

TAKING THE COMMON CURRENCY OUT OF THE COMMON MARKET

REDENOMINATION RISK IN THE EUROZONE

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Taking the common currency out of the common market: Redenomination risk in the eurozone

Abstract:

This paper examines whether political and macroeconomic variables can explain and predict redenomination risk spreads, defined as the residual CR14-CR CDS premium derived through a synthetic-control method for France, Italy, and Germany between 2015 and 2024. Using daily CDS data combined with monthly political and macroeconomic indicators, we construct country-specific redenomination spreads that seeks to isolate the market-implied risk of a euro exit. We then run OLS regressions linking these spreads to inflation, output gaps, ECB policy rates, exchange rates, government debt, trade measures, and political variables. Our findings show that redenomination risk is highly country-specific and event-driven. Italy exhibits sensitivity to political variables such as parliamentary EU skepticism and election timing. Germany shows minimal redenomination risk, driven only weakly by government EU position, consistent with a safe-haven status and the possibility of negative redenomination premia. France demonstrates persistent positive redenomination spreads, but these are less well explained by observable political or macroeconomic determinants. Across countries, selected macroeconomic variables, particularly inflation and the EUR/USD exchange rate, provide additional explanatory power, though their effects vary by national context. Our results suggest that redenomination risk functions as a political tail-risk premium as it is dormant for long periods but prone to repricing around elections, coalition uncertainty, or institutional credibility shocks. These findings have practical implications for investors in sovereign debt, indicating that traditional economic credit models may miss relevant forward-looking risks unless they incorporate euro-membership credibility.

Keywords:

Redenomination risk, eurozone, sovereign debt, currency, CDS

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I. Introduction

A. Background

Since its inception in 1999, the euro has symbolized one of the most ambitious steps toward European integration. By eliminating exchange rate fluctuations and reducing transaction costs, it was designed to strengthen trade, investment, and financial stability within the European Union. Over time, the eurozone has expanded to encompass 20 member states with diverse economic structures, fiscal positions, and political priorities. However, this diversity has also exposed limitations of a shared monetary policy without a corresponding fiscal union. The European sovereign debt crisis in the 2010s exposed this tension and triggered widespread concern about the possibility of member states abandoning the common euro. Such an event would expose bondholders and other investors to currency redenomination risk, the risk that a state's eurodenominated debt could be repaid in a newly introduced national currency of a lower value relative to the euro. There is also a rising theme of euro-skepticism in Europe, where parties who have taken a lesser and greater anti-EU approach have seen electoral success in many countries (European Commission, 2023).

Redenomination risk is distinct from traditional sovereign default risk as a country may still continue to honor its bond obligations while altering the currency of a repayment. This effectively imposes a loss unto the investor via simple devaluation. Conversely, a country with a strong shadow national currency could experience negative redenomination risk, as a eurozone exit could imply an appreciation of its new national currency and thus a gain for investors. Understanding this distinction is crucial for both policymakers and market participants, as redenomination risk tangibly affects the pricing of sovereign bonds.

The economic logic behind redenomination risk also aligns with the twin Ds framework as used by Augustin, Chernov, and Song (2020). They argue that sovereign credit spreads in the euro area incorporate not only default risk but also the possibility of a currency devaluation if a default were to occur. Their quanto-CDS evidence shows that investors assign a sizable conditional probability to currency depreciation following sovereign distress. This framework can be said to provide a theoretical foundation for interpreting the CR14-CR difference as compensation for a default-linked currency event, namely a euro exit or forced redenomination. They furthermore group euro countries into two different groups, a core group and a periphery group. Core countries refer to fiscally stronger and systemically important euro-area members such as Germany and France, and periphery countries like Italy exhibit weaker fiscal positions and greater exposure to regional financial stress.

To understand the relevance of their contribution, it is important to note that a CDS quanto spread reflects the difference between a CDS contract written in different currencies on the same underlying sovereign obligation. This difference isolates the market's expectations about an exchange-rate jump conditional on a credit event. In other words, quanto spreads capture how much depreciation investors anticipate if sovereign distress occurs. This mechanism is conceptually quite similar to the CR14-CR distinction. Both settings allow the market to price a default-linked currency jump, whether via depreciation of the euro against the USD (in the quanto case) or through a switch from the euro to a newly introduced currency (in the redenomination case).

Given the nature of the euro and the eurozone, the European Central Bank (ECB) conducts a uniform monetary policy for the entire euro area and is mandated to maintain price stability. Its institutional design originally limited its ability to act as a direct lender of last resort to sovereigns, reflecting concerns about fiscal discipline and monetary financing (ECB, n.d.). These constraints became salient during the euro area sovereign debt crisis, when several member states faced surging bond yields driven not only by credit concerns but also possibly by redenomination risk. To address this and restore market confidence, the ECB introduced a sequence of interventions.

The first was the Securities Markets Programme (SMP) and consisted of targeted purchases of stressed sovereign bonds to stabilize dysfunctional market segments and reduce liquidity-driven spikes in yields. According to Krishnamurthy, Nagel, and Vissing-Jorgensen (2018) SMP announcements are associated with noticeable short-term declines in sovereign spreads. Later came the Long-Term Refinancing Operations (LTROs), large-scale, low-cost loans to euro area banks. Although not aimed directly at sovereign debt, LTRO liquidity eased funding pressures and indirectly supported sovereign bond markets by reducing tail risks in the banking system. Last came the Outright Monetary Transactions (OMT) in 2012, a conditional program allowing potentially unlimited purchases of short-term sovereign bonds of countries. Krishnamurthy et al. (2018) argues that the OMT was one of the pivotal measures that quelled redenomination fears during the debt crisis, despite never being activated. The inherent nature of the interventions are useful when trying to grasp the dynamics of redenomination risk, as existing research shows that convertibility premia tended to spike around moments of political and financial stress but fell sharply following credible ECB actions, highlighting that redenomination risk behaved as an event-driven rather than persistent component of sovereign yields.

In the years following the euro debt crisis, redenomination risk again became salient during several major political events, such as the 2017 French presidential election and the 2018 formation of Italy's populist government. During these episodes, financial markets priced measurable increases in exit risk premia, reflecting fears of either a eurozone breakup or isolated exits. According to Kremens (2024), redenomination risk accounted for up to 40% of France's sovereign credit spread in 2017 and roughly one-third of Italy's in 2018, strongly indicating that investors differentiate between political and debt-driven risks.

Building on existing literature, this present study focuses on the three largest economies within the eurozone: France, Italy, and Germany. These countries collectively represent the political and economic core of the monetary union, while also differing substantially in fiscal capacity, market perception, and political climate. By analyzing the period from 1 January 2015 to 31 December 2024, this thesis captures a period marked by post-crisis stabilization, the COVID-19 pandemic, and renewed geopolitical and inflationary shocks.

B. Research Question

To what degree can political and macroeconomic variables help explain and predict redenomination risk spreads for France, Italy, and Germany? A natural sub-question then becomes, what effect does that have on investors?

C. Literature Review

This thesis aims to build on a growing literature examining how financial markets price the risk of a eurozone breakup or the exit of individual member states. The most direct reference is Kremens (2024), who develops a market-based measure of redenomination risk using differences between CDS contracts governed by two sets of ISDA definitions (see Methodology). His findings show that redenomination risk contributes substantially to sovereign yields around political events such as the 2017 French and 2018 Italian elections, highlighting its political rather than debt-driven nature.

While Kremens (2024) introduced a novel method to extract redenomination risk from CDS markets, his analysis primarily focuses on identifying the risk premium rather than explaining its political drivers. In practice however, redenomination risk is intertwined with the domestic political environment. Factors such as euroscepticism, government ideology, and electoral uncertainty directly influence market perceptions of euro membership credibility. Building on this observation, our present study investigates the role of political variables in shaping redenomination risk.

As mentioned, Krishnamurthy et al. (2018) decompose euro-area sovereign yields into default, redenomination, and market-segmentation components. They show that the European Central Bank's (ECB) bond-purchase programs compressed yields partly by lowering redenomination premia. This work underscores that redenomination risk is not purely a financial-market artifact but also responds to institutional and policy credibility, which is something this thesis aims to expand upon.

Furthermore, several related studies have analyzed the interaction between sovereign credit risk and exchange rate risk. Augustin et al. (2020) use quanto CDS contracts to decompose sovereign risk into distinct default and devaluation components. They find that these two risks are tightly linked yet able to be separable, implying that sovereign credit spreads incorporate both credit and currency dimensions. Their results complement the notion of redenomination risk.

Our thesis contributes to this literature in two ways. First, it provides an independent replication of Kremens' redenomination spread estimates using data from LSEG Workspace, validating the robustness of the synthetic-control approach and its sensitivity to updated data sources by adding data from more recent years. Second, it also extends the analysis by linking redenomination risk to political variables from the Chapel Hill Expert Survey (CHES), testing whether changes in, for example, government composition or euroscepticism systematically influence redenomination risk. This second part is thus our original idea, as Kremens never tries to find a concrete statistical connection between redenomination risk and interesting variables. We believe that by trying to do so, a number of interesting conclusions can hopefully be drawn that have both theoretical and practical uses.

II. Methodology

Following Kremens (2024), CDS markets distinguishes between three types of credit events: (i) default without redenomination, (ii) default with redenomination, and (iii) redenomination without default. Both the 2003 ISDA (CR) and the 2014 ISDA (CR14) CDS contracts insure against events (i) and (ii), but only CR14 pays out in case (iii). Therefore, the difference in CDS premia between CR14 and CR, known as the ISDA basis, theoretically captures compensation for the risk of a stand-alone redenomination. While redenomination is technically included in event (ii), Kremens argues that defaults and redenomination do not usually coincide with each other and mentions examples such as Greece not leaving the eurozone after its default and Czechoslovakia not defaulting after its redenomination in the 1990s. We can thus infer that looking solely at the ISDA basis, and variations of it, gives us some idea of redenomination risk. Furthermore, when a country redenominates its euro-denominated debt into a new national currency, the new currency typically depreciates once it begins trading freely. Even if the government sets a one-to-one conversion rate at the exit, the market value of the new currency can still fall when it starts trading on exchange markets. This depreciation reduces the euro value of bondholders claims, generating an economic loss even in the absence of a conventional default. CR14 contracts insure against this loss, while CR contracts do not for G7 eurozone members. In practice, this means that if the new currency trades at, for example, 20% below the initial conversion rate, a CR14 contract compensates for that loss whereas a CR contract remains silent. This difference in payouts is what allows the ISDA basis to reflect the expected depreciation conditional on a stand-alone redenomination (Kremens, 2024).

