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DISCUSSION PAPER SERIES

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ABSTRACT

Populism, Political Risk and the Economy: Lessons from Italy*

We study the effects on financial markets and real economic activity of changes in risk related to political events and policy announcements in Italy during the 2013-2019 period that saw the rise to power of populist parties. We focus on events that have implications for budgetary policy, debt sustainability and for Euro membership. We use changes in the Credit Default Swaps (CDS) spread on governments bonds around those dates as an instrument for shocks to policy and institutional risk – political risk for short – in the context of Local Projections - IV. We show that shocks associated with the rise of populist forces or their policies have adverse and sizable effects on financial markets. These negative effects were moderated by European institutions and domestic constitutional constraints. In addition, Italian political developments generate international spillover effects on the spreads of some other euro-zone countries. Finally, political risk shocks have a negative impact on the real economy, although the accommodating stance of monetary policy helped in cushioning their effect.

JEL Classification: E44, G10, H62, H63

Keywords: populism, political risk, policy uncertainty, sovereign debt, fiscal policy, CDS spread

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1 Introduction

The Italian experience during the sovereign debt and Lehman crises is a textbook case study of the adverse effects of financial market shocks on the real economy. The events following the end of the sovereign debt crisis provide, instead, an important lesson on the economic effects of the rise of populist movements and the weakening of more traditional pro-Europe parties. These political events generate shocks to risk associated with budgetary policies, debt sustainability, and the very prospects of continued Euro membership. In this paper, we investigate empirically the economic effects of policy and institutional risk shocks ("political risk shocks" for short) during the 2013-2019 period. Although our main objective is to asses the impact of these shocks on Italy's domestic financial markets and real economy, we also study spillover effects on other euro-zone countries' financial markets. While the Italian experience is interesting in its own right, the potential for such spillovers makes the analysis of the Italian case doubly important.

Even a cursory look at financial market data for Italy suggests that many of the significant fluctuations from 2013 onward – such as the upward jump of the sovereign CDS spread at the end of May 2018 and its fluctuations in the Fall of the same year – occurred as a result of important domestic political developments (see Figure 1). We build on this observation and assume that the change in the Italian sovereign CDS spread on the dates of political events (such as elections) and policy announcements is informative about the unobserved shocks to concerns associated with budgetary policies, government debt sustainability and Euro membership in Italy. This is a very reasonable hypothesis as the sovereign CDS spread reflects the probability of the government defaulting on its debt and the expected losses for bond holders in that case. This is particularly relevant for a country like Italy with a debt-to-GDP ratio around 130% and a GDP growth rate that, despite being mildly positive during most of our sample period, was significantly below the European average.[1]

We adopt the methodology discussed in Stock and Watson (2018) and use the change in the CDS spread for Italian government bonds on political and policy dates as an instrument for political risk shocks in the context of Local Projections (Jordà, 2005). We use the change in the spread for the sovereign CDS contract at each point in time as the indicator variable that is being instrumented (i.e., a unit change in political risk is associated with the unit change in the spread on impact).[2] In defining the instrument we focus on those dates on which general elections for the Italian and

[1]The growth rate was positive from the beginning of 2015 to the middle of 2018. It was negative in the last two quarters of 2018 and only mildly positive in 2019.

[2]The use of external instruments in Local Projections is also found in Fieldhouse et al. (2018). See also Stock and Watson (2012) and Mertens and Ravn (2013) for estimation of structural VARs using external instruments.

European parliaments took place, as well as the dates when the President of the Italian Republic chooses a political leader to attempt forming a government (*Incarico*). We also include the dates in which the budget law is introduced and later revised to be sent to the European Commission for approval, as well as replies of the Commission. Finally, we consider changes around the time of a few significant announcements, such as the formation of a novel coalition between the populist parties (Movimento 5 Stelle and Lega) after the last general elections (*Il Contratto*), and the recent withdrawal of one of the two parties (Lega) from the governing coalition.

We have argued that our instrument is relevant in the sense that changes in the CDS spread around the selected dates convey important information about political risk shocks. Two key additional assumptions are needed for instrument validity. The first one (contemporaneous exogeneity) requires that changes in sovereign CDS spread on the selected dates are orthogonal to the other structural shocks in the system occurring at the same time. This must hold conditionally on a set of controls that include in our case past values of Italian financial market variables, as well as the contemporaneous and past values of the log-change in the VIX and of the first principal component of the change in the CDS spreads for euro countries, plus the UK, to account for global shocks to financial markets. The choice of a narrow window of a day and of a limited number of dates is meant to maximize the probability that this is the case.[3] The second assumption (lead-lag exogeneity) requires our instrument to be also uncorrelated with leads and lags of all the shocks in the system. Under these assumptions, we obtain consistent estimates of the impulse response functions for political risk shocks.

To rule out the possibility that our results are driven by other shocks that we have not controlled for, we conduct a standard placebo test where we define our instrument as the change in the CDS spread on a randomly chosen set of dates. We find that this alternative choice of instrument leads to non-significant responses, supporting the notion that our results are not due to the existence of this type of background shocks.

We use the identification described above to analyze the effect of political risk shocks on financial markets using data at a daily and monthly frequency. Our evidence indicates that increases in political risk, associated with the rise to power of populist forces, have a powerful effect on financial variables: sovereign and bank CDS spreads as well as the BTP-Bund yield spreads increase, making government and bank borrowing more expensive, at the same time equity prices fall and implied equity volatility increases. In addition, political risk shocks also affect the difference between the spread for the 2014- and 2003-clause CDS contracts (defined as the ISDA basis) which captures the probability of redenomination and depreciation of the new currency in that case. Moreover, our shocks also affect the quanto spread, defined as the difference be-

[3] As a recent example of high frequency identification see Gertler and Karadi (2015) who use data on innovations of federal fund futures in a narrow window around Federal Open Market Committee (FOMC) communications as external instruments in the context of a VAR.

tween the spreads on the dollar-denominated and euro-denominated Italian sovereign CDS contracts, which reflects the probability of sovereign default and the associated expected depreciation of the euro relative to the dollar.

The evolution of the spreads around our selected dates also points to the importance of institutional constraints such as the European Commission and the Italian Presidency that have placed constraints on budgetary policies perceived as risky and on a repositioning of Italy with respect to the European fiscal rules and Euro membership. These constraints have triggered risk-decreasing shocks that have cushioned the increase in all the spreads and the negative effects on the stock market stemming from the rise and accession to power of the populist forces.

In addition to the domestic results, we present evidence that political risk shocks in Italy are transmitted to some of the other euro-zone economies. The effects on the sovereign CDS spread and/or the yield on government bonds relative to the Bund yield are both statistically and economically significant for some countries (Spain and Portugal and, to a lesser extent, France, Ireland and Germany). The existence of these spillover effects is one of the important results of our analysis because it makes what happens in Italy relevant for other euro countries as well.

Finally, we discuss why these shocks are likely to have adverse effects on the real economy and present some evidence using the monthly Purchasing Managers Index (PMI) and other leading indicators of real activity. In evaluating the response of the economy it is important to remember that the political shocks we have analyzed have occurred in the context of a large degree of monetary accommodation and the provision of ample liquidity by the European Central Bank. This has contributed to preventing Italian spreads from reaching the levels observed in 2011-2012 during the sovereign debt crisis. In addition, the strengthening of banks' balance sheets following the recapitalization exercises prompted by the European Banking Authority (EBA) stress tests and the reduction in the share of non-performing loans has allowed banks to deal with the increase in the spread in government and bank bonds and cushion its effect on lending rates.[4] All these factors have lessened the negative impact of the rise of populism on the economy in Italy.

The structure of the paper is as follows: in Section 2 we briefly discuss the relationship of our paper with the literature. Section 3 contains a detailed description of the construction of our instrument for political risk shocks. Section 4 describes the evolution of the CDS spreads for Italy and for some other euro-zone countries. In Section 5 we review the econometric methodology. In Section 6 we present the empirical results for financial market variables, first at a daily and then at a monthly frequency. We also discuss the spillover effects of an Italian political risk shock to the financial markets of other euro-zone countries. This section contains an extensive set of robustness checks

[4]See Section 7 and Footnote 50 for details.

and a placebo test. In Section 7 we discuss the channels of transmission of political risk shock to the real economy and present some evidence on this issue. Section 8 concludes the paper.

2 Related literature

Our paper contributes to the literature in several ways. The construction of our instrument for political risk shocks is related to the work of Kelly et al. (2016) who analyze the effects of political uncertainty around elections and global summits in twenty different countries on the implied volatility of stock option contracts.[5] They show that those options whose lives span political events tend to be more expensive. We share the event study orientation and the focus on high frequency financial market fluctuations to isolate exogenous shocks to political uncertainty or risk, but we differ in many dimensions. First of all, we focus on the concerns related to the Italian government budget and debt policies, and the positioning of the government vis à vis the European institutions. For this reason we choose as our instrument the change in the sovereign CDS spread, rather than the implied volatility of index options, as it better captures the consequences of budgetary choices on the sustainability of government debt, as well as the risk associated with Italy's position vis à vis the European fiscal rules, the Euro, and Europe as a whole. Moreover, while their focus is specifically on elections and global summits dates, we focus on a larger set of domestic political dates concerning elections, as well as government formation and budget law announcements. Finally, and most importantly, while their focus is on the effect of political uncertainty on the pricing of risk, our goal is to identify the causal effect of political risk on financial markets and the real economy by constructing an external instrument and using it in the context of Local Projections to quantify the effect on a range of financial variables and the real economy.

Our paper is also related to those studies that analyze theoretically and empirically the effects of economic uncertainty shocks on real variables. In this literature, an increase in uncertainty is modeled as an increase in the variance of future shocks and is shown to have negative real effects.[6] Within this vast field, our contribution is more

[5]They also use (the negative of) the poll spread about the election outcomes as their measure of political uncertainty and show in OLS regressions that it is positively correlated with an increase in the value of option protection against price and variance risks associated with elections. See also, in addition to Kelly et al. (2016), Pástor and Veronesi (2012) and Pástor and Veronesi (2013) for theoretical models of policy uncertainty and political uncertainty. See also Pástor and Veronesi (2018) for a model that endogeneizes the rise of populism as a response to trends in income inequality.

[6]Among others see, Bloom (2009), Leduc and Liu (2016), Basu and Bundick (2017), Bloom et al. (2018) and Alfaro et al. (2018). See Bloom (2014) for a survey. Moreover, Gilchrist et al. (2014) show how uncertainty shocks imply a rise in credit spreads increasing the user cost of capital and

closely related to those papers that focus on the economic effects of political uncertainty or political disagreement on the economy. Baker et al. (2016), for instance, build new indices of political uncertainty for the US and several other countries using textual analysis on national newspapers and show that innovations in those proxies negatively correlate with current and future domestic economic activity. In addition, Azzimonti (2018) uses textual analysis to build an index of political disagreement and finds a negative relationship between her index and aggregate investment in the US. Differently from those papers, we do not rely on textual analysis to define our political risk shock instrument but on the variation of the sovereign CDS spread around important political and policy dates. Moreover, focusing on high-frequency variations around selected dates allows us to identify causal effects of political risk (discussed briefly in the introduction and more fully in Section 3) without having to rely on the ordering of our variable in the context of a Cholesky decomposition.[7]

In this sense, our contribution bears a strong relationship to those papers which aim at identifying monetary policy shocks using high-frequency data (see, for instance, the recent contribution by Gertler and Karadi, 2015).[8] Moreover, our methodology is akin to that of papers studying the effect of fiscal policy (or regulatory policy) using external instruments based on a narrative approach in a VAR or Local Projections context, such as Mertens and Ravn (2013), Ramey and Zubairy (2018) and Fieldhouse et al. (2018). Our paper is also related to those contributions that use the narrative approach to assess the effects of fiscal consolidation in Europe after the financial crisis (Alesina et al., 2017 and Alesina et al., 2019), as on our dates news are revealed about fiscal policy.[9] In

thus inducing a decline in investment spending. Finally, Fernández-Villaverde et al. (2015) empirically estimate the effect of fiscal uncertainty in the context of DSGE and VAR models with stochastic conditional volatility, with adverse effects on the economy.

[7]Baker et al. (2016), for instance, place their Economic Policy Uncertainty index (EPU) at the top of the ordering – followed by financial and real variables – in their basic specification, which implies that it reacts only with a lag to all the other variables. Azzimonti (2018), instead, places her index of Historical Partisan Conflicts (HPC) in the middle of the ordering preceded by variables that represent war, recession periods and divided congress, and followed by the interest rate, investment and GDP. Both authors experiment with the ordering in their robustness exercises. See also Caldara et al. (2019) on the effect on investment of trade policy uncertainty where various proxies are used for uncertainty including one based on newspaper coverage.

[8]See also the earlier contribution by Kuttner (2001) who uses futures on Federal Funds Rate to disentangle the anticipated and unanticipated components of monetary policy interventions on bill, notes and bond yields. Similarly, Campbell et al. (2012) use statements during FOMC dates to identify different effects of forward guidance on financial and macroeconomic variables. Rigobon and Sack (2004) also use high-frequency data to identify monetary policy shocks.

[9]We are also related, although less closely, to Ramey and Shapiro (1998), Ramey (2011), and Romer and Romer (2010) who use a narrative approach to identify government spending or tax shocks. An important difference is that they use their measure directly as a proxy for the fiscal shocks and not as an instrument. Another difference is our use of a narrow-window identification strategy.

particular, our focus is what each event or announcement reveals about the probability of default on sovereign debt due to the chosen fiscal policies, about its recovery value due to the posture of the government vis à vis Euro membership, and about the general uncertainty generated along the way. We differ from those papers because we do not rely on a narrative approach to separate exogenous policy changes related to long term goals from those that respond to cyclical concerns about the economy. We base, instead, our identification strategy on high frequency identification to isolate exogenous sources of variation.

Finally, our analysis is related to papers that assess the possibility of contagion in financial markets across countries. Kremens (2019) and Cherubini (2019), for instance, start from the ISDA basis, i.e., the difference in the spreads on the 2014- and 2003-clause CDS contracts (the latter contract includes the redenomination of debt as a default event; the former does not for G7 or OECD investment-grade sovereigns, see Footnote 15 for details), and develop more complex measures of redenomination risk for the period after the sovereign debt crisis. These two papers analyze the correlation between measures of redenomination risk and redenomination-free credit risk (captured by the spread of the 2003-clause CDS contract) across euro-zone countries and their correlation with sovereign bond yield or CDS spreads in the period 2014 onward. They find that while Italian redenomination risk is not correlated with either the government bond yields or redenomination risk of other countries, those for France are. They conclude that France has spillover effects while Italy does not. The distinguishing feature of our paper is the fact that we go beyond descriptive evidence and correlations and employ an instrumenting strategy that allows us to identify the causal effect of Italian political risk shocks on both Italy and other euro-zone countries. In addition, we focus on the effect of political risk shocks while the other two papers put the emphasis on redenomination risk and its relation with or its importance relative to credit/default risk.

Other papers address the issue of spillovers or contagion in the periods that precedes the ascendancy of populism in Italy.[10] For instance, De Santis (2019) focuses on the difference in the spreads on the dollar- and euro-denominated 2003-clause CDS contracts (the "quanto" spread) during the sovereign debt crisis and immediately after it. He presents evidence on its effects on financial variables, such as sovereign yield spreads in

[10] Although the 5 Stelle movement had a good showing, the February 2013 elections saw the center-left coalition as the winner, leading to the formation of a succession of coalition governments that excluded the populist parties. In addition to the papers discussed in the text see also Gómez-Puig and Sosvilla-Rivero (2016) who show that Granger-Causality tests suggest the presence of bidirectional causality in sovereign yield spreads over Germany in the euro area during a sample period that includes the inception of the European Monetary System as well the Lehman and the sovereign debt crises. Moreover, Caporin et al. (2018), instead, find no evidence of contagion among euro-zone CDS spreads during the 2003 - 2006, November 2008 - November 2011, and December 2011 - December 2013 sample periods, using quantile regressions.

the context of a (FA)VAR in which the foreign redenomination risk is placed after the local quanto spread and concludes that Italy and Spain appear to be less affected from spillovers, while France is affected by foreign redenomination risk shocks. We differ from this paper in terms of the research question, the sample period and the identification strategy (not based, in our case, on the ordering in a Cholesky decomposition). Finally, Kelly et al. (2016), using a regression framework, find that election events in the US have a spillover effect on European equity option prices, while European summits have a spillover effect on US equity option prices.

In sum, there is mixed evidence on the existence of spillover effects across countries and no evidence supporting spillovers from Italy to the financial markets of other euro-zone countries in the more recent period. In addition, none of the contributions discussed above focuses on assessing the causal effect of domestic political risk shocks associated with populism on other countries, as we do.

3 Construction of the instrument for political risk

In this section we describe the construction of our instrument for policy and institutional risk shocks (again, political risk shocks for short). We then explain in Section 5 how this instrument can be used to identify the effect of political risk on the economy in the context of Local Projections - Instrumental Variables (LP-IV). The construction of this instrument is based on: 1) selecting dates around which there may have been important changes in political risk; 2) choosing a variable that best captures such changes.

We argue that the CDS spread on sovereign bonds summarizes neatly the policy and institutional risk that we want to capture and its variation around the events we have selected. We then use the change in the closing value of the CDS spread between the day before the event and the day of the event as an instrument for political risk shocks.

3.1 Choice of events

We focus on political events around which new information may be revealed concerning: the general direction of fiscal policy, the relationship with the European Commission (that has the formal responsibility of passing judgment on member countries' budgetary and debt policies), Italian membership in the Euro, and its stance with respect to European institutions. The information may be noisy (but this does not prevent us from using it as an instrument; see below for details) and may contribute to either an increase or decrease in uncertainty about policies. We concentrate on the period after the sovereign debt crisis because this is the time that saw a strengthening of populist movements: indeed in the 2013 elections the Movimento 5 Stelle gained a large share of the votes and it was just edged out by the Partito Democratico (PD) that managed to form a succession of coalition governments.[11] This all ended with the general elections in March 2018 that saw the Movimento 5 Stelle as the major winner, with the Lega in third position, and opened the door to a coalition government between the these two parties that lasted until the summer of 2019.

