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The CDS basis in the European market

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No. 237

**The CDS Basis in the European
Market**

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Abstract

The relationship between Credit Default Swaps (CDS) and cash bonds plays a pivotal role in providing market participants with important information which directly affects investment and risk management strategies. Particularly relevant is the CDS-Bond basis, defined as the difference in basis points (bps) between CDS and the reference entity bond spread. Understanding the drivers behind CDS-Bond basis behavior enables more informed decision-making that reflects underlying credit market dynamics. This working paper analyzes the CDS-Bond basis in the European market, focusing on the constituents of the Markit iTraxx Europe index between March 2020 until March 2025. The analysis addresses basis behavior at the aggregate index level and across sectors. At an index level a mean reverting pattern has been identified with a negative basis average over the sample observed. In the sectorial analysis a strong heterogeneity emerges, with Autos featuring a more positive basis compared to Financials in a deeply negative basis territory affected by Credit Suisse shock. Finally, practitioner insights are integrated to contextualize these findings, emphasizing liquidity asymmetries, execution constraints, and differences in information absorption between CDS and cash bond markets offering actionable insights for credit market participants, and laying a solid foundation for further research.

Key words: CDS-Bond basis, Sectorial CDS basis, credit spread, iTraxx Europe basis

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The CDS Basis in the European Market

Table of Contents

Abstract.....	2
Table of Contents	3
List of Tables:.....	4
List of Figures:	4
1: Introduction	5
2. Literature Review	6
2.1 Understanding CDS-Bond Basis	6
2.2 Early Empirical Evidence on CDS–Bond Basis Behavior	6
2.3 Recent Developments and Basis Drivers:.....	8
2.4 Research Gaps and Working Paper Contribution.....	9
3. Empirical Analysis	10
3.1 Methodology and Data Overview.....	11
3.2 CDS–Bond Basis Overview.....	12
3.2.1 Macro-Level Summary Statistics	12
3.2.2 Sector-Level Basis Comparisons.....	16
3.3 Market View	22
4. Conclusion.....	24
Appendix 1: Sectorial Statistics.....	26
Appendix 2: Sectorial Weights.....	27
Bibliography	28
Other consulted literature.....	29

List of Tables:

Table 1: Factors influencing the Base (De Wit Matrix).....	8
Table 2: Extension of De Wit Matrix.....	9
Table 3: Summary Statistics for Aggregate Spreads and Basis	13
Table 4: Summary Statistics for Aggregate Spreads and Basis without S33.....	15
Table 5: Sectorial Averages Heatmap.....	21
Table 6: Sectorial Standard Deviation Heatmap.....	21

List of Figures:

Figure 1: <i>Time Series of Aggregate CDS, Bond (Cash), and Basis Spreads (2020–2025)</i>	12
Figure 2: <i>Time Series of Autos & Industrials Basis (2020–2025)</i>	16
Figure 3: Time Series of Consumers Basis (2020–2025).....	17
Figure 4: Time Series of Energy Basis (2020-2025)	17
Figure 5: <i>Time Series of Financials Basis (2020–2025).....</i>	18
Figure 6: Time Series of TMT Basis (2020–2025).....	18
Figure 7: Time Series of Sectorial Basis (2020–2025).....	19
Figure 8: Time Series of Sectorial Basis without Credit Suisse bonds (2020–2025).....	20

1. Introduction

Introduced in 2004, the Markit iTraxx Europe index has become a key benchmark for assessing credit risk and the cost of default protection in the European corporate bond market. Currently in its 43rd series, the index is widely adopted by market participants and serves as an essential tool for trading, risk management, and the pricing of credit instruments at both the single-name and index levels. Over time, the relationship between credit default swap (CDS) contracts and corresponding bonds has been the subject of extensive academic and market-based research.

This paper investigates the CDS–Bond basis (also referred to as the CDS–cash basis), defined as the difference between the CDS protection leg (CDS spread) and the corresponding bond spread, either at a single-name or at index level. Under ideal friction free market conditions no-arbitrage arguments imply that the CDS spread should equal the bond spread, resulting in a basis of zero. However, empirical studies have consistently shown that this is not the case. These anomalies raise the questions concerning the underlying drivers and the conditions under which the no-arbitrage relationship fails (Blanco et al., 2005; De Wit, 2006; Trapp, 2009).

Understanding the CDS–Bond basis is essential, as it provides insights into the informational efficiency of credit markets and the evolving dynamics between CDS contracts and bond markets. While much of the existing literature has explored the CDS–Bond basis at an aggregate level, comparatively fewer studies have examined its behavior across sectors. The design of the iTraxx index with its sector-based composition provides an opportunity to examine whether basis patterns evolve systematically across industries and over time. This working paper presents a comprehensive analysis at both macro and granular levels, emphasizing sectorial disparities and its implications. Therefore this paper focuses on behavior of the CDS–Bond basis at the aggregate and the sectorial levels within the European corporate credit market.

The paper proceeds as follows: Section 2 presents a literature review. Section 3 focuses on the methodology and dataset employed, followed by an analysis of the CDS-Cash basis, exploring various dimensions including aggregate statistics, sector level considerations and explanations by market participants. Finally, Section 4 discusses the findings.

2. Literature Review

This section provides an overview of the literature.

2.1 Understanding CDS-Bond Basis

The literature review explores a broad spectrum of academic studies and discusses the different CDS-Bond basis definitions. Even though under ideal no-arbitrage conditions the basis should equal zero, as noted by Hull, Predescu, and White (2004), market frictions usually result in a permanent gap, known as the basis. Unfortunately, its definition and the terminology used varies across the literature.

De Wit (2006, p. 6) describes the basis as “difference between the CDS premium and the maturity matched par asset swap spread”. Blanco, Brennan, and Marsh (2005, p. 2264) defines it as “the difference between the time t CDS price, precise mathematical representation of the basis as $bitk(m) = sit(m) - citk(m)$, where $sit(m)$ is the CDS spread of maturity m for firm i at date t , and $citk(m)$ is the corresponding bond spread for bond k issued by the same firm. Unfortunately it exists a variety of the bond spread measures, and it should be clearly defined which one is used. This paper is based on the Z-Spread, which will be explained in detail in chapter 3.1.