Since these contracts specify that only bonds issued by a G7 country are insured against event (iii), it becomes natural to look at the three G7 countries that use the euro, Germany, Italy, and France. As mentioned, the difference between the two CDS contracts captures a market-implied redenomination risk. However, this raw difference is affected by other factors. These include liquidity, contract design, and pricing frictions. To isolate the pure redenomination component, Kremens constructs a synthetic control for each treated G7 country (France, Italy, Germany) using other eurozone countries unaffected by redenomination risk. The synthetic control reproduces the behavior of the treated country's ISDA basis using the observable covariates CDS liquidity (measured as number of contributors), sovereign bond yields, and CR14 but excludes the redenomination clause itself. Note that Kremens (2024) also uses CR14 bid-ask spread as a matching variable, but due to lack of data from LSEG we do not include bid-ask spread. We argue that the number of contributors should sufficiently capture liquidity and that bid-ask spread is not necessary for our analysis since it is in this context largely a secondary measure of liquidity.

The donor pool consists of the following countries: Belgium, Finland, the Netherlands, Portugal, Austria, Spain, and Ireland. We use these countries since they are all in the eurozone, which avoids the relevant exchange rates interfering in the data, and taken together we believe these countries can make for a sufficiently fitting portfolio of our treated countries. Kremens (2024) uses in addition to the mentioned countries both Cyprus and Greece, but due to a lack of data from LSEG we could not include these countries. Note that for each treated country, the other two G7 countries are also used for the synthetic control. For example, Germany's donor pool also consists of Italy and

France. The important assumption here is that redenomination risk is country specific and does not propagate across the G7 treated countries.

For each of the countries for the synthetic control, we find daily optimal weights. This is essentially a daily optimization problem that aims to minimize the loss function, which is defined as the squared difference in predictors, for each day, by optimizing the weights of the donor countries. This is done so that the weights sum up to 1, and no weight can be less than 0. We add a small ridge penalty to the loss function to discourage extreme weights. The predictors CR14, number of contributors and 5-year bond yield are given an equal weight within one donor country, following Kremens (2024).

The synthetic control method is particularly appropriate in this setting because it isolates the effect of redenomination clauses from other determinants of CDS spreads. By creating a no-redenomination benchmark for each treated country, it allows for a cleaner interpretation of the residual as the market-implied redenomination premium. The difference between the treated country's ISDA basis and that of its synthetic control yields the redenomination spread (RS);

$$(1) RS_{i,t} = (CR14_{i,t} - CR_{i,t}) - \sum_j w_{ij,t} (CR14_{j,t} - CR_{j,t})$$

In equation (1), $RS_{i,t}$ denotes the redenomination spread for country i at time t , $CR14_{i,t}$ and $CR_{i,t}$ the CDS spreads under the different ISDA definitions, and $w_{ij,t}$ are the synthetic control weights that minimize the distance between the treated country and the control pool across observable characteristics.

We then try to estimate RS as a dependent variable, using different political variables along with key macroeconomic variables. This is done using a regular OLS regression model for each country:

$$(2) Y_{i,t} = \beta_0 + \beta_1 I_{i,t} + \beta_2 OUT_{i,t} + \beta_3 IR_{i,t} + \beta_4 MODX_{i,t} + \beta_5 EX_{i,t} + \beta_6 D_{i,t} \\ + \beta_7 NETX_{i,t} + \beta_8 MODY_{i,t} + \beta_9 ME_{i,t} + \beta_{10} DE_{i,t} + \beta_{11} SP_{i,t} + \beta_{12} SG_{i,t} \\ + \varepsilon_{i,t}$$

In equation (2), i denotes the country in question, t denotes the point in time in an integer number of months and the variables used are those defined in the later section Defining Variables.

It is also worth mentioning that while the underlying CDS series is available at a daily frequency, our method requires combining daily financial market data with political and macroeconomic variables that are observed monthly or even quarterly. Using daily CDS data alongside political indicators that are reported with much larger time-gaps would inflate the number of observations without meaningfully increasing the information one can conclude from this. Aggregating the CDS-based redenomination spread, after the synthetic control, to a monthly frequency therefore ensures better consistency across variables. A second motivation concerns the statistical properties of the synthetic-control residual. At the daily level, the CR14-CR difference contains noise driven by liquidity frictions and day-to-day sentiment shifts. Monthly averaging smooths these fluctuations and produces a cleaner series that better captures the underlying risk

premium. This approach is also conceptually aligned with Kremens (2024), who emphasizes the importance of filtering away short-run noise when interpreting the ISDA basis.

Furthermore, political developments, such as coalition negotiations, changes in cabinet composition, shifts in party support, or adjustments in EU-related policy positions, typically unfold over weeks or months rather than days. A monthly frequency therefore matches the more natural horizon at which political uncertainty is reflected in markets, allowing us to capture how political signals translate into sovereign credit risk without overstating the precision of the political data.

III. Data

A. Data Description

The data used for the dependent variables includes both the CDS data and the data used for the synthetic control, all of which are daily data taken from LSEG Workspace (LSEG, 2025). The CDS data consists of CR14 and CR premiums for Germany, Italy and France, measured as mid yields. The CDS contracts are denominated in U.S. dollars and correspond to 5-year maturities, consistent with the most liquid tenor in the sovereign CDS market. For the synthetic control we also use CR14 and CR data from other eurozone countries, specifically Ireland, Portugal, Finland, Belgium, Austria, Spain and the Netherlands. For all these countries, including Germany, Italy and France, we further collect liquidity data for the CR14 contract, measured as number of contributors and data on 5-year government bond yields, measured as mid yield, which are used in the synthetic control.

In addition to the CDS data, which is used for the dependent variable, we include a large variety of data used for the independent variables. Political variables include government composition, euroscepticism, and time to election, allowing a dynamic link between market prices and political developments. The inclusion of these can all be motivated, and these motivations and the sources for the data hereby follow.

The inflation data is taken from OECD (2025b) and is measured as a harmonized index of consumption, HICP, which is a measure of inflation that is comparable across countries in the EU. If a country has unusually high or low inflation there is an incentive to leave the euro for the country to be able to set the interest rate that is optimal for the country itself, should the ECB interest rate not be the optimal rate for that country. Eichengreen (2010) discusses scenarios in which inflation provides incentives for a country to leave the Euro. One scenario is a hypothetical country, similar to Portugal, suffering from high labor costs and chronic slow growth that might be incentivized to leave the Euro in order to engineer a sharp real depreciation in their background currency to export its way back to full employment. A second scenario provided by Eichengreen is a hypothetical country, similar to Germany, with a strong economic growth that is upset that the ECB has come under pressure to relax its commitment to price stability and therefore reintroduces its background currency to avoid high inflation. Including inflation therefore captures such occurrences.

Our regression also uses output gap as a percentage of GDP. The data comes from OECDs Economic Outlook 117 (OECD, 2025a) which uses forecasted data for 2025 and 2026, but since our observation period is 2015 to 2024 inclusive, the dataset only contains observed data. Output gap measures GDP in relation to potential GDP and is connected to inflation but inflation also depends on expected inflation and cost shock and therefore does not follow output gap directly. Including both inflation and output gap therefore enables us to test separately for the business cycle and price dynamics. The theoretical effect of output gap on redenomination risk is similar to the above reasoning regarding inflation. A country with a positive output gap is incentivized to leave the euro to be able to increase the interest rate to the optimum, and vice versa for a negative output gap.

The interest rate that ECB sets is highly relevant to our analysis and is therefore included. We use the deposit facility rate, abbreviated as DFR, obtained directly from the ECB (European Central Bank, 2025). The DFR is the interest rate banks receive when they deposit money with the central bank overnight and is the key rate through which the Governing Council steers its monetary policy stance (European Central Bank, 2024). The interest rate that the ECB sets is the interest rate of relevance in all eurozone countries and that interest rate is therefore used for all countries in our analysis. An interest rate that is not optimal is naturally captured by including the interest rate itself in the regression. Since ECB sets the interest rate on specific dates, such dates involve sudden movement in the interest rate, and since ECB does not disclose beforehand which interest rate will be adopted, the level of optimality of the interest rate also suddenly changes for each specific country. To further capture the relation between the DFR and output gap, which largely determines if the interest rate is optimal or not for each country in question, we create a moderating variable between output gap and DFR based on the datasets already presented.

Exchange rate could also be motivated as relevant for redenomination risk. We use the EUR/USD exchange rate with data from WRDS Compustat Global (WRDS, 2025). The idea is to capture the strength of the euro, and comparing it to the U.S. dollar is a reasonable approach to achieve this. The alternative would be to compare the euro to a basket of other currencies, but this adds little value for our purpose. Since appreciations of the euro against the dollar generally coincide with appreciations against a broader basket of currencies, the EUR/USD exchange rate provides sufficient and direct measure of euro strength. The theoretical impact on redenomination risk is that there are incentives for the country to redenominate to stimulate net exports if the euro becomes too strong. Redenominating and devaluing the currency makes exports cheaper and imports more expensive, which stimulates GDP.

The EUR/USD exchange rate is connected to net exports, but since net exports also depends on variables such as capital flows and interest rate, we include net exports as a percentage of GDP (OECD, 2025a) separately in our regression. We use this measure since dividing by GDP provides for better comparability across countries. The idea of including this variable is similar to the reasons for including the exchange rate. If a country has low net exports it can be incentivized to redenominate in order for its exports to become cheaper for the importing countries. To capture the relation between exchange rate and net exports we create a moderating variable with a method described

under the Defining Variables section. This moderating variable captures the case when both the exchange rate is strong, and net exports are low.

Our final economic data that we include in our regression is government gross debt as a percentage of GDP (OECD, 2025c). We use gross government debt since net debt might include assets that differ in liquidity between the countries. Dividing by GDP is done here for better comparability as well. The rationale for including this variable is that high levels of debt increase the incentive to use redenomination as a tool to solve fiscal stress. Redenomination would allow a eurozone country with high debt to print money to repay its high debt and inflate away large parts of the real debt.

The political data are from Chapel Hill Expert Survey, abbreviated as CHES, whose mission is to estimate party positioning and policy issues for national parties in various countries across the world (Chapel Hill Expert Survey, 2019; Chapel Hill Expert Survey, 2024). The data sets from CHES are large files that contain a large variety of political variables, but the most relevant variable for our research is EU position. EU position is measured on a scale from 1 to 7, where 1 means that the party strongly opposes European integration and 7 means that the party is strongly in favor. Although a country can be a member of EU without adopting the euro, it is legally unclear if a country leaving the EU would also be forced to leave the euro (Eichengreen, 2010). However, since skepticism towards the EU implies a preference for retaining national control over key political decisions, it is likely that skepticism towards the EU involves skepticism towards the euro. We also use data on seat shares in parliament for each of the parties. We use the seat shares instead of the vote shares since seat shares reflect the actual power that each of the parties obtain from the election and is therefore a better predictor of parliamentary actions, and thus also of potential redenomination. Note that the seat shares in the data sets do not always add to 100%, which is because for some parties in certain years seat share data is not available. However, the seat shares always sum up closely to 100% and since our method, as described under Defining Variables, implies creating a weighted average of the EU position of the parliament this is not a problem. The CHES data further shows the parties in government for each period through a dummy variable where 1 indicates that the party was in the government, and non-government parties receive the value 0. This is useful because we also create a variable with weighted average EU position of the government.

