



# J'Accuse! Antisemitism and financial markets in the time of the Dreyfus Affair <sup>☆</sup>

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## ABSTRACT

We study the stock market performance of firms with Jewish board members during the “Dreyfus Affair” in 19th century France. In a context of widespread latent antisemitism, initial accusations made against the Jewish officer Alfred Dreyfus led to short-lived abnormal negative returns for Jewish-connected firms. However, investors betting on these firms earned higher returns during the period corresponding to Dreyfus’ rehabilitation, starting with the publication of the famous op-ed *J’Accuse!* in 1898. Our conceptual framework illustrates how diminishing antisemitic biases among investors might plausibly explain these effects. Our paper provides novel insights on how antisemitism can increase and decrease over short periods of time at the highest socio-economic levels in response to certain events, which in turn can affect firm value in financial markets.

## 1. Introduction

Antisemitism and other types of prejudice can persist over centuries (Voigtländer and Voth, 2012; Becker and Pascali, 2019), but they may also vary over short periods of time in response to societal incidents. Financial markets provide an ideal setting to detect these short-term fluctuations and their economic consequences. Recent work studies dis-

tortions in firm value to quantify ethnic or nationalistic preferences (Fisman et al., 2014; Kumar et al., 2015; Hjort et al., 2019), but there is less evidence on how the activation of prejudice and its amplification by the press can affect stock market returns. In this paper, we show that financial markets rapidly respond to societal shifts in antisemitic sentiment, and that betting on firms exposed to these discriminatory beliefs can generate excess returns.

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<sup>1</sup> The early history of European financial markets is closely intertwined with that of antisemitism, as financial scandals in this era often fueled antisemitic sentiment (Arendt, 1951; Doerr et al., 2019). Among the most deeply ingrained antisemitic stereotypes was the notion that global finance was controlled by Jewish individuals: in 1886, a best-selling antisemitic book by the French writer Edouard Drumont claimed that “with the Semite, everything starts and ends with the Stock Exchange” (Wilson, 2007, p. 265).

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We study the response of financial markets to exogenous shocks in antisemitism during the Dreyfus Affair, a milestone in European history which coincided with the early days of modern financial markets (Begley, 2009).<sup>1</sup> The Affair was centered around Alfred Dreyfus, a French Jewish army officer who was convicted for high treason in a notorious miscarriage of justice. We show that firms with Jewish board members, after initially losing value following Dreyfus' downfall, experienced higher returns during the press campaign led by the writer Emile Zola to rehabilitate Dreyfus. Our results suggest that latent antisemitism can be quickly turned into active antisemitism in response to certain incidents amplified by the media, leading to consequences at the highest social and economic levels. We discuss different potential explanations for the differential returns of Jewish-connected firms and argue that these may have reflected shifting antisemitic attitudes, including among business elites. These findings are relevant for understanding the economic consequences of shifting social norms in polarized societies.

Our analysis relies on comprehensive data on the stock market returns and the board composition of publicly traded firms between 1891–1899, which we hand-collected from archival sources. We identify Jewish board members using genealogical data on prominent Jewish families from the seminal research by Grange (2016). We then study the performance of firms with Jewish board members throughout the different phases of the Dreyfus Affair. Our analysis combines a standard event-study approach with a difference-in-differences (DID) strategy exploiting the timing of Dreyfus' degradation and of "*J'Accuse!*", a widely publicized editorial that denounced the antisemitic conspiracy against Dreyfus and started the campaign demanding his rehabilitation. We also implement a Coarsened Exact Matching analysis in order to deal with pre-treatment imbalances (Iacus et al., 2012) and a synthetic DID analysis to address potential concerns about violations of parallel trends (Arkhangelsky et al., 2021).

We first examine the short-term impact of several salient antisemitic episodes that shook French society in the 1890s. These episodes include two events associated with the Panama scandal, a financial scandal in late 1892 which paved the way for the Dreyfus Affair; and four events associated with the Dreyfus Affair itself: Dreyfus' military degradation in a widely publicized ceremony in January 1895, the publication of *J'Accuse!* in January 1898, the appointment of the Waldeck-Rousseau cabinet in June 1899, and the presidential pardon of Dreyfus in September 1899. Firms with Jewish board members experienced negative cumulative abnormal returns (CARs) after the first Panama revelations and after Dreyfus' degradation. *J'Accuse!* had a negative but imprecisely measured effect in the short run. In later stages of the Affair, Jewish-connected firms experienced positive CARs around Waldeck-Rousseau's appointment, which publicly signaled the upcoming rehabilitation of Dreyfus.

Our analysis then studies the performance of firms with Jewish connections during the two main phases of the Dreyfus Affair: a phase of high antisemitic sentiment following Dreyfus' degradation; and a phase of descending antisemitic sentiment, initiated by *J'Accuse!*, during which new revelations about the conspiracy against Dreyfus came to the fore. Our preferred specification compares the stock returns of Jewish-connected firms with other firms during the first phase (November 1894 to January 1898) and the second phase (after January 1898) of the Affair, relative to a reference period spanning January 1891 to October 1894. Our identification strategy ensures that our results are not driven by time-varying effects of the correlates of Jewish connections.

