Moving Markets? Government Bond Investors and Microeconomic Policy Changes

Abstract: Do sovereign bond markets react systematically to microeconomic policy reforms? Some observers suggest that investors are very attentive to supply-side policies such as those related to labor markets, corporate taxation and product standards. They argue that, along with macroeconomic outcomes and broad financial market conditions, such reforms affect sovereign bond premiums, for developed as well as emerging economies. In contrast, we predict few systematic effects of supply-side policy reforms on sovereign bond market outcomes. Our theory draws on a standard three-equation model of the economy, widely accepted among economic and finance professionals. That model makes few clear predictions regarding the anticipated effects of microeconomic policy changes; as a result, we expect that such reforms will not generate systematic market reactions. Our analyses, based on daily data from 37 countries from 2004 to 2012, indeed reveal little evidence of a systematic bond market reaction to the 47 most significant reforms to corporate taxation and labor market regulation. These results call into question the notion that “bond market vigilantes” play a central role in compelling governments to enact specific microeconomic policy changes.
1 Introduction

One important question of contemporary capitalism is how financial markets respond to public policy, and in turn the extent to which governments are constrained by the behavior of investors. A crucial piece of this puzzle is understanding how professional investors price the risk associated with government bonds. Past research tells us that investors consider macroeconomic factors—such as expectations about future inflation and economic growth, as well as the government's fiscal balance and debt burden—and opportunities for returns in other bond and equity markets. If the financial press and some international financial institutions are to be believed, investors are also closely attuned to microeconomic policy changes, including labor market regulations, the structure of corporate taxation, and product market standards. Governments that pursue market-friendly microeconomic reforms, they claim, are rewarded with lower borrowing costs, while those that implement interventionist policies are punished. Relying on data from tens of thousands of trading days for 37 countries between 2004 and 2012 and 47 major, dated labor and corporate tax reform events, we seek to understand the extent to which investors in sovereign debt instruments systematically consider such microeconomic policies.

While substantial evidence exists to support the causal linkage between macroeconomic outcomes and sovereign debt risk premiums, the impact of microeconomic policy changes on sovereign investors’ assessments has not been systematically evaluated. We argue that such a link is unlikely to exist. While professional investors hold widely shared views on the causal links between macroeconomic outcomes such as fiscal balances and inflation and sovereign default risk, they have no shared consensus on how microeconomic policies affect macroeconomic outcomes and, therefore, default risk. From a theoretical standpoint, this should not be surprising: neither standard economic models nor the weight of empirical evidence predict unambiguously whether and how microeconomic changes affect the macroeconomic outcomes that are most important to sovereign debt investors (Hausmann and Rodrik 2003; Rodrik 2006, 2008). Thus,
while some investors may view a specific microeconomic policy reform in a positive light, other investors may take a negative or neutral view of the same reform. Alternatively, investors may agree among themselves that a given reform is unlikely to affect future sovereign bond performance.

As a result, we expect little systematic relationship between microeconomic policy changes and market movements. Our main claim—that, beyond a narrow set of fiscal and monetary policy outcomes, investors do not collectively expect microeconomic reforms to significantly affect sovereign risk—runs counter to the notion that “bond market vigilantes” are a powerful, unified force which can compel governments to eschew redistributive and interventionist policies.\(^1\) Such logic has been used to explain policy reversals, such as the Mitterand government’s 1983 “U-turn”, abandoning many of the policies put in place after the Socialists’ 1981 election victory (e.g. Abdelal 2007; Helleiner 1995), as well as breakdowns in negotiations between debtor governments and bondholders, such as in Greece in June 2015.\(^2\)

Ours is not the first paper to argue that macroeconomic outcomes, rather than microeconomic policies, are of central interest to sovereign debt markets. These accounts (Brooks et al. 2015; Mosley 2003; Mosley and Singer 2008; Ballard-Rosa et al. 2019), however, do not rely on daily trading data or offer a theoretical logic to explain why this should be the case. Indeed, Mosley (2003) assumed that investors hold clear preferences over government policies—macroeconomic as well as microeconomic—but that investors sometimes ignore a subset of those policies, as part of their attempts to economize on the collection and evaluation of information. Here, by contrast, we provide an account in which investors may be attentive to microeconomic policies as well, but in which they do not agree about how these policies matter for macroeco- 

---

\(^1\)This term was coined by Ed Yardeni, an investment analyst, in 1983. See: [http://blog.yardeni.com/2013/06/the-bond-yield-gdp-excerpt.html](http://blog.yardeni.com/2013/06/the-bond-yield-gdp-excerpt.html). More recently, economists have debated whether such vigilantes exist, or whether their return is imminent. See, for instance, the debate between Alan Greenspan and Paul Krugman, i.e. [http://delong.typepad.com/sdj/2012/12/bond-vigilantes-and-the-power-of-three-nytimescom.html](http://delong.typepad.com/sdj/2012/12/bond-vigilantes-and-the-power-of-three-nytimescom.html).

\(^2\)Documents leaked in the wake of the breakdown indicated that Greece’s creditors insisted on an increase in the value added tax on hotels and dramatic cuts in monthly pension payments to retirees; the Greek government refused to implement these policy changes (see: Hallerberg 2015).
nomics outcomes. We empirically test the central implication of this account, and the standard economic model underlying it: that microeconomic policy changes, even substantively large ones, have little systematic effect on investors’ aggregate evaluations of default risk even when measured with daily price data.

Using reports of policy reform from the Economist Intelligence Unit (EIU) and extensive primary research of the history of legislated policy reforms, we create a database of significant legislative changes to labor market regulations and corporate taxation, two policy areas frequently cited as central components of supply-side reform. We then consider whether—at the level of daily data—the largest of these changes, in both “pro-market” and “anti-market” directions, generate abnormal returns in the pricing of sovereign risk, captured by daily price changes in credit default swaps (CDS). If markets do not respond systematically to these dramatic changes in labor market and corporate tax policies, they are unlikely to respond to more modest reforms. Our analyses, based on data from 37 countries and covering the years 2004-2012, reveal little evidence that markets respond systematically to even the most significant changes in supply-side policies. These results are robust to an exhaustive set of additional specifications, accounting for electoral cycles and alternative lags and leads, among other factors. Notwithstanding creditors’ public statements in near-default situations (such as Greece in 2010)—in which bond market pressures are often invoked as a key impetus for reform—professional investors do not appear to react systematically to governments’ changes to microeconomic policies.

Rather, we find that the most important factor in the pricing of sovereign spreads and sovereign credit default swaps is liquidity in global capital markets, measured by movements in the U.S. stock market (Eichengreen and Hausmann 2005; Longstaff et al. 2011; Miranda-Agrippino and Rey 2015). National macroeconomic outcomes also are important to sovereign debt pricing. The so called “bond market vigilantes” may pressure sovereign borrowers to improve their overall fiscal balances and to reduce the rate at which they accumulate debt,
and these pressures could help to motivate cuts in public spending (or increases in revenue generation). Such pressures are likely most severe when global capital market liquidity is low and investors are risk averse. But investors’ preferences over macroeconomic outcomes such as inflation, budget deficits and public debt do not seem to translate into clear preferences over microeconomic policies such as labor market regulation and the structure of corporate taxation.

2 National Governments and Financial Markets

Governments typically are attentive to financial market behaviors and outcomes. Capital feeds development, innovation and growth (e.g. Przeworski and Wallerstein 1988; Boix 2003). Governing elites also may aim to please certain types of investors—for instance, to keep equity market prices high where a large segment of the population invests in the stock market (Barabas 2006; Pagliari et al. 2018), or to attract foreign direct investment to complement local capital or to generate positive employment effects (Pandya 2013; Pinto 2013).

In the realm of sovereign finance, governments seek to borrow to smooth consumption, fill revenue shortfalls and fund public programs. Government debt managers aim to minimize the costs associated with borrowing while also ensuring that outstanding debt can be rolled over on favorable terms. Sovereign interest rates also typically affect the cost of credit for private borrowers in an economy. The sensitivity of governments to bond market developments therefore varies with the level of accumulated debt, the maturity structure of the debt, the composition of the investor base and (for commodity exporters) commodity market prices (Campello 2014; Kaplan 2013; Kaplan and Thomsson 2017). All government debt management offices, however, devote significant attention to considering the most appropriate means by which to access capital (Melecky 2007; Sadeh and Porath 2019; Wolswijk and De Haan 2006).

Research on the determinants of sovereign risk premiums suggests several broad patterns. First, sovereign risk premiums are explained partly by global market factors, rather than only by country-specific fundamentals. When global market liquidity is high and investors’ risk aver-
sion is low, sovereign borrowers can issue debt at relatively low cost. In periods of global risk aversion, by contrast, even the trustworthiest sovereign borrowers may pay relatively high interest rates. External factors explain a significant portion of sovereign financing costs not only in developing and emerging economies, but also in developed ones (Attinasi et al. 2009; Campello 2014; Cerutti et al. 2015). Additionally, investors evaluate sovereign borrowers relative to peer countries, defined in terms of geography, market development, or shared institutional memberships (Brooks et al. 2015; Gray 2013). These externally-driven market movements often reflect rational herd behavior among investors (Banerjee 1992; Calvo and Mendoza 2000).

Second, when considering country-specific factors, sovereign bond investors ultimately are interested in the rate of return on, and the repayment of, sovereign obligations. Standard economic models clearly predict a relationship between inflation and fiscal balance, on the one hand, and investment risk (that is, the ability to repay debt), on the other. Empirical assessments confirm that sovereign investors are most concerned with macroeconomic outcomes including public debt, fiscal balances and inflation rates (e.g. Brooks et al. 2015; Mosley 2003). When governments have high levels of debt or histories of default, or when their monetary policy discipline is in question, investors also may demand that governments issue debt at shorter maturities or denominated in foreign currencies (Eichengreen and Hausmann 2005).