A problem with the CHES data set is that the French legislative election 2022 is not included in the data. This is because the survey instead includes the 2024 legislative election which was snap election. To solve this, we find data for the election results of 2022 and assume that the EU position of the parties are the same as those found in CHES (2024). The data from the election 2022 comes from the archives of election results in France (Ministère de l'Intérieur, 2022). A problem with this is that the election results for the constituents of the coalition Ensemble is not shown separately in the archives of election results (Ministère de l'Intérieur, 2022) but in the CHES data the results of constituent parties are shown separately. Due to lack of other sources, we use Wikipedia (Wikipedia contributors, 2025) for the election results of the constituents of Ensemble and cross-check it against the election archives (Ministère de l'Intérieur, 2022) so that the seats of the constituents add up to the seats of the Ensemble. We argue that this is the best we can do due to the lack of other sources, and potential small errors in the exact composition of seats of the Ensemble from the Wikipedia article will not

severely damage our results since we use it simply to decompose the election results of Ensemble.

The motivation for including the parliamentary EU position is that redenomination must occur through a parliamentary decision and the weighted average EU position of the parliament should therefore reflect the probability that a decision for redenomination could occur. We also include the weighted average EU position of the government. The idea for this is that governments often propose laws on which the parliament thereafter votes. A second reason is that government parties often receive more media attention and can therefore affect the public opinion to a higher degree in comparison to parties which do not receive as much media attention.

The final political data used is simply the election dates from which two variables are created. One of the variables is a variable with the remaining months to the next election, and the second variable is a dummy variable where months that are within one year of the next election receive the value 1, otherwise 0. The reasoning for this is that the closer to an election, the sooner in time the results of the next election, which are uncertain, will have an impact. The closer to an election, the more intense the political discussion also becomes and parties might change their opinions to achieve as many votes as possible in the upcoming election. The dummy variable is constructed to specifically capture the last-mentioned aspect.

B. Defining Variables

Dependent Variable

Y: Residual ISDA spread. The dependent variable is created based on the daily data from LSEG terminal of the spread between premia on CR14 CDS and CR CDS. We perform a synthetic control to isolate the redenomination risk part of the spread, see Methodology. The daily residual ISDA spread are transformed into monthly residual ISDA spread by using the arithmetic average residual ISDA spread for each month as the value for the residual ISDA spreads of the months.

Independent Variables

I: Inflation. The variable uses the monthly inflation data from OECD directly measured as harmonized index of consumer prices, HICP.

OUT: Output gap. The variable uses quarterly data from OECD and is measured as output gap as percentage of potential GDP. The quarterly data is converted to monthly data by assuming that each of the months in the quarter have the same output gap. This implies that each of the output gap data points from OECD is repeated for the three months in the quarter.

IR: ECB deposit facility rate. The DFR data from ECB includes the dates when ECB changes the DFR and the interest rate they change to. The variable is therefore naturally constructed by extending a DFR rate over all days until the next date when the DFR is changed. The variable is then transformed to monthly data by using the month end

principle which is motivated by the fact that DFR has low volatility and has the same values for long periods of time.

MODX: Moderating variable of DFR and output gap. The variable is constructed by multiplying the monthly data from variable IR with the monthly data from variable OUT. Before the multiplication, the IR variable is centered around the mean of the DFR during the period 2015-01-01 to 2024-12-31. This is done to reflect that the risk of redenomination should be higher when the interest rate is low and output gap is high, and when the interest rate is high and output gap is low. The distance from the mean interest rate defines if the value of the interest for a certain month is high or low. The product is thereafter multiplied by negative 1 with the logic that more positive values indicate higher risk cases of redenomination risk which is easier to understand in contrast to if high risk cases should be negative.

EX: EUR/USD. The variable uses the American term exchange rate between the Euro and the US Dollar. Due to the high volatility that is common in currency exchange rates, we construct monthly variables by using the average of the daily exchange rate values during each month.

D: Government gross debt as percentage of GDP. The variable uses yearly data from OECD which is then transformed into monthly data by assuming that each month in the year has the same value.

NETX: Net exports as percentage of GDP. The variable is constructed by converting the quarterly data from OECD to monthly data by repeating the value of the quarter for the three months in each quarter.

MODY: Moderating variable between net exports as percentage of GDP and EUR/USD exchange rate. The variable is constructed by multiplying each monthly data point from variable NETX and variable EX. Due to the higher volatility of the variables involved here, in comparison to MODX, and because of different mechanisms, this moderating variable is created with the use of a function. The function implies that the values of NETX and EX are multiplied when both net exports are lower than the mean for the period (2015-01-01 to 2024-12-31) and when the EUR/USD exchange rate is stronger than the mean for the same period, otherwise the value of the specific month is set to zero. This captures the fact that a weak Euro is always positive for net exports, while a strong euro is only negative if net exports are historically low.

ME: Months until election. The variable is constructed with the relevant dates of past and future elections and calculates the number of months until the next election. This is done by finding the difference in years multiplied by 12 and the difference in the numeric values of the months. Thusly, the difference in days is excluded from the calculation. For the next Italian election, we used the latest possible date it must be held (Constitution of the Italian Republic, n.d.).

DE: Dummy variable time until election. The variable uses relevant dates of past and future elections and is equal to 1 if the next election is held within 1 year, and 0 otherwise.

SP: European Union skepticism in parliament. The variable uses data from CHES which includes the EU skepticism of specific parties in each country and is updated so that for every country except France, each of the parties involved in the survey for each parliamentary term from 2015-01-01 to 2024-12-31 obtains a decimal value from 1-7 of EU skepticism, where a lower value means higher EU skepticism. We assume that the EU skepticism within parties remain the same for one parliamentary term and therefore extend the values of EU skepticism from CHES for the entire parliamentary terms. Due to the unordinary election held in France in 2024, the period from the election in 2022 until the election in 2024 does not have values for EU skepticism since no survey is made in that period. We therefore assume that the values of EU skepticism of the parties obtained in 2024 is also the values of their EU skepticism in 2022. This is done because 2024 is the closest point in time where EU position is measured, and we argue that it is reasonable to assume that the EU positions of the companies do not change significantly in 2 years. The variable is created as a weighted average of EU position based on the share of seats from the CHES data. Since all parties in parliament are not always included in the surveys, the shares of seats do not always add to 100%. However, since only small parties are excluded, the sum of the seat shares is always relatively close to 100% and sufficiently represent the position of the parliament. Since the CHES data does not include the outcome of the 2022 election, the weighted average parliament position in France during the period from the election in 2022 until the election in 2024 is constructed based on number of seats in the lower house parliament out of 577 (Wikipedia contributors, 2025) of the parties included in the survey from 2024.

SG: European Union Skepticism Government. The variable uses data from CHES which includes the EU skepticism of specific parties in each country and is updated so that for every country except France, each of the parties involved in the survey for each parliamentary term from 2015-01-01 to 2024-12-31 obtains a decimal value from 1-7 of EU skepticism, where a lower value means higher EU skepticism. The CHES data shows if the party is also a party in government and this is used to create a weighted average of the EU position of the parties in government. For all periods of government, except the Frensch government from the election in 2022 to the election in 2024, this is done by creating a weighted average of EU position based on the share of seats in parliament that the parties in government received in the election. This assumes that the seats in government are proportionally allocated based on the number of seats the government parties have in parliament. For France, the government weighted average EU position in the period between the election in 2022 and the election in 2024 is constructed by using the EU positions of the parties in government from 2024 in the CHES data set. The weighted average of the government position in France in that period is constructed based on weighted average of the number of seats in parliament (Wikipedia contributors, 2025) and the EU position of those parties from the 2024 CHES survey which covers the 2024 election. This is done because 2024 is the closest point in time where EU position is measured, and we argue that it is reasonable to assume that the EU positions of the companies do not change significantly in 2 years.

IV. Main Empirical Findings

A. The Raw ISDA Basis

To fully motivate the construction of the redenomination spread used in the subsequent analysis, this subsection begins by examining the raw ISDA basis, defined as the daily difference between CR14 and CR CDS. The difference between the two theoretically reflects the additional compensation investors demand for the possibility of redenomination into a depreciated domestic currency. However, this raw difference also incorporates several non-redenomination components, including liquidity differences, contract-specific frictions, market-wide risk appetite, and idiosyncratic pricing anomalies. Thus, the raw basis can be somewhat informative but importantly, it does not isolate the pure redenomination component. We denote this collection of graphs as Figure 0 as it's not intended to carry serious informational weight on redenomination risk and is only used to validate the post-synthetic control graphs.

Figure 0. Raw ISDA Basis for Germany-France-Italy (2015-2024)

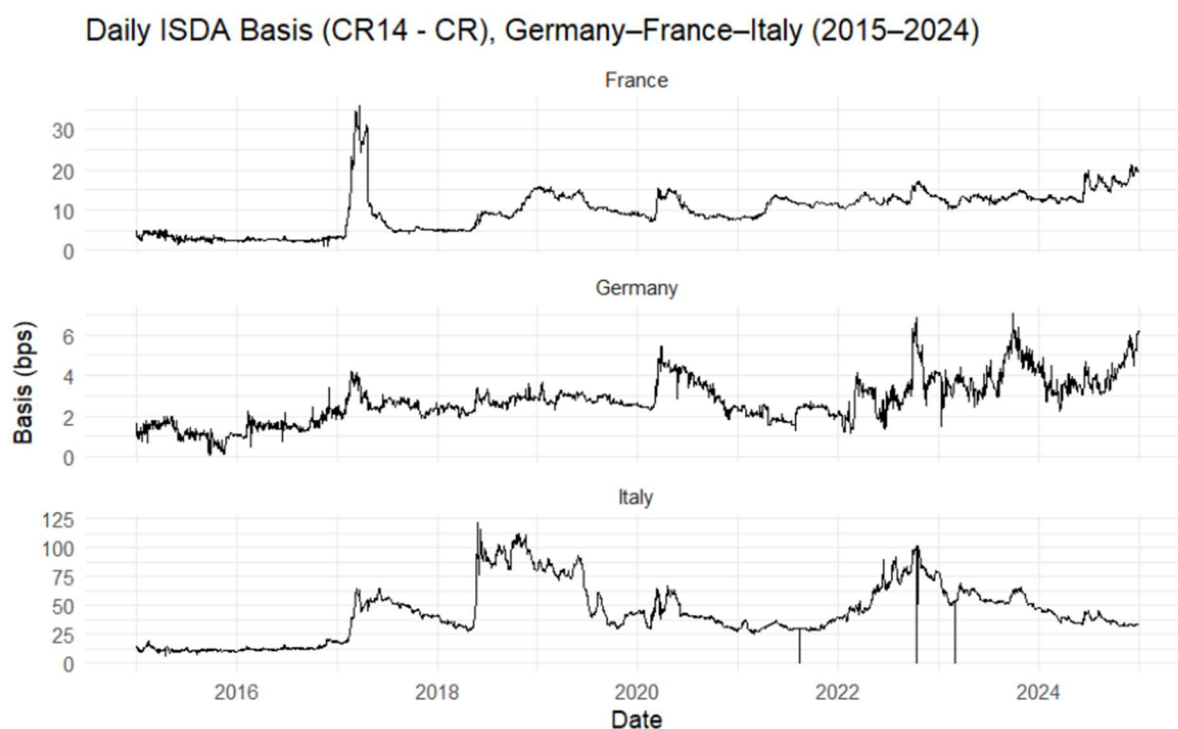


Figure 0. The Raw ISDA Basis is mathematically denoted as the difference between the two CDS contracts CR14 and CR (CR14-CR). Data: ISDA CDS quotes.