The dates we consider are: 1) Italian general political elections for the House and the Senate, as well as elections for the European Parliament; 2) the appointment (*incarico*) by the President of the Republic of a designated Prime Minister (who is in most cases, but not all, later approved by parliament); 3) the presentation of the budget law (*Documento di Economia e Finanza*, DEF) in the spring and the subsequent revision in the second half of the year that is then submitted to the European Commission (*Nota di Aggiornamento* to DEF and Draft Budgetary Plan); 4) other important political announcements regarding the agreement of the populist parties (Movimento 5 Stelle and Lega) on a contract to form a government (*Il Contratto*) or the dissolution of their governing coalition (see Table 1).

Our choice of the estimation period is motivated by the fact that we want to avoid times in which international financial shocks were the main drivers of both economic and political developments. In addition, during the period under consideration these dates are either predetermined by the electoral calendar, or follow political conventions or political developments that are largely uncorrelated with recent economic development, although they may be partly the results of long-run trends in the Italian economy. Note that this characterization would be incorrect for the period before 2013.[12] In any case, we will discuss the conditions under which the instrument strategy we propose is legitimate in Section 5.

3.2 Using the sovereign CDS spread on selected dates as an instrument

This subsection describes how we measure changes in political risk occurring around our dates of interest. We then use this variable as an instrument in the context of Local Projections (see Section 5). More precisely, we want to capture how political events and policy announcements impact the perceived riskiness associated with budgetary and debt policies and their sustainability, as well as with the more general uncertainty

[11]These governments were led by Letta, Renzi and Gentiloni, after Renzi's resignation following his defeat in the referendum on constitutional reform in December 2016.

[12]For instance the appointment of Mario Monti as prime minister in November 2011, following the resignation of Silvio Berlusconi, was determined by the need of prompt correcting actions at the height of the sovereign debt crisis.

associated with changes in the posture of Italian governments with respect to the European Union and Euro membership. The best variable to summarize these risks is the CDS spread on Italian government bonds. Recall that the CDS spread is essentially an insurance premium that reflects the probability of default and the expected loss in that case and a risk adjustment.

As a simple illustrative example, let s_{k0} denote the spread on a CDS contract on an underlying one-period bond with one euro notional principal, having issuer k as the reference entity (the Italian government or a bank, in our case). Assume the premium is paid at the beginning of the period.[13] Let α_{k1} denote the recovery value in the event of default with $\alpha_{k1} \in [0, 1]$. The payoff to the protection buyer is therefore the random variable c_{k1} which equals $1 - \alpha_{k1}$ with probability π_{k0}, where π_{k0} represents the default probability, and is zero otherwise. Hence, we have:

$$\begin{aligned} s_{k0} &= E_0(m_1 c_{k1}) \\ &= \frac{E_0(c_{k1})}{1+r_0} + \mathrm{cov}_0(m_1, c_{k1}) \\ &= \frac{\pi_{k0} \times E_0\{1 - \alpha_{k1} | \alpha_{k1} < 1\}}{1+r_0} + \mathrm{cov}_0(m_1, c_{k1}), \end{aligned} \tag{1}$$

where r_0 denotes the current risk-free rate and m_1 is the stochastic discount factor.[14] Hence, there are three sources of CDS spread volatility: i) the objective default probability π_{kt}; ii) the expected loss given default $E_t\{1 - \alpha_{k,t+1} | \alpha_{k,t+1} < 1\}$; iii) a "risk adjustment" effect, $\mathrm{cov}_t(m_{t+1}, c_{k,t+1})$.

Note that in reality there are *two* types of CDS contracts available on the market. One contract uses the 2014 definition of a "credit events" which includes redenomination of Italian debt. The other contract uses the 2003 definition, which does not consider currency redenomination as a default event.[15]

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[13] Note that, in practice, since 2009, in addition to the upfront spread, the protection buyer pays a quarterly running spread. In fact, CDS contracts are quoted on a running spread basis which is directly comparable to the default spread on the bond whose face value is been insured.

[14] Notice that, in deriving Equation 1 we used $E_0(c_{k1}) = \pi_{k0} \times E_0\{1 - \alpha_{k1} \mid \alpha_{k1} < 1\}$ and $E_0(m_1) = \frac{1}{1+r_0}$. We could also have written the equation for the spread in terms of risk-adjusted expectations, $\tilde{E}(\cdot)$. In that case,

$$s_{k0} = E_0(m_1 c_{k1}) = \frac{\tilde{E}_0(c_{k1})}{1+r_0} = \frac{\tilde{\pi}_{k0} \times \tilde{E}_0(1 - \alpha_{k1} | \alpha_{k1} < 1)}{1+r_0}$$

where $\tilde{E}_0(x) = E_0\left[\frac{m_1}{E_0(m_1)} x\right]$ and $\tilde{\pi}_{k0} = \frac{m_1^d}{E_0(m_1)} \times \pi_{k0}$ is the risk-adjusted probability of default and m_1^d is the realization of the stochastic discount factor in the default state.

[15] More precisely, the redenomination by a G7 country or an OECD country with an investment-grade government debt was not considered a credit event in the 2003-clause CDS contract. It is, instead, considered a default event in the 2014-clause contract if the switch is to a new currency that is not the US dollar, the Canadian dollar, the British pound, the Japanese yen and the Swiss franc and it results in a loss for the investors. Note that the 2014-clause CDS series is only available from

The 2014- and 2003-clause CDS contracts can either be denominated in euros or in US dollars. The dollar-denominated contract protects against the depreciation of the euro relative to the US dollar in case of default on Italian sovereign bonds. It is a more liquid contract than the euro-denominated one and the spread, for corresponding maturities, is more closely aligned with the BTP-Bund spread.

Equation 1 describes well the euro-denominated 2003-clause CDS contract (denoting the premium on that contract as $s_{k0,03}$ and the payoff $c_{k1,03}$). The spread for the euro-denominated 2014-clause CDS contract, that includes redenomination as a default event, can be written as,

$$\begin{aligned} s_{k0,14} &= E_0(m_1 c_{k1,14}) \\ &= \frac{\pi^d_{k0} \times E_0\{1-\alpha_{k1}|\alpha_{k1}<1\} + \pi^r_{k0} \times E_0\{1-\lambda_{k1}|\lambda_{k1}<1\}}{1+r_0} \\ &+ \operatorname{cov}_0(m_1, c_{k1,14}), \end{aligned} \tag{2}$$

where $c_{k1,14}$ equals: (i) $1-\alpha_{k1}$, with $\alpha_{k1}<1$, with probability π^d_{k0} in case of default but no redenomination; (ii) $1-\lambda_{k1}$, where $\lambda_{k1}<1$ equals the euro per new currency (Lira) exchange rate at time 1, with probability π^r_{k0} when there is redenomination but no other default event; and (iii) zero otherwise. We are assuming here that default and redenomination are mutually exclusive events. Thus, the spread for the euro-denominated 2014-clause CDS contract, in addition to the risk of default, captures the probability of Italy exiting the Euro and the depreciation of the new currency relative to the euro if that were to happen.[16]

If the CDS contracts are denominated in dollars the corresponding equations for their spreads ($s^{\$}_{k0,03}$ and $s^{\$}_{k0,14}$) are identical in form to Equation 1 and 2 with payoffs equal to the previous ones times e_1/e_0, where e_t is the euro per dollar exchange rate at time t, i.e., $c^{\$}_{k1,i} = c_{k1,i} \times e_1/e_0$ with $i = 03, 14$; $c_{k1,i}$ are defined in Equations 1 and 2.

4 Evolution of CDS spreads and political events in Italy

In this section, we summarize the evolution of various CDS spreads on sovereign and bank bonds for Italy and we compare it with that of other euro-zone countries. We then discuss the political evolution in Italy and show how it is reflected in changes in the sovereign CDS spread around our selected dates, our instrument of choice for political risk shocks.

mid-September 2014, while the 2003-clause CDS contract is available also for the earlier periods. See the Appendix A for more details on the data used in the empirical analysis.

[16]Note that the risk adjustment term for the 2014-clause CDS contract, $\operatorname{cov}_0(m_1, c_{k1,14})$, differs from the risk adjustment for the 2003-clause CDS contract, $\operatorname{cov}_0(m_1, c_{k1,03})$.

4.1 CDS spreads in Italy and in other euro-zone countries

Both 2003- and 2014-clause sovereign CDS spreads (CDSITA03 and CDSITA14, respectively) for the dollar-denominated (USD) contracts with five-years maturity are reported in Figure 1.[17] The series move largely together until more recently. The former declined substantially during 2013 and 2014 from the peak of 591 basis points reached at the height of the sovereign-debt crisis (15 November 2011, then followed by a second peak of 558 basis points, in mid-June 2012), continuing the downward movement that followed the the "Whatever it Takes" speech by Mario Draghi in July 2012 and the announcement of the government bond purchasing program of countries under distress (the Outright Monetary Transactions program).[18] CDSITA03 and CDSITA14 fluctuate together between 80 and 180 basis points until the beginning of 2017, but then they begin to diverge. Both series first decrease, reaching the lowest point in the end of April 2018 (58 and 85 basis points, respectively), although CDSITA14 starts decreasing later and it remains 30 basis points above CDSITA03. Most importantly, starting from June the two contracts diverge very substantially, with CDSITA14 displaying much larger increases, reaching 286 basis points in mid-November 2018. CDSITA03 also increases but only to 177 basis points, with the difference reflecting an increase in redenomination risk.[19]

In Figure 2 we focus on CDSITA14 and report both the spread for the dollar and euro denominations with the 5-year BTP-Bund spread. We can observe, as noted above, that the spread on the dollar-denominated sovereign CDS contract is more similar to the BTP-Bund spread for corresponding maturities. However, all the spreads move largely together. For instance, the correlation coefficient of the CDS spread for the 2014-clause contract denominated in dollars and euros is 0.985. The correlation coefficient between the spread on the dollar-denominated sovereign CDS contract and the BTP-Bund spread for 5-years and 10 years bond are respectively 0.966 and 0.947.

The spreads on the dollar-denominated CDS contracts for bank bonds with 5-year maturity are reported in Figure 3.[20] There is little difference between the 2003- and

[17]In the paper we focus on the dollar-denominated CDS contracts and for simplicity and when there is no ambiguity we will not use "dollar-denominated" or "USD" in the variable definition when we refer to it in the text.

[18] The introduction by the ECB of long term financing facilities for banks in 2011 helped, but was not enough on its own to stem the increase in the spread.

[19]The difference between CDSITA14 and CDSITA03 has also been highlighted by Minenna (2017), Ignazio Visco, Governor of the Bank of Italy (Visco, 2018), Gros (2018) and Balduzzi et al. (2018a).

[20]CDS indices for the Italian banking sector are computed by weighing the bank-specific CDS spread for the relative size of the reference entity (measured in terms of bank's total assets). Notice that, because we want to avoid jumps in the indices that are solely induced by the availability of CDS spreads (for some banks, CDS started being priced in the middle of our period of interest and other

the 2014-clause of default in the two bank bonds CDS contracts (CDSBANK03 and CDSBANK14, respectively). Both of them tend to follow more closely in recent times the CDS spread for government bonds, inclusive of redenomination risk, CDSITA14. This figures makes the general point that a worsening outlook for Italian government debt negatively affects banks valuations. This is largely due to the fact that Italian banks hold a substantial share of their portfolio in government bonds.

Comparing the Italian spreads with those of other euro-zone countries, we realize immediately that the recent Italian woes are entirely home grown. In Figure 4, we compare the CDS spread of the Italian sovereign 2003-clause contract with those of France, Germany, Ireland, Portugal and Spain during the period 2012-2019. The CDS spreads reached their peak during the sovereign debt crisis. Note that at that time the CDS spread for Portugal, Ireland and Spain exceeded the one for Italy.[21] In contrast, in the more recent period and in particular since the middle of 2018 the spread for Italy has been above the one for Spain, Ireland and even Portugal. The difference is even greater if we use the 2014 definition that includes Italy's exit from the Euro as a default event. This can be seen in Figure 5 where we report the spread for the 2014-clause CDS contracts for the same set of countries of Figure 4. For instance, while the spread for Portugal was greater than the spread for Italy until 2017, it has become much smaller particularly since the second half of 2018. The spread for Spain, and even more so for Ireland, is well below the Italian spread during the entire 2014-2019 period. "Ocular econometrics" also suggests that the spike in the CDS spread for Italy in the late spring of 2018, at the time of the formation of the populist government, is associated with the spikes in the other euro-zone countries although the size of such spike is smaller and varies across countries: larger for Portugal and Spain followed, in order, by Ireland, France and Germany. We will discuss whether there is a causal effect of Italian political risk shocks on the spreads of other countries in Section 6.4.

The real performance and budgetary and debt situation for the same countries is summarized in Table 2. What distinguishes Italy is the high debt-to-GDP ratio and a weak performance of the real economy. The debt-to-GDP ratio climbed over the crisis from 116.5% to 129.0% in 2013. It touched a peak of almost 132% in 2014 and then it stabilized around 131% until 2017, with a small increase to 132% in 2018.[22] Moreover, the growth rate of GDP per capita was below the European average. For instance,

instruments ceased being available), we focus on the subsample of banks with complete CDS data in the 2013-2019 time span (Unicredit, Intesa Sanpaolo, Monte dei Paschi di Siena, and Mediobanca). It is worth noting, that we have included the largest banking groups and that the CDS of the excluded banks still tend to comove with those of the included banks.

[21]Recall also that Ireland received assistance from the European Stability Mechanism (ESM) in the period 2011-2013, Portugal in the period 2011-2014. Spain received two disbursement from ESM in December 2012 and February 2013.

[22]The increase in the debt to GDP ratio was mostly due to the behavior of the denominator during and after the Lehman and sovereign debt crises.

during the period 2013-2018 the Italian growth rate was 0.45% while the average for the original 12 Euro countries was 1.58%. Moreover, the growth rate of multi-factor productivity (MFP) was essentially zero (although the disappointing performance of MFP growth was shared by many other European countries). Note also the substantial primary surplus that has characterized the Italian government budget after the sovereign debt crisis.

4.2 Change in the sovereign CDS spread around political and policy events

Let us focus now on the relationship between political and policy events and the evolution of the CDS spreads. Figures 6 and 7 report the change in the CDS spread on government bonds for 2003- and 2014-clause contracts (in USD) around our event dates that we use as measure of shocks to political risk for the January 2013–August 2019 period. For context, note that in 2011 the Berlusconi government resigns and is replaced by the "technical" Monti government in an attempt to address the financial market crisis that lead to an increase in government bond yields to above 7%. The government implements a consolidation plan, consisting prevalently of tax increases, but including also a reform of the pension system that put it on a more sustainable path (Alesina et al., 2019). The total fiscal adjustment was close to six percentage points of GDP during the 2011-2012 period.

The 2013 general election is characterized by an increase in our measure for political risk shocks, followed by a period of relative quiet during the Letta Government and the initial period of the Renzi governments, both supported by a coalition of traditional parties, with the center left in the driving seat. Both governments accepted the need for fiscal stability. Later in 2014, however, the Renzi government pushes for greater budget flexibility and this leads to testy exchanges with the European Commission that are reflected in an increase in the spread around those dates. The loss by Renzi in the constitutional referendum in December 2016 does not generate an increase in our measure of political risk. Actually the choice of Paolo Gentiloni as Prime Minister leads to a decrease in the CDS spread. Things remain relatively uneventful during the Gentiloni government, although the European Commission raised concerns for the insufficient progress in debt reduction and for its future evolution.

Things change dramatically afterwards. The political elections of March 2018 characterized by the success of the populist parties (Movimento 5 Stelle and Lega) do not immediately lead to a change in perceived political risk. However, there are drastic increases in the spread in correspondence of the announcement of the contract between the 5 Stelle and Lega parties to govern together in May, which outlined the intention of pursuing a very expansionary fiscal policy based on an increase in welfare payments

(*Reddito di Cittadinanza*) and a lowering of the retirement age (*Quota 100*). This challenged and put in doubt Italy's commitments to a structural primary budget surplus to reduce the debt-to-GDP ratio. Concerns about the proposed budget policy were enhanced by the intention of the new populist government in the making, led by prime minister designate Giuseppe Conte, to propose Paolo Savona, an economist that has expressed opposition to Italian membership in the Euro, to the position of Minister of Economy and Finance (the main economic post in the Italian government). All this was accompanied by an increase in the sovereign CDS spread above 250 basis points in May 2018. This increase was in part reversed following the opposition of the President of the Republic, Sergio Mattarella, who imposed the choice of a more moderate Minister of Economy, Giovanni Tria. Another upward movement in the spread occurred after the drafting of the budget law that contemplated a budget deficit of 2.4 percent of GDP, and its subsequent rejection by the European Commission. The achievement of a compromise with a deficit reduced to 2.04 percentage points of GDP and the introduction of automatic increases in VAT and gasoline taxes in 2020 and 2021 in case of a deterioration of the fiscal outlook, brought some respite, but the cumulated shocks over the period capture the market increasing concerns about budgetary sustainability and Italy's position concerning fiscal rules and the Euro. Without these political risk shocks it is not possible to explain the evolution of financial markets, and in particular of the CDS spread and BTP-Bund spread in the second half of 2018. Increases in the spreads are noticeable in 2019 in correspondence of the European elections (that resulted in a success for the Lega), of the announcement of the intention to introduce MiniBOT as a way to pay debts of the Public Administration to the private sector (interpreted by the markets as a potential precursor to a new currency) and the opening of the Commission procedure for excessive debt against Italy. Following the downward adjustment to the budget deficit by the Italian Government and the decision by the Commission not to proceed the sovereign spreads fell below 200 basis points. Even then, they remained higher than those for any other Euro country, except Greece. The decision of the Lega in early August to withdraw from the coalition government with the party has been associated with an increase of the spread to levels again above the 200 basis point mark.

This overall picture highlights the sensitivity of the spreads to events and actions that raise doubts about the sustainability of government debts and fiscal stability and that increase uncertainty about the Italian position in Europe or about future policies. At the same time it points to the importance of institutional constraints such the European Commission and the Italian Presidency that act as a break against risky fiscal policies and/or a repositioning of Italy with respect to the fiscal rules and the Euro. Finally, one needs to remember that the spreads have been affected by the accommodating stance and by the provision of ample liquidity to the banking sector that has characterized the European Central Bank policy during this entire period. This has contributed, together with the institutional breaks just mentioned, to keeping the spreads for Italy from skyrocketing and reaching the levels observed during the sovereign debt crisis.