Third, consistent with the central role of macroeconomic outcomes in sovereign risk, political events and institutions matter to investors because they are perceived to affect either overall economic outcomes (“ability to pay”) or governments’ willingness to honor their external obligations. Market responses to elections or cabinet formation negotiations, for instance, reflect concerns about the consequences of partisan change or divided government for fiscal and monetary outcomes (Bernhard and Leblang 2006; Campello 2014; Hardie 2006; Jensen and Schmith 2005; Leblang and Mukherjee 2005; Sattler 2013). Similarly, investors reward countries with politically independent central banks in anticipation of greater monetary restraint (Bodea and Hicks 2014, 2015). Investors also favor democratic political institutions over autocratic ones;
respect for the rule of law and audience costs in the wake of default confer a “democratic advantage” (Beaulieu et al. 2012; Ballard-Rosa et al. 2019). And investors take binding external commitments, such as preferential trade agreements and regional economic organization membership, as additional signals of commitment to macroeconomic restraint (Gray 2009, 2013; Tomashevskiy and Kono 2015).

What, then, is the role for microeconomic policies in investors’ assessments of sovereign debt? From the existing literature, we might assume that such policies play little role, especially for developed democracies with strong track records of debt repayment (Mosley 2003; Tomz 2012). Yet this assumption requires systematic investigation. To begin, it is possible that financial market constraints have broadened in recent years, in terms of the number and type of policies considered, even for wealthy, stable democracies (see Hardie 2006; Mosley 2003). In addition, the financial press regularly claims—especially in times and places of economic distress—that changes to microeconomic policies affect, and are motivated by, financial markets. Market publications assessing sovereign risk often discuss governments’ regulatory policies. For instance, the May 2012 financial news described Spanish bond yields “spiking as bank reform awaited”, and bond markets “eyeballing French pension reform plans” in August 2013. Similar examples from Greece, Italy and Portugal abound.

Moreover, when governments do undertake structural reforms, sovereign debt markets often are credited (perhaps in conjunction with intergovernmental organizations) as the impetus. In June 2010, Spain’s Socialist prime minister José Luis Rodríguez Zapatero announced a set of labor market reforms. Although the May 2010 announcement of fiscal cuts in Spain had failed to stem rising interest rates on government bonds, the passage of these labor market reforms marked a plateau (until November 2010) in the sovereign premium. The ECB, the Eurozone

---

3We might expect some of these policies, especially sector-specific ones, to matter more directly for equity markets, e.g. Mosley and Singer 2008.


5See, for instance, coverage of the Troika’s take on Portugal’s reforms: Financial Times (2014).
finance ministers and the European Council had insisted that Spain decentralize collective bargaining and reduce protections for permanent workers. But the government’s passage of such reforms was described as “forced by financial markets” [a sharply escalating sovereign risk premium] to “reluctantly approve reform.” Bentolila et al. (2012, p.18) similarly note that “forced by the financial markets’” threats of exit, the Government abruptly changed its views on the need for labor market reform, and put some more pressure on social partners to reach an agreement.” Accounts of labor market and government procurement reform elsewhere in the European periphery similarly cite the need to please bond market investors as a key driver of policy change.

Claims regarding the efficacy and necessity of microeconomic policy reforms also are common in social scientific analyses. While a heated empirical debate has surrounded the role of fiscal retrenchment in economic recovery (Alesina and Ardagna 2010; Alesina et al. 2015; Jayadev and Konczal 2010; DeLong and Summers 2012; Fatás and Summers 2016), a growing body of rigorous work emphasizes the advantages of more strictly microeconomic policy reforms. Barkbu et al. (2012), for instance, analyze data related to a wide swath of microeconomic reforms across Europe and conclude that “reforms also must be granular, targeting, in Southern Europe, labor market duality and the reduced competitiveness of the tradable sector, including relative price misalignments; and in Northern Europe, higher labor market participation and a more vibrant services sector.” Similarly, assessing the determinants of economic transformation in a range of low- and middle-income countries, Dabla-Norris et al. (2013, p.3) conclude that “productivity-enhancing structural reforms are needed to boost technological catch-up, facilitate structural transformation into higher productivity sectors and new activi-

---

6See Samuel Bentolila and Jimeno (2012); also see Picot and Tassinari (2014, p.16) for a claim that “the urgency of these interventions was compounded by pressures from international markets amidst growing fears of a government default.”

7Similar arguments are made about the role of external market pressure in Spain’s 2012 labor market reforms, which were further-reaching than the 2010 changes.

8The ECB’s reform demands for Italy, for instance, referenced the changes as “essential to restore the confidence of investors” (Rose 2011).

9See Barkbu et al. (2012, p.3).
ties, and better allocate existing resources in the economy” (see also Dabla-Norris and Srivisal 2013; Dabla-Norris et al. 2014).

While it is plausible that reforms to labor market policies, the structure of corporate taxation, and product market regulation may improve long-term growth, we take issue with the claim that they systematically affect sovereign risk pricing. Sovereign bond investors are interested in the expected rate of return on, and the probability of repayment of, government bonds. The relationship between the return on debt, on the one hand, and macroeconomic outcomes, on the other, is clearly predicted by standard economic models.

At the same time, there is very little agreement among economists about how microeconomic policies are causally related to the probability of sovereign repayment. Mirroring this lack of consensus, we expect investors also do not share a single model of how changes to microeconomic policies will affect macroeconomic outcomes. Standard models suggest potential linkages between microeconomic policy reforms and current borrowing levels, accumulated debt burdens and debt financing costs—all of which ultimately affect the prospect for repayment—but a direct causal effect of specific microeconomic policy reforms on these key parameters is far from straightforward. Indeed, as Rodrik (2006, p.976) describes the view in the mid-2000s, “the broad objectives of economic reform—namely, market-oriented incentives, macroeconomic stability and outward orientation—do not translate into a unique set of policy actions” (p. 976). Rodrik, commenting on the World Bank’s assessment of structural reforms in developing countries, goes on to note that the effect of any given reform is conditional on the country’s broader economic and political context (also see Hall and Soskice 2001).

Given that there is little agreement among economists (Hausmann and Rodrik 2003; Rodrik 2008) or investors regarding how specific microeconomic reforms will affect the fiscal health of governments, there should not be any systematic relationship between microeconomic policy reforms and bond market movements. Put differently, microeconomic policy reforms will not move markets for one of two reasons: either they do not affect expectations bearing on macroe-
conomic outcomes, which are relevant to risk premiums, or market actors have heterogeneous beliefs over their affect such that trading behavior will cancel out. In the next section, we develop this argument by exploring the potential mechanisms by which microeconomic reforms might generate economy-wide effects of interest to sovereign bond investors. We rely on a standard macroeconomic model, and we discuss the empirical literature relating key microeconomic policies to those mechanisms.

3 Economic Models and Sovereign Bond Markets

Ultimately, any distinction between microeconomic and macroeconomic policy is somewhat artificial. Policymakers justify many policy reforms on both microeconomic and macroeconomic grounds. Take the example of social security reform: pro-reform actors often claim that pension reform will improve labor market efficiency (particularly where pensions are deeply connected to labor market status and regulations), but also reduce budget deficits and improve longer-term fiscal balance. That said, we draw a distinction between “micro” and “macro,” following a prominent strain in the literature. We define microeconomic policies as those aimed primarily at the incentives of individual economic agents—households, workers, capital owners—and macroeconomic policy as that aimed at economy-wide outcomes—i.e. inflation, fiscal balance, debt—even as we recognize that the latter must work through the former.

We expect that microeconomic policies and reforms do not systematically affect market assessments of sovereign risk in large part because they have tenuous or unpredictable effects on the macroeconomic aggregates that define that risk. The causal pathways through which microeconomic reforms could generate macroeconomic effects would run either through GDP, or through the multiplier effect of current spending. Individual market participants may view a specific reform in a particular country as negative or positive in its implications for macroeconomic outcomes. But given considerable disagreement among economic and finance professionals about the link between most microeconomic policies and the macroeconomic drivers of
governments’ fiscal health, we do not anticipate that microeconomic policy reforms will generate systematic price movements in sovereign bond markets.

To illustrate the likely lack of consensus on the causal connection between microeconomic reforms and macroeconomic outcomes, we begin with the standard three-equation IS-PC-MR model, which is heavily used by policymakers. Given its role in policymaking, the three-equation model is likely to provide a foundation on which market participants model their expectations and, therefore, their trading behavior (Carlin et al. 2005). The three equations that form the fundamentals of the model link the investment-saving curve, the Phillips curve, and a monetary policy rule.\(^\text{10}\) For the sake of understanding how participants in sovereign bond markets might respond to microeconomic policy changes, we focus on how government debt burdens, fiscal balance, the real interest rate and the growth rate of GDP interact to shape the prospects for repayment.

In doing so, we assume that participants in sovereign credit markets (both those who purchase debt and those who purchase or offer insurance contracts against sovereign default) are interested mainly in price dynamics (including currency risk) and the likelihood of repayment. Sovereign debt and related secondary markets are highly liquid, especially for developed and emerging market governments issuing benchmark instruments. While a range of investment objectives and strategies guide professional investors, prices ultimately reflect default and—for domestically-denominated issues—currency risk. Therefore, systematic changes in prices should result from systematic changes in expectations regarding rates or return, default and repayment.

A government’s capacity for repayment is, at base, a function of the debt burden (Eaton and Gersovitz 1981). In the 3-equation model, debt dynamics are a function of four variables:

\[^{10}\text{The monetary policy rule is defined as: } (y_t - y_e) = \alpha \beta (\pi_t - \pi_T), \text{ where } \pi_T \text{ is the central bank’s target rate of employment and } \beta \text{ reflects the central bank’s inflation aversion vis-a-vis growth.}\]
$$\Delta b = d + (r - y_y)b$$  \hspace{1cm} (1)$$

Here, $b$ refers to the debt-to-GDP ratio; $d$ is the primary fiscal balance as a share of GDP; $r$ is the real interest rate; and $y_y$ is the growth rate of output. One can think of $b$ as the fiscal legacy bequeathed to any particular government in a given year and $d$ as a function of current fiscal policies. The term $(r - y_y)$ captures the sustainability of borrowing. When it is negative, government indebtedness shrinks; when it is positive, government indebtedness grows indefinitely.