2.2 Early Empirical Evidence on CDS–Bond Basis Behavior

The early studies mostly focused on price discovery and informational efficiency of the CDS and cash market. Blanco, Brennan, and Marsh (2005) conducted one of the earliest studies on the CDS–Bond basis, examining price discovery and the lead–lag relationship between the CDS and the bond markets. Using a sample of 33 U.S. and European investment-grade firms, they find that CDS spreads incorporate credit information faster than bond spreads, reflecting a superior informational efficiency. This advantage is mainly attributed to the higher liquidity and tradability of CDS relative to bonds, which face short-selling and repo-market constraints.

Norden and Weber (2004) provide an analyses that focus on the informational role of CDS. They analyze corporate issues and show that CDS spreads react more strongly to negative credit-rating announcements than equity prices.

Levin, Perli, and Zakrajšek (2005) conduct an empirical analysis of how macroeconomic and firm-specific factors contribute to market frictions in the U.S. corporate debt market. Expanding on previous studies, they employ a large dataset covering multiple bond maturities over a five-year horizon. Their results show an average basis close to zero, punctuated by shocks and systematic frictions, with about 75% of the variation in the aggregate basis explained by macro and financial variables.

Zhu (2004) analyzes around 1,400 reference entities from 1999 to 2002 to examine price discovery between CDS and bond markets. Results align with earlier literature, confirming an average basis close to zero with short-term deviations. Zhu also highlights that patterns observed in the highly liquid U.S. market may differ in comparison to less developed and less liquid credit-derivative markets such as Europe and Asia.

Finally, De Wit (2006) provides a comprehensive and structured analysis of the CDS–Bond basis. His paper introduces a classification of the influencing factors. He identifies liquidity differences between the two markets, default risk, and the macroeconomic environment as fundamental factors. The technical side includes short-selling constraints, execution costs, and the impact of the cheapest-to-deliver (CTD) option embedded in CDS contracts.

Table 1 presents the De Wit (2006) matrix summarizing the early literature, which categorizes the reviewed studies according to data samples, key findings, and identified basis drivers.

Table 1: Factors influencing the Base (De Wit Matrix)

	Blanco, Brennan and March (2005)	Chan-Lau and Kim (2004)	Levin, Perli and Zakrajsek (2005)	Norden and Weber (2004)	Zhu (2004)	De Wit (2006)
DATASET						
CDS Term	5	5	1/2/3/5/7/10	5	5	03/05/10
Period	02/01/2001 to 20/06/2002	19/03/2001 to 29/05/2003	02/01/2001 to 01/09/2005	2000-2002	01/01/1999 to 31/12/2002	01/01/2004 to 30/12/2005
#reference entities	33	8	306	58	24	103
#contracts	33	8	1290	58	24	144
Type reference entities*	IG Corporates	EM Sovereigns (USD Only)	IG/HY Corporates (US-USD only)	IG (+HY) Corporates	IG Corporates	IG/HY Corporates + EM Sovereigns
METHODOLOGY						
Spread Estimation	Interpolation bond spreads to CDS term	No Duration mapping (EMBI+vs. 5-y CDS)	Spline Estimate CDS curve, match to bond term	Interpolation bond spreads to CDS term	Interpolation/Matching bond spread to CDS term	Interpolation/Matching bond spread to CDS term
Long-Term relationship	Cointegration	Cointegration	/	Cointegration	Cointegration	Cointegration
Lead-Lag relationship	VECM Hasbrouck and Gonzalo-Granger	Granger causality, VECM Hasbrouck and Gonzalo-Granger	/	Granger causality, VECM Gonzalo-Granger	Granger causality, VECM Gonzalo-Granger	/
RESULTS						
Basis	+6bps (mean)	"CDS and bonds tend to converge"	0 bp (median). 2bps (mean)	+14bps (mean)	+13bps (mean)	+7bps (median). +16bps (mean)
Long-Term relationship	26 out of 33 cointegrated (unrestricted)	5 out of 8 cointegrated (unrestricted)	/	36 out of 58 cointegrated (unrestricted)	15 out 24 cointegrated (restricted)	88 out of 144 cointegrated (restricted)
Price discovery	CDS tends to lead bonds	Undecided	/	CDS tends to lead bonds	CDS tends to lead bonds in US, not elsewhere	/
Other		No equilibrium price relationship between equity and bond markets	- Mainly idiosyncratic factors cause market frictions. Employs proxies for systematic and idiosyncratic basis determinants	- Stock returns lead CDS and bond spread changes		- Basis smile. Basis lowest for 5-year corporate credits denominated in euro

*:IG, HY and EM stands for investment-grade, high yield and emerging markets, respectively.

Source: De Wit 2006

The early literature predominantly focused on aggregate market behavior, often over limited time horizons and without granular sectorial analyses. Recognizing these constraints sets the stage for the more detailed, sector-specific, and longer-term analyses.

2.3 Recent Developments and Basis Drivers:

The focus now turns to the post-financial crisis literature. Trapp (2009) offers a detailed empirical breakdown of the CDS–Bond basis, demonstrating how credit and liquidity risk asymmetrically influence its behavior across different types of firms. The study highlights a clear segmentation between static and dynamic risk pricing among investor categories. Using panel regressions and matched CDS–Bond data, Trapp shows that bond spreads are more affected by credit ratings, while CDS spreads respond more strongly to market-option implied volatility. These dynamics differ across sectors and credit quality: non-financial firms are more impacted by bond illiquidity, whereas financial firms are more sensitive to CDS liquidity. The

notion that CDS and bonds function as perfect hedging instruments is ultimately challenged, as the basis tends to compress during periods of market stress, reflecting reduced arbitrage opportunities and higher refinancing risk.

Alexopoulou et al. (2009) provide a focus on basis evolution during market turmoil, particularly in the financial crisis of 2007-2008. One of their findings is the decoupling behavior of the markets which saw CDS spreads remaining relatively stable while bond spreads widened significantly. Nevertheless, it has been shown that CDS are leading in the price discovery process, probably due to their flexibility and depth which in terms of liquidity. Also technical constraints shows a systematic advantage versus cash, particularly in moments of financial distress. The research accounted as well for both financials and non-financial firms and used a relatively short time period (1.5 years) using 29 entities from the Markit iTraxx Europe index with the aim to offer a more European perspective relative to Blanco et al. (2005) and Levin et al. (2005).

In Table 2 below, the De Wit's matrix is extended to incorporate the contributions of Trapp (2009) and Alexopoulou et al. (2009), positioning them within the framework of basis drivers.