The raw basis reveals substantial cross-country variation. France exhibits a period of quite low spreads early in the sample, followed by a clear shift to a higher level around 2017. After this break, the French basis fluctuates within a moderately elevated range for the remainder of the sample, with some medium-term drift but no prolonged return to pre-2017 levels. Germany by contrast, shows consistently low and relatively stable values throughout. The German basis remains tightly clustered around a narrow band, with only short-lived deviations that coincide with periods of market-wide volatility rather than prolonged country-specific movements. Italy shows the opposite pattern as its raw basis is both larger in magnitude and more volatile. Several pronounced episodes

of widening are visible, and even outside these periods the Italian series remains clearly above those of France and Germany.

The purpose of presenting the raw basis is not to interpret these levels as redenomination premia, but rather to highlight two empirical features that motivate the next step of the analysis. First, the raw series contains substantial high-frequency noise and market-wide shocks that might obscure the underlying signals. Second, the overall level and volatility differ markedly across countries, suggesting that contract-specific and liquidity-related components actually vary substantially across issuers and over time. These patterns make the raw basis an informative starting point but an imperfect object for cross-country comparison or structural interpretation. The synthetic control procedure addresses these limitations by constructing a benchmark that absorbs the non-redenomination components embedded in the raw series.

Overall, the raw ISDA basis provides a useful descriptive overview of market pricing patterns and highlights substantial cross-country variation. However, as mentioned the CR14-CR spread also reflects non-redenomination factors that vary across time and across issuers, it does not isolate the pure redenomination component. To address this limitation, the next section presents a synthetically controlled version for each country. By matching treated countries to a weighted combination of control units that replicate the non-redenomination pricing components, the synthetic control method allows the residual difference to be interpreted as a more accurate measure of redenomination risk.

B. Residual Spreads after Synthetic Control

Below are the plotted results of our synthetic control, where Figures 1a-c details the specific RS for a given country. Note that the scales on the y-axis differ from country to country. What is being estimated here is essentially the pure redenomination risk for a given country by using a host of other eurozone countries to build a synthetic country that closest matches the country we want to look at. The residual spread is the difference between the ISDA basis and the synthetic ISDA basis for each treated country.

Figure 1a. Isolated Residual Spread for Germany (2015-2024)

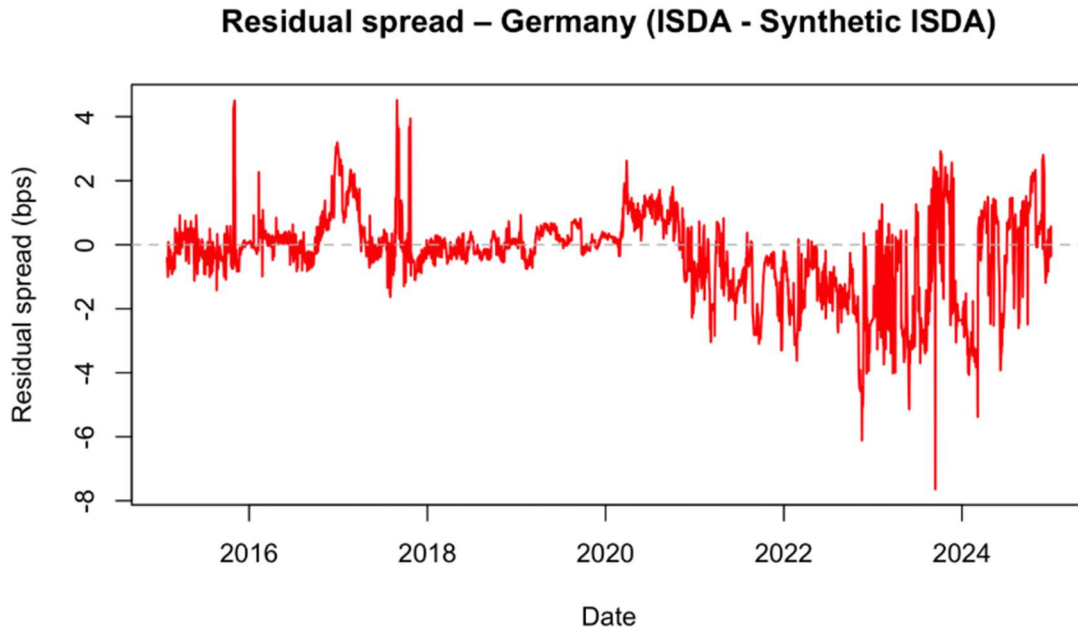


Figure 1c. Isolated Residual Spread for Germany, 2015-2024.

This figure plots the residual CDS spread (RS) for Germany, defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. RS is expressed in basis points. Higher values indicate periods where Germany's CDS pricing deviates from that implied by the synthetic benchmark. Data: ISDA CDS quotes and author-constructed synthetic CDS series.

Figure 1a displays the residual spread for Germany, defined as the difference between the observed ISDA-quoted CDS spread and the synthetic control estimate. The synthetic control fits Germany closely, with residual spreads fluctuating narrowly around zero from 2015 to roughly mid-2019. However, occasional short-lived deviations occur, but the magnitude remains small, generally within -2 to 2 bps. From late 2019 onward, the residuals have become more volatile. The spread moves more widely around zero, and several negative spikes appear between 2020 and 2024, reaching levels below -6 bps at their most extreme. Toward the end of our sample period, the residual series remains volatile with both positive and negative deviations, but without exhibiting a sustained shift away from zero. Overall, the figure shows that the synthetic control tracks Germany reasonably well, but with increased post-2019 noise and several short-lived outliers. This is still a very good fit compared to the other residual series shown below.

Figure 1b. Isolated Residual Spread for Italy (2015-2024)

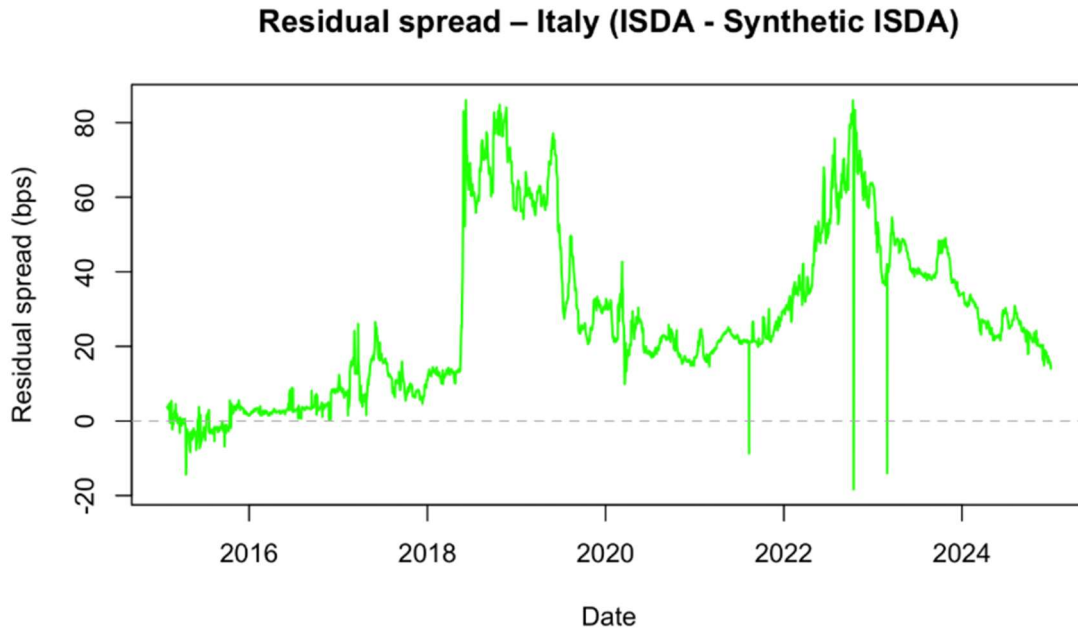


Figure 1b. Isolated Residual Spread for Italy, 2015-2024.

This figure plots the residual CDS spread (RS) for Italy, defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. RS is expressed in basis points. Higher values indicate periods where Italy's CDS pricing deviates from that implied by the synthetic benchmark. Data: ISDA CDS quotes and author-constructed synthetic CDS series.

Further, figure 1b shows the residual spread for Italy. During the early period, approximately 2015 to early 2018, the residual spread remains close to zero, with only small fluctuations typically within about 10 bps. A sharp and persistent deviation emerges beginning in 2018. The residual spread rises rapidly, reaching values above 80 basis points at several points in 2018-2019. After this initial spike, the residuals remain clearly positive and elevated throughout most of the following period. While the magnitude gradually decreases after 2019, the spread remains well above zero and displays substantial volatility. A second period of elevated residual spreads appears around 2022, where deviations again exceed 60-70 basis points. After 2022, the residual decreases but stays positive through most of 2023-2024, although with a downward trend toward the end of the sample. Isolated negative spikes occur sporadically but are short-lived. Overall, the Italy series shows a pronounced and long-lasting positive gap between observed and synthetic CDS spreads after 2018, in contrast to the comparatively flat earlier pattern.