Figure 1 portrays one particularly stark version of how a microeconomic policy reform might impact the sustainability of government debt. In scenario A, a country is on an unsustainable debt path, with dynamics leading to an ever-higher debt-to-GDP ratio. The real interest rate on government borrowing exceeds the growth rate (hence the upward slope of the $\Delta b$ line) and offers the potential for a Greek-style debt trap. The only way for a government to escape this scenario is to run a primary budget surplus, using foregone spending to pay down the debt stock (and, perhaps, to convince investors to reduce risk premiums). Imagine, however, a successful policy change shifts the country to scenario B, where the debt burden is declining even in the presence of primary budget deficits. With this policy change, the real interest rate on government bonds is lower than the growth rate (hence the downward slope of the $\Delta b$ line) and offers the potential for a stable relationship between fiscal deficits and public debt, or even the wholesale elimination of government debt.

Contemporary discussions of bond vigilantes suggest that countries characterized at one moment by scenario B—a stable or declining $b$—can quite suddenly find themselves in scenario A, with a growing and potentially unserviceable debt burden. Governments are particularly in danger of such a switch—a loss in market confidence, leading to a dramatic increase in risk premiums and therefore debt servicing costs—when the value of $d$ is negative and accelerating
(as we would expect, for instance, during economic downturns). Claims that bond markets will reward reformers imply the converse shift from scenario A to scenario B. But how could the virtuous shift to a sustainable debt burden happen? The answers are that growth ($y_g$) must boom or the real interest rate ($r$) must grow more slowly than output.

It is typical for causal accounts focused on macroeconomic outcomes to emphasize growth collapses as a source for a rapid accumulation of public debt, and growth booms as a means of achieving a “virtuous circle” of debt reduction. But what role might microeconomic policy play in either growth ($y_g$), or the real interest rate ($r$)? For structural reform of pension systems, tax policies and labor markets to push countries in scenario A toward a more stable scenario B, those reforms have to affect one or both of these crucial parameters.

To what extent should we expect such effects? There are large theoretical and empirical analyses of a host of microeconomic policies. We focus on two types of policies—labor market reforms and the structure of corporate taxation. Both types of policies are at the heart of many current calls for structural reform in Europe and beyond. Additionally, policy changes are sufficiently frequent (unlike very rare social security reforms, for instance) in these spheres

---

11A loss in market confidence also could result from crises in geographically proximate or economically similar countries or from a more global shift in sentiment, leading to a general increase in investors’ risk aversion.

12Another possibility is that the primary deficit ($d$) must explode, but that would require redrawing the graphs to reflect a new, higher intercept on the y-axis.
and are thus amenable to rigorous empirical work.

How might labor market regulations matter for debt dynamics? Lazear (1990), Saint-Paul (1996) and others suggest that under very general conditions, job security provisions, including severance pay and unemployment insurance, decrease the level of employment by raising the costs to firms of hiring and firing. Hence, labor market regulations, all else equal, will reduce the rate of employment and lower output. Moreover, to the extent such policies encourage labor informality, the negative consequences are even more stark (Gerxhani 2004). Thus, liberalizing labor markets should increase the efficiency of firms (as they can adjust their workforces to meet demand); increase employment in the formal sector; and increase the growth rate, $y$. As a result, labor market deregulation could improve the prospect for debt repayment. A secondary effect, particularly salient in countries with substantial welfare states, is that $d$, the fiscal balance, might improve as tax revenues increase and expenditures on unemployment compensation fall. If these dynamics are general, microeconomic policy reform related to labor markets ought then to generate reductions in sovereign risk premiums.

There is, however, a prominent alternative account (Agell 1999; Iversen 2005; Iversen and Soskice 2010a; Rodrik 2008), in which the presence of labor market regulations does not detract from, and may even improve, output. Central to this account is the notion that labor market protections can improve on a pure market outcome. This occurs through three mechanisms. First, labor market regulation such as minimum wages and increased firing costs compress the income distribution. If such regulations apply broadly across the labor market, they serve to constrain wages in those sectors where the marginal product of labor is highest; these are typically sectors where workers have the highest skills and output tends to be exported. By constraining the wages of the most productive workers, labor market regulations serve as a subsidy to investment in the most competitive sectors of the economy (even as they increase wages in non-tradable sectors). If, as in endogenous growth models, those sectors are subject to increasing returns to scale, growth is higher under regulated labor markets.
Second, labor market regulations can increase incentives for the accumulation of human capital (Agell 1999; Iversen 2005). Some forms of production require investments in specific skills as a complement to specialized technologies. Those specific skills represent sunk costs and are not easily portable across jobs. From the point of view of employees, investments in these forms of human capital will only be realized if they are insured against unemployment via high firing costs, extensive unemployment insurance or both. In this case, labor market regulations facilitate productivity-enhancing investments in skill-specific human capital. Third and finally, labor market regulations and coordinated wage bargaining can constrain inflation throughout the economy, particularly when associated with a complementary central bank (Hall et al. 1998; Iversen and Wren 1998). Together, these three factors suggest that labor market regulations can improve the productivity of the economy, increasing $y_y$.

The theoretical disagreement on the causal link between labor market regulations and growth dynamics is mirrored in the empirical literature. Empirical studies offer little means of discerning how bond market participants ought to react to labor market policies (Agell 1999; Blanchard and Wolfers 2000; Botero et al. 2004; Freeman 2005; Caballero et al. 2013; Griffith and Macartney 2014). There is precious little agreement on the empirical relationship between labor market regulations and the growth of output. Hence, we have little reason to expect that participants in sovereign bond markets share a single view on the effects of labor market regulations.

The situation is similar when we turn to our second policy of interest, corporate taxes. Endogenous growth models provide a clear mechanism linking tax policy to capital accumulation (Barro 1990; Jones et al. 1993). The results of increases in corporate taxation can include reduced profits (and presumably investment) (Weichenrieder 2009); the relocation of actual economic activity to lower tax settings (Hines Jr 1999); or the shifting of reported revenues and/or profits from high-tax to low-tax settings (Clausing 2009; Cao 2010; Jensen 2013). Any single one of these mechanisms might reduce growth ($y_y$).
Yet while there is considerable theoretical consensus on the direct effect of higher corporate tax rates, the picture is considerably less clear once we account for the government’s use of tax revenues. If tax revenue is invested in public goods with large, positive externalities and the effects of higher tax rates on firms’ behavior are modest (as in, say, Mendoza et al. 1997), higher tax rates may have net positive effects on growth. And, of course, if any increase in revenue improves the overall fiscal balance, or $d$ in the equation above, the probability of repayment increases, and some market actors might respond positively.13

As with labor market regulations, the empirical research provides dissensus. Research on the effect of tax composition on growth outcomes provides estimates ranging from null (Easterly and Rebelo 1993) to small (Mendoza et al. 1997; Acosta-Ormachea and Yoo 2012) to quite large (Kneller et al. 1999). It could be that some bond market actors share a model of how corporate tax policy impacts growth, but for changes in corporate taxation policies to systematically move markets, there would need to exist a level of consensus that is absent in academic research.

Although our empirical application in this paper is to labor market regulations and corporate taxes, the basic issue appears over and over: one is hard pressed to find a clear causal link between any specific microeconomic policy reform and economic growth in the literature. Indeed, even if microeconomic reforms are an important ingredient of long-term creditworthiness, the supportive empirical work provides a rich array of factors that seem to condition the effect of such reforms in any given setting. These conditioning factors include country-specific, pre-reform starting points (Bouis et al. 2011; Barkbu et al. 2012); complementarities across microeconomic reforms (Hall and Soskice 2001; Pérez and Yao 2012; Rodrik 2006); and the pace of reforms (Spilimbergo et al. 2009).

Our general claim that professional investors do not share a view on the causal connection between microeconomic reforms and macroeconomic outcomes highlights the importance of

13On sovereign debt investors’ positive responses to expropriations, as another means of improving fiscal balances, see Wellhausen (2015).
shared beliefs and models for market operation. If market participants share a view of the underlying models by which assets are priced (MacKenzie 2008), markets will move systematically in response to changes (or expectations of changes) in the parameters of those models. Shared beliefs and ideas can therefore lead to pronounced market movements, as investors buy and sell according to their views of what others in the market will do (see Calvo and Mendoza 2000; Brooks et al. 2015). For financial market participants, ideas regarding “appropriate” policies typically come from the economics profession; for investors in sovereign debt, international financial institutions also can be a conduit for such ideas (Chwieroth 2007, 2009; Nelson 2014, 2017).

Participants in international bond markets do appear to share beliefs about appropriate macroeconomic policies, such as positive fiscal balances and low rates of inflation. We therefore expect these indicators to be associated with the pricing of sovereign debt. But, given that there is considerable disagreement among economists on whether microeconomic policy changes have implications for default risk, we find little reason to expect that market participants broadly subscribe to a causal model linking any particular microeconomic reform to investment risk. We therefore predict little effect of microeconomic policy changes, even large ones, on sovereign debt markets. The next section evaluates this claim empirically.

4 Empirical Strategy and Data

In order to assess the effect of microeconomic policy changes on investors’ behavior, we test whether such changes are systematically linked with changes in the pricing of sovereign risk. Doing so presents two challenges. First, much of the literature linking sovereign debt outcomes with political events and institutions relies on annual, quarterly and (occasionally) monthly data (e.g. Ballard-Rosa et al. 2019; Brooks et al. 2015; Gray 2013; Mosley 2003), typically as the result of the periodicity of economic and political indicators. Yet, financial market reactions to changes in risk occur over a much shorter time frame in markets that are highly
liquid. We therefore need fine-grained data to isolate the potential effect of a specific policy reform. Political economy research that focuses on specific events, like elections and post-election cabinet formation, has turned to daily data as a means of more closely matching theory with evidence (e.g. Bernhard and Leblang 2006; Bechtel 2009; Jensen and Schmith 2005). We employ a similar approach, which requires not only daily data for bond market outcomes, but also for policy changes.