5 Econometric methodology

To assess the effects of policy and institutional risk we rely on the LP-IV (Local Projections - Instrumental Variables) estimator for both financial and real variables.[23] Moreover, we opt for LP-IV instead of simply using the change in the sovereign CDS spread on our selected dates as a proxy in non-instrumented LP, because our measure for policy and institutional risk - most likely - captures only a part of the shock (i.e., there is relevant news on policy and institutional risk that is not released in our dates). In other words, our measure is not the true shock, but it can be used as an instrument for it. More precisely, under the assumption of linearity and stationarity, the dynamic effect $\Theta^i_{1,h}$ of political risk shock $\varepsilon_{1,t}$ on variable $Y_{i,t}$ is:

$$Y_{i,t+h} = \Theta^i_{1,h}\varepsilon_{1,t} + u^i_{1,t+h}. \tag{3}$$

Because we can only observe an instrument Z_t for the shock $\varepsilon_{1,t}$, we estimate $\Theta^i_{1,h}$ via LP-IV. More specifically, we normalize $\varepsilon_{1,t}$ so that a unit increase in $\varepsilon_{1,t}$ generates a unit increase in $Y_{1,t}$ ($\Theta^1_{1,0} = 1$), defined from now on as the indicator variable. In our case, we assume that a change in political risk leads to a one-for-one change increase in the sovereign CDS spread.[24] Moreover, we add a set of control variables to Equation 3 to reduce the sampling variance of the IV estimator and to make certain that the conditions that assure its validity are satisfied (see below). We can then write,

$$Y_{i,t+h} = \Theta^i_{1,h}Y_{1,t} + \delta W_t + u^{i\perp}_{1,t+h} \tag{4}$$

where W_t is a vector of contemporaneous and lagged controls, and $u^\perp_t = u_t - Proj(u_t|W_t)$.

Following Stock and Watson (2018), Z_t is a valid instrument if it satisfies:

1. $E(\varepsilon^\perp_{1,t}Z^\perp_t) = \beta \neq 0$ (relevance)
2. $E(\varepsilon^\perp_{2:n,t}Z^\perp_t) = 0$ (contemporaneous exogeneity)

[23] One reason why we employ LP-IV is because there is evidence in our dataset against invertibility which precludes the use of SVAR-IV. See Stock and Watson (2018), Section 2.2 and 2.3 for a discussion on invertibility. More precisely, we use the estimation strategy and apply the invertibility test discussed in Section 3 by Stock and Watson (2018) and we largely reject the null hypothesis of invertibility. See also Forni and Gambetti (2014) for a discussion on the concept of invertibility and a different test for it. In any case, in the robustness section we will also present results based on a Cholesky decomposition where we amend the information deficiency in our VAR system.

[24] Notice that differently from other cases mostly encountered in Microeconomics, here we do not observe the shock/treatment which implies that the scale of the impulse responses is indeterminate. This ambiguity is solved by a normalization assumption.

3. $E(\varepsilon_{t+j}^{\perp} Z_t^{\perp}) = 0$ for $j \neq 0$ (lead-lag exogeneity).

In essence, the exogeneity conditions require the instrument to be contemporaneously uncorrelated with all the other shocks driving the economy (shocks to international financial markets, trade shocks, monetary policy shocks, etc.) and also uncorrelated at any leads and lags with each shock of the system. Both conditions have to hold conditional on controlling for past and contemporaneous information contained in W_t the elements of which will be discussed below.

Equation 4 can be rewritten as $Y_{i,t+h}^{\perp} = \Theta_{1,h}^{i} Y_{1,t}^{\perp} + u_{1,t+h}^{i\perp}$ where $x_t^{\perp} = x_t - \text{Proj}(x_t|W_t)$. Using conditions 1.-3., $\Theta_{1,h}^{i}$ can be estimated following standard IV procedures:

$$\Theta_{1,h}^{i} = \frac{E(Y_{i,t+h}^{\perp} Z_t^{\perp})}{E(Y_{1t}^{\perp} Z_t^{\perp})}. \tag{5}$$

In our specific case, Z_t represents our instrument constructed as the change in the closing value of the CDS spread between the day before the event and the day of the event controlling for a set of variables W_t. This is equivalent to use the unforecastable part of Z_t as an instrument. In addition, Y_t represents a set of outcomes variables discussed in details at the beginning of Section 6.1 and 6.2.

When we use daily data, we include sovereign and banks CDS spreads, BTP-Bund spreads, stock market returns and implied volatility, all in first differences. $Y_{1,t}$, our indicator variable, is the series of the sovereign CDS spread in first differences, so that a unit shock in financial risk is normalized to generate a unit increase in the sovereign CDS spread. W_t is a vector of controls which includes past realizations of Z_t and Y_t, and contemporaneous and lagged values of the log-change in the VIX and of the first principal component of the change in the CDS spreads for euro countries (excluding Greece and Italy), plus the UK. We use the last two variables to control for global factors affecting financial variables.[25] One can give an intuitive interpretation of this procedure. Suppose $Y_{i,t}$ is the FTSE MIB index (the benchmark stock market index for Italy). Then, the causal effect of a policy and institutional risk shock on Italian stock prices is estimated by regressing the change in the log of the FTSE index on the change

[25] For instance, Longstaff et al. (2011) find that there is a high degree of commonality in sovereign credit spreads across countries suggesting that they are driven more by global market factors than by country-specific fundamentals. The exclusion of Greece in calculating the first principal component is due to the lack of observations of its CDS spread because its market was not operative between March 2012 and June 2013 and, even after that, it took time for the level of activity to recover. The exclusion of Italy is motivate by the fact that the change in the CDS spread appears also as a dependent variable. In any case, the inclusion of Italy (and/or Greece when the data are available) leads to similar conclusions. In addition, note that if we run a regression of the first differences in CDS spreads on past changes of the CDS itself and on past changes of the other financial variables, we find that it contains a statistically significant but very small predictable component. Then, since our instrument is the change of the CDS on certain dates, the inclusion of a set of lagged controls help us to satisfy the lead-lag exogeneity condition.

in the sovereign CDS spread using the change in the latter on our selected dates as an instrument.

The conditions for instrument validity require, in addition, the instrument to be informative about political risk (instrument relevance). This does not mean that it must capture all of the political risk shock series but it must be correlated with it. Therefore, it is alright to omit dates in which additional information is revealed about political risk, provided that the included dates capture enough variation such that they generate a first stage regression with satisfactory explanatory power. This is what happens in our case and we will discuss the strength of our first stage results below.

6 Effects on financial markets

In this section, we present results on the effects of political risk shocks on financial variables. First, we focus on daily domestic financial variables and then we provide evidence at a monthly frequency. We also discuss the effect on the quanto spread and redenomination risk. Finally, we discuss the spillover effects of Italian political risk shocks to other euro countries. The section concludes with a set of robustness checks and a placebo test.

In our basic daily results, we use the the change in the CDS spread for the 2014-clause contract as an instrument because it provides a more comprehensive measure of the riskiness of government debt. For our monthly results, we use instead the change in the CDS spread for the 2003-clause contract because it is available for a longer period of time and it allows for more precise estimates in that context. Each contract is available in either dollars or euro denomination. We rely mostly on the spreads on the dollar-denominated sovereign CDS contracts because the underlying markets are more liquid.

The relevance of our instrument is confirmed by the first stage regressions. At a daily frequency, when using the changes in the CDS spread of the 2014-clause contract denominated in dollars as the indicator variable and its value on selected dates as the instrument, the coefficient on our instrument is positive and highly significant with a t-statistic which is always around 8.[26] Analogously, at a monthly frequency – where the instrument is summed over this longer period – the same coefficient is positive and significant with a t-statistic around 5. If we add the change in the spread on the 2003 CDS contract as an additional instrument, its coefficient is non-significant in the first stage regression while the change in the CDS spread in the 2014-clause contract

[26]Note that a t-static around eight implies a F-test of about 64 which exceeds the usual threshold of 10 often used to check whether the instrument is weak (Staiger and Stock, 1997).

remains highly significant.[27] In the same vein we have also added to the change in the CDS spread of the 2014-clause contract the change in the log of FTSE MIB and of its implied volatility around our selected dates as instruments, their coefficients are jointly and individually insignificant in the first stage regression. Therefore, we will continue to use only the change in CDSITA14 as an instrument in our basic results.

6.1 Main results on daily data

We start from the results obtained using daily financial data. In particular, we focus on the impulse responses of the CDS spread for Italian government bonds, the BTP-Bund spread at 5- and 10-year horizon, the CDS spread for bank issued bonds (with 5-year maturity), the log change of the FTSE MIB index (the benchmark stock market index for Italy), and the log of its implied volatility. In order to satisfy the exogeneity conditions, in each regression we control for 4 lags of all the previous variables, 4 lags of the instrument itself and for the present value and three lags of the log-change in the VIX and of the first principal component of the change in the CDS spreads of the dollar-denominated 2014-clause contract for euro countries (excluding Greece and Italy), plus the UK (PCΔCDS14 for short). Since all the endogenous variables are non-stationary, we employ the LP-IV procedure on their first differences which we then cumulate when we plot impulse response functions.

In Figure 8 we report the impulse response function obtained using the change in the CDS spread for the dollar-denominated 2014-clause contract (CDSITA14) as instrument on daily data using four lags of the control variables.[28] The estimation period is from September 23, 2014 (the first available date for the 2014-clause contract) to August 12, 2019 covering the experiences of center-left governments that followed the Monti government and of the first populist government until its fall at the beginning of August 2019. In the first graph we present the impulse response function of the level of the sovereign CDS spread in USD (obtained by cumulating the estimated effect on the change of the CDS spread).[29] The impulse response is normalized to one on impact and it builds to around two after four working days. This suggests that it takes time for the

[27]Note that if we re-parametrize the equation including the changes in both spreads and use as regressors the change in the CDS spread for the 2003-clause contract (as a measure of credit risk) and the difference between the change in the CDS spreads for the 2014- and 2003-clause contracts (as a measure of redenomination risk, defined in the literature as the ISDA basis), both coefficients are statistically significant, which means that both redenomination and credit risk are important. The coefficient for redenomination risk is twice the size of the one for credit risk but the difference is not statistically significant.

[28]The confidence intervals are obtained using the block bootstrap method by Kilian and Kim (2011). See the Appendix B for more information.

[29]The responses of the spread on the euro-denominated 2014-clause CDS contract are essentially identical and are not reported.

peak of the effect to be realized as the implications contained in the shock are decoded and the investment or risk mitigation strategies are implemented. The responses are highly significant and one can also reject the hypothesis that the response after four days is equal to the impact response at the 5% significance level.[30] Note, moreover, that even after 21 working days the response remains above one.

The impulse response of the BTP-Bund spread on bond with five years remaining maturity also builds from 1 to 2.5 percentage points and equals approximately 2 percentage points even after three weeks (the effect on the 10-years BTP-Bund spread is slightly smaller). An increase in the yield of 200 basis points translates into an annual increase in the cost of debt of approximately half of a percentage point of Italian GDP (roughly 8/9 billions euros in 2018). There is also a significant and persistent response of the CDS spread on bank bonds, although its size is somewhat smaller as it fluctuates between 0.5 and 1.5. We will discuss in Section 7 how that can be rationalized in the light of the accommodating policies of the European Central Bank and the improved balance sheets of Italian banks. Political risk shocks have also significant negative effects on stock market returns, as measured by the FTSE, as well as on stock market volatility (the latter at the 10% significance level).

These effects are economically significant, particularly the ones on the spreads. For instance, the adverse political risk shock associated with the results of the 2018-elections (that saw the success of the populist parties) and the announcement of the appointment of Giuseppe Conte as prime minister of a Lega-government (with the Euro-skeptic Paolo Savona as the presumed Minister of Economy and Finance), resulted, respectively, in 7 and 16 basis point change in the sovereign CDS spread. These two shocks alone would have generated a sustained change in the BTP-Bund spread of about 45 basis points.[31] Conversely, the intervention of President Mattarella that lead to a second mandate to Giuseppe Conte to form a government (with Paolo Savona in the less important position of Minister for European Affairs) was associated with an initial drop of the sovereign CDS spread of 19 basis points that reversed most of the 5-year BTP-Bund spread increase. The impulse response functions for the spreads also emphasize the substantial moderating effect of the European Commission interventions. In particular, when the European Commission accepted the revised draft budgetary plan because now in line with the EU fiscal rules, we register a drop in the sovereign CDS spread of about 13 basis points which moderated, but did not nullify, the increase in the spreads due to the market reactions to the initial budget drafts that allowed for a larger deficit.[32] As

[30]This can be seen in the Online Appendix, Section 3 where we report the distribution of the difference between the impact and the 4th day response constructed using 2000 block-bootstrap replications.

[31]Professor Paolo Savona is well-know to have a critical view of the Euro and European Union in general and was the main author of a plan of how Italy could exit the Euro (Plan B).

[32]The European Commission rejected the first draft because considered to be unsustainable given the fiscal rules set by the EU. After a series of letters, November 21, 2018 the European Commissions

we have already observed, the effects on stock market returns of political risk shocks are not as large as those for the spreads but remain sizable, generating a one-percentage-point decrease in returns for each 10-basis-points increase in the sovereign CDS spreads that are frequently observed around political and policy dates.

Another way to think about the quantitative effects is to observe that the 5-years BTP-Bund spread fluctuated around an average value of 216 basis points during the populist government, which represents a 120 basis points increase relative the average from September 2014 to the day of the Contract between Lega and Movimento 5 Stelle. If we cumulate over this period the changes in the sovereign CDS spread around political and policy dates we obtain a value of around 35 basis points. This cumulated change in our instrument can "account" for a large fraction of the observed BTP-Bund spread change (approximately 70 basis points out of the 120 basis points change between the two periods) if we assume a long-run impulse response of around two.

A more rigorous way to assess the quantitative importance of political risk shocks is to calculate the forecast error variance decomposition. We rely on Gorodnichenko and Lee (2017) and Plagborg-Møller and Wolf (2018). In particular, since we do not observe the true shock, the point estimate can be interpreted as a lower bound of the forecasted error variance explained by political risk shocks. In Figure 9, we show the daily forecast error variance decomposition. Risk shocks explain at least a 10% of the variability of financial variables over time. Although this quantity may seem not large, there are two elements that need to be taken into account to correctly interpret this result. First of all, as emphasized above, this is a lower bound, and the less precise is our instrument on a daily basis the larger is the bias between the true value and our estimate. Secondly, financial variables at a daily frequency are extremely noisy and are continuously buffeted by a stream of news, while our instrument is based on selected few dates that represent only around 4% of all the total number of days used in estimation.

6.2 Main results on monthly data

In this section we present the results obtained using monthly financial data. In particular, we want to explore if the results presented Section 6.1 are preserved when we focus on observations at a monthly frequency.[33] Note that the monthly counterpart of our instrument for political risk shocks is the sum (at a monthly level) of the residual of a regression of our daily instrument on four lags of the sovereign CDS, the bank

and the Lega-5Stelle government finally found an agreement and the European Commission accepted the revised draft with a deficit to GDP ratio of 2.04 percentage points, instead of 2.4 percentage points, and with a clause on automatic increases in VAT if budget goals were not met.

[33] We measure the financial variables on the last day of the month, but results are robust to taking averages over the previous five days or over the entire month.

CDS, and the BTP-Bund spreads, and on the contemporaneous value and three lags of the log-change in the VIX and of the first principal component of the change in the dollar-denominated CDS spreads of the 2003-clause contract for euro countries (except Italy and Greece), plus the UK (PCΔCDS03 for short). Figure 10 presents the monthly political risk shock instrument using both the change in CDSITA03 and CDSITA14.[34] Interestingly it is much clearer on a monthly basis that a series of risk-increasing shocks hit the Italian economy from April 2018 to August 2019. With the exception of a risk-reducing shock in December 2018 due to the intervention of the European Commission, all the other shocks are positive and sizable.

Figure 11 contains the impulse response functions and is the monthly counterpart of Figure 8. The indicator variable is the sovereign CDS which implies that we are normalizing the political risk shock to have a unit-impact effect on the instrumented (indicator) variable. In all the monthly results (for financial and real variables) we also control for one lag of the endogenous variable under consideration and one lag of the instrument. Remarkably, results are fully preserved at a monthly level displaying a much longer persistence for most of the variables. In addition, it is important to notice that the response of both the BTP-Bund and bank CDS spreads is larger than one, implying that our shock has an effect above and beyond the direct effect measured on the sovereign CDS spread.

In order to formalize the quantitative importance of policy and institutional risk shocks on a monthly basis, we calculate the forecast error variance decomposition following the same procedure described for daily data. Figure 12 highlights how risk shocks have been able to explain an important amount of the unpredictable variations of the sovereign CDS and other financial variables. Specifically, risk shocks explain up to a 20% (after some months) of the variability of both the BTP-Bund and the Bank CDS spread. Those results are even stronger keeping into account how the instrument has been originally constructed and the fact that we are focusing on a lower bound.

It may be interesting to compare our instrument for political risk meant to capture concerns regarding budgetary policy, government debt sustainability and Euro membership with the well known economic policy uncertainty (EPU) index developed by Baker et al. (2016) and based on the frequency with which a set of key words meant to capture economic policy uncertainty appear in newspapers. A version of the index has been constructed by the same authors for Italy.[35]

[34] Notice that at a monthly frequency we focus on the change of dollar-denominated CDSITA03 in order to increase as much as possible the number of observations that now go from January 2013 to June 2019.

[35] The Italian version of the EPU index is based on triplets of words from the Corriere della Sera and La Repubblica belonging to the following sets ("incertezza" or "incerto"), ("economia" or "economico"), and ("tassa" or "tasse" or "politica" or "regolamento" or "regolamenti" or "spesa" or "spese"

Before comparing it with our risk shock we obtain the unanticipated component of the change in the EPU index by regressing it on one lag of itself, of the log of the Purchasing Manufacturing Index (PMI), of the log of a stock price index (FTSE MIB), and of the EONIA (the European Overnight Index Swap) as a proxy for monetary policy. The correlation between the innovation in the EPU index and our instrument over the entire period January 2013 - August 2019 is about 0.1 and it is not significant at conventional levels. However if we focus on the period from September 2014 the correlation is above 0.2 and it is significant at about the 10% level. Its value increases to more than 35% (with a p-value of around 3%) when we consider the sample starting after the middle of 2016. All this is illustrated in Figure 13 where we report on the horizontal axis the initial date of the sample used for estimation and on the vertical axis either the correlation coefficient or the p-value of the test of its significance. Both our political risk shocks and the shocks to the EPU index are plotted, instead, in Figure 14. We observe that many, but not all of the spikes in the latter period tend to coincide, whereas in the first period innovations in the EPU index have greater variance. The overall impression is that our political risk shock captures some dimensions that are also present in the EPU index shock, but it is more driven by concerns about the sustainability of debt in Italy and about a possible exit from the Euro, which become acute in the second period because of the ascendancy of populist parties. The EPU index shocks in the first part of the sample period capture also other and more general sources of uncertainty.