Figure 1c. Isolated Residual Spread for France (2015-2024)

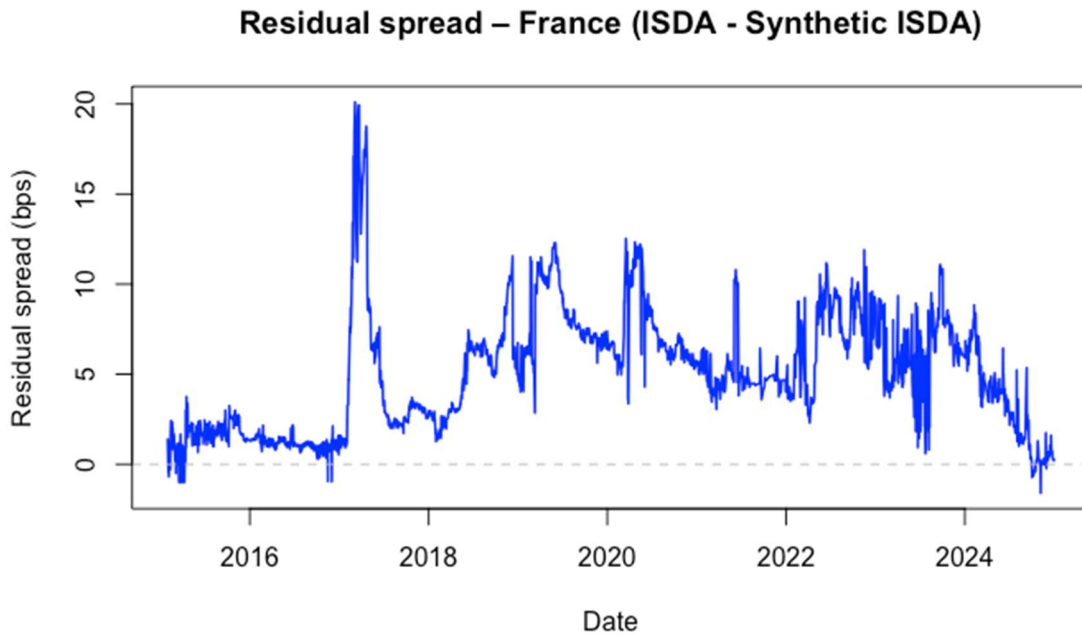


Figure 1c. Isolated Residual Spread for France, 2015-2024.

This figure plots the residual CDS spread (RS) for France, defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. RS is expressed in basis points. Higher values indicate periods where France's CDS pricing deviates from that implied by the synthetic benchmark. Data: ISDA CDS quotes and author-constructed synthetic CDS series.

Finally, figure 1c displays the residual CDS spread for France. At the start of our sample period (approximately 2015 to early 2017), the residual spread remains close to zero with modest fluctuations, indicating that the synthetic control provides a good approximation of France's CDS dynamics at this stage. A noticeable upward deviation emerges in 2017, with the residual spread rising sharply to values above 20 basis points for a brief period. After this spike, the residual remains consistently positive throughout the entire time period. Between 2018 and 2021, the spread fluctuates mostly between 5 and 12 basis points, showing moderate but persistent deviations from the synthetic control. From 2022 onward, the residual continues to display sustained positive values, though with slightly reduced volatility compared to the earlier years. Toward the end of the sample (2023-2024), the residual gradually declines and approaches zero again, but without fully reversing the positive gap that characterizes much of the post-2017 period. Overall, the France series shows a marked increase in residual spreads after 2017, with persistent but moderate positive deviations relative to the synthetic control.

C. OLS Regressions

Below are the subsequent OLS regressions for each country, where RS is plotted as a dependent variable that we try to estimate using the various macroeconomic and political variables mentioned above.

Table 1a. OLS Regression for Germany

```
Call:
lm(formula = residual_spread ~ . - date, data = germany)

Residuals:
    Min       1Q   Median       3Q      Max
-2.63032 -0.38201 -0.01089  0.44397  2.12110

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   115.127484   54.964465   2.095   0.0386 *
inflation     -0.324691    0.050395  -6.443 0.00000000344 ***
output_gap_percentage -0.007297    0.037080  -0.197   0.8444
DFR           0.030320    0.135384   0.224   0.8232
moderator.x    0.023726    0.038686   0.613   0.5410
eurusd        -5.045002    2.705766  -1.865   0.0650 .
debt_gdp       -0.019437    0.019331  -1.005   0.3169
net_exports    -0.455666    0.181375  -2.512   0.0135 *
moderator.y    -5.037982    9.707857  -0.519   0.6049
months_to_election 0.016771    0.012956   1.294   0.1983
within_one_year  0.337105    0.277752   1.214   0.2275
eu_position    -2.214267    1.537983  -1.440   0.1529
eu_position_govt -14.745009    7.571644  -1.947   0.0541 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.77 on 107 degrees of freedom
Multiple R-squared:  0.5264,    Adjusted R-squared:  0.4732
F-statistic: 9.909 on 12 and 107 DF,  p-value: 0.00000000000912
```

Table 1a. OLS Regression of the Residual Spread for Germany (2015-2024).

This table reports OLS estimates from regressing the German residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. The dependent variable is measured in basis points. Independent variables include inflation, output gap, debt-to-GDP ratio, current-account net exports, EUR/USD exchange rate, and political variables (months to election, EU position index, government EU position). The sample consists of monthly observations from 2015 to 2024.

As table 1a shows, the inflation variable is highly significant ($p < 0.001$) and has a negative coefficient (-0.325), indicating a relatively strong relationship in terms of magnitude compared to the other macroeconomic controls. Net exports are shown to be statistically significant with a small coefficient (-0.456). The coefficient on the exchange rate variable (eurusd) is almost statistically significant at the 5% level, and the effect size is larger (-5.045). Among the political variables, the eu_position_govt variable is almost significant at the 5% level, with a negative coefficient (-14.745). The remaining macroeconomic controls, such as output gap, debt-to-GDP, and DFR, do not show statistically significant effects in this specification.

The adjusted R^2 of approximately 0.47 is relatively high given the nature of the dependent variable, as a large share of its variation could be interpreted as still driven by noise and short-term market fluctuations. In this context, an adjusted R^2 of about 47% indicates that the model explains a substantial portion of the systematic variation. The F-statistic indicates overall joint significance of the included regressors ($p < 0.001$), meaning the model captures systematic variation in the residual series.

Table 1b. OLS Regression for Italy

```
Call:
lm(formula = residual_spread ~ . - date, data = italy)

Residuals:
    Min       1Q   Median       3Q      Max
-40.036  -4.181   0.006   4.427  26.797

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)    452.8949    105.7059   4.284 0.00004043 ***
inflation        2.2900     0.9316   2.458 0.015587 *
output_gap_percentage -0.1633     0.7147  -0.228 0.819712
DFR              0.6647     3.0797   0.216 0.829529
moderator.x      0.1128     0.7663   0.147 0.883292
eurusd          -40.4902    26.4505  -1.531 0.128801
debt_gdp        -0.6799     0.1312  -5.183 0.00000105 ***
net_exports      1.8864     1.7112   1.102 0.272799
moderator.y     -191.9500    101.0861  -1.899 0.060300 .
months_to_election  0.4943     0.1292   3.825 0.000222 ***
within_one_year  11.2304     4.7084   2.385 0.018846 *
eu_position     -80.5795    33.7287  -2.389 0.018660 *
eu_position_govt   9.8929     8.9032   1.111 0.269009
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 9.931 on 106 degrees of freedom
(1 observation deleted due to missingness)
Multiple R-squared:  0.8103,    Adjusted R-squared:  0.7888
F-statistic: 37.72 on 12 and 106 DF,  p-value: < 0.00000000000000022
```

Table 1b. OLS Regression of the Residual Spread for Italy (2015-2024).

This table reports OLS estimates from regressing the Italian residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. The dependent variable is measured in basis points. Independent variables include inflation, output gap, debt-to-GDP ratio, current-account net exports, EUR/USD exchange rate, and political variables (months to election, EU position index, government EU position). The sample consists of monthly observations from 2015 to 2024.

For Italy, the inflation variable is statistically significant at the 5% level, with a positive coefficient (2.290), indicating a comparatively large magnitude relative to other macroeconomic variables, but still less so than Germany. Debt-to-GDP also displays strong significance ($p < 0.001$) and has a negative coefficient (-0.680). The month-to-election variable is significant at the 1% level, while the within-one-year election dummy is significant at the 5% level, both with positive coefficients. Additionally, the parliament EU position variable (eu_position) is significant with a negative coefficient (-80.580). The remaining controls, including output gap, DFR, net exports, and other moderator variables, do not display statistically significant effects. The highly significant intercept of approximately 470 basis points represents Italy's baseline redenomination risk after controlling for our determinants. Because the explanatory variables do not have economically meaningful zero values (i.e. inflation being 0%, EUR/USD=0, etc.), the intercept should not be expected to give any useful information when interpreted literally. Instead, it captures a structural and time-invariant component of redenomination risk that is not explained by the model.

The adjusted R^2 of approximately 0.79 indicates that the model explains a very substantial share of the variation in Italy's residual spread. This is notably high given the circumstances mentioned in the section for Germany above. The overall model is jointly significant, as reflected in the F-statistic ($p < 0.001$).

Table 1c. OLS Regression for France

```
Call:
lm(formula = residual_spread ~ . - date, data = france)

Residuals:
    Min       1Q   Median       3Q      Max
-5.3109 -1.4098 -0.3639  0.9953 13.3964

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   -1.225026   7.635136  -0.160   0.8728
inflation      -0.009316   0.314582  -0.030   0.9764
output_gap_percentage  0.124279   0.126606   0.982   0.3285
DFR            -0.061261   0.606317  -0.101   0.9197
moderator.x    -0.132572   0.134262  -0.987   0.3257
eurusd        -35.104731   7.833874  -4.481 0.0000187 ***
debt_gdp        0.046675   0.047799   0.976   0.3310
net_exports    -0.414322   0.585681  -0.707   0.4808
moderator.y      3.183196  30.894981   0.103   0.9181
months_to_election -0.011626   0.024907  -0.467   0.6416
within_one_year  0.069048   0.783586   0.088   0.9299
eu_position     1.983634   2.047457   0.969   0.3348
eu_position_govt  4.461292   2.442381   1.827   0.0705 .
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 2.503 on 107 degrees of freedom
Multiple R-squared:  0.4392,    Adjusted R-squared:  0.3763
F-statistic: 6.982 on 12 and 107 DF,  p-value: 0.00000003225
```

Table 1c. OLS Regression of the Residual Spread for France (2015-2024).

This table reports OLS estimates from regressing the French residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. The dependent variable is measured in basis points. Independent variables include inflation, output gap, debt-to-GDP ratio, current-account net exports, EUR/USD exchange rate, and political variables (months to election, EU position index, government EU position). The sample consists of monthly observations from 2015 to 2024.

As table 3 shows, compared to Italy and Germany fewer variables exhibit statistical significance in the French specification. The exchange rate variable (eurusd) is highly statistically significant ($p < 0.001$) with a negative coefficient (-35.105), representing the strongest and clearest predictor in the model in terms of both magnitude and significance. Additionally, the eu_position_govt variable is significant at the 10% level, though its coefficient (4.462) is more moderate in size relative to the exchange-rate effect. The remaining macroeconomic and political variables, including inflation, output gap, net exports, debt-to-GDP, election timing measures, and the moderator indicators, do not display statistically significant associations with France's residual CDS spread in this specification. Coefficients on these variables are generally small.