Table 2: Extension of De Wit Matrix

Category	Trapp (2009)	Alexopoulou et al. (2009)
Sample	EU corporates; matched 5Y CDS–Bond dataset	29 EU iTraxx firms (financial & non-financial); 2004–2008
Average Basis	Positive overall	Widening during crisis
Main Drivers Identified	Credit ratings, implied vol, bid-ask spreads, firm type	Systemic risk factors (gov't yields, equity vol), illiquidity
Key Insights	CDS reacts more to real-time risk; bond spreads reflect static ratings; segmentation by firm profile	CDS leads bonds in price discovery; crisis-induced decoupling; sector effects evident

Sources: Trapp 2009, Alexopoulou et al. (2009)

2.4 Research Gaps and Working Paper Contribution

There are still several gaps which this paper addresses. First, a recurring limitation in existing studies is the restricted time horizon of the data samples employed. Timeframes are often short,

missing out on potentially important structural trends. This working paper expands the time dimension by examining ten iTraxx Europe time-series over five years with daily data frequency, providing a more robust analysis of the long-term behavior of the CDS-Cash basis.

Second, while recent research has explored more of the sector-specific dynamics, it only distinguished between financial and non-financial firms, hence providing a high-level overview. This paper showcases a more granular approach building on the sectorial categorization by Markit in the structure of the iTraxx Europe index. Therefore, the variations in the basis across industry groups can be examined with greater detail.

Third, although price discovery and lead-lag relationships between CDS and bond markets are well-discussed in the literature, certain event-driven dimensions remain underexplored. In particular, the behavior of the basis during key macroeconomic and market stress events has not been systematically addressed. This research contributes to closing this gap by analyzing basis reactions to key macroeconomic developments within the study period. Moreover, a substantial gap in past research is the lack of standardization in the selection of CDS–Bond pairs, complicating the process of cross-study comparisons. To address this, this paper focuses explicitly on the iTraxx Europe 5-year index and its single-name constituents. Using a standardized and, most importantly, widely recognized reference, the goal is to enhance consistency in the study and also lay the groundwork for future comparable research on the topic.

While most influential studies on the CDS–Bond basis have historically examined the U.S. market, as in Blanco et al. (2005), Levin et al. (2005), and Zhu (2004), the present analysis shifts the focus to the European credit market. It builds on the framework of Alexopoulou et al. (2009) and enhances it through more recent data, expanded coverage, and sector-level granularity.

3. Empirical Analysis

This section describes the methodology and the dataset followed by the analysis-

3.1 Methodology and Data Overview

The analysis is based on publicly available information on the iTraxx Europe 5Y from Markit documents, which provide full details on index composition and sector classification across ten different series, from Series 33 to Series 42.

For each entity in these index series, the corresponding 5-year single-name CDS tickers were retrieved via Bloomberg. Next, the reference bond for each CDS was identified. To ensure high-quality matching, a strict set of criteria was used: the bond had to be issued by the same legal entity as the CDS, share the same rank (senior unsecured), have benchmark size (minimum €450 million in outstanding volume), and match the CDS maturity as closely as possible. Bonds were selected mostly in EUR, although a few GBP and CHF bonds were included, provided their spreads aligned closely with the same issuer EUR curve.

No interpolation techniques were applied in the maturity matching process, in fact it was performed manually to preserve precision. While this results in slight mismatches, the differences are minimal: the average maturity gap, including outliers, is -0.18 years, with a range between -0.61 and +0.24 average years. These deviations are considered negligible and do not materially affect the results, consistent with findings in prior studies such as Blanco et al. (2005), Zhu (2004), and Trapp (2009).

In the eventuality where no appropriate bond match could be found, no reference obligation was assigned. This conservative approach reduced the sample size slightly but avoided contamination from maturity or seniority mismatches with 1,172 bonds matched out of 1,250 CDS names.

The final dataset consists of ten time series, each covering six months of data, with daily spreads for both single-name 5Y CDS and the associated bond Z-spreads. The latter is defined as the constant spread over the €STR-based OIS spot curve that equates the present value of a bond's contractual cash flows to its market price. It was chosen as the most efficient measure for the basis but has the draw back that the market tends to focus on the asset swap spread.

The full dataset spans from March 20, 2020, to March 20, 2025, covering five years of market activity, capturing events such as Covid-19, Credit Suisse and the shift from quantitative easing to tightening environment.

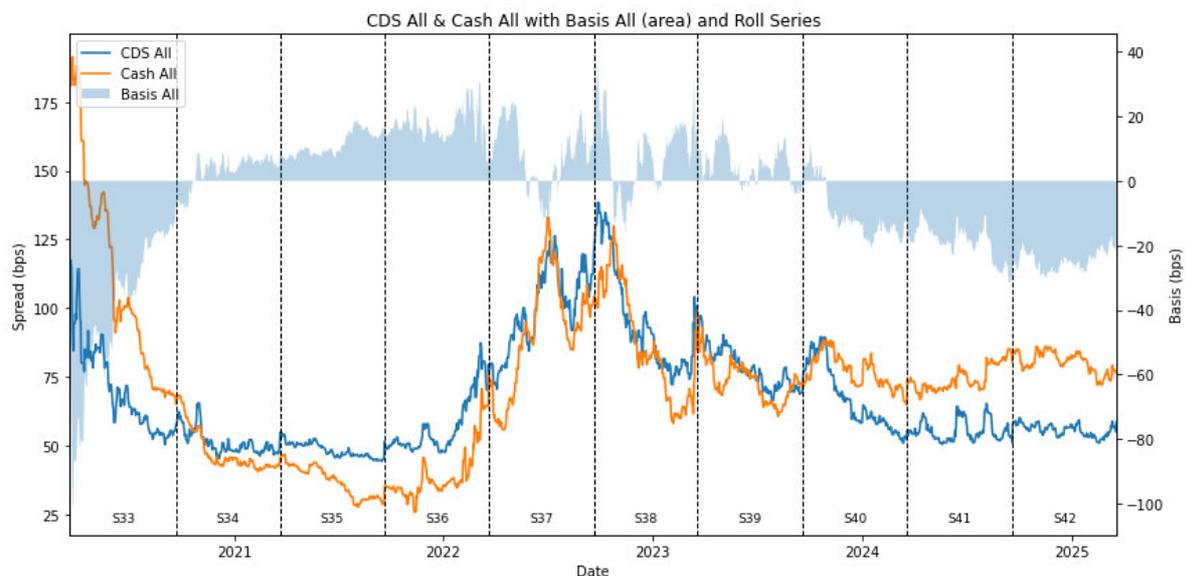
In conclusion, this structure forms the empirical foundation of the study with a final dataset containing 32,877 daily data points, enabling a robust and granular analysis of the CDS–Bond basis over time and across sectors.

