), such an analytical conception of financialization provides the opportunity to study the state's active role in expanding financial markets.

These results aim to complement those approaches that view financialization as a path for markets to exert instrumental power on public policy (Hardie, 2011; Trampusch and Fastenrath, 2021). Governments may also exploit derivatives markets to achieve strategic goals, such as reducing the cost of borrowing and attracting foreign investors to sovereign debt markets. This approach does not imply that the unstable character of public borrowing in periods of financialization should be underestimated (Lagna, 2016). Rather, it is a way of representing the complex links and reciprocal constraints between governments and financial markets. The extent to which these links differ, in line with each country's socioeconomic situation and status, is part of a new comparative theoretical research agenda that will shed light on the transformation of global financial markets, the politics of public borrowing, and the construction of confidence in light of states' performance and financial markets.

The innovative research question addressed in this article was whether market confidence operated in the same way in all southern European countries and under all circumstances, regardless of their internal heterogeneity. To address this, we sought a model that would be as simple as possible while still jointly explaining the variations in the cost of borrowing in the three countries. The cost of borrowing variable displayed similar patterns in southern European countries, which shows that markets tend to strengthen and reproduce existing status relationships regarding sovereign solvency in an attempt to limit or reduce uncertainty. Most of the research on status and the market is conducted on businesses and not on sovereign states (Bothner et al., 2011; Jensen, 2008; Sauder

et al., 2012). How status is built in sovereign debt markets exceeds the aims of this article, though it presents an opportunity for a new research agenda on how countries' status influences the building of market confidence and its implications for democracy.

An additional goal of this study was to determine whether speculation with CDSs was at the origin of the debt crisis. The results confirmed that the CDS variables were not satisfactory in explaining the increase in the cost of borrowing for southern European countries between 2008 and 2012. CDSs acted fundamentally as instruments to secure public debt during the period when confidence was in the process of being restored. This was characterized by high levels of public debt and economic stagnation, which is in line with the financial panic and markets' aversion to risk between 2012 and 2015. In this sense, the results showed that maintaining market confidence in southern European countries was not only a question of fiscal conditions but also a future-oriented approach where market participants aimed to rebuild legitimacy and repair the normal functioning of CDS markets after the growth of speculation over the preceding decades (Beckert, 2014; Beckert and Bronk, 2019; Swedberg, 2011).


Ultimately, the approach devised in this article provides the necessary evidence, based on the available data, to revise the concepts of state financialization theories. As shown here, the processes of state financialization—more specifically, how governments manage public debt—may induce speculative actions contrary to public interest. At the same time, debt market financialization allows for the creation of conditions that favor processes to develop pragmatic legitimacy and offer logical rewards to participants that benefit public interest, especially in the context of uncertainty (Culpepper and Reinke, 2014). The equilibrium between these mutually dependent processes constitutes a fundamentally political issue that affects both state financing costs and the transparency of the process that regulates the functioning of debt markets.


## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 746622; the Ministry of the Economy and Competitiveness—Government of Spain, reference number: CSO2016-78122-R; and the Ministry of Science and Innovation - Government of Spain/AEI, reference number: PID2019-106273RB-I00.

## ORCID iDs

Matilde Massó  <https://orcid.org/0000-0003-3163-7023>

Rubén Fernández-Casal  <https://orcid.org/0000-0002-5785-3739>

Obdulia Taboadela  <https://orcid.org/0000-0003-2942-9620>

## Supplemental material

Supplemental material for this article is available online.

## References

- Adkins L (2017) Speculative futures in the time of debt. *The Sociological Review* 65(3): 448–462.
- Aiken LS, West SG and Reno RR (1991) *Multiple Regression: Testing and Interpreting Interactions*. Thousand Oaks, CA: SAGE.
- Anderson KM (2019) Financialisation meets collectivisation: Occupational pensions in Denmark, the Netherlands and Sweden. *Journal of European Public Policy* 26(4): 617–636.
- Arce O, González Pueyo J and Sanjuán L (2010) *El mercado de Credit Default Swaps: Areas de vulnerabilidad y respuestas regulatorias*. Madrid: Comisión Nacional del Mercado de Valores.