6.3 Redenomination spread and quanto spread

We have described how CDS contracts differ by what is classified as a default event and by the currency of denomination. Focusing on the first dimension, let us consider the information contained in the difference between the CDS spread of the 2014- and the 2003-clause contract. Using Equations 1 and 2 we can write[36]

$$\begin{aligned} s_{k0,14} - s_{k0,03} &= \mathbb{E}_0[m_1(c_{k0,14} - c_{k0,03})] \\ &= \frac{\pi^r_{k0} \times \mathbb{E}_0[1-\lambda_{k1}|\lambda_{k1} < 1]}{1+r_0} + \pi^r_{k0}\mathrm{Cov}_0[m_1, (1-\lambda_{k1})|\lambda_{k1} < 1]. \end{aligned} \tag{6}$$

Therefore, the difference between these two spreads captures the probability of redenomination, the expected losses to the depreciation of the new currency relative to the euro and a risk adjustment term equal to the conditional covariance between

or "deficit" or "Banca Centrale" or "Banca d'Italia" or "budget" or "bilancio"). See also Caldara and Iacoviello (2018) for an index of global political risk based on textual analysis.

[36]The specification of the covariance term after the second equality sign uses the fact that $\mathrm{Cov}(x, z) - \mathrm{Cov}(y, z) = \mathrm{Cov}(x - y, z)$.

the stochastic discount factor and the losses under redenomination.[37] This difference is called as the "ISDA basis" and we will use it as our measure of redenomination risk.

Let us focus now on the currency of denomination of the CDS contract (with premium $s_{k0,03,€}$). Consider for simplicity the 2003-clause contract. The spread on the euro-denominated CDS contract is described by Equation 1. The dollar-denominated contract has instead a payoff equal to $c_{k0,03,\$} = (1 - \alpha_{k1})e_1/e_0$, where e_t is euro per dollar exchange rate at time t, to cover for a (likely) depreciation of the euro in case of default. The premium can therefore be written as $s_{k0,03,\$} = \{\pi^d_{k0}\, \mathbb{E}_0[(1-\alpha_{k1})e_1/e_0|\alpha_{k1} < 1]\}/(1 + r_0) + \mathrm{Cov}(m_1, c_{k0,03,\$})$. The difference in premia on the CDS denominated in different currency is called the quanto spread and can be written for our illusted contract as,

$$\begin{aligned} s_{k0,03,\$} - s_{k0,03,€} &= \mathbb{E}_0[m_1(c_{k0,03,\$} - c_{k0,03,€})] \\ &= \frac{\pi^d_{k0} \times \mathbb{E}_0[(1 - \alpha_{k1})(1 - e_1/e_0)|\alpha_{k1} < 1]}{1 + r_0} \\ &+ \pi^d_{k0}\mathrm{Cov}_0[m_1, (1 - \alpha_{k1})(1 - e_1/e_0)|\alpha_{k1} < 1]. \end{aligned} \tag{7}$$

Therefore, the quanto spread reflects the probability of default and the expected depreciation of the euro relative to the dollar, together with a risk adjustment. For the more complex 2014-clause contract it would also reflect the probability of redenomination and the expected devaluation of the new currency with respect to euro.

The impulse responses to a political risk shock of the redenomination spread and the quanto spread at a daily frequency are reported in Figure 16, together with the proportion of the forecast error variance explained by the same disturbances over the period September 2014-August 2019. We continue using the change in dollar-denominated CDSITA14 as an instrument. Adding changes in CDSITA03 as an instrument brings no new information and results remain unchanged as we have already discussed. They also remain very similar if we use only the change in CDSITA03 as an instrument. In line with Figure 8, the indicator variable is the 2014-clause of the sovereign CDS denominated in dollars. As displayed in the first row, political risk shocks have a significant impact effect on both the redenomination spread and the quanto spread. Nevertheless, the effect is quantitatively larger and more persistent for the redenomination spread for which it remains significant even after 6 working days while that is not the case for the response of the quanto spread. The variance explained, over the same period, is closed to a fifth for the redenomination spread. Figure 17 shows the monthly counterpart of Figure 16. The results obtained at a daily frequency are fully preserved at a monthly level for the redenomination spread and become stronger and more significant

[37] We could also have written the redenomination spread in terms of risk adjusted expectations, $\tilde{E}(\cdot)$. In that case, $s_{k0,14} - s_{k0,03} = \frac{\tilde{\mathbb{E}}_0[c_{k0,14} - c_{k0,03}]}{1+r_0} = \frac{\tilde{\pi}^r_{k0} \times \tilde{\mathbb{E}}_0[1-\lambda_{k1}|\lambda_{k1}<1]}{1+r_0}$ where $\tilde{\pi}^r_{k0}$ is the risk-adjusted probability of redenomination.

for the quanto spread.[38] Again, political risk shocks explain an important fraction of the variance of the two dependent variables. Specifically, political risk shocks explain more than 20% and 15% of the forecast error variance of redenomination spread and quanto spread, respectively, after a few months.

6.4 Spillover effects to other euro-zone countries

In this section we test whether political risk shocks in Italy have an effect on the financial markets of other euro-zone countries (France, Germany, Ireland, Portugal and Spain) and provide a quantitative assessment of such effects. We employ the same econometric strategy described in Section 5 with financial variables of other European countries as dependent variables. In essence, we test for spillovers from Italy to other euro-zone countries by regressing the change in country CDS spreads on changes in the Italian CDS spreads, instrumented with the change of the spread on political and policy announcement days.[39] In order to be cautious we exclude in the construction of the instrument the dates of European elections and the dates in which Italy submitted a draft budget to the European Commission (eight dates in total) as it may be close to the time when other countries do so as well. We have done this to avoid overlapping events and to make sure that on our selected dates no important news about other countries or Europe in general are revealed. Moreover, recall that, in addition to the log-change of the VIX, we control for PCΔCDS14 to account for common factors that drive the CDS spreads.

We show the response of foreign CDS contracts to a political risk shock at a daily frequency in Figure 18. We focus on French, German, Irish, Portuguese and Spanish 2014-clause CDS contracts denominated in dollars. Again, the indicator variable is the spread of CDSITA14 denominated in dollars and in all the Local Projection regressions we control for four lags of the instrument, the indicator variable and all the dependent variables, together with the current value and three lags of the log-change in the VIX, as a proxy for international volatility, and of PCΔCDS14 as a proxy for general European risk. In calculating the first principal component we exclude also the country under examination as the CDS spread also appears as a dependent variable. Interestingly, Italian political risk shocks have a positive and significant effect on many of the countries considered either on impact or with few lags. In particular, Portugal and Spain display a pronounced response which is significant at the 5% level and dies out only after 5 and 7 working days, respectively. They are significant at the 10% level for France and

[38] We use the change in dollar-denominated CDSITA03 as an instrument as we did for Figure 11.

[39] Whether these spillovers can be defined as contagion is an open issue. There is indeed a lively discussion in the literature as to what can and should be defined as contagion. See the seminal contribution in Forbes and Rigobon (2002), and Forbes (2012) and Gómez-Puig and Sosvilla-Rivero (2016) for a review of the different definitions of contagion.

Germany but they are much smaller. The spread on CDS contracts for Ireland does not respond significantly.[40]

An analogous message is delivered by Figure 19, where we focus on the daily-frequency impulse responses of the difference between the 10-year government bond yield for France, Ireland, Portugal and Spain and the 10-year German Bund yield. The responses for Spain, Ireland and France are positive and significant at the 5% level with some lags. As before, Portugal displays responses similar to Spain in size but significant only at the 10% level.

As a robustness exercise for both the CDS spread and the 10-year bond yield spread relative to the Bund, we have also been more drastic in reducing the list of dates using in constructing our instrument. More specifically, we removed other seven dates, in addition to the eight already eliminated for the base results, if they fall in a 2-sided window of seven days for each side centered on election dates of other euro countries (47 events in total), the Brexit referendum and other key events in the Brexit process (32 additional events). Our conclusions remain unaltered (see the Online Appendix, Section 1).[41]

The evidence of economically and statistically significant effects of Italian political risk shocks on the domestic economy is a very important result on its own. However, the potential for spillovers on other euro-zone countries makes the analysis of the Italian case especially important.

6.5 Robustness checks

The baseline results are quite robust at both the daily and the monthly frequency to several variations in the experiment design and the main message on the empirical importance of political risk shocks remains unchanged. The results are reported in the Online Appendix, Section 1.

The domestic and international results at a daily frequency are robust to using either CDSITA03 or CDSITA14 as an instrument, denominated either in euro or dollar. They also remain unchanged if we allow for eight lags of the controls instead of four. In addition, domestic results are also robust to removing from the list of selected dates those for European elections and for the submission to the European Commission of the draft budget because they are common to all the euro-zone countries (the baseline of

[40]In all the cases, we do not to show the variance explained by Italian political risk shocks because the lower bound is close to zero for most countries. As explained in Section 6.1, this result is not surprising because financial variables at a daily frequency are extremely noisy and are continuously buffeted by a stream of news while our instrument is based on few selected dates that represents only around 4% of all the total number of days used in estimation.

[41]This is also true for the domestic daily results for Italy. To limit the length of the Online Appendix we have only included this robustness exercise for the spillover effects.

the spillover effects do not include those dates). Finally, the estimated impulse response functions obtained with LP-IV are similar to those obtained by putting our instrument after the log-change in the VIX and PCΔCDS14 and before the other financial variables, and using a Cholesky identification strategy. This last result should not be totally surprising given that Plagborg-Møller and Wolf (2019) show that the two procedures are asymptotically identical, provided an infinite number of lags is included. Finally, the domestic results at a monthly frequency are invariant to using the average of the last 5-days of the month or the monthly average instead of the end of period observation for all the endogenous variables.

6.6 Placebo test

Our identification strategy starts with choosing a set of dates around which news are revealed about political risk and uses the change in sovereign CDS spread on those days as an instrument for shocks to political risk. We assume that on those dates no other shocks occur that are systematically correlated with our instrument, conditional on a set of controls that include the present and the past values of the log-change in the VIX and of PCΔCDS14 (or PCΔCDS03) together with lagged values of the financial variables included in our analysis. In other terms, our empirical strategy is based on a series of event studies together with the assumption that there are no confounding factors on those dates. We want to make certain that our results do not depend upon the existence of other background shocks we do not control for and that would have given us the results we obtain even if we had chosen different dates. For this reason, we conduct a standard placebo test in which we apply our procedure to a randomly selected set of dates equal in number to those include in our own original set. We then repeat this procedure 2000 times and present the 2.5th (5th) and 97.5 (95th) percentile for the impulse response functions obtained using the change of the CDS spread on the randomly selected dates as an external instrument in the same local projection context. The results are reported in the Online Appendix, Section 2. It is comforting to see that the both 90th and 95th confidence intervals include the zero at all horizons of the impulse response functions for all the variables, with one exception. The exception is the response of the change in the spread of the sovereign CDS on impact which is significant at the 10% level but not at the 5%. Note however, that the CDS is our indicator variable and by construction its coefficient on impact is normalized to be one and basically we are regressing the change in the CDS spread on itself on a subset of dates. Therefore this finding is neither surprising nor worrisome. In sum, the placebo test suggests that our results are not driven by background shocks we do not control for.

7 Real effects

Results of the previous section highlight the importance of political risk shocks for financial variable fluctuations. We now discuss how risk shocks may be transmitted to the real economy and present some evidence on their effect on real variables.

7.1 Why political risk matters

Political risk shocks can have an adverse effect on the economy through several channels. First, the news revealed around our political and policy events as well as the choice of the changes in sovereign CDS spread as an instrument puts the emphasis on concern on debt sustainability. A rise in the CDS spread on government bonds is reflected in an increase in the cost of funding for the Italian government putting further stress on government finances and requiring a higher primary surplus in order to respect the European fiscal rules. Moreover, it may generate an adverse self-reinforcing loop whereby higher deficits (inclusive of debt costs) lead to increases in debt-to-GDP ratio, and further increase in the deficit.

Second, the increase in CDS spread on government bonds can have a negative effect on banks' balance sheets as they have substantial holding of government bonds.[42] A loss in value of government bonds has multiple effects on a bank's balance sheet. A capital loss on sovereign bonds may have an adverse impact on a bank's profit and losses and/or on book equity. Whether it does or not depends on if sovereign bonds are marked to market (which, in turn, depends upon whether they are classified as trading securities, securities available for sale, or securities held to maturity) and upon the changing accounting treatment of each category.[43] Whatever the exact way losses are accounted for, investors may incorporate information about the worsening quality of a bank's security portfolio in its financial market valuations and cost of funding. Moreover, if access to non deposit funding is conditional on the posting of collateral (as in the interbank market), the decrease in value of government bonds may affect

[42]Italian banks in 2013 had the highest share of domestic government bonds over total assets compared to all other Euro countries (9%) and had the second highest home bias (97% of total government bonds held were issued by the Italian government).

[43]The securities in the "held to maturity" (now "held to collect") portfolio are not marked to market. Those for which the Fair Value Option is chosen (loosely, those in the "trading" book) are marked to market and a capital loss would impact immediately the profit and loss account (and hence shareholder equity). A fall in value of those held as "available for sale" would impact firms' equity (but not profit and losses). However, until recently, this change could however be sterilized and would not affect the Tier1 Capital Ratio. After January 2018, this sterilization is no longer allowed for any bank, and losses negatively affect the regulatory capital ratios. Over time there has been a transfer of assets by banks towards the "held to maturity" portfolio, which insulates the balance sheet from fluctuations in the market value of government bonds but at the cost of greater balance sheet rigidity.

access to such sources. The increase in the cost of or access to funding for banks (as reflected by the CDS spreads for bank bonds) may, in turn, impact client firms' cost and availability of credit.[44] We will call this transmission mechanism the bank cost-of-funding channel. Its strength will depend by the stance of monetary policy and by the strength of banks' balance sheet. We will discuss this in more detail in the next section when we comment the empirical results on the effects of political risk shocks on the real economy.

A third channel of transmission of political risk shocks related to budgetary policy actions or announcements that add concerns for debt sustainability works through the expectations of future fiscal consolidations, which may adversely affect consumption expenditure of forward looking households and counteract the expansionary effects of increases in spending or tax cuts (see the early seminal paper by Giavazzi and Pagano, 1995 and, for a recent discussion and further references, Alesina et al., 2019).

Finally, a set of papers have emphasize the effect that an increase in policy, political or other forms of uncertainty can have negative effect on aggregate demand through three main channels: risk premia, real option effects and precautionary savings. To start with, a second-moment shock is associated with an increase in risk premia that raise the cost of finance because the lender must be compensated for the greater risk and the increased probability of default.[45] This channel is related to the bank cost-of-funding channel in that both result in an increase in lending rate. Moreover, an increase in uncertainty in the presence of non convex adjustment costs or irreversibility leads to the postponement of investment decisions.[46] Finally, even without non convexities and irreversibility, an increase in uncertainty can lead to a fall in output in general equilibrium in models with nominal rigidities. Essentially, uncertainty induces precautionary saving and a fall in consumption. Moreover, even if there is an increase in precautionary labor supply, the increase in the markup can shift labor demand inward enough to generate a fall in hours worked, output, and investment in equilibrium (addition to the fall in consumption). By comparison, in real business cycle models there is instead an increase in hours worked and output.[47]

[44] The negative consequences on Italian firms' investment and employment decisions during the financial crisis and the sovereign debt crisis have been analyzed by Balduzzi et al. (2018b)).

[45] See Gilchrist et al. (2014) and Caldara et al. (2016).

[46] The literature on this topic is extensive. See Bloom (2009) and Bloom et al. (2018). For evidence for Italy see Guiso and Parigi (1999).

[47] See Basu and Bundick (2017) for a detailed discussion of all this. See also Born and Pfeifer (2014), Fernández-Villaverde et al. (2015) and Leduc and Liu (2016).

7.2 Results on real effects

In order to test whether policy and institutional risk affects real variables we use the same LP-IV procedure presented so far. Once again, we normalize impulse responses to have a unit-impact effect on sovereign CDS. In line with the monthly analysis on financial variables, we build the instrument for political risk using the spread on the dollar-denominated 2003-clause sovereign CDS contract. Analogously to the monthly analysis on financial variables, we opt for this contract in order to maximize the number of observations in our analysis, 78 in our case from January 2013 to June 2019. That said, 78 is not a very large sample and this ought to be taken into account in interpreting the real results and their precision.

As endogenous variables we use i) the log-transformation of the Purchasing Managers' Index (PMI) in the manufacturing sector; ii) the log-deviation of the Italian PMI manufacturing to the Global PMI manufacturing (hereafter relative PMI); iii) Composite Leading Indicator (CLI) provided by OECD database; iv) a survey of firms' confidence provided by ISTAT database.[48]

Differently to the financial measures presented above, these real variables are not random walk processes implying that taking the first differences is not necessarily the best option. As a result, we present LP-IV estimates using four different specifications: i) high-pass filter which remove frequencies related to periodicities above the 2-year horizons; ii) first differences; iii) time-quadratic trend; iv) simple levels.

Figure 20 shows impulse responses to a policy and institutional risk shock which triggers one basis-point increase in the sovereign CDS spread. The overall picture that emerges is that a risk-rising shock leads to a decrease on both economic activity and firms' confidence. In some of the cases the response is significantly negative (or close to it) after two/three months. This is the case when using the PMI (absolute or relative) or the index of firms' confidence, especially when we rely on the Band-Pass filter. In that case, the effect of political risk shocks on the real economy are significant at the 5% level for the PMI manufacturing and the relative PMI. It is significant at the 10% for the firm confidence index and the OECD composite leading indicator. Note that using the log-deviations of the PMI from its weighted value across countries is a parsimonious way to control for world demand.

Taking into account the limited number of observations and of political events, these results constitute interesting evidence that political and institutional risk does not only affect financial variables but may also propagate to the real economy. However, quantitatively speaking, results are not particularly large. Variance decomposition analysis indicates a lower-bound of 5% after a couple of months. A possible explanation as to why there were negative effects on the real economy but they were not large is that

[48]See Appendix A for more details on these variables.

the bank cost-of-funding transmission channel was muted during this period because of the stance of monetary policy and the improvement in banks' balance sheet position.