3.2 CDS–Bond Basis Overview

3.2.1 Macro-Level Summary Statistics

To establish a foundational overview of the CDS-Bond basis across the full-time horizon observed, Figure 1 below displays the time series of CDS spread, bond Z-spread, and the resulting CDS–Bond basis for all constituents of the iTraxx Europe index from 2020 to 2025. Roll dates are marked by vertical dashed lines for reference.

Figure 1: Time Series of Aggregate CDS, Bond (Cash), and Basis Spreads (2020–2025)



Source: Own Creation, Bloomberg data

The basis shows a certain cyclicity in the levels, from constantly negative to positive environment. The short-term oscillations go from extremely close movements of the two markets trading at essentially the same levels to more distant spread levels with still a

correlation in the movements. In particular, S37, S38, and S39, which cover the period from March 2022 to September 2023, CDS and Cash trade very close, making the basis oscillate from negative to positive levels in very short time windows. This behavior aligns with earlier findings by Zhu (2004) and De Wit (2006), who showed that the basis frequently deviates from zero due to temporary frictions yet tends to revert quickly.

It is important to consider some key events at a macro level took place and had a major impact on the two markets' relationship. The first data concerning the Credit Suisse collapse hit the market in early 2022 with the data leak “Suisse Secrets”, and the market reacted drastically. This will be investigated when the index will be split into sectors. Furthermore, it is evident how the Covid-19 credit shock still affects the dataset analyzed in the first time series; the basis was at record negative basis levels reaching ~ -102 bps, reversing then to positive in a very short timeframe.

Table 3 reports the key statistical values of the full-sample distribution for CDS spreads, bond Z-spreads, and the basis:

Table 3: Summary Statistics for Aggregate Spreads and Basis

Metric	CDS (bps)	Cash (bps)	Basis (bps)
Mean	67.87	72.04	-4.17
Median	58.83	72.69	1.50
Max	138.48	191.50	38.42
Min	44.42	25.73	-102.67
StdDev	20.34	27.56	20.03
Skew	1.16	0.98	-1.14
Kurtosis	0.69	2.29	2.10

Source: Own Creation, Bloomberg data

The basis mean is slightly negative amounting to -4.17 bps. Nevertheless, this calculation doesn't take into consideration the bid-ask spread in both markets, which could create a minor bias on the actual basis that market participants deal with. This negative mean is in contrast with the findings of Blanco et al. (2005) and Zhu (2004), who reported a positive average basis under normal market conditions. However, these results align more closely with observations by De Wit (2006), who found that the basis is often negative under stressed conditions in European credit markets. In fact, the positive median basis suggests that the distribution is left skewed and that the mean is influenced by large negative outliers, especially during a crisis. Furthermore, a high standard deviation is observed showing considerable movements compared to the mean. Typically short-term fluctuation can be strong and influence the basis, as it can be seen for example with the minimum reached during the Covid-19 crisis with -102.67 bps. These variations are in line with research by Alexopoulou et al. (2009), which showed significant temporary disruptions during times of macro stress hitting credit markets.

Analyzing the Skew we find an opposite sign of CDS and Cash compared to the Basis: This suggests a positive skew for CDS and Cash, which show a tendency to larger moves upwards rather than downwards. The negative skew of the basis on the other hand shows a tendency to tighten to the downside move, due to the asymmetric strength of the movements of the two markets.

Finally, the similarity in kurtosis between the basis and the cash market indicates that extreme basis values are largely driven by dislocations on the bond side. This supports the hypothesis discussed by Trapp (2009) that bond spreads exhibit fatter tails and slower mean reversion, in contrast, CDS spreads absorb information more efficiently, leading to faster corrections.

Before moving on to the next section, Table 4 contains results of a simulation that will exclude S33, eliminating the outlier values from the Covid-19 crisis. In such way the noise deriving from extreme events is neglected and it is possible to observe basis behavior under more regular circumstances.

Table 4: Summary Statistics for Aggregate Spreads and Basis without S33

Metric	CDS (bps)	Cash (bps)	Basis (bps)
Max	138.48	132.93	38.42
Min	44.42	25.73	-31.55
Mean	67.53	67.67	-0.14
Median	58.25	71.89	4.12
StdDev	20.72	22.43	15.20
Skew	1.19	0.12	-0.33
Kurtosis	0.71	-0.35	-0.99

Source: Own Creation, Bloomberg data

By excluding the Covid-19 shock period in early 2020, the mean basis converges towards zero (-0.14 bps), effectively supporting the long-term no-arbitrage hypothesis of Zhu (2004) and Levin et al. (2005). This implies that over time, despite short-term dislocations, the CDS and bond markets tend to converge to similar level leading to null basis value.

The median basis remains moderately positive (+4.12 bps), suggesting that in general bonds tend to trade slightly tighter relative to CDS. Importantly, the standard deviation of the basis narrows to 15.20 bps, and both skewness (-0.33) and kurtosis (-0.99) decline significantly compared to the full-sample results. This points to a more symmetric and thinner-tailed distribution, indicative of greater pricing efficiency and less frequent extreme dislocations during relatively normal market conditions.

Overall, the statistics results outline a central finding of this working paper: while short-term shocks can cause severe basis volatility and deviations, the CDS–Bond basis is fundamentally mean-reverting over longer time horizons.

3.2.2 Sector-Level Basis Comparisons

This section dives into how the CDS–Bond basis behaves not only at the aggregate iTraxx level, but also across its five underlying sectors: Autos & Industrials, Consumers, Energy, Financials, and TMT. While much of the existing literature either aggregates all firms or splits only between financial and non-financial entities, as in Alexopoulou et al. (2009) and Trapp (2009), this paper addresses a key gap by providing a more granular, sector-level analysis of basis dynamics within the European credit market.

By combining time series charts and heatmaps, it is possible to gain a deeper understanding of the interactions of various sectors and what is their impact at an index level. In essence, the goal is to identify where basis distortion lies in the index.