- Becker J (2014) The Periphery in the present international crisis: Uneven development, uneven impact and different responses. *Spectrum: Journal of Global Studies* 5: 21–41.
- Beckert J (2014) *Capitalist dynamics. Fictional expectations and the openness of the future*. MPIfG Discussion Paper 14/7. Cologne: Max Planck Institute for the Study of Societies.
- Beckert J and Bronk R (2019) *Uncertain futures imaginaries, narratives, and calculative technologies*. MPIfG Discussion Paper 19/10. Cologne: Max Planck Institute for the Study of Societies.
- Bell S and Hindmoor A (2015) Taming the city? Ideas, structural power and the evolution of British banking policy amidst the great financial meltdown. *New Political Economy* 20(3): 454–474.
- Bothner MS, Podolny JM and Bishop E (2011) Organizing contests for status: The Matthew effect vs. the mark effect. *Management Science* 57(3): 439–457.
- Braun B (2015) Governing the future: The European Central Bank's expectation management during the Great Moderation. *Economy and Society* 44(3): 367–391.
- Braun B and Hübner M (2018) Fiscal fault, financial fix? Capital Markets Union and the quest for macroeconomic stabilization in the Euro Area (2018). *Competition & Change* 22(2): 117–138.
- Braun B, Gabor D and Hübner M (2018) Governing through financial markets: Towards a critical political economy of Capital Markets Union. *Competition & Change* 22(2): 101–116.
- Bruszt L and Vukov V (2017) Making states for the Single Market European integration and the reshaping of economic states in the peripheries of Europe. *West European Politics* 40(4): 663–687.
- Chaplin G (2005) *Credit Derivatives. Risk Management, Trading and Investing*. Chichester: John Wiley & Sons.
- Chiapello E (2015) Financialisation of valuation. *Human Studies* 38: 13–35.
- Culpepper P (2015) Structural power and political science in the post-crisis era. *Business Politics* 17(3): 391–409.
- Culpepper P and Reinke R (2014) Structural Power and Bank Bailouts in the United Kingdom and the United States. *Politics & Society* 42(4): 427–454.
- Davis A and Walsh C (2016) The role of the State in the financialisation of the UK economy. *Political Studies* 64(3): 666–682.
- Davis L (2016) Identifying the financialization of the nonfinancial corporation in the U.S. economy: A decomposition of firm-level balance sheets. *Journal of Post Keynesian Economics* 39: 115–141.
- Davis M and Cartwright L (2019) Deferred lives? Money, debt, and the financialized futures of young temporary workers. In: Featherstone M (ed.) *The Sociology of Debt*. Bristol: Policy Press, pp. 91–118.
- Dutta SJ (2020) Sovereign debt management and the transformation from Keynesian to Neoliberal Monetary Governance in Britain. *New Political Economy* 25(4): 675–690.
- Engelen E, Fernandez R and Hendrikse R (2014) How finance penetrates its other: A cautionary tale on the financialization of a Dutch University. *Antipode* 46(4): 1072–1091.
- Epstein GA (2005) *Financialization and the World Economy*. Cheltenham: Edward Elgar.
- Ertuk I, Froud J, Johal S, Leaver A and Williams K. (Eds) (2008) *Financialization at work: Key Texts and Commentary*. London: Routledge.
- European Commission (2010) Report on sovereign CDS European Commission (2010). Available at: <http://www.fdn.nl/csFDArtikelen/WEB-HFD/y2010/m12/d06/20852775> (accessed 23 November 2015).
- Fastenrath F (2019) The political economy of the state-finance nexus: Public debt, crisis and bank business models. Available at: <https://kups.ub.uni-koeln.de/9817/> (accessed May 2019).
- Fastenrath F, Schwan M and Trampusch C (2017) Where states and markets meet: The financialisation of sovereign debt management. *New Political Economy* 22(3): 273–293.
- Fennese J and D'Amico R (1980) Collinearity, ridge regression and investigator judgement. *Sociological Methods of Research* 8(3): 309–340.
- Friedman J, Hastie T and Tibshirani R (2001) *The Elements of Statistical Learning*. New York: Springer.
- Galán M (2012) *Los Credit Default Swaps: Una aproximación a su régimen jurídico*. Documentos de Trabajo del Departamento de Derecho Mercantil. Universidad Complutense de Madrid 2012/57. Department of Commercial Law. Law School. Complutense University of Madrid.
- Gambarotto F and Solari S (2015) The peripheralization of Southern European Capitalism within the EMU. *Review of International Political Economy* 22: 788–812.