Firms with Jewish board members experienced a relative but imprecisely estimated *decline* in returns during the first phase, and a more pronounced *growth* in returns during the rehabilitation phase of the Affair. The mixed evidence we find for the 1894–1897 period, in our interpretation, reflects the already high prevalence of antisemitic sentiment in French society when the Affair broke out; a large historical literature supports this interpretation (Lazare, 1894; Levaillant, 1907; Arendt, 1951). This stands in contrast with the large increase in returns we observe during the Affair's second phase. Our estimates imply that

during the two years following *J'Accuse!*, in comparison with the rest of the stock market, investors holding Jewish-connected stocks earned rents amounting to 14.1% of the value of firms with any Jewish connection, and 7.9% of the whole market. While the volatility of these stocks also increased, the magnitude of these excess returns implies that investors were more than compensated for this increased risk—the risk-adjusted returns of Jewish-connected firms also increased in the aftermath of *J'Accuse!*.<sup>2</sup>

To further alleviate concerns about potential violations of parallel trends between firms with and without Jewish connections, we deploy two additional empirical strategies. First, we implement the synthetic difference-in-differences (SDID) estimator of Arkhangelsky et al. (2021). This estimator identifies optimally weighted combinations of pre-period control observations that effectively re-balance pre-trends across treated and control firms. The post-period treatment effect is then identified off the difference in reweighted control-unit trends and actual treated-unit trends. Second, we use the Coarsened Exact Matching procedure (CEM) (Iacus et al., 2012), a type of Iacus et al.'s (2011) Monotonic Imbalance Bounding multivariate matching method, which defines and matches exactly by the strata where treatment and control units belong. In a setting where some of the observable pre-treatment variables are not balanced, the CEM procedure minimizes covariate imbalances and the risk that they may bias the estimated treatment effects. Our core results are robust to using both these alternative approaches.

A key potential driver of the stock fluctuations we observe may be that the Dreyfus Affair changed expectations (downward, then upward) about the profitability of Jewish-connected firms. We provide evidence suggesting that this channel may have been present, but cannot explain the entire evolution of stock returns for Jewish-connected firms. First, the actual profitability of these firms, as measured by dividends, did not change relative to other firms throughout the period. Second, Jewish-connected firms that conducted their operations abroad, and were therefore less vulnerable to a backlash by the French public or the state, also experienced higher returns during Dreyfus' rehabilitation campaign. Finally, firms did not change their board composition in response to the Affair; board composition was primarily driven by the ownership structure of firms and was therefore unlikely to respond to the ebbs and flows of the Dreyfus Affair. Section 6 provides a detailed discussion of these alternative mechanisms.

To explain our findings, consistent with the historical record documenting the rise and fall of antisemitism during this period (Wilson, 2007; Joly, 2007), we propose a different and complementary interpretation focusing on the existence of antisemitic investors with pessimistic views of Jewish stocks. Building on De Long et al. (1990)'s seminal model of noise traders, we consider the coexistence of two types of risk-averse agents: neutral investors with unbiased beliefs and antisemitic investors who hold uncertain, negatively (positively) biased beliefs about Jewish (non-Jewish) stocks.<sup>3</sup> In this model, Jewish stock prices suffer from three sources: (i) fundamental antisemitic biases in beliefs with long-lasting impacts on stock prices, (ii) idiosyncratic shocks on those biases with short-lived effects, and (iii) the uncertainty surrounding antisemitic investors' beliefs that further reduces demand for Jewish stocks.

Our main results can be interpreted in light of this model. Outbursts of antisemitism at the onset of the Affair produced idiosyncratic shocks on the bias of antisemitic investors, leading to short-lived neg-

<sup>2</sup> Using data on media coverage that we manually collected from five major contemporaneous newspapers, we additionally show that news revelations about Dreyfus contributed to the higher returns experienced by Jewish-connected firms. The positive relationship between news coverage and these firms' returns is driven by pro-Dreyfus coverage, while anti-Dreyfus coverage has the opposite effect.

<sup>3</sup> For conciseness, we use the term "biased beliefs" in the paper to also capture investors' biased preferences, or prejudice, between firms with and without Jewish connections.

ative market reactions on Jewish stocks. The publication of *J'Accuse!* polarized beliefs in French society, which increased uncertainty about antisemitic biases and decreased Jewish-connected stock prices in the short run. However, *J'Accuse!* also sparked off a media campaign aiming to rehabilitate Dreyfus, which contributed to debiasing and reducing uncertainty about fundamental antisemitic beliefs. Both led to a sustained appreciation of Jewish stocks in the long run.