Second, it is a challenge to isolate the direct effect of microeconomic policy changes on bond market movements. Microeconomic policy events might be endogenous to unobserved factors that also affect the pricing of sovereign risk. Additionally, because investors may anticipate domestic policy events, it is difficult to measure if and when markets react to these events. To address these concerns, we rely on an event study framework (for a survey see: Campbell et al. 1997; Corrado 2011; Sandler and Sandler 2014; MacKinlay 1997), a shock-based research design originally developed and commonly used in the finance literature (Fama et al. 1969; Binder 1985; Brown and Warner 1985), but less often used in the field of international political economy (some exceptions are: Bernhard and Leblang 2006; Bechtel 2009; Guidolin and La Ferrara 2010; Wilf 2016). We analyze the pricing of sovereign risk at high frequency to measure how investors react to new information about microeconomic policies and rely on event “windows” of varying lengths to allow for the possibility that well-informed investors might forecast policy changes and price them in before reforms are actually legislated. Although this methodology does not allow us to fully isolate the effect of reforms on market pricing from other confounders—there is always a chance investors have access to inside information that enables them to anticipate the type of event we are interested in—it allows us to closely examine the impact that reforms have during the days surrounding their passage or discussion while controlling for other domestic and international factors, including those associated with broader economic conditions that prevail across the period of our study. We supplement the event study with evidence from a traditional time-series cross-country analysis.
To test whether investors respond systematically to changes to labor market regulations and corporate tax policies, we use daily data on bond markets and microeconomic policies. To measure bond market pricing, we employ daily prices of credit default swaps (CDS), representing insurance contracts against sovereign default or debt restructuring. CDS is a derivative product—an asset whose underlying value is based on another asset—used by investors to hedge the risk of default or restructuring of bond investment. The CDS contract specifies a reference obligation, usually a dollar- or euro-denominated senior external or international debt issued by the sovereign in question. Restructuring of or default on that debt triggers payment of the CDS contract.

Investors pay a fee to the seller (the insurer) during the term of the contract. If the issuer (for sovereign debt, the government) defaults on or restructures the reference instrument during the term of the contract, the seller of the CDS compensates the buyer. The most common CDS contract has a five year term (Longstaff et al. 2011). We gathered daily CDS data from Longstaff et al. (2011) and updated it via Bloomberg, covering 37 countries between October 2004 and June 2012. These sovereign CDS spreads are mid-market indicative prices for five-year CDS contracts (Aldasoro and Ehlers 2018). That is, they reflect daily market quotation data, as reported by the relatively small set of dealers worldwide.

The price of the CDS contract captures market perceptions of a borrower’s creditworthiness.\textsuperscript{14} CDS prices are, like spreads on sovereign debt, an indicator of how investors price risk in secondary markets for debt: for government bonds that already have been issued, how might policy changes lead investors to update their assessments of country creditworthiness? While one could instead look at primary capital markets—the point at which governments issue debt—to understand when investors are willing to lend to governments it is difficult to observe

\textsuperscript{14}In the Appendix we present summary statistics for CDS price and CDS price change: Figure A1 plots the Kernel density for CDS price; Figure A2 plots the Kernel density for CDS price change, the dependent variable in the empirical tests; Table A1 presents summary statistics for the latter variable; and Table A2 presents summary statistics of CDS price and price change by country for the period 2004-2012. For a discussion of more recent changes in the global CDS market, see Aldasoro and Ehlers 2018.
price responses in primary markets; if a policy change causes a shift in risk assessments among investors, governments simply will not bring debt to market. By contrast, in secondary markets, investors already hold assets, so any market reaction will be captured in pricing (rather than in quantity of credit offered). Hence, most analyses of sovereign bond market reactions to political events and policy changes use CDS pricing or sovereign bond spreads (Brooks et al. 2015).

CDS contracts are a relatively recent financial innovation, limiting their use in analyses prior to the 2000s. At the same time, daily CDS prices—generated based on trading activity on over-the-counter derivative exchanges, among a small set of dealers (Peltonen et al. 2014)—provide a fine-grained mechanism for assessing the sovereign risk perceptions present in secondary markets for (outstanding) government debt. Using CDS pricing to identify market movements therefore maximizes the chances of finding market responses to policy changes, even if such changes do not persist over time (to affect the terms of subsequent debt issues, for instance). If microeconomic policy reforms cause investors to update their assessments of sovereign risk, daily CDS pricing should quickly reflect these changes.\(^\text{15}\)

In order to identify the microeconomic reforms that are most likely to generate reactions among bond market investors, we generate a list of the most significant and unexpected labor market and corporate tax policy changes that occurred between October 2004 and June 2012. To identify substantively significant reforms we consult the Economist Intelligence Unit’s (EIU) annual reform indices. The EIU generates separate indices for corporate tax burden and labor market flexibility—which range between -1 (more corporate tax burden and less labor flexibility) and 1 (less corporate tax burden and more labor flexibility)—, and sells these data to market actors who presumably rely on it to make investment choices. If there is any data on microeconomic policy that ought to affect market sentiment and asset allocation decisions,

15The pricing of new debt in primary markets also might reflect updated investor assessments, but these are revealed only when governments bring new issues to market. And economic conditions and policies may affect strategic government debt managers’ propensity to enter primary debt markets.
In order to leverage daily CDS pricing data, we must date policy reforms to the day, rather than rely on annual measures of reforms.\textsuperscript{16} Many of the policy changes that underlie the reform indices are minor and are unlikely to impact financial markets, so we focus our attention on the most significant reforms. To identify the largest reforms, we take the 5 percent largest changes in the EIU’s annual corporate tax and labor market indices (where changes are in both a pro-market, liberalizing, and anti-market, restrictive direction).\textsuperscript{17} This process based on the EIU data identified 18 relevant annual changes in labor market regulation and 13 in corporate tax (see Table 1).\textsuperscript{18}

Based on the understanding that many of these changes might have been expected by investors, beyond examining this larger pool of reforms we focus our attention on those for which there was a mismatch between the ideology of the majority party in Congress (left, right) and the direction of the reform (anti-, pro-market), that is, those that were more likely to be unexpected. Table 1 presents a list of the relevant changes identified where those that are considered to be unexpected are highlighted in gray. To identify unexpected reforms, we started by assuming that legislators will support policies that benefit their party’s constituency and oppose policies that hurt it, that is, left- (right-) wing parties will support anti- (pro-) market policies and oppose pro- (anti-) market ones. Then, we claim that pro- (anti-) market reforms that are passed in Congress under a leftist (right-wing) majority are unexpected both

\textsuperscript{16}Many recent analyses of the determinants of microeconomic reforms continue to rely on annual policy data, e.g. (Duval et al. 2018; Hallerberg and Scartascini 2017)

\textsuperscript{17}In choosing 5 percent largest annual changes we balance our desire to collect data on a reasonable number of major reform events against the onerous work of dating reforms to the day of their legislative passage, which we describe below. In addition, by first identifying the country-years in which, according to the EIU, largest changes occurred in labor and corporate tax policy, we make sure to be looking for daily reform events only in years in which markets perceived large movements in these two areas. We assume these are the years in which it is most likely that major reforms in the issues of interest were passed.

\textsuperscript{18}Our CDS dataset covers 37 countries between October 2004 and June 2012. However, as shown in Table 1, using the EIU’s reform indices we only identified relevant annual changes in labor market and corporate tax in 18 of these countries and none of these reforms occurred in 2004 or 2012. In Table A3 in the Appendix we present a complementary table with the maximum, minimum and median values of changes in the corporate tax burden a labor market flexibility EIU’s indices for the 37 countries during the period under study. Because the EIU’s data are proprietary, we only use and present data on changes in the indices of interest to identify the years in which relevant reform events occurred. The EIU’s data on changes in corporate tax burden and labor flexibility indices are available for replication.
to the public and to markets (e.g. when a left party votes in favor to cut minimum wage or a right party favors increasing corporate taxes).\textsuperscript{19}

Because in some of the country-years in which we identified substantial annual movements in corporate tax and labor market reforms more than one important labor/corporate tax regulation might have been approved, by scaling down from yearly changes to daily events we expanded our full sample to 47 daily events, out of which 25 are coded as unexpected.\textsuperscript{20} Table 2 summarizes the number of pro- and anti-market labor and corporate tax daily events and Table A4 in the Appendix presents a complete description of these events, including the dates on which they occurred.

Finally, given uncertainty about when investors learn about a policy and the pace of their responses, we date each of the identified policy reform events to (a) the date they were first discussed in Congress and (b) the date in which they were finally passed through legislatures (we examine CDS movements around both dates for each event in our analysis). Of course, we cannot be certain that these events were fully surprising for investors. Reform events might have been anticipated by investors months, perhaps years, before their announcement and formal passage. Common wisdom suggests that some investors may have privileged access to inside information that allows them to adapt earlier than others. Yet, event studies in business and finance largely assume that investors learn about a change when the information becomes public.\textsuperscript{21} Departing from the same assumption, and following the approach of assigning two different dates to each event and examining unexpected or “U-turn” policy changes, we hope to systematically identify the most surprising reform events in labor and corporate tax reforms between 2004 and 2012. Furthermore, as we explain below, we allow for the possibility that

\textsuperscript{19}In order to assess whether the majority party in Congress was right- or left-wing we relied on the Database of Political Institutions compiled by the World Bank.

\textsuperscript{20}Often times, “reform packages” are disaggregated into several pieces of legislation that are discussed and voted in Congress on different dates. Column “N Daily Events” in Table 1 presents the number of relevant (labor and corporate tax) policy reform daily events for each country-year.