- Gambarotto F, Rangone M and Solari S (2019) Financialization and deindustrialization in the Southern European periphery. *Athens Journal of Mediterranean Studies* 5(3): 151–172.
- Grammatikos T and Vermeulen R (2012) Transmission of the financial and sovereign debt crises to the EMU: Stock prices, CDS spreads and exchange rates. *Journal of International Money and Finance* 31(3): 517–533.
- Green C (1993) From “tax state” to “debt state.” *Journal of Evolutionary Economics* 3: 23–42.
- Hager SB (2016) *Public Debt, Inequality, and Power: The Making of a Modern Debt State*. Berkeley, CA: University of California Press.
- Hardie I (2011) How much can governments borrow? Financialization and emerging markets government borrowing capacity. *Review of International Political Economy* 18(2): 141–167.
- Hendrikse R and Lagna A (2017) State financialization: A multi-scalar perspective. Available at: <https://ssrn.com/abstract=3170943>
- Ingham G (2010) *Capitalismo*. Madrid: Alianza Editorial.
- James S and Quaglia L (2017) *Brexit and the limits of financial power in the UK*. GEG Working Paper 129. Oxford: University of Oxford.
- Jensen M (2008) The use of relational discrimination to manage market entry: When do social status and structural holes work against you? *Academy of Management Journal* 51(4): 723–743.
- Karwowski E (2019) Towards (de-)financialisation: The role of the state. *Cambridge Journal of Economics* 43(4): 1001–1027.
- Karwowski E and Centurion-Vicencio M (2018) Financialising the state: Recent developments in fiscal and monetary policy. HAL archives ouvertes: fhalshs-01713028f. Available at: <https://halshs.archives-ouvertes.fr/halshs-01713028/document> (accessed January 2019).
- Konings M (2005) Political institutions and economic imperatives: Bringing agency back in. *Research in Political Economy* 22: 85–130.
- Konings M (2010) The pragmatic sources of modern power. *European Journal of Sociology* 51(1): 55–91.
- Krippner GR (2011) *Capitalizing on Crisis. the Political Origins of the Rise of Finance*. Cambridge, MA: Harvard University Press.
- Lagna A (2015) Italian municipalities and the politics of financial derivatives: Rethinking the Foucauldian perspective. *Competition & Change* 19(4): 283–300.
- Lagna A (2016) Derivatives and the financialisation of the Italian state. *New Political Economy* 21(2): 167–186.
- Langley P and Leyshon A (2012) Financial subjects: Culture and materiality. *Journal of Cultural Economy* 5(4): 369–373.
- Lapavistas C and Powell J (2013) Financialisation varied: A comparative analysis of advanced economies. *Cambridge Journal of Regions, Economy and Society* 6: 359–379. Available at: <https://doi.org/10.1093/cjres/rst019>.
- Lapavistas C, Kaltenbruner G, Labrinidis G, Lindo D, Meadway J, Michell JP, Pires E, Powell J, Stenfors A, Teles N and Vatikiotis L (2014) *Crisis en la Eurozona*. Madrid: Capitán Swing.
- Lazzarato M (2012) *The Making of the Indebted Man: An Essay on the Neoliberal Condition*. Los Angeles, CA: Semiotext(e).
- Lazzarato M (2015) *Gobernar a través de la deuda: Tecnologías de poder del capitalismo neoliberal*. Buenos Aires, Argentina: Amorrortu.
- Lemoine B (2013) Les dealers de la dette souveraine: politiques des transactions en-tre banques et État dans la grande distribution des emprunts français. *Sociétés Contemporaines* 92: 59–88.
- Lemoine B (2017) The politics of public debt financialisation: (Re)inventing the market for French Sovereign Bonds and shaping the public debt problem (1966–2012). In: Buggeln M, Daunton M and Nützenadel A (eds) *The Political Economy of Public Finance: Taxation, State Spending and Debt since the 1970s*. Cambridge: Cambridge University Press, pp. 240–261.
- Lindblom CE (1977) *Politics and Markets*. New York: Basic Books.
- Mader P, Mertens D and Van der Zwan N (eds) (2020) *The Routledge International Handbook of Financialisation*. London: Routledge.