This period has been characterized by an overall accommodating stance of monetary policy with low and even negative policy rates, with the provision of ample liquidity to the banking sector and with a continuation of the asset purchase program.[49] In particular, the various versions of the long term refinancing operations (LTROs and TLTROs) that have provided access to cheap liquidity for the banking sector and have tied the conditions to the lending policy of the banks (TLTROs). Moreover the announcement of TLTRO III, starting in September 2019, has cushioned banks from the potential adverse consequences of the coming to an end of TLTRO II in 2020.

The transmission of political risk shocks on lending rates also depends upon the overall strength of banks' balance sheets. The latter has been improving also because of recapitalization exercises following the European Banking Authority (EBA) stress tests and the reduction in the share of non-performing loans due to the positive, albeit less than spectacular, growth rates of real GDP from the beginning of 2015 until the middle of 2018 (see Table 2) as well as to the action of previous center-left governments and to the intervention of the supervisory authorities.[50] All this suggest that the cost-of-funding channel was weak in the period we are examining. This is confirmed by the fact that borrowing rates have not increased much and remained at a moderate level in the second half of 2018 and in the first half of 2019. Surveys of Italian firms also suggest that financial conditions are not identified as an important reason of concern.[51]

By contrast, Balduzzi et al. (2018b) provide firm-level evidence that fluctuations in the sovereign CDS spread affected firms' investment and employment decisions through its effect of the bank CDS spread, during the Lehman and sovereign debt crises and before the "Whatever it takes" speech by Mario Draghi. The decrease in employment and investment characterizes particularly small firms and is large from an aggregate point of view. In sum, the monetary policy posture of the ECB and the activity of the

[49]More precisely, in October 2018 the ECB Governing Council announced the intention to end the net asset purchases at the end of December and this is confirmed at the December meeting. However, the Governing Council announced that it intended "to continue reinvesting, in full, the principal payments from maturing securities purchased under the asset purchase programme [...] as long as necessary to maintain favorable liquidity conditions and an ample degree of monetary accommodation." In September 2019, it was announced that net purchases would be restarted.

[50]The Renzi Government made the tax treatment of the losses associated with non-performing loans more favorable, reformed the judicial procedures to make insolvency and collateral recovery procedures more efficient and provided credit guarantees to favor the securitization of bad loans. The European (ECB) and domestic supervisory authorities (Bank of Italy) also provided prodding for the banks to recognize, evaluate, securitize and sell non performing loans.

[51]On both these points see the most recent issues of the Economic Bulletin of the Bank of Italy. See for instance the Economic Bulletin, No. 3, 2019, pp 20 and 34 at *www.bancaditalia.it/pubblicazioni/bollettino-economico/2019-3/en-boleco-3-2019.pdf?language_id=1.*

integrated European system of banking supervision and regulation, together with the institutional constraints on the Italian government represented by the Italian President and the European Commission, explains why the adverse effect on the real economy of political risk shocks were attenuated but not eliminated.[52]

8 Conclusions

The Italian populist experiment in the last few years has provided very interesting evidence to evaluate the effects of political risk shocks on the economy. We show that concerns generated by the electoral success of the populist parties, and their announced policies and positioning vis à vis the Euro and the European Commission adversely affected the cost of borrowing for the government and the banking sector, while depressing equity prices and increasing their volatility. The impact on financial variables is statistically significant and quantitatively important. Political risk shocks can also have an overall adverse effect on the real economy and we provide some evidence that this is indeed the case. We also highlight the importance of the European Central Bank, the European Commission and the Italian Presidency in moderating the negative effects on financial markets and the real economy. Finally, there is evidence of spillover effects of Italian political risk shocks on the financial market of other countries, in particular for Spain and Portugal.

An important feature of the Italian experience is that the rise and electoral success of populism has occurred in the context of a high level of debt and of a weak performance of the Italian economy, both in terms of GDP and multi-factor productivity growth, over an extended period of time. These factors have amplified the concerns about fiscal stability and debt sustainability.

Italy is not alone in experiencing the advance of populist forces that generate tensions and uncertainties about institutional arrangements and policies (domestic or international). Much remains to be done on this topic and we have little doubt that the evolution of the political situation in Italy and in other countries will continue to offer interesting evidence on the effect of policy and institutional risk associated with populism. Further work on the economic consequences of such political developments is of great importance.

[52]On the possibility of a contractionary fiscal expansion and crowding out in the Italian case see also Blanchard and Zettelmeyer (2018) and Balduzzi et al. (2018a).

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Appendix A: data description

Variable list

Variable name	Definition
	Financial Variables
CDSITA14 USD	$-denominated 5-year CDS spread on Italian sovereign bonds, Markit, 2014 ISDA clause, daily frequency.
CDSITA03 USD	$-denominated 5-year CDS spread on Italian sovereign bonds, Markit, 2003 ISDA clause, daily frequency.
CDSBANK14 USD	CDS index for Italian banks based on $-denominated 5-year CDS spread on Italian banks' bonds (see Section), Markit, 2014 ISDA clause, daily frequency.
CDSBANK03 USD	CDS index for Italian banks based on $-denominated 5-year CDS spread on Italian banks' bonds (see Section), Markit, 2003 ISDA clause, daily frequency.
BTP-Bund Spread 5 Years	BTP-Bund Spread computed as the difference between yield on 5-year Italian and German treasury bonds (5-Year BTP Yield – 5-Year BUND Yield), Bloomberg, daily frequency.
BTP-Bund Spread 10 Years	BTP-Bund Spread computed as the difference between yield on 10-year Italian and German treasury bonds (10-Year BTP Yield – 10-Year BUND Yield), Bloomberg, daily frequency.
FTSE	FTSE-MIB index, Bloomberg, daily frequency.
Implied Volatility FTSE	30-days implied volatility of FTSE-MIB index, Bloomberg, daily frequency.
VIX	VIX volatility index, Bloomberg, daily frequency.
PCΔCDS03	First principal component of the daily change in the CDS spreads of the dollar-denominated 2003-clause contract for euro countries (excluding Greece and Italy), plus the UK.
PCΔCDS14	First principal component of the daily change in the CDS spreads of the dollar-denominated 2014-clause contract for euro countries (excluding Greece and Italy), plus the UK. In Section 6.4 we also exclude the country under examination in the calculation of the first principal component.
Country Sovereign CDS 2003 USD	$-denominated 5-year CDS spread on France, Germany, Ireland, Portugal, and Spain sovereign bonds, Markit, 2014 ISDA clause, daily frequency.
Country Sovereign CDS 2014 USD	$-denominated 5-year CDS spread on France, Germany, Ireland, Portugal, and Spain sovereign bonds, Markit, 2014 ISDA clause, daily frequency.
Country bond-Bund Spread 10 Years	Bond-Bund Spread computed as the difference between yield on 10-year French, Irish, Portugal, Spanish and German treasury bonds, Bloomberg, daily frequency.

Variable name	Definition
	Real Variables
PMI Manufacturing	Italian Purchasing Managers' Index for manufacturing, Markit, monthly frequency.
Relative PMI	Difference between PMI Manufacturing and Global Purchasing Managers' Index, Markit, monthly frequency.
OECD CLI	Composite Leading Indicator for Italy, OECD, monthly frequency.
Firm Confidence	Economic Sentiment Indicator, ISTAT, monthly frequency.

Construction of bank CDS spread variables

Since the CDS contract is related to the specific issuer, an individual bank in this case, we construct an index by weighing the bank-specific CDS spread for the relative size of the reference entity (measured in terms of bank's total assets). Notice that, because we want to avoid jumps in the indices that are solely induced by the availability of CDS spreads (for some banks, CDS started being priced in the middle of our period of interest and other instruments ceased being available), we focus on the subsample of banks with complete CDS data in the 2013-2019 time span (Unicredit, Intesa Sanpaolo, Monte dei Paschi di Siena, and Mediobanca).[53] In order to avoid repetitions, in the table below we show details specifically for Unicredit.[54]

Details on real variables

The PMI provides information on whether current and future business conditions, as viewed by purchasing managers, are expanding, stable, or contracting. The PMI is based on a monthly survey administrated to senior executives of a representative sample of companies in the manufacturing and service industries, then weighted by their contribution to the national GDP. The survey is composed of five, equally-weighted, sub-indices (for new orders, inventory levels, production, supplier delivery times, and employment) and includes questions about changes in the business conditions (whether improving, stable, or deteriorating). The headline PMI is a number in the [0;100] interval, where 50 indicates no change, while values above/below 50 are associated to expansion/contraction of the economic activity. The PMI index is then calculated as PMI $= (P_i * 1) + (P_s * 0.5) + (P_d * 0)$, where P_i, P_s, and P_d denote, respectively, the percentage of answers reporting an improvement, no change, or deterioration in the specific area of the survey.

[53] Note that we have included the largest banking groups and that the CDS of the excluded banks still tend to comove with those of the included financial institutions.

[54] It is possible to obtain analogous information on Intesa Sanpaolo, Monte dei Paschi di Siena, and Mediobanca.

The composite leading indicator (CLI) is an index designed to provide early signals of turning points in business cycles, thus showing fluctuation of the economic activity around its long term potential level. CLIs provide short-term economic movements based on a set of time series that exhibit leading relationship with the GDP at turning points. The component series for each country are selected based on various criteria such as economic significance, cyclical behavior, data quality, timeliness, and availability. For Italy, these series are: i) consumer confidence indicator, ii) manufacturing order books, iii) deflated orders for total manufactured goods, iv) future tendency of manufacturing production, v) CPI, and iv) imports from Germany. For more information, see `https://data.oecd.org/leadind/composite-leading-indicator-cli.htm`.

ISTAT economic sentiment indicator, a general index of confidence of manufacturing companies based on a survey carried out by the Italian National Institute of Statistics (*Clima di fiducia delle imprese manifatturiere*). The sample is composed of a panel of about 4000 firms with five or more employees, stratified by economic sector, geographic partition, and firm size. The survey collects qualitative data on current and expected cyclical situation of manufacturing firms, providing assessments and expectations on i) firm's order books, ii) production, iii) liquidity conditions, iv) assessment on stocks of finished products, v) expectation on firm's employment, vi) expectation on firm's selling prices, and vii) expectations on the Italian general economic situation. For more details, see `http://siqual.istat.it/SIQual/visualizza.do?id=8888945&refresh=true&language=EN`.

Appendix B: block bootstrap

Following Kilian and Kim (2011) we estimate confidence interval using the block bootstrap procedure. As emphasized by Kilian and Kim (2011), we opt for this approach because the error term in the Local Projection regressions is most likely serially correlated. The LP impulse response estimator for horizon h depends on the tuple,

$$\mathcal{T}_h = [y_{t+h} \quad \varepsilon_t \quad \varepsilon_{t-1} \quad \dots \quad \varepsilon_{t-J} \quad x_{t-1} \quad \dots \quad x_{t-I}] \tag{8}$$

where y_t is the dependent variable, ε_t our instrument for political risk shocks and x_t a series of controls. To preserve the correlation in the data, build the set of all $\mathcal{T}_h$ tuples for $h = 0, 1, \dots, H$. For each tuple $\mathcal{T}_h$, employ the following procedure:

1. Define $g = T - l + 1$ overlapping blocks of $\mathcal{T}_h$ of length l.[55]
2. Draw with replacement from the blocks to form a new tuple $\mathcal{T}_h^b$ of length T.
3. Estimate θ_h^b from $\mathcal{T}_h^b$ using LP estimator.
4. Repeat 1. to 3. B (≥ 2000) times and select confidence intervals.

[55] Notice that $l = (T - I - J + 2)^{\frac{1}{3}}$ is defined following Berkowitz et al. (1999). Results are not sensitive to alternative choices of l.

Table 1: Choice of dates: full set

Dates	Event Description
25 February, 2013	Italian General Elections
10 April, 2013	D.E.F.
24 April, 2013	Letta Incarico
20 September, 2013	N.A. D.E.F.
15 October, 2013	Draft Budgetary Plan
15 November, 2013	European Commission Opinion on Draft Budgetary Plan
17 February, 2014	Renzi Incarico
8 April, 2014	D.E.F.
5 may, 2014	European Elections
30 September, 2014	N.A. D.E.F.
15 October, 2014	Draft Budgetary Plan
21 November, 2014	Italy sends letter to European Commission
28 November, 2014	European Commission Opinion on Draft Budgetary Plan
10 April, 2015	D.E.F.
18 September, 2015	N.A. D.E.F.
15 October, 2015	Draft Budgetary Plan
16 November, 2015	European Commission Opinion on Draft Budgetary Plan
8 April, 2016	D.E.F.
27 September, 2016	N.A. D.E.F.
19 October, 2016	Draft Budgetary Plan
25 October, 2016	European Commission sends letter to Italy
27 October, 2016	Italy sends letter to European Commission
16 November, 2016	European Commission Opinion on Draft Budgetary Plan
5 December, 2016	Constitutional Referendum and Renzi resignation
12 December, 2016	Gentiloni Incarico
11 April, 2017	D.E.F.
25 September, 2017	N.A. D.E.F.
17 October, 2017	Draft Budgetary Plan
27 October, 2017	European Commission sends letter to Italy
30 october, 2017	Italy sends letter to European Commission
22 November, 2017	European Commission Opinion on Draft Budgetary Plan
5 March, 2018	Italian General Elections
26 April, 2018	D.E.F.
14 May, 2018	Coalition (Contract) Lega-M5S
23 May, 2018	Conte I Incarico
28 May, 2018	Cottarelli Incarico
31 May, 2018	Conte II Incarico
27 September, 2018	N.A. D.E.F.
4 October, 2018	Italy sends letter to European Commission
5 October, 2018	European Commission sends letter to Italy
16 October, 2018	Draft Budgetary Plan (I)
18 October, 2018	European Commission sends letter to Italy
22 October, 2018	Italy sends letter to European Commission
23 October, 2018	European Commission rejects Draft Budgetary Plan
13 November, 2018	Draft Budgetary Plan (II)
21 November, 2018	European Commission Opinion on Draft Budgetary Plan (II)
19 December, 2018	European Commission sends letter to Italy
9 April, 2019	D.E.F.
27 May, 2019	European Elections
28 May, 2019	MiniBOTS voted at the House
29 May, 2019	European Commission sends letter to Italy
31 May, 2019	Italy sends letter to European Commission
5 June, 2019	Procedure for excessive debt is announced
3 July, 2019	No procedure for excessive debt
9 August, 2019	Lega triggers government crisis

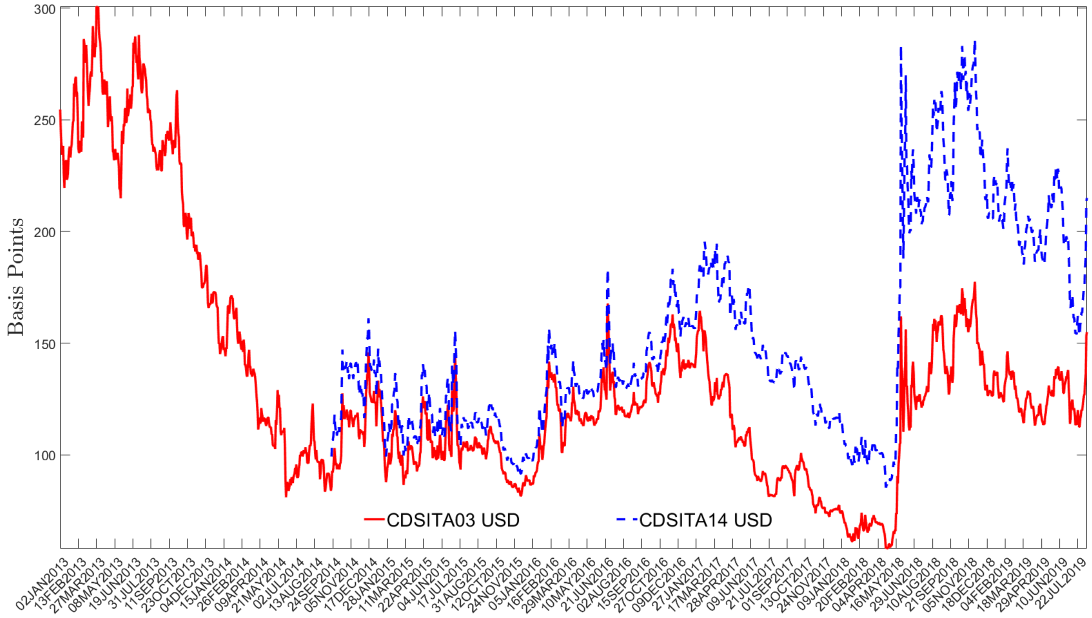
Selected dates when new information is revealed concerning political and policy developments. The dates we consider are: 1) Italian and European general elections; 2) the appointment (*incarico*) of a designated Prime Minister; 3) the presentation of the budget law (D.E.F.) in the spring and the subsequent revision in the second half of the year that is then submitted to the European Commission (N.A. D.E.F. and Draft Budgetary Plan); 4) other important political announcements (e.g., *Contratto*).