\textsuperscript{21}For example, studies that analyze press releases as events also rely on this assumption and do not account for the possibility that investors who access insider information might have already adjusted their pricing behavior (e.g. Wilf 2016).
Table 1: Top 5% Largest Annual Changes in Labor and Corporate Tax Policies

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Δ EIU Score</th>
<th>Direction</th>
<th>N Daily Events</th>
<th>Party</th>
<th>Unexpected</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Labor Reforms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Argentina</td>
<td>2006</td>
<td>-0.3</td>
<td>Anti-market</td>
<td>2</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>2 Belgium</td>
<td>2005</td>
<td>-0.4</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>3 Brazil</td>
<td>2005</td>
<td>-1</td>
<td>Anti-market</td>
<td>1</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>4 Brazil</td>
<td>2006</td>
<td>-0.7</td>
<td>Anti-market</td>
<td>1</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>5 China</td>
<td>2006</td>
<td>-0.3</td>
<td>Anti-market</td>
<td>4</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>6 China</td>
<td>2011</td>
<td>0.5</td>
<td>Pro-market</td>
<td>2</td>
<td>Left</td>
<td>Yes</td>
</tr>
<tr>
<td>7 France</td>
<td>2005</td>
<td>-0.4</td>
<td>Anti-market</td>
<td>4</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>8 Germany</td>
<td>2011</td>
<td>0.4</td>
<td>Pro-market</td>
<td>1</td>
<td>Right</td>
<td>No</td>
</tr>
<tr>
<td>9 Greece</td>
<td>2005</td>
<td>-0.4</td>
<td>Pro-market</td>
<td>3</td>
<td>Right</td>
<td>No</td>
</tr>
<tr>
<td>10 Hungary</td>
<td>2005</td>
<td>-0.6</td>
<td>Anti-market</td>
<td>2</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>11 Malaysia</td>
<td>2005</td>
<td>-0.4</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>12 Malaysia</td>
<td>2006</td>
<td>0.3</td>
<td>Pro-market</td>
<td>1</td>
<td>Right</td>
<td>No</td>
</tr>
<tr>
<td>13 Portugal</td>
<td>2008</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>2</td>
<td>Left</td>
<td>Yes</td>
</tr>
<tr>
<td>14 Russia</td>
<td>2005</td>
<td>-0.3</td>
<td>Anti-market</td>
<td>2</td>
<td>Center</td>
<td>No</td>
</tr>
<tr>
<td>15 South Africa</td>
<td>2005</td>
<td>1</td>
<td>Pro-market</td>
<td>1</td>
<td>Left</td>
<td>Yes</td>
</tr>
<tr>
<td>16 South Africa</td>
<td>2011</td>
<td>0.3</td>
<td>Pro-market</td>
<td>1</td>
<td>Left</td>
<td>Yes</td>
</tr>
<tr>
<td>17 South Korea</td>
<td>2006</td>
<td>0.7</td>
<td>Pro-market</td>
<td>1</td>
<td>Center</td>
<td>No</td>
</tr>
<tr>
<td>18 Turkey</td>
<td>2005</td>
<td>0.6</td>
<td>Pro-market</td>
<td>2</td>
<td>Center</td>
<td>No</td>
</tr>
<tr>
<td><strong>Corporate Tax Reforms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Belgium</td>
<td>2007</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>2 Colombia</td>
<td>2007</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>3 Colombia</td>
<td>2010</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>4 France</td>
<td>2010</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>2</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>5 France</td>
<td>2011</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>2</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>6 Germany</td>
<td>2006</td>
<td>1</td>
<td>Pro-market</td>
<td>1</td>
<td>Right</td>
<td>No</td>
</tr>
<tr>
<td>7 Germany</td>
<td>2008</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>8 Greece</td>
<td>2009</td>
<td>1</td>
<td>Pro-market</td>
<td>1</td>
<td>Right</td>
<td>No</td>
</tr>
<tr>
<td>9 Mexico</td>
<td>2008</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Right</td>
<td>Yes</td>
</tr>
<tr>
<td>10 Saudi Arabia</td>
<td>2010</td>
<td>0.3</td>
<td>Pro-market</td>
<td>1</td>
<td>Nd</td>
<td>No</td>
</tr>
<tr>
<td>11 South Korea</td>
<td>2008</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Center</td>
<td>No</td>
</tr>
<tr>
<td>12 Spain</td>
<td>2008</td>
<td>-0.2</td>
<td>Anti-market</td>
<td>1</td>
<td>Left</td>
<td>No</td>
</tr>
<tr>
<td>13 Turkey</td>
<td>2008</td>
<td>0.8</td>
<td>Pro-market</td>
<td>1</td>
<td>Center</td>
<td>No</td>
</tr>
<tr>
<td><strong>Total number of events</strong></td>
<td>47</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 2: Frequency of daily events by type of reform

<table>
<thead>
<tr>
<th>Type of reform</th>
<th>Labor</th>
<th>Corporate tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pro-market</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>Anti-market</td>
<td>20</td>
<td>8</td>
</tr>
</tbody>
</table>

investors price in these legislative changes in advance (or with some delay) by examining several different time windows around these dates and controlling for election timing.\textsuperscript{22}

In order to date the policy changes of interest we used several sources. For labor reforms, we consulted the ILO-Natlex database, which compiles information on national labor and social security legislation, including complete legislative histories on these matters. Collecting data on corporate tax events was more challenging because no single entity gathers information on corporate tax regulations for many countries and years. Thus, we relied on country reports from international organizations and consultancy companies, legislative reports produced by national governments, and newspapers.\textsuperscript{23}

5 Empirical Analysis

5.1 Event Study Methodology

We begin our analysis of the effect of labor and corporate tax reforms on market’s behavior with an event study. An event study such as ours measures the impact of a piece of legislation on CDS prices over an event window around the time information about the new legislation is disclosed. Such a focused analysis helps isolate effects attributed to the events of interest (labor market and corporate tax legislative reforms) while controlling for other domestic and international factors that might also affect CDS pricing. Capturing the effect of the event of interest on

\textsuperscript{22}Figures A3 and A4 in the Appendix plot changes in CDS prices (\%) around the days in which unexpected labor and corporate tax reforms occurred.

\textsuperscript{23}These include policy reports and press releases by international organizations, such as as the OECD, and private consultancy companies, such as KPMG and Deloitte, as well as national newspapers and secondary sources.
the asset price requires comparing on an event day each country’s observed asset return to its unobserved, expected return on that day. In our case this specifically involves disentangling the effects of information that is not microeconomic policy responsive—information that is country-specific but time invariant, and information that is time-specific but reflective of broader market conditions rather than country-specific dynamics—from policy-responsive information that is likely to affect CDS pricing. To calculate the expected return, our event study first analyzes the relationship between CDS prices and an unaffected asset prior to the event during a control period. This involves estimating the following model:

\[ R_{it} = \alpha_i + \beta_i M_t + \varepsilon_{it}, \]

where \( R_{it} \) is the return on CDS in country \( i \) at time \( t \), which is a day relative to the event occurring at \( t = 0 \) \((t \in \{-\infty, ..., -1, 0, 1, \ldots \infty\})\); \( M_t \) is the overall market return, \( \varepsilon_{it} \) is the error term or the country specific return, which by assumption is unrelated to the market return. To measure the overall market return we use both the U.S. bank prime and the average between the S&P 500 and the Dow Jones daily return as reported by the Federal Reserve Economic Data (FRED).

Equation 2 is estimated over an estimation window before the event day \((t_0)\). Then, the estimated residuals are calculated over an event window \([t_0 - t_d, t_0 + t_d]\), where \( t_d \) and \( t_d \) are the endpoints of the event window chosen by the researcher.\(^{24}\) These residuals are the abnormal returns and are calculated as follows:

\[ \text{Abnormal Return}_{it} = \hat{\varepsilon}_{it} = R_{it0} - E(R_{it0}|M_{it0}) = R_{it0} - \hat{\alpha}_i - \hat{\beta}_i M_{it0}, \]

\(^{24}\)This model adjusts the event date return to remove the influence of the overall market. A naive analysis might compare the event date return \( R_{t0} \) with returns observed during a control period before the event. If the event date return was statistically large compared to pre-event control period returns, we might mistakenly conclude that the event had a significant price impact. However, this comparison does not disentangle the effects of country-specific information from market-wide information affecting the asset price (Corrado 2011).
where $\alpha_i$ and $\beta_i$ are the estimates obtained over the control or estimation window $[t_a, t_b]$ which has a length of $t_b - t_a + 1$ and precedes the event window leaving a gap of length $t_{-d} - t_b$ between the ending day of the estimation window ($t_b$) and the start day of the event window ($t_{-d}$) to avoid anticipation effects. Notice that adjusting the observed event date price $R_{it_0}$ by subtracting the conditional expected return yields the abnormal return specified in equation 3. Thus, simply put, the abnormal return is the observed return minus an estimate of the unobserved potential outcome, if the country had not been “treated” by the event.

Market actors are, of course, forward looking. Unfortunately, there is no rule of thumb governing how forward looking they are which might instruct us in establishing the appropriate time window over which normal and abnormal returns should be estimated. In lieu of such a rule, we run the analysis over 5, 10, 15 and 21 days event windows, and an estimation window of 30 days that ends 15 days before the beginning of the event window. However, as a robustness check, in the Appendix we vary the size of the estimation window to 60, 90 and 120 days (see tables A6 and A7).

In order to quantify the overall impact of an event on asset prices, we then calculate event specific Cumulative Abnormal Returns (CAR) over the chosen event window:

$$CAR = \sum_{t_{-d}}^{t_d} AbnormalReturn_{it}$$

In principle, if $CAR > 0$ ($<0$) we could conclude that the event has a positive (negative) effect on changes in CDS prices over the selected time window. However, following standard practice, we present significance test results where the null hypothesis $CAR = 0$ is tested against a two-sided alternative. We anticipate none or little support for either alternative hypotheses that $CAR > 0$ or $< 0$, as we do not expect a systematic response by investors to microeconomic policy events.