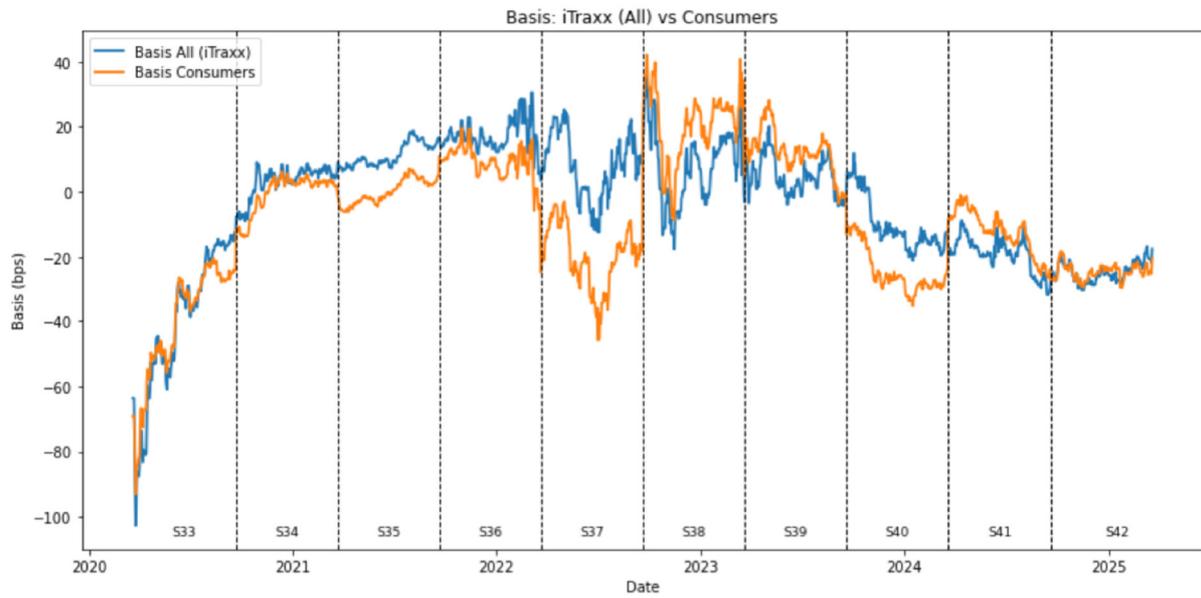
The figures below illustrate the CDS–Bond basis dynamics at the sector level, with each chart presenting a direct comparison between a single sector’s basis and the overall iTraxx index basis.

Figure 2: Time Series of Autos & Industrials Basis (2020–2025)



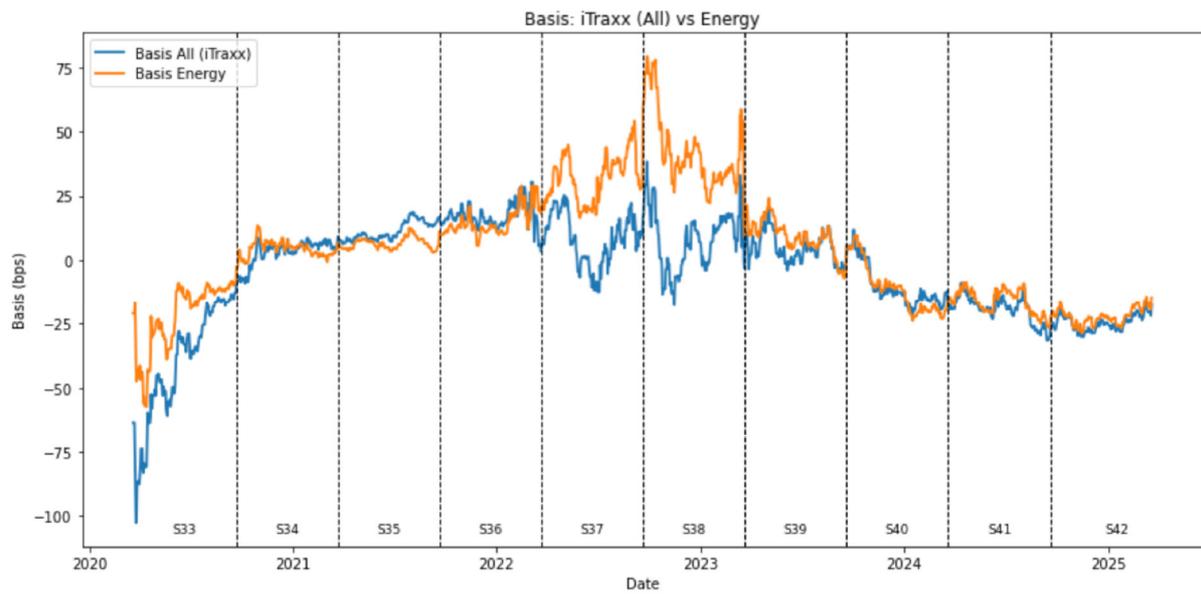
Source: Own Creation, Bloomberg data

Figure 3: Time Series of Consumers Basis (2020–2025)



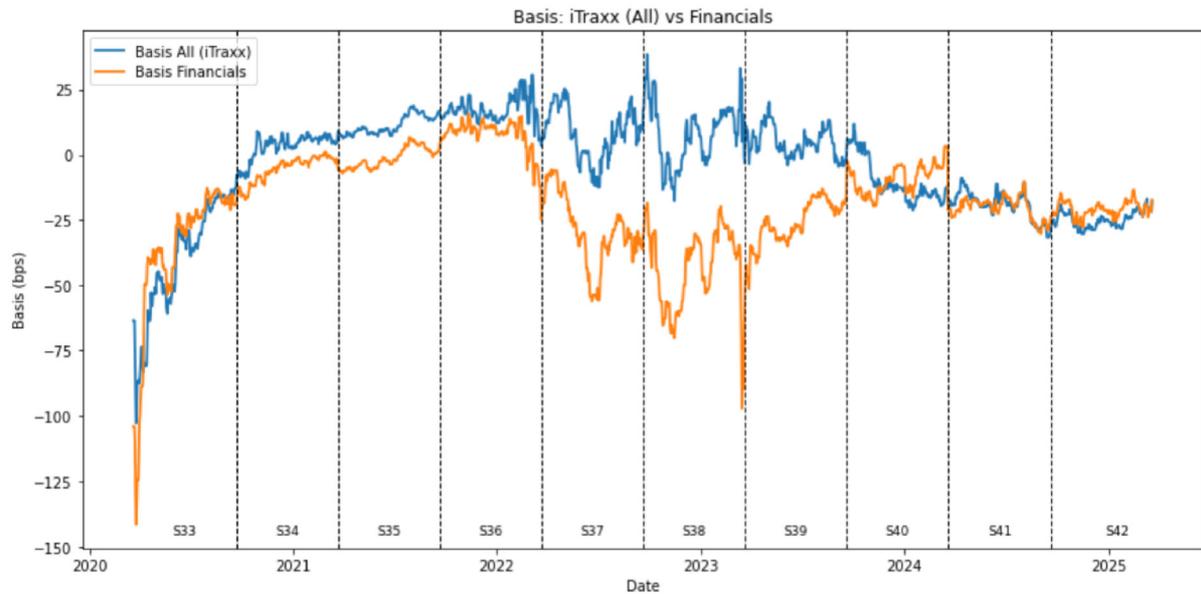
Source: Own Creation, Bloomberg data

Figure 4: Time Series of Energy Basis (2020–2025)