- Mason CH and Perreault WD, Jr (1991) Collinearity, power, and interpretation of multiple regression analysis. *Journal of Marketing Research* 28(3): 268–280.
- Mason R and Brown W (1975) Multicollinearity problems and ridge regression in sociological problems. *Social Science Research* 4: 135–149.
- Massó M (2016) The effects of government debt market financialization: The case of Spain. *Competition & Change* 20(3): 166–186.
- Mevik BH and Cederkvist HR (2004) Mean squared error of prediction (MSEP) estimates for principal component regression (PCR) and partial least squares regression (PLSR). *Journal of Chemometrics* 18(9): 422–429.
- Molina O and Rhodes M (2007) The political economy of adjustment in mixed market economies: A study of Spain and Italy. In: Hancké R, Rhodes M and Thatcher M (eds) *Beyond Varieties of Capitalism. Conflicts, Contradictions and Complementarities in the European Economy*. Oxford: Oxford University Press, pp. 223–252.
- Morgan G (2010) Legitimacy in financial markets: Credit default swaps in the current crisis. *Socio Economic Review* 8: 17–45.
- Mosley L (2015) (De)Fault Lines? The EU, National Governments, and Private Capital Markets in the Post-Crisis Era. In: Dallago B and McGowan J (eds) *Crisis in Europe in the Transatlantic Context. Economic and Political Appraisals*. New York: Routledge, pp. 152–168.
- Mulligan J (2016) Insurance accounts: The cultural logics of health care financing. *Medical Anthropology Quarterly* 30(1): 37–61.
- Nolke A (2016) Economic causes of the Eurozone crisis: The analytical contribution of Comparative Capitalism. *Socio-Economic Review* 14(1): 141–161.
- Pataccini L (2017) From “Communaute spirit” to the “ghosts of Maastricht”: European integration and the rise of financialization. *International Journal of Political Economy* 46(4): 267–293.
- Perez S and Matsaganis M (2018) The political economy of austerity in Southern Europe. *New Political Economy* 23(2): 192–207.
- Piga G (2001) Derivatives and public debt management. *Report*. New York: Council for Foreign Relations.
- Preda A (2009) *Framing Finance: The Boundaries of Markets and Modern Capitalism*. Chicago, IL: University of Chicago Press.
- R Core Team (2018) *R: A Language and Environment for Statistical Computing*. Vienna: R Foundation for Statistical Computing. Available at: <http://www.R-project.org/>
- Rockwell R (1975) Assessment of multicollinearity. *Sociological Methods and Research* 3(3): 308–320.
- Rodrigues J, Santos AC and Teles N (2016) Semi-peripheral financialization: The case of Portugal. *Review of International Political Economy* 23(3): 480–510.
- Rodrigues J, Santos AC and Teles N (2020) Revisiting the concept of semi-peripheral financialization. In: Santos AC and Teles N (eds) *Financialization in the European Periphery: Work and Social Reproduction in Portugal*. London: Routledge, pp. 23–50.
- Rodríguez-Díez MV (2013) Los análisis de la sostenibilidad de la deuda. Estructura y reformas. *Boletín Económico Del ICE* 3046: 19–30.
- Sauder M, Lynn F and Podolny JM (2012) Status: Insights from organizational sociology. *Annual Review of Sociology* 38: 267–283.
- Soener M (2015) Why do firms financialize? Meso level evidence from the US apparel and footwear industry, 1991–2005. *Socio-Economic Review* 13(3): 549–573.
- Stockhammer E (2011) Peripheral Europe’s Debt and German Wages: The role of wage policy in the Euro Area. *International Journal of Public Policy* 7: 83–96.
- Stockhammer E (2016) Neoliberal growth models, monetary union and the Euro crisis. A post-Keynesian perspective. *New Political Economy* 21(4): 365–379.
- Streeck W (2013) *The politics of public debt. Neoliberalism, capitalist development and the restructuring of the state*. MPIfG Discussion Paper 13/7. Cologne: Max Planck Institute for the Study of Societies.
- Streeck W (2015) *The rise of the European Consolidation State*. MPIfG Discussion Paper 15/1. Cologne: Max Planck Institute for the Study of Societies



- Swedberg R (2011) *The role of confidence in the European Debt Crisis (2009-2010)*. CSES Working Paper Series, 63. Department of Sociology. Cornell University, Ithaca, New York.
- Trampusch C (2019) The financialization of the state: Government debt management reforms in New Zealand and Ireland. *Competition & Change* 23(1): 3–22.
- Trampusch C and Fastenrath F (2021) States' interests as limits to the power of finance: Regulatory reforms in early local government financialization in the US and UK. *Regulation and Governance* 15: 245–261.
- Van der Zwan N (2014) Making sense of financialisation. *Socio-Economic Review* 12: 99–129.
- Van der Zwan N (2019) The financial politics of occupational pensions: A business interests perspective. In: Nijhuis DO (ed.) *Business Interests and the Development of the Modern Welfare State*. London: Routledge, pp. 271–229.
- Van der Zwan N (2020) Patterns of pension financialization in four European Welfare States. *Revista Internacional de Sociología* 78(4): e175.
- Vogel D (1987) Political science and the study of corporate power: A dissent from the New Conventional Wisdom. *British Journal of Political Science* 17(4): 385–408.
- Wehrens R and Mevik BH (2007) The pls package: Principal component and partial least squares regression in R. *Journal of Statistical Software January* 18(2): 1–23.
- Wyplosz C (2007) *Debt sustainability assessment: The IMF approach and alternatives*. HEI Working paper 03/2007. Geneva: Graduate Institute of International Studies.