As in Becker's (1957) seminal analysis of taste-based discrimination in labor markets, discrimination in our model creates rents that can be exploited at the expense of discriminating agents. However, because uncertainty about biases matters to risk-averse investors, everyone generically chooses to buy or sell some amount of both Jewish and non-Jewish stocks. Thus, changes in the distribution of biases induce all investors to re-optimize their portfolios, which affects equilibrium prices. Those insights stand in contrast with the phenomenon of segregation of minority workers in labor markets, in which discriminating employers do not hire minority workers, and only the marginal employer's bias matters for the wage gap (Heckman, 1998; Charles and Guryan, 2008; Lang and Lehmann, 2012). The key to this difference is twofold: our model incorporates uncertainty and risk-aversion, and accounts for the fact that investors' holding of the discriminated stocks is not bounded below by zero.

Empirically, our findings also underscore the resilience of discrimination against Jewish-connected firms. Even though antisemitism was a declining force after Dreyfus' pardon (Joly, 2007), all the effects of discrimination likely did not disappear at the end of the Affair. Our model highlights how changes in the distribution of biases allowed investors to earn higher returns by betting more on Jewish firms. However, such arbitrage involved risk given the uncertainty about future biases. This can explain why the price of Jewish stocks did not converge immediately towards the value predicted by their fundamentals.

Our finding of excess returns for firms with Jewish connections after *J'Accuse!* provides novel evidence on how discriminatory beliefs might affect financial markets. In related work, Pager (2016) shows that firms engaging in hiring discrimination are less likely to survive financial crises. Other studies provide cross-sectional evidence of this mechanism in the context of discrimination against women (Hellerstein et al., 2002; Kawaguchi, 2007; Weber and Zulehner, 2014). While suggestive, these results may be partially driven by unobservables such as managerial practices that correlate with ethnic or gender prejudice. We exploit exogenous antisemitic shocks that are plausibly orthogonal to firms' unobservables.

Several studies have explored the distortionary impacts of ethnic preferences and social norms on investment. Kumar et al. (2015) document a decline in investment flows to funds with managers with Middle-Eastern-sounding names after 9/11, and Niessen-Ruenzi and Ruenzi (2019) report investment flow differences by gender. Relatedly, Jung et al. (2019) show weaker market reactions to forecast revisions by analysts with less favorable names.<sup>4</sup> Fisman et al. (2014) show that deteriorating Sino-Japanese relations in the 2000s adversely affected the performance of firms involved in bilateral exchange, and Hjort et al. (2019) show that ethnic discrimination lowers value creation among publicly listed firms in Kenya. Overall, the literature has mainly focused on the efficiency consequences of these behaviors. There is less evidence of investors' discriminatory beliefs generating profit opportunities for other investors. Our results are consistent with a long-standing hypothesis that unbiased investors can "beat the market" by betting against discriminators (Wolfers, 2006).

More broadly, the paper relates to the large literature on individual preferences and investment behaviors (Grinblatt and Keloharju, 2001). Hong and Kacperczyk (2009) find that "sin stocks" associated with alco-

hol and tobacco products are less likely to be held by norms-constrained investors, and have higher expected returns. The political views of managers and analysts also matter to their decisions and the corresponding market reactions (Hong and Kostovetsky, 2012; Hutton et al., 2014; Jiang et al., 2016).

Finally, we contribute to a growing literature on the economic origins and consequences of antisemitism. Our paper estimates the short-term impacts of exogenous shifts in antisemitic beliefs. Several studies have explored the long-term persistence of antisemitism and its link with financial development in historical Germany (Voigtländer and Voth, 2012; D'Acunto et al., 2018; Becker and Pascali, 2019) and Russia (Grosfeld et al., 2019). Ferguson and Voth (2008) study firms with connections to the Nazi movement, and Doerr et al. (2019) show that exposure to a failing bank led by a Jewish chairman increased Nazi voting after Germany's 1931 banking crisis. Finally, Huber et al. (2021) explore the consequences of mass dismissals of Jewish managers in Nazi Germany. In contrast to the environment in Huber et al. (2021), firms with Jewish connections during the Dreyfus Affair did not experience structural changes and did not face the likely prospect of government discrimination.<sup>5</sup> We provide, to the best of our knowledge, the first evaluation of the economic consequences of the Dreyfus Affair, and we study the contemporaneous effects of shifts in antisemitic sentiment before and after *J'Accuse!*. Our empirical setup allows us to study negative as well as positive shocks to antisemitism; in doing so, we provide evidence that debiasing among some investors can affect price movements in financial markets.<sup>6</sup>

The rest of the paper is organized as follows. We provide relevant background on the Dreyfus Affair in Section 2. Sections 3 and 4 describe our data and our empirical framework, respectively. Our main results are presented in Section 5. Section 6 discusses potential mechanisms. Section 7 concludes.