Table 2: International comparison

		Real GDP	Nominal GDP	Debt	Surplus	Primary Surplus	Interest Payment	Multifactor Product.
All (2002-2018)	Germany	1.30	2.59	70.0	-1.08	1.12	2.21	0.62
	Ireland	4.69	6.27	64.1	-4.74	-2.56	2.18	1.03
	Greece	-0.12	1.30	141.5	-6.90	-2.27	4.63	-0.72
	Spain	1.52	3.29	68.4	-4.08	-1.72	2.36	-0.34
	France	1.23	2.55	81.3	-3.95	-1.51	2.44	-0.11
	Italy	0.11	1.82	119.4	-3.09	1.44	4.52	-0.04
	Portugal	0.55	2.46	99.5	-5.26	-1.72	3.55	0.34
Pre-Crisis (2002-2007)	Germany	1.29	2.38	64.3	-2.60	0.22	2.82	0.82
	Ireland	5.29	8.35	27.1	0.97	2.07	1.10	0.98
	Greece	4.04	7.36	103.9	-6.90	-2.08	4.82	1.14
	Spain	3.36	7.40	43.6	0.73	2.70	1.97	-0.51
	France	1.87	3.96	64.5	-3.20	-0.43	2.77	0.02
	Italy	0.99	3.63	105.7	-3.10	1.67	4.77	-0.16
	Portugal	1.08	4.37	68.3	-4.73	-1.98	2.75	0.65
Crisis (2008-2012)	Germany	0.77	1.95	76.4	-1.72	0.80	2.52	0.21
	Ireland	-1.42	-2.25	84.2	-14.8	-12.0	2.74	1.08
	Greece	-5.31	-3.75	142.8	-11.1	-5.42	5.72	-3.62
	Spain	-1.28	-0.81	61.9	-9.16	-7.02	2.14	-0.82
	France	0.37	1.50	83.1	-5.52	-2.88	2.64	-0.43
	Italy	-1.36	0.15	117.6	-3.68	1.00	4.68	-0.18
	Portugal	-1.36	-0.80	101.4	-7.78	-4.14	3.64	-0.35
Post-Crisis (2013-2018)	Germany	1.76	3.35	70.5	0.97	2.30	1.33	0.81
	Ireland	9.17	11.3	84.4	-2.10	0.68	2.78	1.08
	Greece	0.05	-0.54	178.0	-3.37	0.17	3.53	-0.04
	Spain	2.01	2.61	98.5	-4.65	-1.72	2.93	0.24
	France	1.29	2.01	96.5	-3.40	-1.45	1.95	0.07
	Italy	0.45	1.40	134.5	-2.58	1.57	4.15	0.31
	Portugal	1.61	3.26	129.2	-3.70	0.57	4.27	0.60

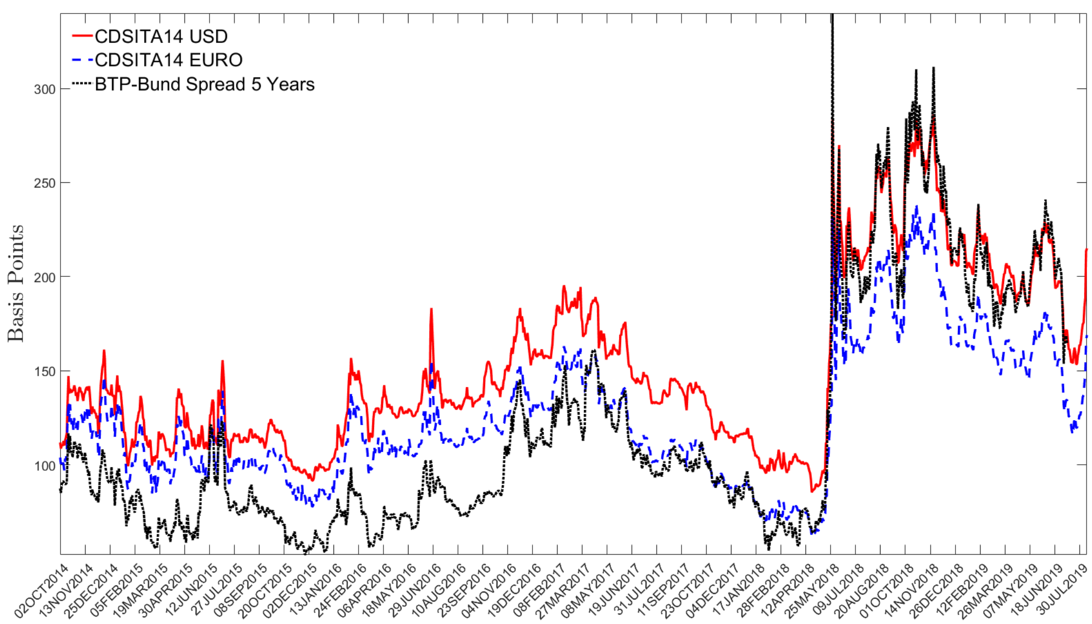
Real GDP is the growth rate of GDP at chain linked prices (2010), Nominal GDP is the growth rate of GDP at current prices, Debt is the government debt to GDP ratio, Surplus is the total government surplus (deficit if negative) to GDP ratio, Primary Surplus is the government primary surplus (before interest expanses, deficit if negative) to GDP ratio, Interest Payment is the ratio between interest payed on debt and GDP, Multifactor Product. is the annual growth rate of multifactor productivity. The four panels report averages of yearly data on the period of interest specified in the first column. Authors' calculation on Eurostat and OECD data.

Figure 1: Sovereign CDS spreads, 2003 and 2014 clause



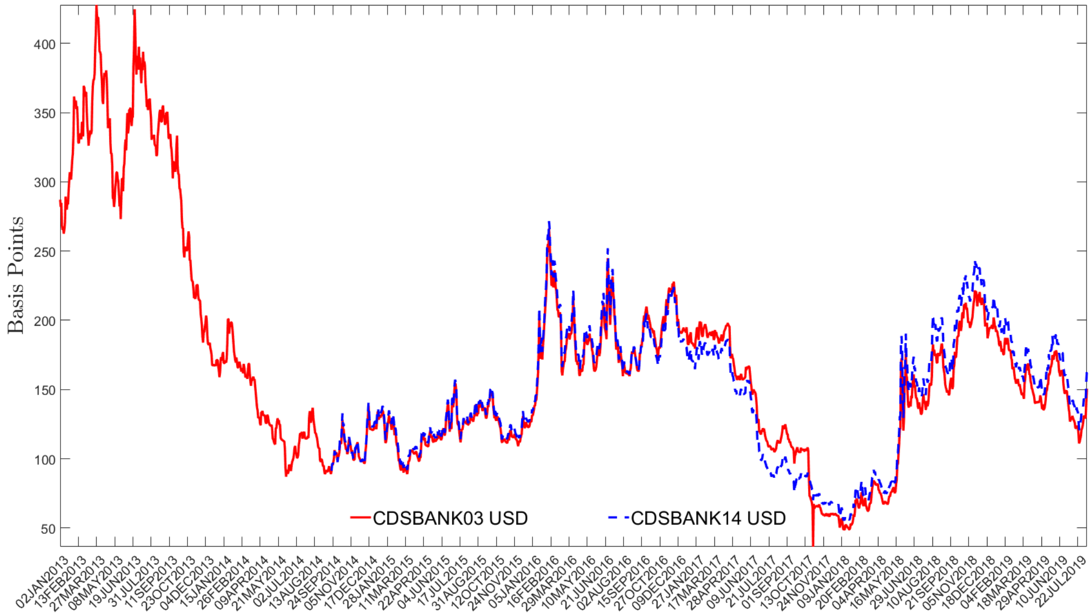
The solid red line is the sovereign CDS spread of the 2003-clause contract (CDSITA03). The dashed blue line is the sovereign CDS spread of the 2014-clause contract (CDSITA14). Both contracts are denominated in dollars with five-year maturity.

Figure 2: Sovereign CDS spreads and BTP-Bund spread



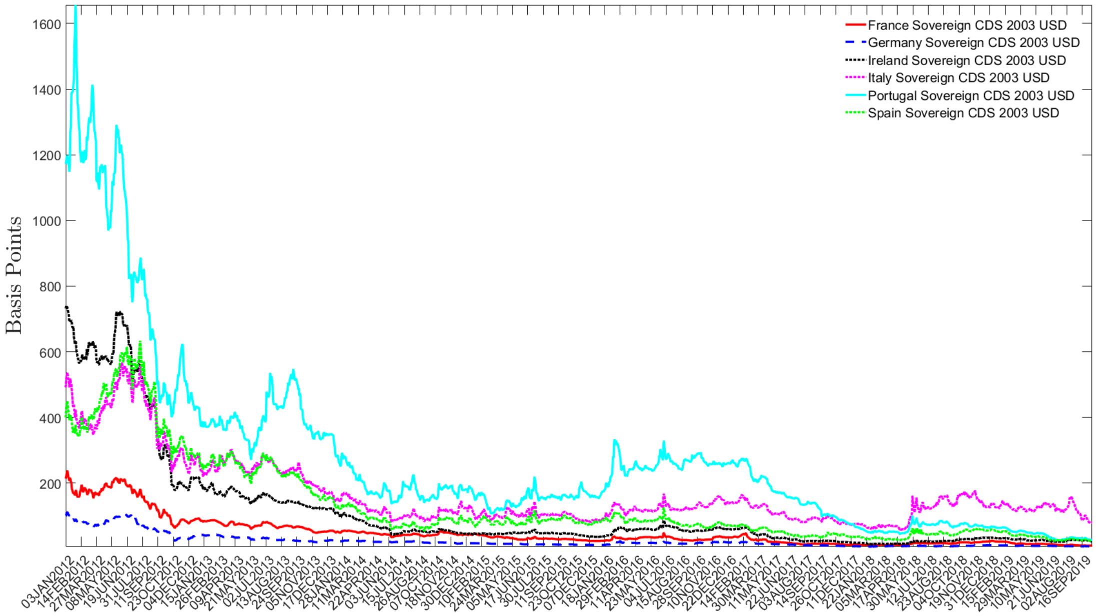
The solid red line is the spread on the dollar-denominated 2014-clause sovereign CDS contract. The dashed blue line is the spread on the euro-denominated 2014-clause sovereign CDS contract. Both contracts have a five-year maturity. The dotted black line is the difference between the 5-year BTP yield and the 5-year Bund yield.

Figure 3: Bank CDS spreads



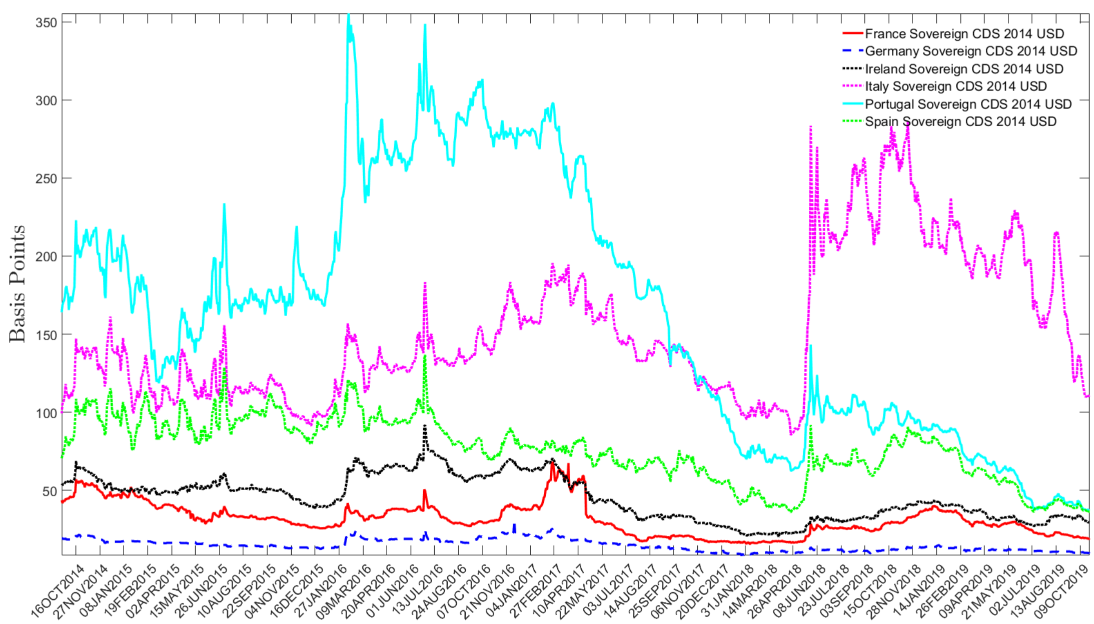
The solid red line is the CDS spread of the 2003-clause contract for bank bonds (CDSBANK03). The dashed blue line is the CDS spread of the 2014-clause contract for bank bonds (CDSBANK14). Both contracts are denominated in dollars with five-year maturity. For more information on how we construct these variables see Appendix A.

Figure 4: Sovereign CDS spread, 2003-clause contract, for some Euro countries



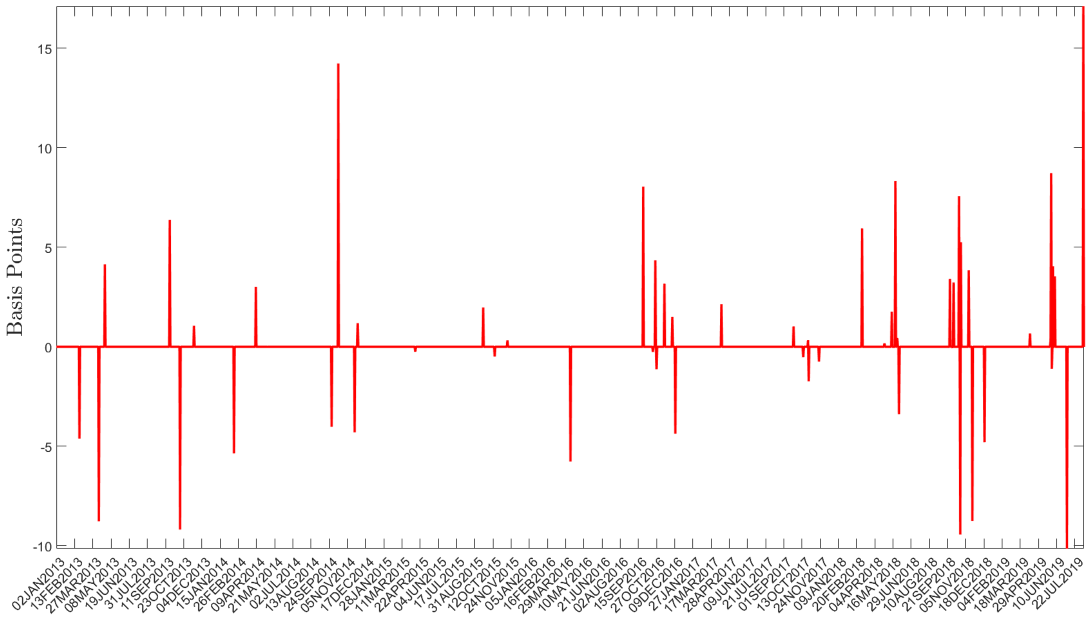
The figure reports the spread on the dollar-denominated 2003-clause sovereign CDS contracts for France, Germany, Ireland, Italy, Portugal and Spain with a 5-year maturity.

Figure 5: Sovereign CDS spread, 2014-clause contract, for some Euro countries



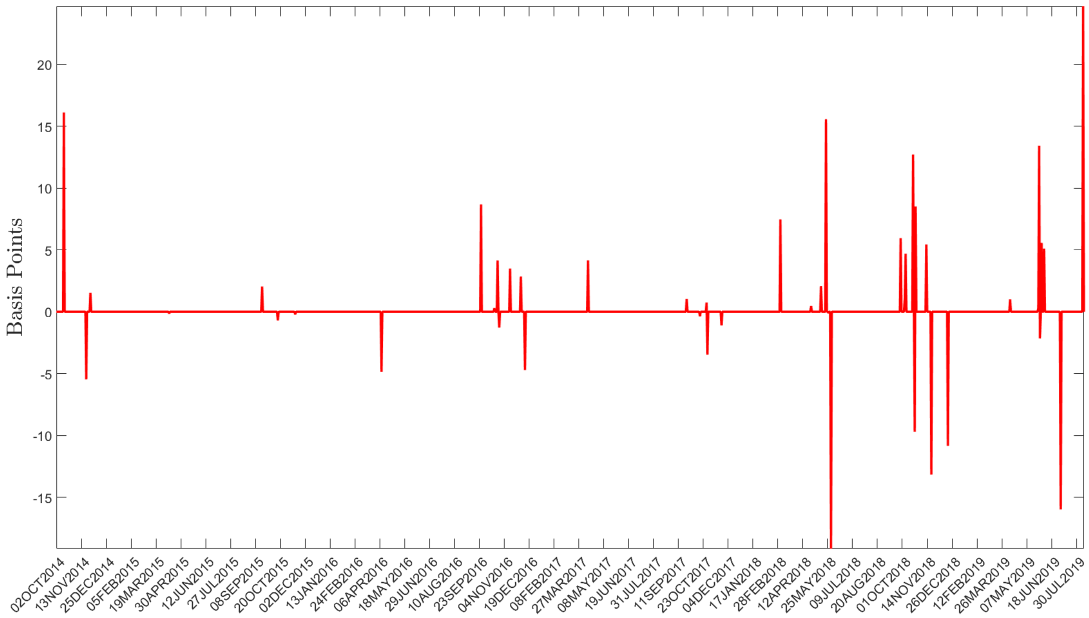
The figure reports the spread on the dollar-denominated 2014-clause sovereign CDS contracts for France, Germany, Ireland, Italy, Portugal and Spain with a 5-year maturity.

Figure 6: Δ Sovereign CDS spread, 2003-clause contract, around political events



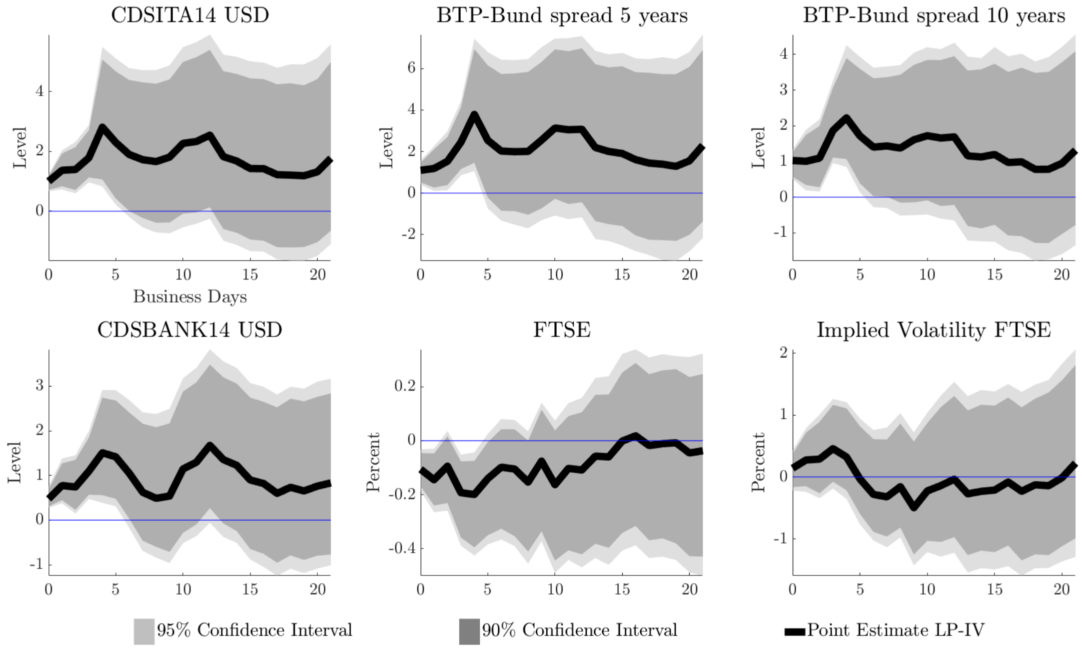
Changes in the CDS spread of the sovereign 2003-clause contract denominated in dollars around dates presented in Table 1. Changes are defined as the closing price of the event day minus the closing price of the previous day.