Tables 3 and 4 summarize the significance test results for the 47 relevant events we have
identified following the procedure described in the previous section. In the first table we present the results only for pro-market reform events (N=19) and in the second one for anti-market ones (N=28). In each of these tables we report results at different event window sizes (5, 10, 15 and 21 days). Specifically, we show the percentage of events in which the null hypothesis of no effect of the reform event was rejected at a 5% significance level against the alternative of positive ($CAR > 0$) or negative ($CAR < 0$) effects.\(^{25}\)

Table 3: Summary of event study results for all pro-market events (% of total events)

<table>
<thead>
<tr>
<th>Labor</th>
<th>5 days</th>
<th>10 days</th>
<th>15 days</th>
<th>21 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR &gt; 0</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>CAR &lt; 0</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corporate tax</th>
<th>5 days</th>
<th>10 days</th>
<th>15 days</th>
<th>21 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR &gt; 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>CAR &lt; 0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Number of events 19 19 19 19

Note: Table displays the percentage of labor and corporate tax reform events in which the null of no effect (Cumulative Abnormal Returns = 0) is rejected against the alternative of positive ($CAR > 0$) or negative ($CAR < 0$) effect considering a 5% significance level and different event window lengths.

It is important to note that pro- and anti-market policy reforms are not correlated with countries’ overall economic performance. Although conventional wisdom might suggest that pro-market policy reforms are more likely to occur during economic hard times and anti-market changes during good times, we find no systematic relationship between the implementation of pro- and anti-market reforms and economic growth. Both types of reforms occur during periods of both economic growth and decline.\(^{26}\)

Starting with the set of labor pro-market events shown in the first row of Table 3, we observe

\(^{25}\)More specifically, we conduct the following simple t-test: $\frac{\sum (AR)/N}{\sqrt{AR_{SD}/N}}$ where $AR$ is the abnormal return and $AR_{SD}$ is the abnormal return standard deviation. If the absolute value of the test is greater than 1.96, then the average abnormal return for the CDS is significantly different from zero at the 5% level.

\(^{26}\)Table A5 in the Appendix provides a summary of quarterly economic growth when the reforms under study were passed; a simple t-test test confirms no statistically significant difference between the means of pro- and anti-market groups.
Table 4: Summary of event study results for all anti-market events (% of total events)

<table>
<thead>
<tr>
<th></th>
<th>5 days</th>
<th></th>
<th>10 days</th>
<th></th>
<th>15 days</th>
<th></th>
<th>21 days</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CAR &gt; 0</td>
<td>CAR &lt; 0</td>
<td>CAR &gt; 0</td>
<td>CAR &lt; 0</td>
<td>CAR &gt; 0</td>
<td>CAR &lt; 0</td>
<td>CAR &gt; 0</td>
<td>CAR &lt; 0</td>
</tr>
<tr>
<td>Labor</td>
<td>4</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>15</td>
<td>2</td>
</tr>
<tr>
<td>Corporate tax</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Number of events</td>
<td>28</td>
<td></td>
<td>28</td>
<td></td>
<td>28</td>
<td></td>
<td>28</td>
<td></td>
</tr>
</tbody>
</table>

Note: Table displays the percentage of labor and corporate tax reform events in which the null of no effect (Cumulative Abnormal Returns = 0) is rejected against the alternative of positive (CAR > 0) or negative (CAR > 0) effect considering a 5% significance level and different event window lengths.

that at any event window size the percentage of events that have a statistically significant impact on CDS pricing, regardless of the direction of such impact, is always less than 6% of the total number of events we analyzed. In other words, at every event window size, markets react to a very low proportion of major labor reforms. Similarly, jumping to the second row of Table 3, corporate tax events are also rarely significant. Only when considering a 21 days event window, we find that 2% of corporate tax pro-market reform events are statistically significant. This preliminary finding suggests that investors do not tend to respond to market-friendly microeconomic policy events.

Second, and contrary to the conventional wisdom that pro-market reforms should produce a positive reaction in markets (which should be reflected in negative abnormal returns), the results in Table 3 suggest that investors do not necessarily reward governments for implementing market-friendly microeconomic policies. Whereas some of the pro-market reforms that are statistically significant generate positive cumulative abnormal returns (CAR >0)—an increase in CDS prices—, others produce negative abnormal returns (CAR <0)—a decrease in the price.

Table 4 shows the results for anti-market reform events, which follow a similar pattern. The first row of this table shows that the proportion of statistically significant labor reform events is always less than 15% suggesting, again, that markets do not react towards most anti-
market labor reforms. Similarly, as shown in the second row of this table, few corporate tax reforms are statistically significant (less than 4% across all event window lengths). Moreover, when markets do respond, they do not do so in a way that is consistently punitive: sometimes investors react positively (CAR < 0) to reform events that hurt markets whereas others they react negatively (CAR >0). To sum up, very few pro- and anti-market reform events produce cumulative abnormal returns, and when they do so it is not always the case that pro-market reforms are rewarded whereas anti-market ones are punished by sovereign debt markets.

In addition to looking at the average abnormal return for each country-event we estimate the cumulative abnormal return for all country-events treated as a group. These results are displayed in Table A8 in the Appendix and show that, when considered jointly, cumulative abnormal returns are not statistically significant at any event window size.

A plausible concern is that we do not observe a clear pattern in markets’ reactions because we are conflating microeconomic policymaking events that take place during periods of economic crisis with those that do not. Thus, we explore the possibility that investors might react differently during the hard and the good times, potentially sanctioning anti-market movements more heavily during the former. On Table 5 we present the results of our event study differentiating our policy episodes according to the time in which they occur (domestic economic crisis vs. not crisis). Firstly, we consider months of economic crisis as those in which a country’s average foreign and domestic currency rating—given by the three major credit rating agencies (Moody’s, Standard & Poor, and Fitch Ratings)—is half a standard deviation below the median rating of our sample.\footnote{Using this first measure we identified 13 events took place during months of economic crisis. Table A9 in the Appendix list events happening during months of crisis vs. not.} Secondly, based on economic crises data compiled by Reinhart and Rogoff (2009) we identify episodes that happen under market pressure as those which occur during years in which a country was going through one of the types of economic crisis identified by these authors (banking crisis, currency crisis, sovereign domestic or external default, infla-}
tion crisis or stock market crashes). The results shown on Table 5 and a simple Fisher Exact Test—particularly suitable to perform hypothesis testing on small samples of data against the null hypothesis of independence—suggest that the association between an episode happening during a crisis period and producing abnormal returns is not statistically significant at a 0.05 confidence level.

### Table 5: Event Study Results by Crisis/Not Crisis Period

<table>
<thead>
<tr>
<th></th>
<th>Abnormal Returns</th>
<th></th>
<th>Abnormal Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Crisis Month</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8%</td>
<td>92%</td>
<td>6%</td>
</tr>
<tr>
<td>No</td>
<td>22%</td>
<td>78%</td>
<td>24%</td>
</tr>
<tr>
<td>Fisher test=</td>
<td>0.40</td>
<td></td>
<td>0.21</td>
</tr>
</tbody>
</table>

Note: Both tables present the proportion of events that produce (or not) significant cumulative abnormal returns disaggregated between episodes that occur during months (table on the left) or years (table on the right) of crisis and those that happen out of crisis periods, and their corresponding Fisher Exact Test results.

Finally, we focus only on those events we have identified as unexpected, that is, events for which there is a mismatch between the sign of the majority party in Congress and the direction of the policy being passed (N=14). Table 6 summarizes the t-test results for this set of events. It presents the magnitude of the cumulative abnormal returns for all unexpected events that resulted significant at least for one of the specifications of event window size. We find significant cumulative abnormal returns in 9 out of the 14 unexpected reform events. However, the results are not consistent across event window sizes for any of these events, and only in three of these reforms (highlighted in gray) markets reacted in the expected direction. In short, CDS prices

---

28 Using this second measure we identify 17 episodes occurred during years of domestic economic crisis. Table A10 in the Appendix shows which event-years fall in each type of crisis; for a detailed explanation on the methodology used to date each type of crises, see Reinhart and Rogoff (2009).
Table 6: Cumulative Abnormal Returns for Unexpected Events

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Type</th>
<th>Direction</th>
<th>Party</th>
<th>5 days</th>
<th>10 days</th>
<th>15 days</th>
<th>21 days</th>
<th>CAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2005</td>
<td>Labor</td>
<td>Anti-market</td>
<td>Right</td>
<td>0.076</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>2011</td>
<td>Labor</td>
<td>Pro-market</td>
<td>Left</td>
<td>0.155</td>
<td>0.267</td>
<td>0.207</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>2005</td>
<td>Labor</td>
<td>Anti-market</td>
<td>Right</td>
<td>-0.139</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>2005</td>
<td>Labor</td>
<td>Pro-market</td>
<td>Left</td>
<td>0.159</td>
<td></td>
<td></td>
<td>0.252</td>
<td></td>
</tr>
<tr>
<td>South Africa</td>
<td>2011</td>
<td>Labor</td>
<td>Pro-market</td>
<td>Left</td>
<td>-0.116</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Belgium</td>
<td>2007</td>
<td>Corporate Tax</td>
<td>Anti-market</td>
<td>Right</td>
<td>0.014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colombia</td>
<td>2010</td>
<td>Corporate Tax</td>
<td>Anti-market</td>
<td>Right</td>
<td>-0.85</td>
<td>-0.126</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>2011</td>
<td>Corporate Tax</td>
<td>Anti-market</td>
<td>Right</td>
<td>-1.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>2008</td>
<td>Corporate Tax</td>
<td>Anti-market</td>
<td>Right</td>
<td>0.154</td>
<td>0.151</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note:* The first panel of the table displays the magnitude of cumulative abnormal returns for unexpected events that are statistically significant at least for one event window size; cases highlighted in gray indicate when markets reacted in the expected direction. The second panel in the table lists those unexpected return with no significant cumulative abnormal returns.