## 2. The Dreyfus Affair

We first discuss the origins of antisemitism in late 19th century France, and then provide a timeline of major events in the Dreyfus Affair, which has inspired a large historical literature. Further details and deeper analyses can be found in, e.g., Whyte (2005) and Wilson (2007).

### 2.1. Political and social context

In the 1890s, France was governed by a democratic regime known as Third Republic, established after the Franco-Prussian War of 1870-71. During this time, international politics was characterized by recurring tensions with Germany while domestic policy involved major extensions of civic and social rights and a secularization of the state. In this context, Jewish citizens enjoyed full civic rights. The process leading to the integration of ethnic and religious minorities started with the French Revolution and continued throughout the 19th century, during which many Jewish citizens followed a path of assimilation. By the late 19th century, many Jewish citizens were well-integrated in French business, culture, and politics.

However, this integration faced substantial antisemitic opposition stemming from conservative forces hostile to secularization. In 1886, a writer named Edouard Drumont published a best-selling antisemitic book entitled *La France Juive* ("The Jewish France"). This book described an alleged universal Jewish conspiracy against France, which

<sup>5</sup> Liberal French governments never considered or enacted antisemitic policies under the Third Republic, spanning 1870-1940 (see Section 2.1). Until the advent of the Vichy regime in 1940, no viable political force advocated for antisemitic policies.

<sup>6</sup> The debiasing mechanism speaks to a large literature on the impact of information (Adida et al., 2018; Grigorieff et al., 2020), evaluations (Bohren et al., 2019), and quota policies (Beaman et al., 2012) on destigmatization and the debiasing of prejudice (see also Bertrand and Dufló, 2016).

<sup>4</sup> Kumar et al. (2015); Niessen-Ruenzi and Ruenzi (2019); Jung et al. (2019) all show that there is little difference by performance, thus ruling out the importance of statistical discrimination in those cases.

in Drumont's view permeated many spheres of French society.<sup>7</sup> The Catholic newspaper *La Croix* and openly antisemitic outlets such as *La Libre Parole* (created in 1892 by Drumont) and *L'Antijuif* ("The Anti-Jew") regularly accused Jews of fomenting the corruption of French culture through, in particular, their alleged dominance of the business and financial spheres. In addition, Jews were often used as scapegoats for the French defeat against Prussia in 1871. For example, *La Libre Parole* published a series of articles condemning the presence of Jewish officers in the military.

In the leadup to the Dreyfus Affair, several scandals further contributed to rising levels of antisemitism. In 1882, Jewish businessmen—in particular, members of the Rothschild family—were widely blamed for the bankruptcy of the *L'Union Générale* bank; this episode is considered a founding moment of French antisemitism (Arendt, 1951; Wilson, 2007).<sup>8</sup> The broad-based antisemitic sentiment following the crash of *L'Union Générale* was shared by the *Agents de Change*, the chartered professional traders exclusively allowed to operate in the Paris Stock Exchange. During the 1890s, their association financed a press campaign that used anti-German and antisemitic arguments to oppose the liberalization of trades in the Paris Stock Exchange (Lagneau-Ymonet and Riva, 2012; Hautcoeur et al., 2022).

In 1892, antisemitic outlets such as *La Libre Parole* uncovered revelations around the bankruptcy of the Panama Company. This scandal further aggravated antisemitism as it "showed that the intermediaries between private enterprise and the machinery of the state were almost exclusively Jews" (Arendt, 1951, p. 96). The French Antisemitic League was established around the same period, in 1889. Despite the fact that antisemitic politicians failed to coordinate around a single political movement and fared poorly in the 1893 elections, "public opinion was entertained, during the three years before the Dreyfus Affair, in a spirit of defiance and hatred... in which the Dreyfus Affair fatally had to break out" (Levaillant, 1907). According to Lazare (1894), the latent antisemitism in French society primarily stemmed from economic resentment:

"This prejudice against the Jews has prevailed to the present day, secret, instinctive... People still feel an intense bitterness against the deicides, and glance with no favourable eye at their riches, for they still find it difficult to understand how this tribe of miscreants and murderers, doomed to perdition, can legitimately be the owners of wealth."

[Lazare, 1894, p. 388]

## 2.2. Timeline of the Dreyfus Affair

The Dreyfus Affair broke out in this context of widespread latent antisemitism. In September 1894, a French spy at the German Embassy in Paris discovered a note announcing the delivery of confidential French military documents. This information reached the Minister of War, who mandated an intelligence officer, Major Henry, to identify the author of the note, the so-called *bordereau*. Henry fabricated a file against Alfred Dreyfus, an army captain, composed of forgeries under the pretext that the *bordereau* bore some resemblance with Dreyfus' writing. On the basis of this file, Dreyfus was summarily convicted for high treason by a court-martial in December 1894, and deported to French Guiana in February 1895.