The quite modest adjusted R^2 of approximately 0.38 indicates that the model explains a smaller share of the variation in France's residual spread. With that said, the F-statistic ($p < 0.001$) indicates the overall model is still jointly significant.

To summarize, across the three countries the OLS regressions reveal notable differences in the number and strength of statistically significant predictors of the residual CDS spread. Italy exhibits the strongest explanatory patterns. Several variables are statistically significant with comparatively large coefficient magnitudes. Italy also shows the highest model fit, with an adjusted R^2 near 0.79, indicating that a substantial portion of the variation in its residual spread is captured by the included macroeconomic and political variables.

Germany displays a more moderate level of explanatory power. Inflation, the exchange rate, and the government's EU-position score are the key significant variables, although their coefficient magnitudes are generally smaller than those observed in the Italian regression. The adjusted R^2 of about 0.47 suggests that the model captures a meaningful, but distinctly smaller, share of the variation in Germany's residual spread compared to Italy.

France, in contrast, shows fewer statistically significant relationships. The exchange rate variable is the only consistently strong predictor, while most macroeconomic and political variables are not significant at the 5% level. The adjusted R^2 of roughly 0.38 indicates a lower degree of explanatory power relative to both Italy and Germany. The overall pattern suggests that the residual spread for France is less systematically related to the included regressors.

Taken together, the results indicate considerable cross-country heterogeneity in how the residual CDS spreads co-move with macroeconomic and political variables, with Italy showing the strongest associations, Germany moderate ones, and France the weakest. Overall, the empirical findings suggest that redenomination risk is neither uniform across the eurozone or purely macroeconomic. Instead, its dynamics appear linked to country-specific political structures, electoral uncertainty, and investor perceptions of a country's institutional credibility.

V. Discussion

A. Main Discussion

Our empirical results support that redenomination risk within the eurozone is not a homogeneous phenomenon but is shaped by country-specific political structures, institutional credibility, and macro-financial sensitivities. Although macroeconomic fundamentals play a role, much explanatory power arises from political variables, particularly in countries with unstable coalition governments and a history of Eurosceptic political movements.

Italy's results demonstrate that redenomination risk is to an extent political. Multiple political variables, including EU position, months to election, and election year are statistically significant, and the model explains almost 80% of the variation in Italy's residual CDS spread. This aligns with the synthetic-control evidence showing large

positive deviations around political transitions such as the 2018 formation of the first Conte government and the 2022 shift to a more Eurosceptic (SIEPS, 2022) coalition led by Giorgia Meloni. These episodes illustrate that markets rapidly price in changes in expected policy direction when credibility towards the euro becomes uncertain. The Italian case thus strongly supports the view that redenomination risk is closely tied to political fragmentation and governing coalition instability. It is also worth noticing that the residual spreads are much larger for Italy, than for Germany and France, suggesting that the risk for redenomination is priced in relatively high.

Germany on the other hand presents the opposite situation, as its redenomination spread is close to zero or even negative throughout the sample. The regression also shows that political drivers are limited. Only the government's EU position carries some statistical significance (close to 5%), and even this effect is small. This reflects Germany's comparatively stable political system, low electoral and political volatility, and central role as a safe asset issuer in the eurozone. If hypothetically redenominated, German sovereign debt would likely be repaid in an appreciating currency, generating negative redenomination risk (Kremens, 2024). The German results therefore highlight the role of institutional strength and market confidence as stabilizing forces.

France lies between these two extremes. The synthetic-control results show sustained positive redenomination premia after 2017, especially during the 2022 presidential election. Yet the regression analysis reveals relatively weak explanatory power from political variables. This may reflect the structure of the French semi-presidential system, in which the president enjoys substantial executive autonomy even when parliamentary fragmentation increases. Investors may therefore view French political volatility as less likely to translate into changes in currency or fiscal policy, provided extreme shifts in the presidential elections do not occur. The French case illustrates that redenomination risk can remain elevated even when political variables are less predictive, which might be suggesting a more structural or persistent premium unrelated to short-term political cycles.

So far, a central insight emerging from this thesis is that redenomination risk in France, Italy, and Germany does not behave as a persistent component of sovereign spreads. Instead, it responds sharply to political shocks, while remaining more dormant during periods of political calm. This pattern aligns with the findings of Krishnamurthy, Nagel, and Vissing-Jorgensen (2018), who also document that redenomination risk behaves as an episodic and event-driven premium rather than a stable or slow-moving factor. In their analysis of ECB crisis interventions (namely the SMP, OMT, and LTROs), the authors show that redenomination risk plays only a limited role during normal periods, implying that redenomination risk was unlikely to be a major contributor to yields for most of their sample period (2010-2012). They show that for the eurozone countries Spain and Portugal, the redenomination premium is typically muted outside of major ECB policy dates, and its contribution to overall yield changes is modest on average, only accounting for only 13% of the total yield across the SMP and OMT announcements. Yet this small average contribution masks a crucial feature of the redenomination premium, which is that it responds to meaningful events. Krishnamurthy et al. show that redenomination risk drops sharply in Spain around the SMP and OMT announcements, with reductions of 20-56 bps observed in narrow two-day windows. These large and sudden movements demonstrate that redenomination risk

is not a smooth or continuous process. Instead, it is activated by specific developments that change the perceived likelihood of euro exit, whether by stabilizing forces (ECB intervention) or destabilizing ones (political instability or fiscal stress). The authors emphasize this point when noting that redenomination risk was present at times but not persistently so.

Our thesis finds a similar pattern in the political domain. Political shocks do not uniformly elevate redenomination risk, instead their effects appear more punctuated, emerging only when political developments meaningfully alter expectations about policy continuity. This mirrors the event-driven dynamics in Krishnamurthy et al. but with the relevant shocks coming from domestic political processes rather than ECB policy actions. In both settings, redenomination risk represents a latent risk premium that remains suppressed until an event triggers a repricing of euro-area breakup probabilities.

Redenomination risk could be said to be a tail-risk premium, characterized not by continuous movement but instead by concentrated jumps around certain relevant events that change the market's fundamental perception of the euro. The ECB policy events examined by Krishnamurthy et al. and the political shocks analyzed in this thesis can therefore both be said to operate through this mechanism. Where their analysis demonstrates that ECB interventions can reduce redenomination risk in compressed time windows, the results here show that political instability can increase it with a similarly abrupt pattern.

Taken together, these insights again support the view that redenomination risk is best seen as an event-sensitive component of sovereign spreads. Its episodic nature helps explain why average levels remain low even when the theoretical potential for euro fragmentation exists, while its sharp reactions to political shocks underscore the importance of institutional credibility and political stability in sustaining market confidence in the euro.

The twin-Ds framework also helps explain some cross-country asymmetries we observe. According to Augustin et al. (2020), the conditional devaluation probability is far higher for core countries (where they include Germany and France) than for periphery ones (Italy), meaning that even fiscally strong countries price a substantial currency-jump component when default risk rises. This aligns with our finding that France, despite its fundamentals, exhibits persistent positive residual spreads after 2017. Conversely, Italy's elevated and volatile residual spreads are more consistent with the periphery factor structure described in their model, where regional stress and political fragmentation amplify the interaction. Germany's near-zero or negative residuals reflect its position as a safe-asset issuer, for which redenomination would likely imply currency appreciation rather than depreciation, a mechanism they highlight in their contribution quanto-CDS literature.

Another relevant insight from Augustin et al. (2020) is the distinction between true and risk-adjusted probabilities. Their model shows that markets require substantial compensation for bearing currency-jump risk, implying that the risk-neutral probability of devaluation conditional on default is higher than the true underlying probability. This to an extent parallels our findings that redenomination risks tend to spike in response to

political shocks even when fundamental fiscal conditions remain unchanged, with the latter being a reflection of unchanged true probability. The market prices the risk of such events, reinforcing the event-driven nature of redenomination risk in the euro area.

An important pattern in our results is that the parliamentary EU-position variable and the government EU-position variable does not have a uniform explanatory power across all three countries. This asymmetry is not random as it can be argued that it reflects structural differences in how political authority is exercised in Italy, France, and Germany, and how investors interpret the institutional feasibility of redenomination. As noted earlier, redenomination is formally a legislative act, but investors may not treat all political actors as equally relevant signals of redenomination likelihood.

Italy is the clearest example of this logic. The Italian political system is characterized by fragile coalitions, frequent government turnover, and high legislative fragmentation (The Economist, 2021). Because Italian governments rarely survive a full term, markets could regard individual cabinets as unreliable predictors of long-run policy direction. What ultimately matters for a decision as drastic as redenomination is also broad parliamentary support, not the stance of a particular cabinet that may fall within months. Germany presents the opposite institutional environment. Its parliamentary system is marked by comparatively stable governing coalitions and an executive that typically steers the legislative agenda with consistent majorities. An example of these would be the grand-coalition Merkel cabinets. France occupies an intermediate position. As a semi-presidential system, executive authority is shared between a directly elected president and a government that generally sets policy priorities. While the National Assembly plays an important legislative role, macroeconomic and European policy signals tend to carry the most weight when coming from the executive branch rather than parliament. Ertaş (2023) mentions how the French president can, and have, passed legislative acts without going through a round of voting in parliament first. This helps explain why the parliamentary EU-position variable does not explain redenomination risk for France, while the government measure shows only marginal significance.

A common theme across regressions is that the macroeconomic variables also explain a good portion of redenomination risk. Italy, however, remains predominantly driven by political variables, again suggesting that markets view Italian redenomination risk as domestic and political rather than macroeconomic in nature. Germany's role as a structurally export-oriented economy provides a plausible explanation for why net exports appear to correlate with lower redenomination risk in our results. Germany has maintained one of the world's largest and most persistent current-account surpluses throughout the euro era, driven by strong manufacturing competitiveness and external demand. As documented by the Bertelsmann Stiftung (2018), this surplus is a long-standing structural feature rather than a cyclical fluctuation. Kremens (2024) also frequently mentions that the euro is undervalued relative to what a standalone Deutsche Mark would likely be, reinforcing the idea that Germany's exports gains from euro membership. Against this background, rising net exports can be interpreted as reinforcing Germany's structural advantages within the monetary union, thereby reducing the perceived likelihood of any currency change. While the literature does not directly link fluctuations in trade balances to redenomination-risk pricing (Kremens, 2024; Krishnamurthy et al., 2018), the mechanism can be argued to be consistent with Germany's position as the eurozone's anchor economy.

In Italy's case, the inflation variable being significant and with a positive coefficient is logical due to the country's nature as a high-risk country, where political debates have raised Eurosceptic concerns. High inflation often brings a desire to set one own's interest rate, which would only be possible if Italy left the eurozone. Thus, high inflation can directly correlate to increased redenomination risk if the ECB interest rate is not the optimal rate for the country in question, which seems to be the case for Italy.