Figure 7: Δ Sovereign CDS spread, 2014-clause contract, around political events



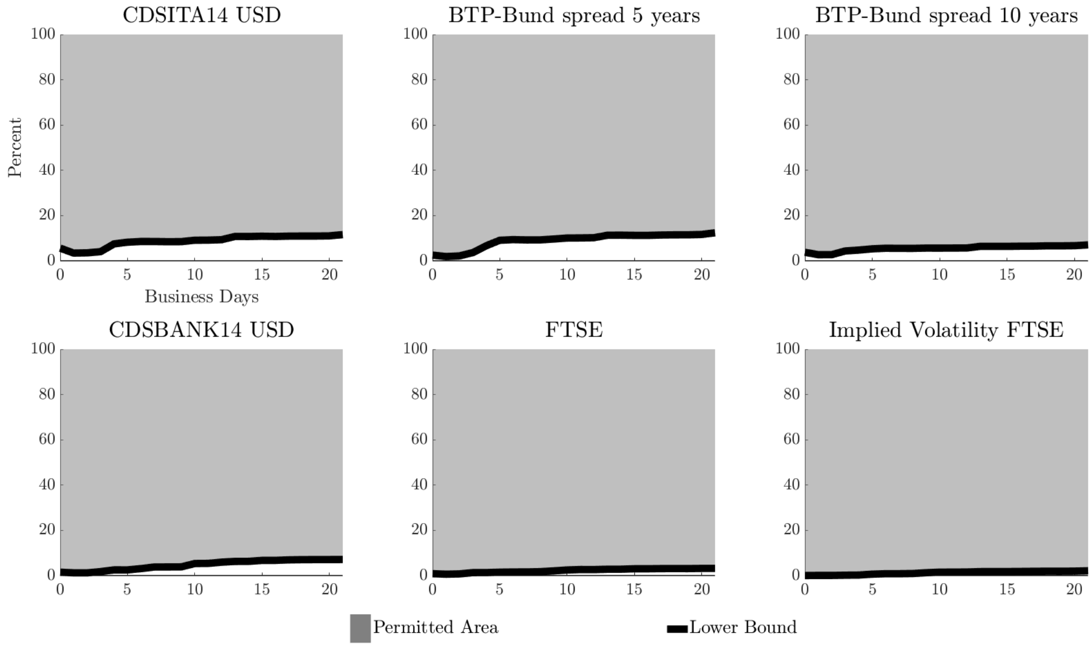
Changes in the CDS spread of the sovereign 2014-clause contract denominated in dollars around dates presented in Table 1. Changes are defined as the closing price of the event day minus the closing price of the previous day.

Figure 8: Financial variables: impulse responses at a daily frequency



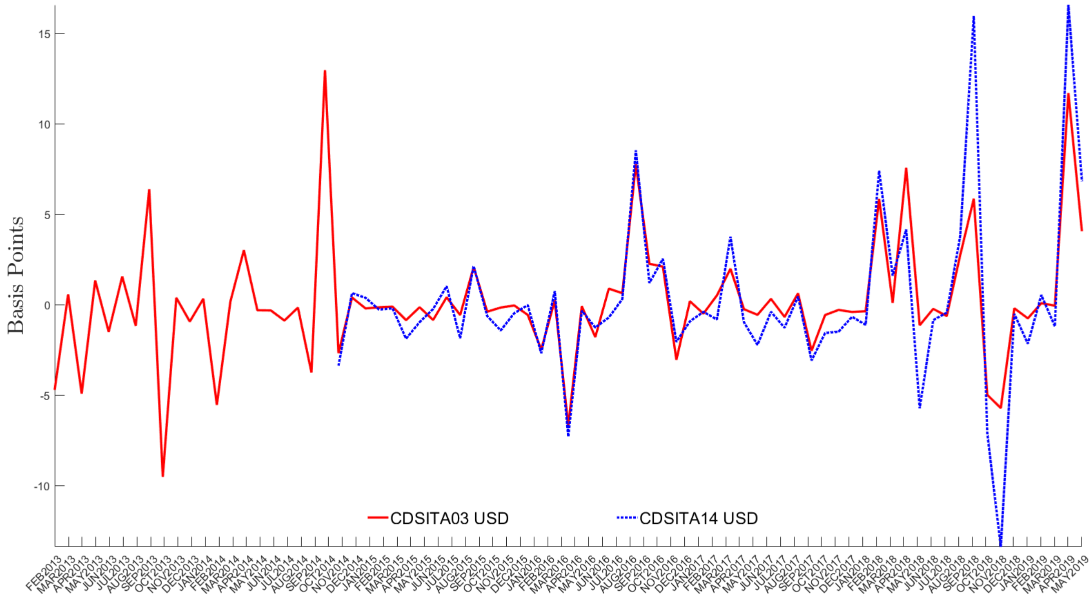
Impulse response functions of financial variables to a political risk shock at a daily frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2014-clause contract (CDSITA14) on the selected dates and the indicator variable is CDSITA14, denominated in dollars. BTP-Bund Spread 5 Years is the same variable described in the legend of Figure 2 and BTP-Bund Spread 10 Years is its 10-year maturity counterpart. CDSBANK14 USD is the same variable described in the legend of Figure 3. FTSE is a log-transformation of the most commonly used Italian stock price index and Implied Volatility FTSE is the log-transformation of its implied volatility. All the variables enters in the LP-IV regressions in first differences. The estimated responses are then cumulated in the graph above. In each regression, we control for 4 lags of the instrument and all the endogenous variables and for the present value and 3 lags of the log-change in the VIX and of PCΔCDS14. Confidence bands are estimated with 2000 block-bootstrapped simulations.

Figure 9: Financial variables: variance decomposition at a daily frequency



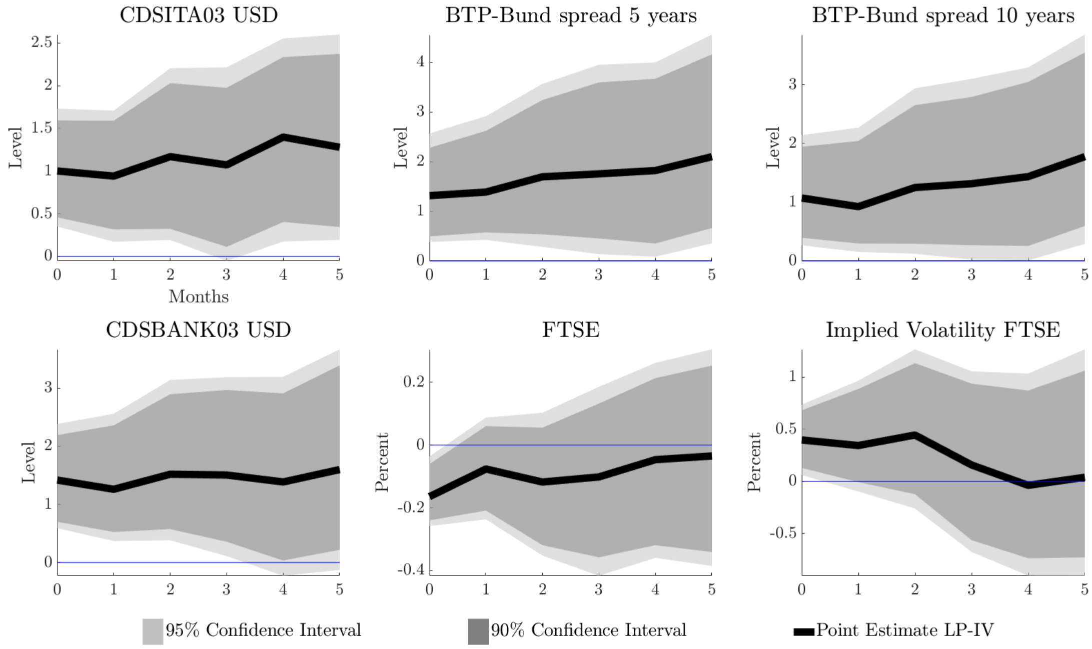
Lower bound of the variance of daily financial variables explained by political risk shocks. Results are derived from the impulse responses shown in Figure 8 using the same procedure suggested by Gorodnichenko and Lee (2017). As shown by both Gorodnichenko and Lee (2017) and Plagborg-Møller and Wolf (2018), the variance explained by the instrument is a lower bound for the variance explained by the shock itself.

Figure 10: Political risk shock instrument at a monthly frequency



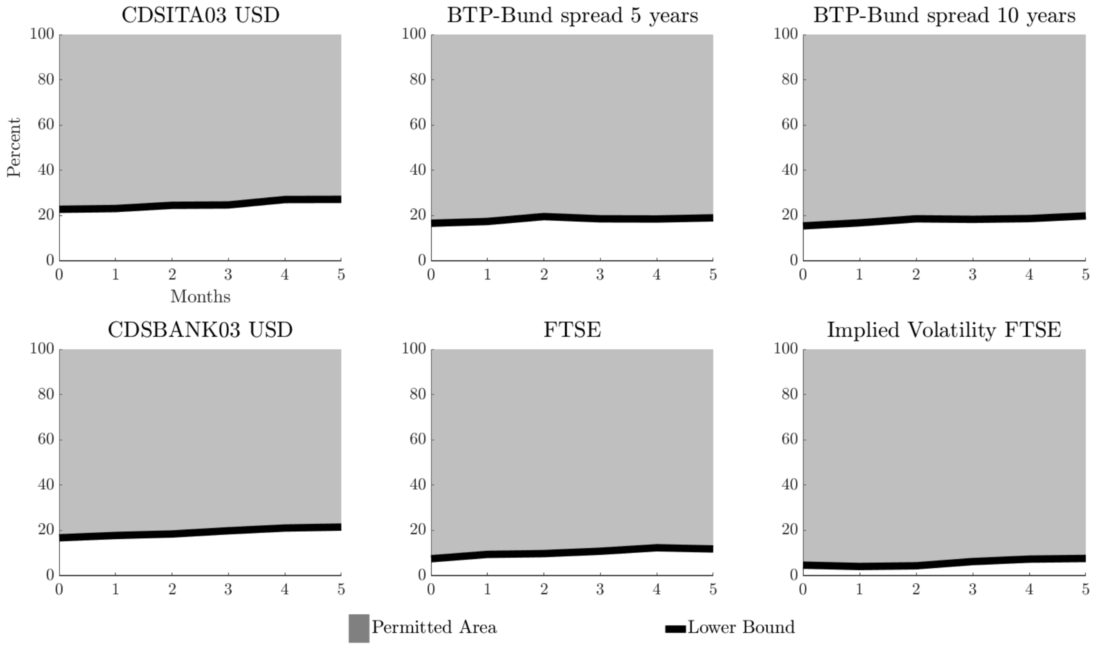
Instrument for political risk shocks at a monthly frequency. The solid red line is the monthly version of the variable presented in Figure 6. The blue dotted line is the monthly version of the variable presented in Figure 7. The daily changes are projected on the same set of controls used to obtain the results presented in Figure 8. The residuals from these regressions are the relevant variables to be cumulated on a monthly basis to obtain the figure above.

Figure 11: Financial variables: impulses responses at a monthly frequency



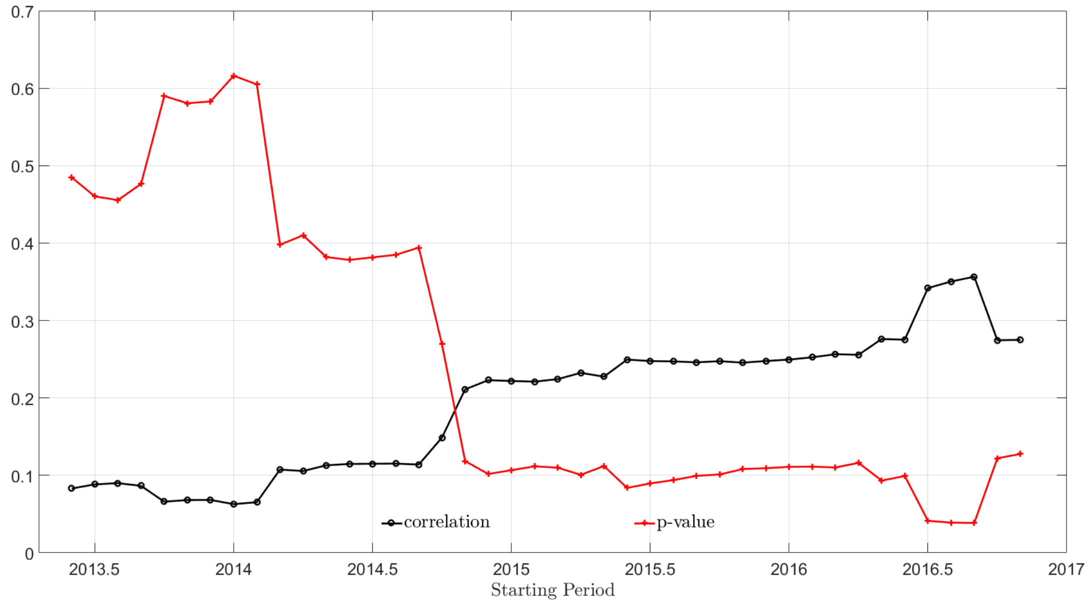
Impulse response functions of financial variables to a political risk shock at a monthly frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2003-clause contract (CDSITA03) on the selected dates and the indicator variable is CDSITA03, denominated in dollars at a daily frequency (with the controls used for Figure 8) and then cumulated at a monthly basis. The endogenous variables are the monthly counterpart – defined as the last daily observation of the month – of the daily variables presented in Figure 8. In each regression, we control for one lag of the endogenous variable under consideration and one lag of the instrument. All the variables enters in the LP-IV regressions in first differences. The estimated responses are then cumulated in the graph above. Confidence bands are estimated with 2000 block-bootstrapped simulations.

Figure 12: Financial variables: variance decomposition at a monthly frequency



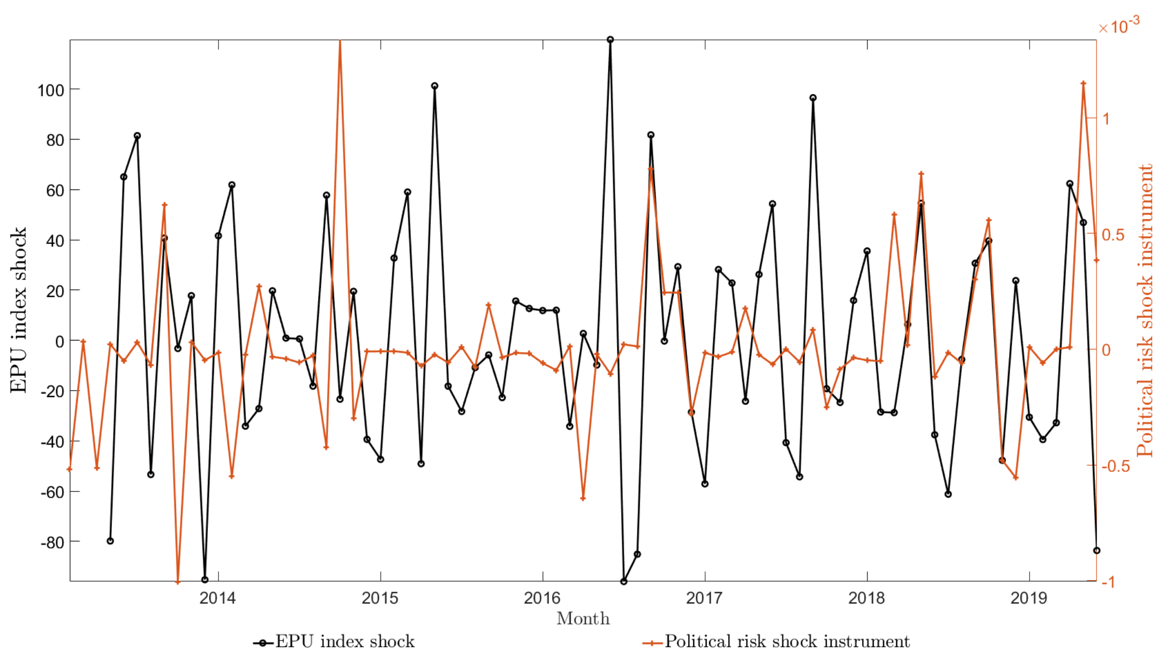
Lower bound of the variance of daily financial variables explained by political risk shocks. Results are derived from the impulse responses shown in Figure 11 using the same procedure suggested by Gorodnichenko and Lee (2017). As shown by both Gorodnichenko and Lee (2017) and Plagborg-Møller and Wolf (2018), the variance explained by the instrument is a lower bound for the variance explained by the shock itself.