The Dreyfus case was made public on November 2, 1894, when *La Libre Parole* revealed the arrest of a Jewish captain on accusations of espionage. Antisemitic coverage of the Dreyfus case peaked in January 1895, when the degradation of Dreyfus made national headlines. Newspapers gave a detailed account of the degradation ceremony of "the traitor" that took place at the *Ecole Militaire* in Paris, in front of a large crowd shouting antisemitic abuse. Appendix Fig. A.1 (a) shows

the frontpage of *Le Petit Journal* after this episode.<sup>9</sup> Antisemitic outlets emphasized Dreyfus' Jewish origins and provided derogatory coverage denigrating all French Jews. Appendix Fig. A.2 provides two examples of such coverage.

After Dreyfus' deportation, his brother and a few supporters started gathering evidence to prove the miscarriage of justice. Meanwhile, an intelligence officer, Lieutenant-Colonel Georges Picquart uncovered evidence suggesting the real culprit was a different officer, Ferdinand W. Esterhazy. This information was dismissed by Picquart's hierarchy. On January 11, 1898, Esterhazy was acquitted by military judges, making any revision of Dreyfus' trial impossible. Until that point, the mainstream media remained anchored to the initial consensus that Dreyfus was the treacherous author of the *bordereau*.

*J'Accuse...!* The turning point of the Dreyfus Affair occurred on January 13, 1898, with the publication of *J'Accuse!* by Emile Zola on the frontpage of *L'Aurore*. This editorial revealed all the facts pointing to the wrongful conviction of Dreyfus and condemned the rise of antisemitism in French society that led to Dreyfus being falsely accused:

"These, Sir, are the facts that explain how a miscarriage of justice came about; The evidence of Dreyfus's moral values, his affluence, the lack of motive and his continuous claim of innocence combine to show that he is the victim of . . . the hunt for "dirty Jews" that brings shame upon our time."

[Emile Zola, "J'accuse...!", *L'Aurore*, 13 January 1898 (authors' translation).]

*L'Aurore's* circulation increased tenfold on the day *J'Accuse!* was published as the editorial reached a large share of public opinion. While Zola was subsequently prosecuted for libel, *J'Accuse!* broke the consensus about Dreyfus' guilt and signaled the beginning of a broader campaign demanding his rehabilitation.<sup>10</sup> Archival work suggests that public opinion also became increasingly pro-Dreyfus throughout the year 1898. Wilson (2007) lists 138 pro-Dreyfus public meetings across 64 French towns between October 1898 and December 1899, compared to 23 anti-Dreyfus meetings during the same period.

On June 22, 1899, the liberal politician Pierre Waldeck-Rousseau was given the mission of forming a unity government to bring the Dreyfus Affair to an end. In September 1899, Dreyfus was again found guilty, this time with extenuating circumstances. However, at the request of Waldeck-Rousseau, Dreyfus was granted a presidential pardon on September 19, 1899, and released shortly thereafter. This marked the end of the most salient and controversial phase of the Affair, although Dreyfus was not fully reinstated until 1906. Appendix Fig. A.3 shows that media coverage of the Affair peaked after *J'Accuse!* and fell rapidly after Dreyfus' pardon.

The Affair had deep political and social consequences on French society (Begley, 2009). With the resolution of the Dreyfus case, antisemitism lost prominence as a broad-based ideology and became associated with extreme-right politics, lurking inside reactionary movements such as the French Action, from which it would experience a resurgence in the 1930s. French politics was fundamentally changed, as intellectuals became *engagés*, namely proactively involved in public life and the political sphere. Beyond France, the Affair became an international *cause célèbre* and sent a shockwave throughout Europe, allegedly prompting Theodor Herzl to start the Zionist movement for an independent Jewish State.

<sup>9</sup> A contemporary observer described: "A huge crowd, held off with difficulty by the police, danced for joy, seethed with excitement, whistled, shouted cries of hatred: 'Death to the Jews!... Death to the traitor!... Death to Judas!'" (Wilson, 2007, p. 10).

<sup>10</sup> Edouard Herriot, a prominent politician recalled: "From then on it was impossible not to take sides. Zola's open letter forced us to rise up, either against an outrageous slanderer, or against an unspeakable ruling clique" (Wilson, 2007, p. 13).

<sup>7</sup> Cohn (1967) draws a connection between Drumont's writings and the infamous antisemitic "Protocol of the Elders of Zion" distributed worldwide in the 1900s.

<sup>8</sup> In 1889, the catholic outlet *La Croix* wrote: "*L'Union Générale* was assassinated because it was competing with the Jews."

### 3. Data

This section describes the data we collected from three main sources. Our analysis combines stock market data with data on Jewish board membership among publicly traded firms, as well as newspaper data on coverage of the Affair by pro-Dreyfus and anti-Dreyfus newspapers (see also Appendix C).