...seem not to be systematically responsive to reform events.
5.2 Regression Analysis

We complement the event study results with a regression analysis of our panel data in which dummy variables indicating the occurrence of an event in a given country at a given time are correlated with daily CDS price changes. Although this approach provides limited leverage for identifying a causal relationship between the occurrence of microeconomic policy reforms and CDS pricing, it supplements the event study results. It does so by allowing us to control for several national and international factors typically associated with movements in sovereign markets using monthly and quarterly data, including everything from elections and changes in the partisan composition of government to macroeconomic policy to dynamics in international stock markets (see Brooks et al. 2015).

The key macroeconomic dynamics are GDP, the growth rate and inflation. Thus, we include quarterly GDP, quarterly growth rates and monthly inflation rates from the IMF’s International Financial Statistics. Given strong evidence that balance of payments crises are closely associated with market movements, we also include monthly reserves as a share of imports from the IMF’s IFS.²⁹ In order to assess the impact of more explicitly political factors, we also include a dummy variable for the months of executive elections and a measure of the partisan orientation of the government, where parties of the right, center and left are scored 1, 2 and 3, respectively—this latter to account for arguments linking parties of the left with market swings, particularly in the developing world; both of these measures come from the World Bank’s Database of Political Institutions. Finally, investors’ assessment of sovereign risk should depend on global capital market conditions, as well as on the returns available in other asset markets. As the U.S. represents the world’s largest issuer of sovereign debt, as well as its largest equity mar-

²⁹Given the timing of events and the speed to which macroeconomic variables move, we would expect microeconomic policy reform events not to affect our right hand side variables in the short run. However, to address the concern that reforms might affect our right hand side variables, besides performing a multicollinearity test, we conduct a series of pooled OLS analyses to assess whether or not our episodes of interest predict each of our key macroeconomic indicators: growth rates, GDP, inflation and reserves. The results are presented in tables A11 and A12, and indicate that the occurrence of microeconomic reforms is not associated with countries’ macroeconomic trends.
ket, analysts (e.g. Eichengreen and Mody 2000; Longstaff et al. 2011) typically use U.S. capital market conditions to account for these dynamics. We therefore include daily data on U.S. stock market returns, measured as the average of the S&P500 and the Dow Jones, and the daily U.S. prime bank rate; the latter tracks very closely the returns available on U.S. Treasury securities, which are assumed to be a nearly risk-free sovereign asset. Hence, these measures capture the fact that professional investors have investment opportunities across assets (equities) as well as across sovereign debt assets.

To temporally disaggregate our control variables that are measured at a lower frequency (monthly and quarterly) than the dependent variable (daily), we follow the disaggregation method proposed by Denton (1971) and Dagum and Cholette (2006).30

Our model tests whether pro- and anti-market labor and corporate tax policy reform events produce changes in daily CDS prices. It assumes that each period within an event window will have the same outcome, and thus estimates an average outcome for the full event period, following the equation:

\[ y_{it} = \lambda I_{it} + \beta X_{it} + \gamma_i + \varepsilon_{it} \]  

(5)

where \( t \in 1...T \) denote time (calendar days), \( i \in 1...N \) denote countries; \( y_{it} \) is the outcome of interest, daily percentage change in five-year CDS contract price for country \( i \) at time \( t \); \( I_{it} \) is

---

30In most of empirical applications, the most common solution in the presence of a mixed sample frequency is to pre-filter the data so that the left- and right-hand side variables are sampled at the same frequency. In our case, to match frequencies we disaggregate the monthly and quarterly variables into daily series following the widely used denton-cholette method. This method computes the interpolation of a time series observed at low frequency by using a related high-frequency indicator time series. The Denton process imposes the condition that the sum of the interpolated series within each year equals the annual sum of the underlying series for that particular year. According to the International Monetary Fund (IMF), this method is “relatively simple, robust, and well-suited for large-scaled applications” (Bloem et al. 2001). For implementation in R, we use tempdissag package (see Sax and Steiner 2013). Note that there is a large and growing literature on models that tackle the problem of different sampling frequencies at which dependent and independent variables are available. However, mixed-frequency models or MIDAS regression models have been so far developed for situations where high-frequency information is used to forecast low-frequency variables, e.g. using monthly inflation to predict quarterly growth rates (e.g. Ghysels et al. 2004, 2007; Andreou et al. 2010; Ghysels et al. 2006, 2016). More recently, Foroni et al. (2018) have developed a theoretical framework to deal with the reverse scenario, the Reverse Unrestricted Mixed Data Sampling (RU-MIDAS) model, but so far very few applications of this methodology can be found in the literature (an exception to this is: Foroni et al. 2019).
a set of indicator variables that takes value 1 over the event window of different types of events (pro-market, anti-market, labor and pro-market, labor anti-market, corporate tax pro-market, and corporate tax anti-market), and 0 otherwise; \( X_{it} \) is a set of time-varying domestic and international control variables described above\(^{31}\); \( \gamma_i \) denote country fixed effects that control for unobserved time-invariant country factors; and \( \varepsilon_{it} \) is an unobserved error term.

Again, because investors might anticipate governments’ policy reforms, in the econometric model represented by equation 5 we consider an event window of 15 days, i.e. a week before and after the reform event. A two-week event window is relatively large to account for anticipation effects, but relatively short to minimize the chance of including within the event window unobserved events, unrelated to labor and corporate tax policies, or other time-varying country characteristics that might also affect returns. As a robustness check, we present results for event windows of 5, 10, 21 and 30 days in the Appendix (see tables A14–A17).

Our regression analysis results provide further evidence on that pro- and anti-market microeconomic policy reforms produce little reaction in sovereign debt markets. Table 7 reports the results for different specifications of the model represented by equation 5. Models 1, 2 and 3 display the independent average effect of pro-market and anti-market event windows on the outcome variable. Neither of these coefficients is statistically significant, indicating that both pro- and anti-market reform events do not have an effect on daily CDS price changes over a 15 days event window. This result is confirmed after disaggregating pro- and anti-market reforms into labor and corporate tax policy events in Models 4, 5 and 6. Pro- and anti-market labor reform events as well as corporate tax events do not produce a statistically significant effect on CDS pricing. Only \emph{anti-market corporate tax reforms} appear to have a positive and slightly significant impact on CDS pricing in Model 6 when \emph{log GDP} is included as a covariate. However, this latter result does not hold across different specifications that include other covariates (inflation, type of regime and OECD membership) and consider different event and estimation

\(^{31}\)Because our inflation data is incomplete reducing our sample to a third, we present the models that include this covariate only on Table A13 in the Appendix.
Table 7: Effect of pro- and anti-market labor and corporate tax reforms on CDS price changes

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pro-market event window</strong></td>
<td>–0.019</td>
<td>–0.087</td>
<td>–0.100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.501)</td>
<td>(0.690)</td>
<td>(0.694)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Anti-market event window</strong></td>
<td>–0.077</td>
<td>–0.128</td>
<td>–0.078</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.378)</td>
<td>(0.420)</td>
<td>(0.422)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Labor pro-market event window</strong></td>
<td></td>
<td></td>
<td></td>
<td>–0.050</td>
<td>–0.615</td>
<td>–0.632</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.446)</td>
<td>(0.438)</td>
<td>(0.440)</td>
</tr>
<tr>
<td><strong>Labor anti-market event window</strong></td>
<td></td>
<td></td>
<td></td>
<td>–0.234</td>
<td>–0.371</td>
<td>–0.307</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.582)</td>
<td>(0.622)</td>
<td>(0.620)</td>
</tr>
<tr>
<td><strong>Corporate pro-market event window</strong></td>
<td></td>
<td></td>
<td></td>
<td>–0.060</td>
<td>0.186</td>
<td>0.175</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(1.005)</td>
<td>(1.342)</td>
<td>(1.354)</td>
</tr>
<tr>
<td><strong>Corporate anti-market event window</strong></td>
<td></td>
<td></td>
<td></td>
<td>0.200</td>
<td>0.577</td>
<td>0.581*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.352)</td>
<td>(0.310)</td>
<td>(0.282)</td>
</tr>
<tr>
<td><strong>U.S. bank prime</strong></td>
<td>0.028*</td>
<td>0.024</td>
<td>0.047</td>
<td>0.028*</td>
<td>0.023</td>
<td>0.046</td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td>(0.017)</td>
<td>(0.024)</td>
<td>(0.012)</td>
<td>(0.018)</td>
<td>(0.024)</td>
</tr>
<tr>
<td></td>
<td>(7.258)</td>
<td>(8.006)</td>
<td>(8.000)</td>
<td>(7.257)</td>
<td>(8.005)</td>
<td>(7.999)</td>
</tr>
<tr>
<td><strong>Reserves</strong></td>
<td>–0.032*</td>
<td>–0.037**</td>
<td>–0.032*</td>
<td>–0.032*</td>
<td>–0.037**</td>
<td>–0.037**</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.011)</td>
<td>(0.014)</td>
<td>(0.011)</td>
<td>(0.014)</td>
<td>(0.011)</td>
</tr>
<tr>
<td><strong>Election month</strong></td>
<td>–0.226</td>
<td>–0.228</td>
<td>–0.230</td>
<td>–0.231</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.123)</td>
<td>(0.126)</td>
<td>(0.123)</td>
<td>(0.126)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Incumbent party ideology</strong></td>
<td>0.030</td>
<td>0.037</td>
<td>0.030</td>
<td>0.037</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.031)</td>
<td>(0.038)</td>
<td>(0.031)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Growth rate</strong></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Log GDP</strong></td>
<td>0.869*</td>
<td></td>
<td></td>
<td>0.866*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.320)</td>
<td></td>
<td></td>
<td>(0.319)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>82,158</td>
<td>82,158</td>
<td>66,638</td>
<td>66,407</td>
<td>66,638</td>
<td>66,407</td>
</tr>
<tr>
<td><strong>Countries</strong></td>
<td>37</td>
<td>31</td>
<td>31</td>
<td>37</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td><strong>R^2</strong></td>
<td>0.006</td>
<td>0.005</td>
<td>0.005</td>
<td>0.006</td>
<td>0.005</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Note: Clustered standard errors by country in parenthesis; *** p < 0.001, ** p < 0.01, * p < 0.05