Figure 13: Correlation (and p-value) of political risk shock instrument with EPU index shock



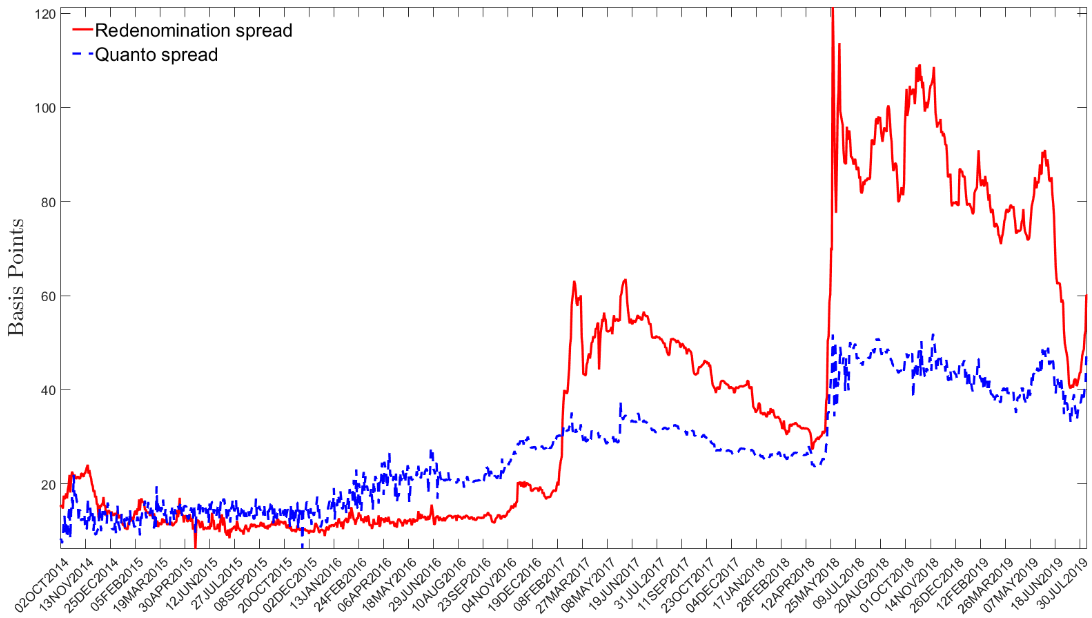
The black line with spots is the correlation between the innovation in the EPU index by Baker et al. (2016) and our monthly instrument for political risk shocks (shown in Figure 10) for different starting points. Both measures refer to Italy. The red line with pluses is the p-value of the significance level of the correlations for the same starting points.

Figure 14: EPU index shocks and political risk shock instrument



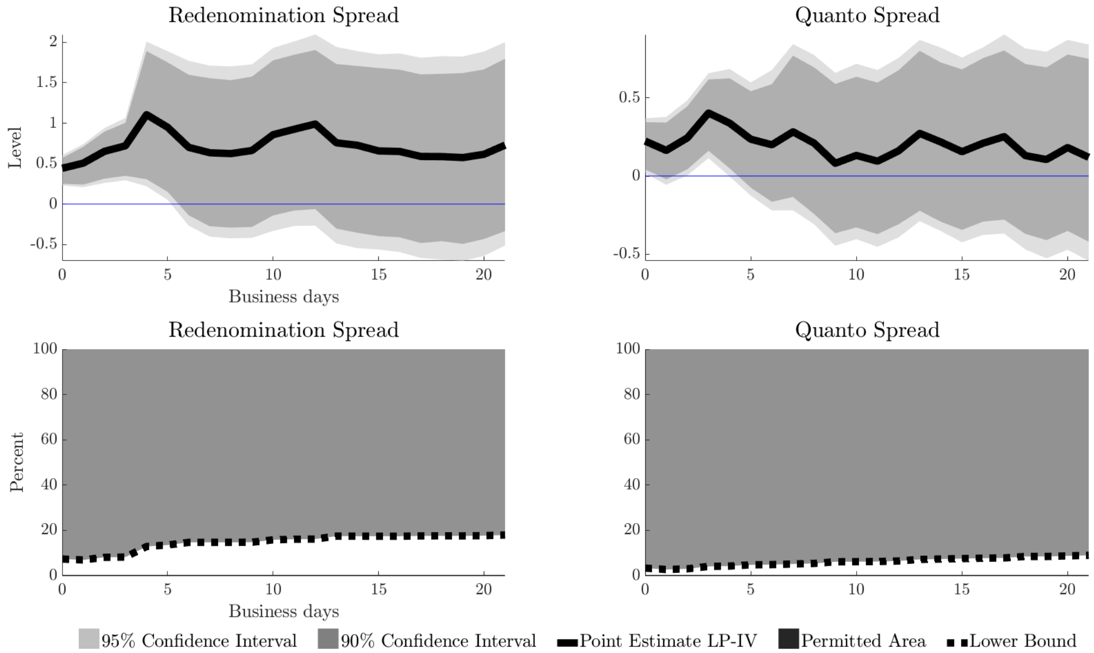
The black line with sports is the monthly innovation in the EPU index by Baker et al. (2016) which refers to the left y-axis. The orange line with pluses is the monthly instrument for political risk shocks (shown in Figure 10) which refers to the right y-axis.

Figure 15: Redenomination spread and quanto spread



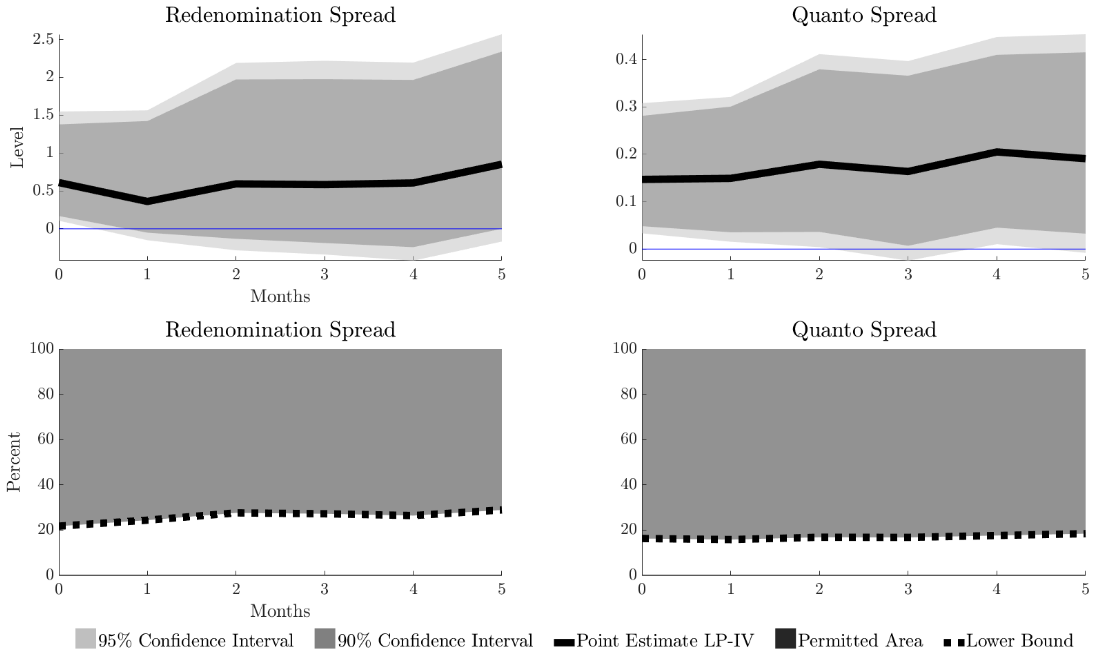
The solid red line is the redenomination spread (ISDA basis) defined as the difference between the sovereign CDS spreads for the 2014- and 2003-clause contracts (CDSITA14 - CDSITA03). Both contracts are denominated in dollars. The dashed blue line is the quanto spread, defined as the difference between CDSITA14 denominated in dollars and CDSITA14 denominated in euro.

Figure 16: Redenomination spread and quanto spread: impulses responses and variance decomposition at a daily frequency



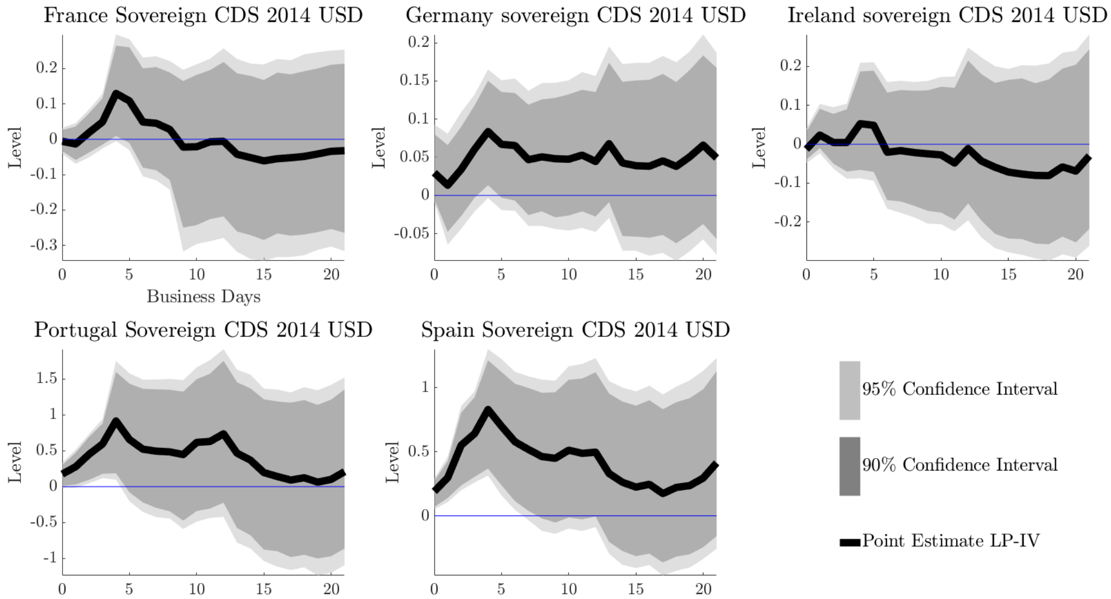
The first row shows impulse responses of redenomination spread and quanto spread to a political risk shock at a daily frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2014-clause contract (CDSITA14) on the selected dates and the indicator variable is CDSITA14, denominated in dollars. In line with Figure 8, in each regression, we control for 4 lags of the instrument and all the endogenous variables and for the present value and 3 lags of the log-change in the VIX and of PCΔCDS14. Redenomination spread is defined as the difference between the sovereign CDS spreads for the 2014- and 2003-clause contracts (CDSITA14 - CDSITA03). Both contracts are denominated in dollars. The quanto spread is defined as the difference between CDSITA14 denominated in dollars and CDSITA14 denominated in euro. Confidence bands are estimated with 2000 block-bootstrapped simulations. The second row shows the lower bound of the variance of redenomination spread and quanto spread explained by political risk shocks. Results are derived from the impulse responses in the first row using the same procedure suggested by Gorodnichenko and Lee (2017). As shown by both Gorodnichenko and Lee (2017) and Plagborg-Møller and Wolf (2018), the variance explained by the instrument is a lower bound for the variance explained by the shock itself.

Figure 17: Redenomination spread and quanto spread: impulse responses and variance decomposition at a monthly frequency



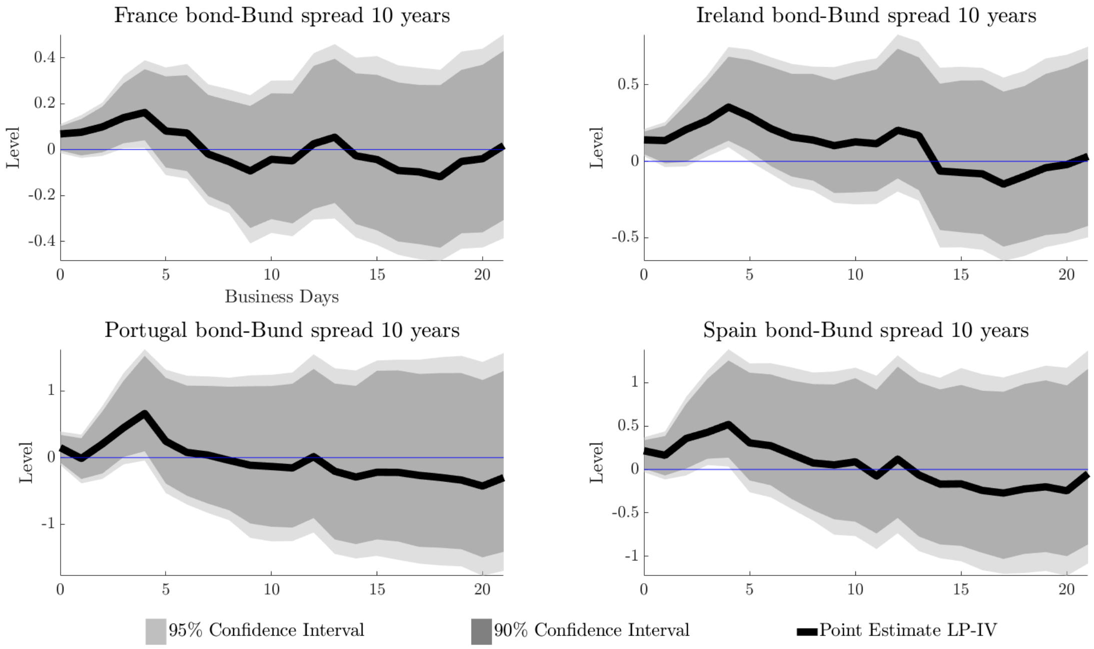
The first row shows impulse responses of redenomination spread and quanto spread to a political risk shock at a monthly frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2003-clause contract (CDSITA03) on the selected dates and the indicator variable is CDSITA03, denominated in dollars. Redenomination spread is defined as the difference between the sovereign CDS spreads for the 2014- and 2003-clause contracts (CDSITA14 - CDSITA03). Both contracts are denominated in dollars. The quanto spread is defined as the difference between CDSITA03 denominated in dollars and CDSITA03 denominated in euro. In each regression, we control for one lag of the endogenous variable under consideration and one lag of the instrument. Confidence bands are estimated with 2000 block-bootstrapped simulations. The second row shows the lower bound of the variance of redenomination spread and quanto spread explained by political risk shocks. Results are derived from the impulse responses in the first row using the same procedure suggested by Gorodnichenko and Lee (2017). As shown by both Gorodnichenko and Lee (2017) and Plagborg-Møller and Wolf (2018), the variance explained by the instrument is a lower bound for the variance explained by the shock itself.

Figure 18: Spillover effects on sovereign CDS spreads for euro-zone countries: impulse responses at a daily frequency



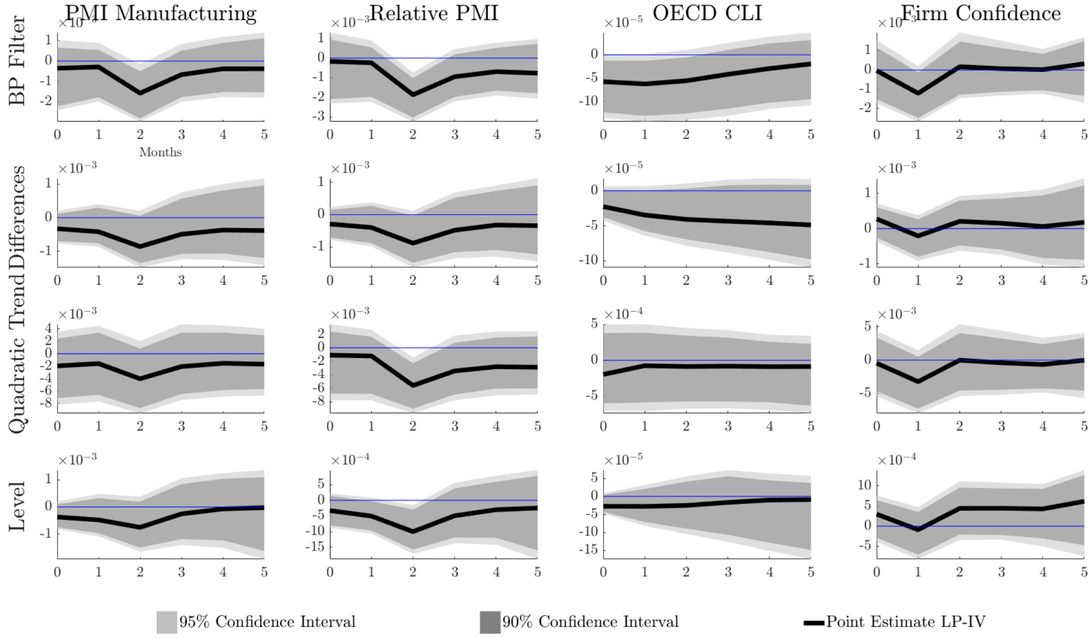
Impulse response functions of euro-zone country sovereign CDSs to a political risk shock at a daily frequency. All CDS contracts are denominated in dollars and use the 2014 clause. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2014-clause contract (CDSITA14) on the selected dates and the indicator variable is CDSITA14, denominated in dollars. The estimated responses are then cumulated in the graph above. In each regression, we control for 4 lags of the instrument and all the endogenous variables and for the present value and 3 lags of the log-change in the VIX and of PCΔCDS14 (the country under examination is excluded when calculating PCΔCDS14). All the variables enters in the LP-IV regressions in first differences. Confidence bands are estimated with 2000 block-bootstrapped simulations.

Figure 19: Spillover effects on gov. bonds yields relative to the Bund for euro-zone countries: impulses responses at a daily frequency



Impulse response functions of the difference between the 10-year sovereign bond yield and the 10-year bund yield of a series of euro-zone countries at a daily frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2014-clause contract (CDSITA14) on the selected dates and the indicator variable is CDSITA14, denominated in dollars. All the variables enters in the LP-IV regressions in first differences. The estimated responses are then cumulated in the graph above. In each regression, we control for 4 lags of the instrument and all the endogenous variables and for the present value and 3 lags of the log-change in the VIX and of PCΔCDS14 (the country under examination is excluded when calculating PCΔCDS14). All the variables enters in the LP-IV regressions in first differences. Confidence bands are estimated with 2000 block-bootstrapped simulations.

Figure 20: Real variables: impulse responses at a monthly frequency



Impulse response functions of real variables to a political risk shock at a monthly frequency. The solid black line is estimated via Local Projections - Instrumental Variables where the instrument is the change in the CDS spread for the 2003-clause contract (CDSITA03) on the selected dates and the indicator variable is CDSITA03, denominated in dollars. The endogenous variables are the log-transformation of the Purchasing Manager Index of the manufacturing sector (PMI Manufacturing), the log-difference between the Italian PMI Manufacturing and the Global PMI Manufacturing, the level of the Composite Leading Indicator from OECD database (OECD CLI), and the log-trasformation of a survey of firms' confidence (Firm Confidence). For the sources and definitions of those variables see Appendix A. In each regression, we control for one lag of the endogenous variable under consideration and one lag of the instrument. Results are shown using different detrending techniques: (i) *BP Filter* is the High Pass filter removing periodicities above 24 frequencies; (ii) *Differences* is same technique presented in Figures 8 and 11; (iii) *Quadratic Trend* is a standard time quadratic trend; (iv) *Level* is variables without being treated and controlling for the past value of the dependent variable in each regression. Confidence bands are estimated with 2000 block-bootstrapped simulations.