#### 3.1. Financial data

**Background** The Paris Stock Exchange (*Bourse de Paris*) was established in the early 19th century under the purview of a monopolistic organization called the *Compagnie des Agents de Change* (CAC). The *Bourse* was comprised of two different markets: the *Parquet* or *Marché Officiel* regulated by the CAC, and the *Coulisse* or *Marché en Banque* operating independently of these regulations. Our analysis focuses on the official market, the *Parquet*, since there is no reliable daily data on transactions in the *Coulisse*. Hautcoeur and Riva (2011) describe the *Parquet* as “a structured organization... [with] efficient settlement and compensation procedures,” analogous to other major marketplaces of this era. Meanwhile, competition between the *Parquet* and the *Coulisse* fostered antisemitism among the *Agents de Change*, as many brokers operating in the *Coulisse* were themselves Jewish (Lagneau-Ymonet and Riva, 2012).

**Data sources** We hand-collected firm-specific information from the *Annuaire des Agents de Change*, a registry of stock broker yearbooks published by the CAC and available from the archives of the French Ministry of Finance. The yearbooks include data on firm capitalization, the book value of shares, dividends, the location of firm headquarters, surnames of board members, and whether a firm’s assets are guaranteed by the French state. We use this data to construct daily measures of stock returns and market indices. The yearbooks also include daily price data for contemporary government bonds (*Rentes*), which we use as the risk-free rate. Appendix Table A.1 reports summary statistics from this data. In total, we observe 140 firms listed in the Paris Stock Exchange between 1891–1899, including 124 firms listed during the entire period.<sup>11</sup>

The information from the yearbooks was complemented with three other sources. Daily stock price data was collected from the *Bulletin de la Cote*, the daily spreadsheet published by the CAC available from the French National Library (BNF). This includes two types of stocks: stocks tradable in cash (*Au Comptant*) and stocks tradable as cash and forward (*Au Comptant et A Terme*). The latter category was traded much more frequently, and the firms issuing them were generally better known. Additional data on the board composition of firms was obtained from the *Archives du Crédit Agricole* and the *Annuaire Chaix*. As we describe below, changes in the board composition of firms are infrequent and firms with Jewish board members do not experience more changes after the beginning of the Dreyfus Affair.

#### 3.2. Jewish board membership

We use information on boards of directors (*conseils d’administration*) to identify firms with connections to prominent French Jewish families of this era. The list of families comes from Grange (2016), a comprehensive historical study that identifies 40 prominent French Jewish extended families between 1870 and 1940. Grange (2016) exploits many historical sources, from the marriage registers from the

<sup>11</sup> The fourth row of Table A.1 shows that on an average day 70% of the stocks are traded. Given the level of liquidity of financial markets at the time, we use a stock’s share of traded days during the study period as a proxy for its liquidity, and exclude those that were traded less than 20% of days. Liquidity defined in this way is uncorrelated with our various measures of Jewish connections. In addition, we show in Appendix Table A.12 that our results are not driven by low liquidity.

prestigious Parisian synagogue on *rue de la Victoire*, the directories of high society associations such as the *Bottin mondain*, and the famous *Livre d’Or des Salons* from 1899, to records of naturalization, of the order of merit *Légion d’Honneur*, autobiographies, and interviews. Examples of such dynasties include the Pereire, Rothschild, Stern, and Louis-Dreyfus families, whose histories, lives, and businesses were vividly depicted from multiple historical angles. We identify a board member as Jewish if the individual’s first and last name exactly match a full name listed in Grange (2016). In total, we observe 44 unique Jewish individuals out of 1,244 board members between 1891–1899. Our two measures of Jewish connections are the fraction of Jewish board members and an indicator for firms with a Jewish CEO.<sup>12</sup>

Regardless of their religious beliefs, it is reasonable to assume that the individuals with a name listed in Grange (2016) were exposed to the antisemitic sentiment prevailing in this period. Prominent Jewish families were highly recognizable by the public and regularly targeted by the antisemitic press which published lists of Jewish businessmen, as did *L’Antijuif* in late 1898 (Tillier, 1997). One among many instances is a statement made by Drumont in 1891: “*The Third Republic is no longer the Republic of the French, but the Kingdom of the Rothschilds*” (Wilson, 2007).

In addition, because of the tight links between many firms and a few prominent founding families, the identity of board members was widely publicized and well-known to investors. The contemporary press and literature regularly chronicled the business rivalries between some of these families, the most famous of which opposed the Pereire (active in banking, gas lighting, public transit, railways, and transatlantic travel) to the Rothschild family, who controlled a large conglomerate encompassing banks, mines, and railway companies. Similarly, the Louis-Dreyfus dynasty established by Léopold Dreyfus (1833-1915) was closely associated with naval shipyards and food processing.

At the time of the Dreyfus Affair, board members typically acted as non-independent directors with various degrees of involvement in corporate management. Given the high concentration of ownership in French firms and the prevalence of strong control by founding families (Landes, 1949), board members were most commonly the firm’s founders, the founders’ offspring, and/or the largest shareholders.<sup>13</sup> The chairman of the board (*président du conseil*) typically exerted the function of CEO (*président directeur général* or PDG in French).