Source: Own Creation, Bloomberg data

Figure 5: Time Series of Financials Basis (2020–2025)



Source: Own Creation, Bloomberg data

Figure 6: Time Series of TMT Basis (2020–2025)



Source: Own Creation, Bloomberg data

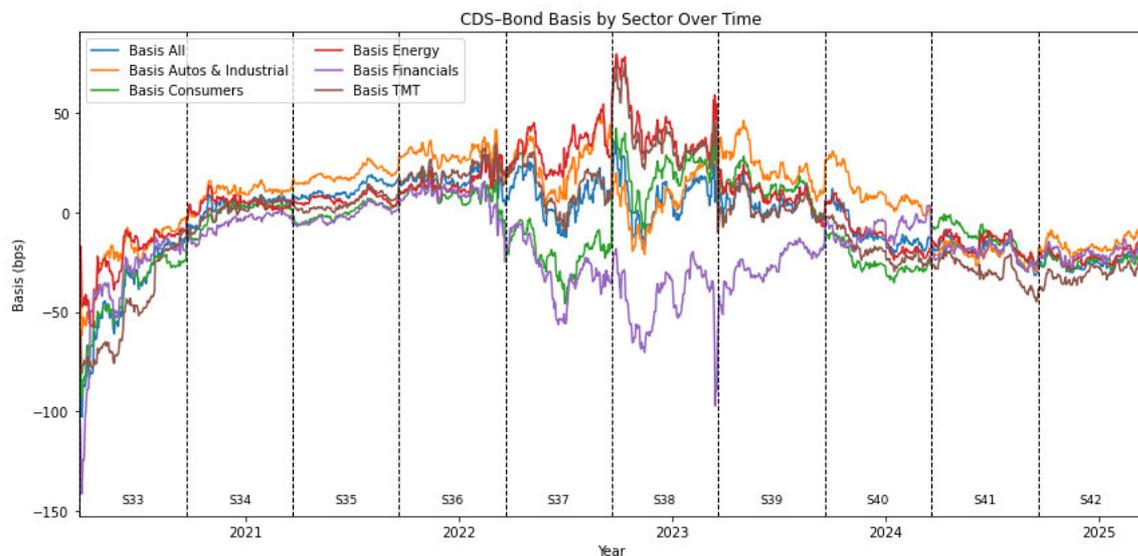
The above charts show the sectorial evolution of CDS and bond Z-spreads over time. Generally, Autos & Industrials present the widest CDS spread in the time horizon observed, leading to a more positive basis compared to the index. Moreover, most of the spread level

shifts are gathered around roll dates, indicating frequent rebalancing deriving from changes in the index constituents. Big swings can be seen in particularly in Financials, where the market turmoil caused by Credit Suisse has led the basis to extremely negative levels. Interestingly, other sectors feature the opposite direction in the turmoil, such as Energy and TMT, leading to a relatively flat index spread oscillating between a negative and positive environment.

To better illustrate the market’s reaction during these phenomenons, there will be two charts presented below, one containing the spreads of Credit Suisse in the dataset despite their outlier nature, and one without. This choice captures how individual names can materially distort sector averages during stress periods and reinforces the need for granular monitoring of sector-level spread dynamics.

Figure 7 shows the sectorial basis with also the index level basis containing Credit Suisse bonds Z-spreads.

Figure 7: Time Series of Sectorial Basis (2020–2025)



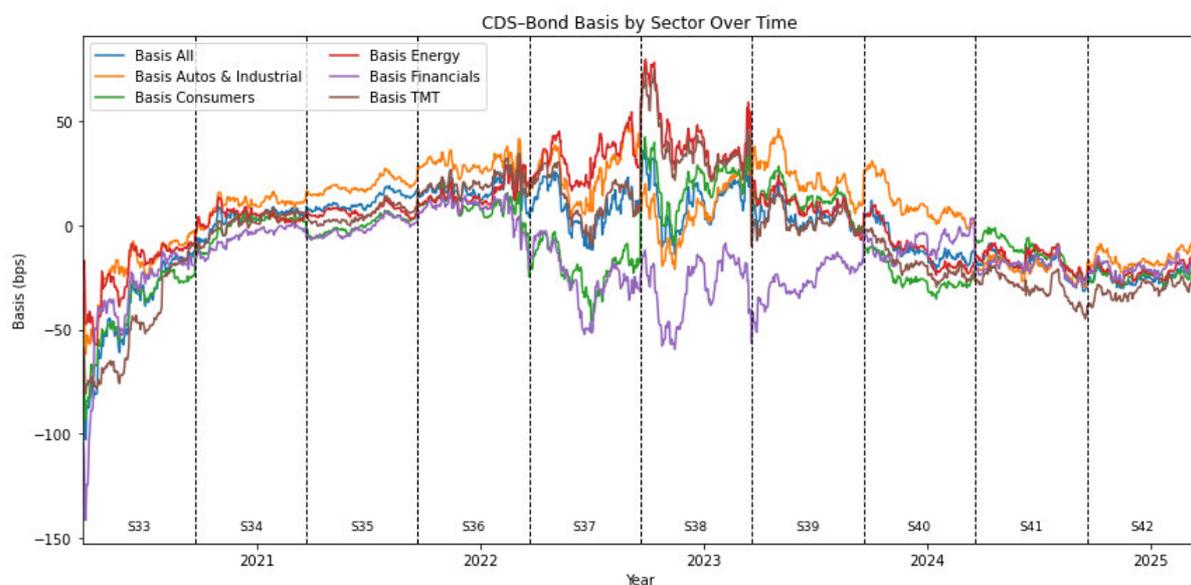
Source: Own Creation, Bloomberg data

This chart allows to visualize a key concept discussed in Alexopoulou, Andersson, and Georgescu (2009): the decoupling of the two markets during risk off events. From March 2022 to September 2023 it is clear the opposite direction taken from Financials compared to the other sectors. This observation expands the findings of the earlier study as it shows how basis volatility at a macro level, can be directly determined by sector specific exposures.