Turning to the control variables, in the four models presented in Table 7 the variable *U.S. stock market returns* has a negative and statistically significant correlation with CDS price change across all models. Moreover, its magnitude is substantively large: a one point increase in the average between the S&P 500 and the Dow Jones generates a 56% decrease in daily CDS price changes, indicating that opportunities for returns in equity markets, and especially in the world’s largest equity market, reduce the demand for sovereign assets, and for insurance against window lengths (see tables A13–A24 in the Appendix).
sovereign default. Hence, the reactions of investors to policy reform also can be expected to vary not as a function of the reforms, but as a function of more general market conditions (e.g. Calvo and Mendoza 2000; Brooks et al. 2015). At the same time, U.S. bank prime rate is not statistically significant across different specifications of the same model, and when it does have an effect, the magnitude is relatively small. In addition, macroeconomic domestic variables are also relevant to CDS pricing. Reserves has a negative and statistically significant impact on CDS price changes, though the magnitude of the relationship is small and varies across models. Specifically, a 1% increase in monthly reserves as a share of imports is associated with a decrease in daily CDS price changes that varies between less than 0.0001% (Models 1 and 2) to 0.037% (Model 4). Finally, when log of GDP is included in the model, a one point increase in it is associated with a statistically significant increase in daily CDS price change of 0.86%.

In the Appendix, we report a series of checks to the robustness to make sure that our results hold under different specifications. Overall, our finding that sovereign debt markets do not react towards market (un)friendly reforms holds after incorporating inflation as a covariate (Table A13); considering event windows of various sizes: 5, 10, 21 and 30 days (Tables A14–A17); testing the effect of each day within a 15 days event window on CDS price movements to explore whether markets react on specific days (Table A18); and considering the most relevant single event per country-year instead of multiple events per country-year (Table A19) as we do in the analysis presented in Table 7. Additionally, in tables A20 and A22, respectively, we incorporate an interaction term between the event windows and type of regime, and between the event windows and OECD membership to assess the possibility that democracies’ and/or developed nations’ advantages in international markets drive our results (Ballard-Rosa et al. 36
Also, we examine whether financial markets have integrated the key distinctions between “liberal market economies” (LMEs) and “coordinated market economies” (CMEs). A large body of research on “varieties of capitalism” has shown that key features of industrial relations, corporate governance, and labor market regulations have important implications for everything from monetary policy to trade competitiveness to inequality (Hall and Soskice 2001; Iversen 1998; Iversen and Soskice 2010b). It is plausible that financial markets have integrated the key distinctions between LMEs and CMEs such that market responses to policy changes vary across them. To test this possibility, we operationalize LMEs and CMEs following Hall and Gingerich (2009) and on Table A23 we show that our results hold when we control for this distinction. Moreover, tables A24 and A25 present results for our baseline models, excluding observations, first, for the period 2007–2010, and then for the period 2009–2012, to ensure that our results are not driven by behavior associated with the global financial crisis and the European debt crisis, respectively.  

Finally, in Table A26 we present baseline model results using an alternative measure of the dependent variable, volatility of the CDS price, measured as the standard deviation of the annualized CDS returns over the period of interest.

6 Conclusion

Government officials, financial journalists and political economists often note the power of bond market investors. These investors determine the pricing of a key form of sovereign finance, and changes in their risk assessments of investment risk alter the cost and availability of credit. For governments with large debt burdens, short debt maturities, or foreign currency-denominated debt, increased risk premiums can have dramatic effects. Government debt managers regularly interact with professional investors, holding “road shows” prior to issuing new debt, soliciting

---

investors’ reactions to their policies, and augmenting investor relations programs (Blommestein 2009). Pursuing policies that are consistent with investors’ preferences promises to lower the cost of credit, enabling public spending on objectives other than debt servicing.

Professional investors over macroeconomic outcomes such as inflation and government fiscal balances appear clear, as is their response—in terms of risk acceptance and aversion—to broad market conditions. What is much less clear, however, is whether these investors share a set of consistent views regarding microeconomic policies. Our extensive empirical analyses reveal scant evidence of systematic bond market responses, in the form of abnormal returns, to the most significant subset of changes in labor market and corporate tax policies. We therefore have little basis for concluding that investors hold a shared view on how supply-side policies matter for sovereign risk, or whether such policies matter at all.

How do we square these results with those public statements by government officials which invoke financial market pressures and demands as a central impetus to reform? Given that government debt managers often interact closely with private sector investors and should have a sense of their views, one possibility is that elected officials use capital market pressures as a justification for reforms. Some governments may take advantage of bond market pressures on the macroeconomic side to push for reforms on the microeconomic side as well (e.g. Spain 2012 labor market reform, see Picot and Tassinari 2014).

A second possibility is that government officials view microeconomic reforms as a means of signalling their overall commitment to pro-market policies (Chapman et al. 2017). Changes to supply-side policies often are contentious at home, rendering them a costly signal to investors. Government officials ultimately want markets to expect low inflation and fiscal discipline; they can use microeconomic reforms to communicate that they are willing to privilege market-friendly behaviors over domestic political considerations. Third and finally, it could be that some large investors do have microeconomic policy preferences, that governments know the contents of those preferences, and that governments are especially keen to attract that specific
subset of sovereign debt investors—for instance, because they are perceived as having longer
time horizons.\footnote{On heterogeneity in the sovereign debt investor base and its implications for financial stability, see Arslanalp and Tsuda \citeyear{arl}.}

One would need to research the government side of the relationship in order to evaluate
these potential causal pathways. Beyond that important angle for future work, it also would
be valuable to evaluate bond market reactions to macroeconomic “events” related to inflation,
government budget balances and debt levels. The prevailing consensus regarding investors’
interest in macro-level outcomes is drawn from indicators of macroeconomic performance, typ-
ically measured with monthly, quarterly or annual data; from measures of or institutions; or
from interviews with participants in capital markets.\footnote{For instance, see Ballard-Rosa et al. \citeyear{ballard}; Bodea and Hicks \citeyear{bodea}; Brooks et al. \citeyear{brooks}; Mosley \citeyear{mosley}; Maxfield \citeyear{maxfield}.}

A more explicit parallel to our work would consider reactions of sovereign bond markets to
specific macroeconomic events. Such an event study approach presents significant challenges;
most importantly, macroeconomic reforms aimed at fiscal consolidation or monetary restraint
typically are not legislated. They therefore rarely have precise start dates; and if they come
in the midst of market pressures, their arrival also is not a surprise to investors. Nevertheless,
one might use policy announcements related to central bank independence \cite{ranaldo}; Spiegel et al. \citeyear{spiegel}, announced changes to budgeting procedures, the release of budget
forecasts or major fiscal adjustments to conduct similar analyses.\footnote{For such an analysis at the EU level, see Afonso and Strauch \citeyear{afonso} study of events related to the 2002 operation of the Stability and Growth Pact.} Moreover, we might expect
that certain microeconomic reforms would affect equity, rather than sovereign bond, markets.
Some reforms, such as an increased role for private financial institutions in national pension
systems, or deregulation of specific product markets, should affect equity returns of publicly-traded firms in certain sectors. Of course, governments may be less sensitive to equity market
movements than to bond market changes, but this is nonetheless another way in which scholars
could gauge investors’ assessments of supply-side reforms.\footnote{See, for instance, Wilf (2016).}

With respect to equity markets, some event study-based evidence suggests sector- and firm-specific responses to anticipated policy changes. For instance, Wilf (2016; cited p. 17, p. 21) considers how stock returns for internationally-active, publicly-traded US banks are affected by events related to the negotiation of new international banking rules (Basel III). Related, Bechtel (2009) considers the response of German equity markets (the DAX index) to elections and coalition formation; his focus is less on sector- or firm-specific policy changes, however; rather, he considers how systemic market risk varies as a result of the political process (also see Sattler 2013 for a similar approach, considering a broader set of developed countries).

All told, our findings indicate that microeconomic reforms do not seem linked to rewards in sovereign debt markets and, therefore, to direct pressures from bond markets. Markets do respond with some consistency to changes in governments’ holdings of foreign reserves, but the single most important factor (in terms of statistical significance and substantive effect) is the broader state of global capital markets, captured by movements in the U.S. stock market. This latter finding is consistent with recent work (Longstaff et al. 2011; Miranda-Agrippino and Rey 2015) suggesting that international factors are more important for sovereign credit markets than anything that happens within countries (also see Brooks et al. 2015; Eichengreen and Mody 2000). And it also suggests that a lack of consensus among investors may offers greater flexibility to governments—in all but the most dire economic circumstances—when it comes to choosing and reforming supply-side policies.
References


41


Carlin, W., Soskice, D. et al. (2005), ‘Macroeconomics: imperfections, institutions, and policies’, *OUP Catalogue*.


Eichengreen, B. and Hausmann, R. (2005), ‘Original sin’, *Other people’s money: debt denomination and financial instability in emerging market economies* p. 266.


URL: https://www.ft.com/content/887e6754-6510-11e4-91b1-00144feabdc0


Pinto, P. M. (2013), *Partisan investment in the global economy: Why the left loves foreign direct investment and FDI loves the left*, Cambridge University Press.


Spilimbergo, M. A., Prati, M. A. and Ostry, M. J. D. (2009), *Structural reforms and economic performance in advanced and developing countries*, number 268, International Monetary Fund.