Table 1 provides descriptive statistics on Jewish connections overall and by sector. 15% of firms have a Jewish CEO and the average fraction of Jewish board members is 6.9%. These families are most represented in the gas/electricity and railway sectors (panel a). Panel (b) looks at correlates of Jewish connections. Jewish-connected firms experience slightly lower stock returns on average, are differentially represented across sectors, and are more likely to operate abroad.<sup>14</sup> In our analysis, we address concerns related to these imbalances by flexibly interacting firm-level covariates with the relevant time dummies in our difference-in-differences setting. We also implement deploy a synthetic DID approach and a Coarsened Exact Matching approach, as described below.

One concern for our analysis could be that investment decisions reflected broader patriotic or nationalistic sentiment rather than an-

<sup>12</sup> In a robustness check, we also use a different, likely less accurate registry from Lévy’s (1960) list of Jewish last names. The measures of Jewish connections computed using both databases are strongly correlated—the correlation between the fraction of Jewish board members in Grange (2016) and in Lévy (1960) is 0.83.

<sup>13</sup> We are not aware of any historical data documenting ownership stakes among board members. Murphy (2007) discusses at length the literature on the history of corporate ownership in France that took deep root in the 18th and 19th centuries.

<sup>14</sup> This is consistent with the historical record in Wilson (2007) describing how prominent Jewish families, such as the Rothschilds, were regularly attacked for their foreign connections.

**Table 1**  
Sectors and Characteristics of Firms with Jewish Connections.

	Firms (1)	% Board Members (2)	Jewish CEO (3)
<b>(a) Jewish Connections by Sector</b>			
<i>Sector</i>			
Banking/Insurance	33	0.046	0.145
Gas/Electricity	12	0.164	0.380
Mining/Heavy Industry	29	0.050	0.074
Railways/Transport	36	0.071	0.238
Other	30	0.069	0.033
Total (average)	140	0.068	0.150
St. Dev.		(0.106)	(0.329)
<b>(b) Firm Characteristics and Jewish Connections</b>			
Stock price (Fr.)	763.74	112.208 (600.683)	-180.412 (157.270)
Daily returns	0.010	-0.034* (0.018)	-0.004 (0.004)
Liquidity (traded on any day)	0.70	-0.123 (0.183)	-0.011 (0.051)
Banking/Insurance	0.24	-0.469 (0.319)	-0.020 (0.109)
Gas/Electricity	0.08	0.906*** (0.308)	0.200* (0.104)
Mining/Heavy Industry	0.20	-0.655*** (0.217)	-0.151* (0.077)
Railways/Transports	0.27	0.147 (0.354)	0.203 (0.126)
Other sectors	0.21	0.071 (0.322)	-0.232 (0.075)
State guarantee	0.22	-0.038 (0.320)	0.050 (0.114)
Foreign operations	0.26	0.628 (0.439)	0.333*** (0.126)
Number of shares	98.57	140.707 (154.805)	47.811 (50.435)
Market Cap. in 1891 (Million Fr.)	88,492.08	40,674.00 (114,834.2)	7,570.04 (57,898.53)
Market-to-book ratio	2.56	-4.190 (3.707)	-1.599* (0.828)
Board Size	9.95	-2.771 (3.178)	-0.519 (1.228)
Politically connected	0.61	0.260 (0.470)	0.105 (0.116)

Notes: Panel (a) reports descriptive statistics on Jewish board membership across sectors. Panel (b) reports the coefficients and standard errors from OLS regressions of the form:  $y_i = \alpha + \beta JewishConnections_i + \varepsilon_i$ , where Jewish connections are measured as the fraction of Jewish board members (column 2) or a dummy for firms with a Jewish CEO (column 3). The sample averages differ slightly from those in Appendix Table A.1 since here we use data at the firm level instead of data at the firm-day level. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Heteroskedasticity-robust standard errors in parentheses.

tisemitic biases. Importantly, our results in Section 5 are robust to controlling for foreign connections interacted with the two time dummies corresponding to the two phases of the Dreyfus Affair. Finally, Jewish connections are stable throughout the period since few firms experience changes in their board composition during the first phase (1895-97, after Dreyfus' degradation) or the second phase (1898-99, after *J'Accuse!*) of the Dreyfus Affair, as we show in Appendix Table A.2.