This behaviour reflects not only a sector-specific reaction to stress but also supports the idea that basis volatility is not confined to aggregate market movements, but it can manifest within specific industries due to concentrated exposures or unique credit events. Interestingly, outside of major dislocation periods such as Covid-19 and the Credit Suisse episode, the basis across sectors tends to converge toward similar levels, suggesting, as noticed in 3.2.1 Macro-Level Summary Statistics, a long-run mean-reverting dynamic.

Below the chart without including Credit Suisse bonds into the dataset:

Figure 8: Time Series of Sectorial Basis without Credit Suisse bonds (2020–2025)



Source: Own Creation, Bloomberg data

This figure allows to visualize two key behaviours: a less negative basis and a contagion effect. Absence of Credit Suisse bonds leads to a “more positive” basis, pointing to tighter Z-spreads for the cash bonds, on the other hand there is no major change in trend, in fact the movement of the Financials basis is essentially the same but with a smaller magnitude. In terms of contagion, over S37, S38 and S39 the inclusion of Credit Suisse bonds has made the overall index basis -1.5 bps more negative in average, with a maximum of -13 bps reached in the most critical phase.

Moving deeper into the sectorial analysis, the same statistical metrics have been performed, nevertheless, the full results will be shown in Appendix 1. Below two heatmaps provide a schematic representation of the main metrics across the sectors for every market.

Table 5: Sectorial Averages Heatmap

Sector	Mean			N° Members
	CDS	Cash	Basis	
Autos & Industrial	79,72	73,04	6,67	36
Consumers	61,60	69,62	-8,02	23
Energy	64,48	60,68	3,80	19
Financials	68,84	87,22	-18,38	30
TMT	63,01	67,70	-4,70	18

Source: Own Creation, Bloomberg data

The above table shows the mean CDS, bond Z-Spreads, and Basis across the five iTraxx sectors, alongside the average number of constituents per sector over the time horizon observed. Financials stand out with the most negative average basis (-18.38 bps), driven by higher bond spreads relative to CDS. Consumers and TMT also display a modestly negative basis, conversely, Autos & Industrials (+6.67 bps) and Energy (+3.80 bps) are the only two sectors with an average positive basis. The rightmost column confirms that Financials and Autos & Industrials have the highest representation within the index

Furthermore, Table 6 below displays the standard deviation of CDS spreads, bond Z-spreads, and the CDS–Bond basis across sectors, alongside the standard deviation in the number of constituents per sector over time.

Table 6: Sectorial Standard Deviation Heatmap

Sector	Standard Deviation			N° Chg Members
	CDS	Cash	Basis	
Autos & Industrial	26,01	32,95	20,26	0,46
Consumers	21,96	27,24	20,39	1,27
Energy	23,13	19,23	22,52	1,00
Financials	18,83	34,94	19,24	0,00
TMT	19,11	24,34	27,00	1,04

Source: Own Creation, Bloomberg data

Some interesting takeaways emerge from this table. TMT exhibits the second-lowest standard deviation in both CDS and bond Z-spreads, yet it records the highest basis volatility (27 bps). This may be explained by its relatively low number of constituents and the second-highest turnover rate (standard deviation in members: 1.04), suggesting that even modest changes in composition can disproportionately affect spread dynamics. In contrast, Autos & Industrials shows the second-lowest basis volatility (20.26 bps), despite ranking highest and second-highest in CDS and cash spread volatility, respectively. This suggests that in some sectors, opposing movements in the two legs of the basis may partially offset each other, reducing overall basis instability.

Finally, the two sectors with the highest numbers of constituents have the lower standard deviation in terms of change in constituents, showing a stable core composition.

3.3 Market View

After discussing the findings with various market participants, it is possible to derive interpretations and expand the understanding on a trading perspective.

By focusing on the negative basis behaviour in the context of short selling in periods of credit stress it is clear, that in times of crisis, bond spreads widen more than CDS, leading to a negative basis. This is attributed to liquidity requirements in the execution. Essentially liquidity in cash bonds dries up much quicker than CDS / Index. For example, in the CDS trading space a 10 to 20 million execution for single names is pretty standardized and common given the high liquidity, on the other hand, selling 20 or 30 million in notional of a bond is much harder for traders, in particular at a reasonable spread level.

Furthermore, by looking into the sectorial split we find in times of crisis that it is common to see a volatile basis which moves from positive to negative basis levels with high frequency. This behaviour was identified during the Credit Suisse crisis, where the basis of the different sectors decoupled, moving in different directions and with different momentum, i.e. financials basis became rather negative leading to a very instable basis at an iTraxx level. Different scenario instead could be observed during Covid-19 times, where overall basis was negative. In essence in times of macro crisis, which either involve all sectors (Covid-19) or eventually

by financial contagion (Credi Suisse) the basis tends to turn negative. In a sector specific crisis volatility is increasing and the basis variates often from positive to negative. These changes in basis sign constitute a phenomenon given by an efficiency mismatch in absorption of information between the two markets, defined as “the basis breathing process”.

Additionally at index level there are real money taking actions, for example macro strategies investors such as hedge funds or asset managers. On the other hand single-names market participants exercise a more thorough credit selection. This has a critical implication as it shows a difference in the technicalities between the two CDS categories (single name/index). While the index is more liquid with tighter bid-ask spreads and market participants usually trading around mid; in single names, spreads are wider and influenced by company specific characteristics which leads to individual names decoupling from index/macro view, hence explaining the sectorial analysis findings showing differences in sectors of the iTraxx.