Germany shows a negative and significant coefficient for inflation which is reasonable if the interest rate that the ECB sets is optimal for Germany, which likely is the case most of the time since Germany is by far the largest economy in the EU. The negative coefficient is explained further by the argument that Germany having high inflation can be interpreted in terms of the eurozone as a whole having an economic upturn, something that would hardly have Germany considering leaving the euro due to economic concerns. This can be because of a potential high correlation between economic upturn in Germany and economic upturn in the rest of the euro countries due to the large size of the German economy.

However, since the residual spread for Germany is negative for a large period, a negative coefficient for inflation might instead imply a larger risk for redenomination. A more negative spread implies that the CR14 premium is lower in comparison to CR premium, which happens if a redenomination would benefit the bondholder due to a stronger shadow currency. If the negative coefficient of inflation mainly stems from the negative residual spreads, the effect of inflation on redenomination risk would be similar to the case of Italy, where inflation increases redenomination due to a will the country to control their own interest rate. For Germany's case, the higher inflation would then imply that the shadow currency appreciates, or more accurately that the redenomination to the shadow currency would be made possible at a stronger initial currency rate, which explains the more negative residual spread.

We cannot fully prove which of the cases for Germany is the true case, but by running the regression using the absolute value for each residual spread data point, see Appendix B, we find that the coefficient for inflation is positive. When using absolute values, a higher value implies higher redenomination risk. Therefore it is likely that the second case holds true, where inflation increases redenomination risk, but we cannot prove this entirely using absolute values because it is not certain that a distance to the x-axis from the negative side corresponds to the same risk for redenomination as the same distance to the x-axis from the positive side.

For France, inflation is not significant. It could be the case that the ECB interest rate for the period closely matches the optimal interest rate for France, and the inflation does therefore not become significant since it is handled by ECB with a suitable interest rate.

France obtains a significant negative coefficient for the EUR/USD exchange rate while the exchange rate is significant with a negative coefficient for Germany at the 10% level with a p-value of 0.065. Italy does not obtain a significant p-value, although the p-value is relatively close to being significant at the 10% level (p-value of 0.129), also with a negative coefficient. The negative coefficient implies that as the value for the exchange rate increases, meaning that the euro appreciates against the U.S. dollar, the redenomination risk decreases. In our motivation for including the variable we argued

that a higher exchange rate should increase the redenomination risk as countries are incentivized to leave the euro in order to redenominate to a weaker currency to stimulate net exports. Our results instead show the opposite. This can be explained by the fact that using currency devaluations as a tool for stimulating net exports is a short-term solution. A strong euro instead ignites competition among the domestic companies, but also between domestic companies and companies abroad, to provide better products or services. This benefits the economy in the long run which makes redenomination an inappropriate tool for achieving economic growth. The negative coefficient of the exchange rate can instead be explained by the strength of the economy captured through the exchange rate. A stronger euro is a result of high exports and/or high financial inflows in the forms of investments. The high exports means that the economy is likely doing good. In this situation there are no incentives to stimulate net exports. Interestingly, the exact value of the coefficient might reflect the volume of trade and investments between the USA and the country in question where more trade and investments should imply a more important relationship.

If the strong euro is caused by high financial inflows, this signals a strong belief in the future of the economy since many investors believe they have found positive NPV investments, or at least investments that have returns equal to the discount rates. If investors would not believe that they would receive at least a return equal to the discount rate, capital would not flow into the country to such a large extent to influence the exchange rate until the market prices such investments cheap enough to expect a return at least equal to the discount rate.

Furthermore, our data supports that government debt significantly affects redenomination risk and has a negative coefficient for Italy. The negative coefficient does not align with our hypothesis on how the variable would affect redenomination risk. We motivated the inclusion of the variable by reasoning that a higher government debt incentivizes the country to redenominate to be able to print money and inflate away the real value of the debt. The interpretation of the negative coefficient is instead the opposite, that higher debt reduces redenomination. This result is counterintuitive, but it becomes reasonable when interpreted in terms of trust in the Italian economy. The government gross debt as a percentage of GDP is in our data set always much higher for Italy than for Germany and France. To illustrate this, Italy had a government gross debt as percentage of GDP in 2024 of 148.41% while Germany and France had 63.288% and 116.457% respectively (OECD, 2025c). When the gross debt of the Italian government increases even further when it is already at high levels, this signals a trust from debt investors in the Italian government. Debt investors, whether private or institutional, would not want to lend to Italy if they did not expect that Italy would be able to repay the debt in the future. For this expectation to hold, investors would need a positive forecast on the Italian economy. Therefore, potential uncertainty in the market about the potential of Italy to repay its debt is reduced when institutional investors and other large investors show trust in the Italian economy and government, which helps explain the inverse relationship between redenomination risk and government gross debt. This can be further explained by understanding that the Italian government would not seek loans without a purpose, and the increased debt can therefore be used for growing the Italian economy which strengthens the economic forecast of Italy. As the economic forecast of Italy is strengthened, the need to redenominate to stimulate the economy through

multiple channels diminishes. Government gross debt in Germany and France does not significantly affect redenomination risk according to our result. This is reasonable since both countries have much lower government gross debts as percentage of GDP. Investors might therefore never doubt that these countries will be able to repay their debt, and changes in the level of government debt thereby has no significant impact on redenomination risk.

As the exchange rate can be regarded as significant for Germany and France, and almost significant for Italy, while the net export variable shows significance for Italy only, their interaction term, moderator Y, does not provide additional explanatory power for redenomination risk in Germany and France where Moderator Y is statistically insignificant. Moderator Y was constructed to only include extreme cases where net exports are below the mean while the exchange rate is above the mean. These cases do not occur often in our dataset for Germany and France, and in those cases they do occur they do not significantly affect redenomination. This might be because the magnitude of deviations from the respective means are not large enough for redenomination to become relevant. There might also be a problem of multicollinearity. However, Moderator Y is nearly significant at the 5% level (p-value of 0.060) for Italy. This suggests that the extreme cases discussed earlier do occur for Italy. When net exports fall below their average and the euro is simultaneously stronger than its mean value, markets appear to perceive a higher incentive for Italy to exit the euro to stimulate net exports. The negative coefficient of -191.95 is large and negative, reinforcing this interpretation.

Moderator X, the interaction term between the ECB DFR and output gap, did not show significance. DFR and output gap did not show significance by themselves for any of the countries either. A likely explanation is the low frequency of the output gap measure, which is only available annually. Because the annual values are repeated across all months in the year, the variable exhibits very limited variation, reducing its ability to explain monthly fluctuations in redenomination risk. Because output gap updates infrequently, a large part of the variation in the moderating variable stems from the variation of the DFR. Therefore, there might be problems with multicollinearity which we will examine further in our robustness check. DFR and output gap might both be insignificant because of possible multicollinearity with Moderator X. For output gap, it might also be the case that inflation, which depends on output gap, expected inflation and price shocks, already capture the important aspects of the economy and that inflation is the main aspect a country wants to control, not primarily output gap. The DFR might also be reflected in the exchange rate which immediately changes as the DFR changes. These complex macroeconomic links in the data cannot be fully proven, but the possibility of potential links reduces the robustness of our method.

Taken together, an important implication of the results is how they portray investor behavior in pricing redenomination risk. In Italy, the pronounced spikes around major political transitions illustrate how investors react not to slow-moving fundamentals but to sudden changes in expected policy direction, suggesting that market-implied redenomination probabilities rise abruptly when coalition uncertainty increases. For Germany, the near-zero or negative residual spreads highlight that investors do not assign meaningful probability to a depreciating exit scenario. Instead, markets appear to anticipate that any hypothetical redenomination would strengthen the currency. For

France, although redenomination premia remain elevated after 2017, the weaker explanatory power of political variables suggests a more persistent, structural premium that investors maintain even in the absence of direct political shocks. All in all, these findings reinforce the view that investors should pay close attention to political climates as macroeconomic fundamentals alone do not fully capture the nature of redenomination risk.

B. Robustness Test

In the empirical analysis, OLS is used as the primary estimation method because it provides consistent and interpretable point estimates for linear models and represents a very standard approach in literature. However, the classical OLS standard errors rely on assumptions such as homoskedasticity and no autocorrelation, which are often violated in monthly economic and financial time series. Inflation, output gaps, and interest rates, for example, typically exhibit strong autocorrelation.

To assess the robustness of the OLS inference under weaker assumptions, we complement the baseline results with a moving-block bootstrap (MBB). The MBB is specifically designed for dependent time series data. Instead of resampling individual observations independently, the method resamples overlapping 12-month blocks, thereby preserving the autocorrelation structure of the original series. This makes it a more appropriate choice than the standard i.i.d. bootstrap for data with autocorrelation (Bühlmann, 2002).

The bootstrap procedure is repeated 10,000 times for each country. Importantly, the bootstrap does not replace the OLS coefficient estimates. Instead, the coefficient estimates remain those from the original OLS regression. What the bootstrap provides are robust standard errors, z-values, and p-values based on the empirical distribution of the resampled estimates. This allows us to evaluate whether the statistical significance of the OLS results is robust when relaxing the classical error assumptions.

Table 2a. Bootstrap Results for Germany

Bootstrap – Germany					
	term	estimate	boot_se	z_value	p_value
1	(Intercept)	115.127483905	134.53642021	0.85573471	0.392144539
2	inflation	-0.324690953	0.10139407	-3.20226766	0.001363502
3	output_gap_percentage	-0.007296805	0.13307646	-0.05483167	0.956272567
4	DFR	0.030320440	1.12262321	0.02700856	0.978452904
5	moderator.x	0.023726179	0.14707241	0.16132311	0.871838925
6	eurusd	-5.045001511	4.47391586	-1.12764783	0.259468679
7	debt_gdp	-0.019436654	0.04276691	-0.45447883	0.649484229
8	net_exports	-0.455666006	0.34874006	-1.30660643	0.191346413
9	moderator.y	-5.037982229	35.04519043	-0.14375674	0.885692567
10	months_to_election	0.016770750	0.02082770	0.80521373	0.420696357
11	within_one_year	0.337104812	0.50030041	0.67380479	0.500435431
12	eu_position	-2.214266587	4.69636795	-0.47148490	0.637294498
13	eu_position_govt	-14.745008544	18.11091110	-0.81415057	0.415558700

Table 2a. Bootstrap Regression Results for Germany (2015-2024).

This table reports bootstrap estimates for the regression of the residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls, expressed in basis points. The table shows the regular OLS coefficient estimate, bootstrap standard error, z-value, and p-value for each regressor. The bootstrap procedure uses resampling with replacement (10,000 replications). Variables include inflation, output gap, debt-to-GDP ratio, EUR/USD exchange rate, net exports, and political controls (months to election, within-one-year indicator, EU position indices). Statistical significance is based on the bootstrap p-values. The sample consists of monthly data from 2015 to 2024.