Expanding on the findings of this paper, it emerged that negative basis on index level corresponds to market participants trading actively in search of arbitrage opportunities, making the index more liquid, which is in strong contrast with cash bonds behaviour as previously discussed. This adds up furtherly on the consensus of extremely negative levels in times of deep crisis such as Covid-19, where essentially cash widens way more dramatically versus a relatively more stable CDS. Additionally, diverse factors can explain the negative basis environment, such as the current interest rate environment with a monetary policy easing cycle coming from high interest rates, which affected the bonds spreads making the cost of liquidity higher. On the other hand, CDS is an unfunded product, which only sees an upfront payment as execution cost without building up in the construction of the spread. This structural difference confirms once again the more liquid profile of CDS, leading to the next key point: positioning. The ability to short cash bonds, comes from borrowing, i.e. repo market and when there is no inventory, there is the possibility to rely on the OTC market deriving from it: CDS contracts. The deriving marketplace is an “avenue to scale” positioning through leverage. These structural differences, contribute to diverse ways of entering a position in the credit markets, showcasing another reason for the basis breathing phenomenon. Applying these reasonings to the index levels and also to the sectors, clearly shows how many dynamics are underlying these two markets relationship.

Finally, basis behaviour is correlated with investors perspectives and roll dates dynamics. In every crisis it can be spotted the constant presence of a bottom, explained by investors risk appetite, in particular in context of net basis strategies. Different investor categories showcase diverse spectrum of reaction to the basis, in fact the negative bottoms can be considered as optimal entries for specific funds focusing on arbitrage opportunities. The illiquidity premium given by cash could allow the investor to lock in a great basis, ensuring risk free return.

Moving on to behavior in roll dates, reversals into basis movements makes sense in particular on the CDS side, as investors usually roll into the new series for liquidity reasons, which explain the CDS spreads widening in pre roll to then tighten in post roll environment.

Focusing on liquidity asymmetries, execution constraints and structural differences, they provide a clear understanding of the dynamics behind some patterns identified such as negative basis in stress scenarios and instability of basis in sector specific crisis.

4. Conclusion

This working paper set out to expand the existing literature on the CDS-Bond basis by focusing on the European credit market, more specifically on the iTraxx Europe index and its constituents, with a wider timeframe covering from March 2020 to March 2025. Leveraging a robust dataset comprehending over 32,000 daily observations, the empirical analysis provided insights into aggregate and sector-specific basis dynamics.

First, at index level, the CDS–Bond basis exhibited a clear mean-reverting behavior, which averaged slightly negative (-4.17bps) in the full-time horizon of the sample used, influenced by major market dislocations during times of crisis. In fact, in the additional analysis excluding iTraxx S33 (the Covid-19 shock), the average amounted to -0.14 bps, reaffirming the long-run no arbitrage relationship established in prior literature (Blanco et al., 2005; Zhu, 2004; Levin et al., 2005).

Secondly one of the main findings was the pronounced negative basis in Financials, heavily influenced by Credit Suisse turmoil. The negative basis emerged because of wider cash credit

spreads compared to CDS, justified by structural differences, information absorption asymmetries and liquidity constraints related to the two markets execution process.

The empirical analysis provides a simple and solid foundation on which future research can build on. Limitations can be found in the assessments of execution costs and bid-ask spreads, which could partly bias the basis levels, furthermore the lack of available comparable research makes cross-study comparison difficult. By building up an analysis using the same CDS benchmark index at a European level will facilitate future studies validation and will allow to gain even a deeper understanding of the credit markets behavior in both regular and stress scenarios. Additionally, it would be helpful to integrate also behavioral and strategic aspects such as investor positioning and arbitrage strategies employed by fund managers and market makers in the credit space.

Appendix 1: Sectorial Statistics

Table 7: Autos & Industrials Summary Statistics

Autos & Industrial			
Metrics	CDS	Cash	Basis
Mean	79,72	73,04	6,67
Median	73,58	69,76	10,65
Min	50,58	22,64	-61,84
Max	174,30	224,08	48,95
StdDev	26,01	32,95	20,26
Skewness	1,32	1,31	-0,42
Kurtosis	1,27	2,93	-0,53

Source: Own Creation, Bloomberg data

Table 8: Consumers Summary Statistics

Consumers			
Metrics	CDS	Cash	Basis
Mean	61,60	69,62	-8,02
Median	52,05	70,32	-6,03
Min	34,88	22,96	-92,99
Max	146,95	183,52	42,17
StdDev	21,96	27,24	20,39
Skewness	1,27	1,03	-0,42
Kurtosis	1,45	1,75	0,51

Source: Own Creation, Bloomberg data

Table 9: Energy Summary Statistics

Energy			
Metrics	CDS	Cash	Basis
Mean	64,48	60,68	3,80
Median	55,18	62,47	5,03
Min	41,41	22,40	-57,42
Max	156,16	147,64	79,45
StdDev	23,13	19,23	22,52
Skewness	1,40	1,16	0,45
Kurtosis	1,68	3,53	0,21

Source: Own Creation, Bloomberg data

Table 10: Energy Summary Statistics

Financials			
Metrics	CDS	Cash	Basis
Mean	68,84	87,22	-18,38
Median	64,79	82,30	-17,84
Min	42,50	32,93	-141,31
Max	134,50	248,91	15,80
StdDev	18,83	34,94	19,24
Skewness	0,85	1,01	-1,44
Kurtosis	0,08	1,73	5,08

Source: Own Creation, Bloomberg data

Table 11: TMT Summary Statistics

TMT			
Metrics	CDS	Cash	Basis
Mean	63,01	67,70	-4,70
Median	56,93	66,28	0,58
Min	40,13	27,14	-80,76
Max	150,63	165,12	74,37
StdDev	19,11	24,34	27,00
Skewness	1,92	1,37	-0,27
Kurtosis	4,80	2,94	0,16

Source: Own Creation, Bloomberg data

Appendix 2: Sectorial Weights

Table 72: Number of Constituents per Sector / % on overall index

Sectors	S42	S41	S40	S39	S38	S37	S36	S35	S34	S33
Autos & Industrials	36	36	36	35	35	35	36	36	36	36
Consumers	24	24	24	23	23	23	23	22	20	21
Energy	17	18	17	20	19	19	20	19	19	19
Financials	30	30	30	30	30	30	30	30	30	30
TMT	18	17	18	17	18	18	16	18	20	19
Autos & Industrials	29%	29%	29%	28%	28%	28%	29%	29%	29%	29%
Consumers	19%	19%	19%	18%	18%	18%	18%	18%	16%	17%
Energy	14%	14%	14%	16%	15%	15%	16%	15%	15%	15%
Financials	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%
TMT	14%	14%	14%	14%	14%	14%	13%	14%	16%	15%

Source: Own Creation, Bloomberg data

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