Table 2b. Bootstrap Results for Italy

Bootstrap – Italy					
	term	estimate	boot_se	z_value	p_value
1	(Intercept)	452.8948544	393.4891806	1.15097156	0.24974394
2	inflation	2.2900081	2.3927231	0.95707194	0.33853095
3	output_gap_percentage	-0.1633037	4.1993230	-0.03888809	0.96897961
4	DFR	0.6647196	30.7618501	0.02160857	0.98276020
5	moderator.x	0.1127580	4.4587600	0.02528909	0.97982438
6	eurusd	-40.4901637	61.1248885	-0.66241697	0.50770403
7	debt_gdp	-0.6799498	0.4071458	-1.67004032	0.09491139
8	net_exports	1.8864148	3.8776260	0.48648705	0.62662189
9	moderator.y	-191.9499876	1239.0811823	-0.15491317	0.87688977
10	months_to_election	0.4942969	0.4790150	1.03190280	0.30211766
11	within_one_year	11.2303919	23.1764109	0.48456131	0.62798757
12	eu_position	-80.5794768	125.0674298	-0.64428826	0.51938853
13	eu_position_govt	9.8929237	33.7751972	0.29290499	0.76959478

Table 2b. Bootstrap Regression Results for Italy (2015-2024).

This table reports bootstrap estimates for the regression of the residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls, expressed in basis points. The table shows the regular OLS coefficient estimate, bootstrap standard error, z-value, and p-value for each regressor. The bootstrap procedure uses resampling with replacement (10,000 replications). Variables include inflation, output gap, debt-to-GDP ratio, EUR/USD exchange rate, net exports, and political controls (months to election, within-one-year indicator, EU position indices). Statistical significance is based on the bootstrap p-values. The sample consists of monthly data from 2015 to 2024.

Table 2c. Bootstrap Results for France

Bootstrap – France					
	term	estimate	boot_se	z_value	p_value
1	(Intercept)	-1.225026445	35.00675120	-0.03499401	0.972084521
2	inflation	-0.009315953	0.64132302	-0.01452615	0.988410219
3	output_gap_percentage	0.124278848	1.59786567	0.07777803	0.938004621
4	DFR	-0.061261052	5.15671034	-0.01187987	0.990521458
5	moderator.x	-0.132572199	1.70998751	-0.07752817	0.938203384
6	eurusd	-35.104731406	11.57981935	-3.03154396	0.002433065
7	debt_gdp	0.046674906	0.12692565	0.36773424	0.713071410
8	net_exports	-0.414321520	0.90358690	-0.45852980	0.646571857
9	moderator.y	3.183195614	36.32225087	0.08763762	0.930164701
10	months_to_election	-0.011625909	0.06905869	-0.16834823	0.866309333
11	within_one_year	0.069047629	1.94849436	0.03543640	0.971731759
12	eu_position	1.983634375	7.84349506	0.25290185	0.800344063
13	eu_position_govt	4.461292153	7.84529268	0.56865847	0.569587935

Table 2c. Bootstrap Regression Results for France (2015-2024).

This table reports bootstrap estimates for the regression of the residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls, expressed in basis points. The table shows the regular OLS coefficient estimate, bootstrap standard error, z-value, and p-value for each regressor. The bootstrap procedure uses resampling with replacement (10,000 replications). Variables include inflation, output gap, debt-to-GDP ratio, EUR/USD exchange rate, net exports, and political controls (months to election, within-one-year indicator, EU position indices). Statistical significance is based on the bootstrap p-values. The sample consists of monthly data from 2015 to 2024.

Generally, from the tables above, one can reasonably suspect that there is likely multicollinearity between the variables which reduces the robustness of our research. There might also be other problems with the data that causes additional assumptions of the OLS to break. This can be seen through the decrease in the number of significant variables in the bootstrap results when compared to the OLS results. However, a few variables remain significant when using bootstrapping. For Germany, inflation remains highly significant. For Italy, debt GDP is significant at the 10% level and for France the exchange rate is highly significant.

The political variables lose their significance after implementing bootstrapping. From our data we therefore cannot conclude that our political variables influence the redenomination risk. However, since previous research has documented that redenomination risk is largely event driven (Krishnamurthy et al., 2018), we have strong reasons to believe that the loss of significance is a data problem rather than proof against political variables affecting redenomination risk. For parliamentary EU position and government EU position this might also be because the data from CHES is infrequent, updated only every 4 years. Although we have argued that political opinions develop slowly, it is possible that regularly drawn yearly data would better capture the changes in EU position of political parties.

Note also that we must be careful about the interpretations of the coefficients for the significant variables for Germany. When discussing the inflation variable, we referred to Appendix B to gain a clue about if the coefficient is positively or negatively affecting redenomination risk. For the rest of the significant variables in the regular OLS, these variables are not significant in the OLS using absolute values and we cannot gain such clues about the coefficients. The interpretations of the coefficients for Germany in the discussion assume that a positive coefficient increases redenomination risk as the variable increases, and vice versa. However, this cannot be proven to be the case from our analysis.

VI. Conclusion

This thesis set out to examine whether political and macroeconomic variables can help explain and predict redenomination risk spreads for France, Italy, and Germany. By combining existing synthetic-control methods with the extension of an OLS framework, and using updated CDS and political datasets for 2015-2024, we provide new evidence on how markets price the risk of a euro exit across the eurozone's three largest economies. Our main finding shows that redenomination risk is highly country-specific and largely event-driven rather than persistent. Italy displays the strongest and most systematic link between political dynamics and redenomination premia, with variables such as parliamentary EU position and election timing emerging as significant predictors. Germany, in contrast, shows minimal redenomination risk and only limited sensitivity to political developments, reflecting its institutional stability and safe-haven status. France occupies an intermediate position. While its redenomination premium rises meaningfully after 2017, especially around presidential elections, political and macroeconomic variables explain this variation to a lesser extent.

Across all three cases, macroeconomic variables provide additional explanatory power. Specific variables such as inflation and the EUR/USD exchange rate contribute much to this, but their influence is neither uniform for all countries, or dominant for a specific one. Instead, our chosen macroeconomic variables seem to be inherently related to underlying national economic fundamentals. As such, they can amplify redenomination concerns when the underlying economic environment is fragile or dampen them when fundamentals are strong.

As for the implications of investors, our findings point to the conclusion that redenomination risk should be viewed as a political risk rather than a constant economically fundamental premium. Market-implied redenomination probabilities can remain dormant for long periods, only to rise sharply in response to election outcomes or coalition instability. This suggests that a given investor should ideally monitor political developments in relevant countries, especially those with volatile party systems or rising Eurosceptic sentiment. This becomes especially salient with the found implication that macroeconomic fundamentals, although informative, do not fully capture the dynamics of redenomination risk. This suggests that traditional sovereign-risk frameworks that prioritize macro fundamentals could theoretically miss the most important forward-looking variables. A comprehensive financial assessment should therefore incorporate political risk indicators and institutional credibility in some capacity.

A final implication is that redenomination risk does not always operate in the one-way direction investors might expect. For countries viewed as safe assets (Germany) within the euro area, markets may price the possibility that a hypothetical redenomination would result in a stronger, not weaker, national currency. In such cases, the redenomination component of the CDS premium can turn negative, reflecting anticipated appreciation rather than depreciation. As such, investors may use CDS not only to guard against the risk of default, but also to express views on the relative valuation of the euro versus an implied shadow currency.

The analysis, however, comes with limitations. Synthetic-control estimates depend on the traits and behavior of the donor pool and may still contain noise from liquidity frictions and market microstructure. The MBB reveals that political variables are not robustly significant, since they do not retain statistical significance after bootstrapping. The political indicators are measured at relatively low frequency, which restricts their ability to capture short-term developments. Potential multicollinearity among variables also constrains the precision of some estimates, and the linear OLS framework may not fully accommodate the nonlinear, jump-like nature of redenomination risk.

We suggest that future research incorporate higher-frequency political data and perform statistical diagnostics to mitigate multicollinearity and ensure that the OLS assumptions hold more closely.

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Appendix A: Use of AI Tools

For the writing of this thesis, we have used AI, specifically ChatGPT, in the following capacities:

- To check grammar and suggest changes to already written sentences, not to change the meaning but to enhance clarity and flow. In accordance with suggested guidelines, AI was **not** used to write directly original sentences based on information given to it.
- To help with debugging code already written by us. More specifically it was used to understand why certain errors occurred, but the solutions to these errors are our own.
- To assist in understanding how to implement the synthetic control. Since Kremens has not published the code he uses, not on GitHub nor in the appendix to his paper, we needed help to understand how such a code should be structured. In some parts of the synthetic control, AI has made specific suggestions of how certain lines of the code can be written, from which we have taken inspiration.
- ChatGPT 4 and 5 are the only AI models we have used for this thesis. At no point were they provided with confidential information or copy-right protected material.

Appendix B: Germany OLS using Absolute Values for Residual Spread

Table 3. Germany OLS using Absolute Values for Residual Spread

```
Call:
lm(formula = residual_spread ~ . - date, data = germany_abs)

Residuals:
    Min       1Q   Median       3Q      Max
-1.13929 -0.33245 -0.09862  0.25804  1.91713

Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)  -35.405510   41.961809  -0.844   0.4007
inflation      0.177527    0.038473   4.614 0.000011 ***
output_gap_percentage  0.007525    0.028308   0.266   0.7909
DFR            0.046110    0.103357   0.446   0.6564
moderator.x    -0.007127    0.029534  -0.241   0.8098
eurusd        -2.427153    2.065677  -1.175   0.2426
debt_gdp       0.026771    0.014758   1.814   0.0725 .
net_exports     0.174715    0.138468   1.262   0.2098
moderator.y     7.588742    7.411320   1.024   0.3082
months_to_election -0.017374    0.009891  -1.757   0.0818 .
within_one_year  0.041309    0.212046   0.195   0.8459
eu_position    -0.063922    1.174151  -0.054   0.9567
eu_position_govt  5.749662    5.780460   0.995   0.3221
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.5879 on 107 degrees of freedom
Multiple R-squared:  0.4769,    Adjusted R-squared:  0.4182
F-statistic: 8.128 on 12 and 107 DF,  p-value: 0.000000001157
```

Table of OLS Regression of the Residual Spread for Germany with absolute values (2015-2024).

This table reports OLS estimates from regressing the absolute values of German residual CDS spread (RS) on macroeconomic and political variables. RS is defined as the difference between the observed 5-year ISDA CDS spread and the synthetic spread constructed from matched euro-area controls. The dependent variable is measured in basis points. Independent variables include inflation, output gap, debt-to-GDP ratio, current-account net exports, EUR/USD exchange rate, and political variables (months to election, EU position index, government EU position). The sample consists of monthly observations from 2015 to 2024.