## 4. Empirical framework

### 4.1. Event study framework

We first estimate the short-term effects of major episodes of the Panama scandal and the Dreyfus Affair on the stock market performance of firms with Jewish board members. This analysis is conducted in a standard event study framework, as summarized in the following specification:

$$CAR_i = \beta_0 + \beta_1 JewishBoardMembers_i + \Omega X_i + \varepsilon_i \quad (1)$$

where  $i$  denotes a firm,  $JewishBoardMembers_i$  denotes the fraction of Jewish board members based on Grange (2016), and  $X_i$  is a vector of controls including sector dummies, type of admission in the Paris Stock Exchange, guarantee type (a dummy indicating whether a stock is guaranteed by the French state), a dummy for whether the firm operates abroad, market capitalization at the beginning of the period (January 1, 1891), and a dummy for political connections.<sup>15</sup>

In equation (1), cumulative abnormal returns (CARs) are estimated as follows. First, we estimate firm-specific betas via a one-factor arbitrage pricing model (i.e., the so-called market model where the factor is the market). We use a capitalization-weighted market index in a

<sup>15</sup> Following Ortiz-Serrano (2018), we identify politicians in firm boards based on shareholder reports and the online repository of the two French parliamentary chambers (*Sénat* and *Assemblée Nationale*). Politically connected firms are defined as firms whose board of directors included at least one MP (deputy or senator), a member of the Council of State (*Conseil d'Etat*) or the diplomatic corps, a regional or local politician, or a government-appointed director (in the case of colonial banks).

[-300,-60] estimation window before the first revelations related to the Panama scandal on September 5, 1892. In the Appendix, we also use a 3-factor Fama-French model which includes the market return, the difference in returns between firms with capitalization below sample median and firms with capitalization above sample median, and the difference in returns between firms in the first tercile and firms in the third tercile of book-to-market ratio. Second, we calculate abnormal returns for each firm  $i$  and each trading day as the difference between actual returns (relative to the risk-free asset) and predicted returns. Third, we sum abnormal returns in a narrow time windows  $([0,2])$  around each event. If no trading occurred for any firm on the event date, the event window is centered around the subsequent trading day.<sup>16</sup>

#### 4.2. Difference-in-differences

The Dreyfus Affair began in earnest with Dreyfus' arrest and trial by court-martial in November-December 1894, and took an unexpected turn on January 13, 1898, with the publication of *J'Accuse!*. These events delineate the start of the first and second phase of the Dreyfus Affair, respectively. During the first phase, Dreyfus' treason was not questioned in the mainstream, and the Dreyfus case strengthened existing antisemitic beliefs. *J'Accuse!* provided new evidence about the case and signaled the beginning of a rehabilitation campaign in favor of Dreyfus. This marked the beginning of the second phase of the Affair, during which evidence about the miscarriage of justice came to the fore, and pro-Dreyfus coverage overtook antisemitic coverage (see Appendix Fig. A.3). Our main specification estimates how the performance of Jewish-connected firms evolved during these different phases of the Affair:

$$y_{it} = \alpha + \beta_1 JewishConnections_i \times \mathbb{1}\{Dreyfus' \text{ degradation} \leq t \leq J'Accuse\}_t + \beta_2 JewishConnections_i \times \mathbb{1}\{t \geq J'Accuse\}_t + \delta_i + \delta_t + (\mathbf{X}'_i \boldsymbol{\theta}_t)' \boldsymbol{\eta} + \varepsilon_{it} \quad (2)$$

where  $i$  and  $t$  denote firm and trading day, and  $\delta_i$  and  $\delta_t$  denote firm and day fixed effects, respectively. We estimate equation (2) on the balanced panel of 124 firms. We use daily and monthly returns, squared demeaned returns (a proxy for volatility), and risk-adjusted returns (the Sharpe ratio) as the dependent variable  $y_{it}$ .<sup>17</sup>  $\mathbf{X}_i$  is a vector of firm-level controls interacted with the two binary variables  $\mathbb{1}\{Degradation \leq t \leq J'Accuse\}_t$  and  $\mathbb{1}\{t \geq J'Accuse\}_t$ . As in the event study analysis, these controls include the log market capitalization on January 1, 1891, sector dummies, admission type, and separate dummies for (i) stocks guaranteed by the French state, (ii) firms operating abroad, and (iii) firms with elected politicians on their board.  $JewishConnections_i$  is a measure of Jewish presence in firm  $i$ 's board of directors. We either use the fraction of Jewish board members or an indicator for firms with a Jewish CEO. In our baseline specification, we use the average of these measures throughout the period. Standard errors are heteroskedasticity-robust and clustered by firm.

<sup>16</sup> Our analysis follows the standard event study method, as described in Campbell et al. (1997), chapter 4, which is the most common method to study important and abrupt events in financial markets. Given that stock prices are usually subject to large amounts of idiosyncratic noise over time, other methods to examine the longer time series (such as structural break tests) are usually not efficient in this context.

<sup>17</sup> The intuition behind equation (2) is similar to that of a portfolio exercise in which investors take a long position on firms with Jewish board members and a short position on other firms. Compared to this strategy, our specification additionally controls for firm fixed effects, sector dummies, and other firm characteristics interacted with the two period dummies, thus better addresses firm-specific determinants of stock performance over the period as well as any sector-wide time-varying shocks. A recent literature takes a similar approach to estimate the effect of the Panama Papers on stock returns (Bennedsen and Zeume, 2017; O'Donovan et al., 2019).

The key identifying assumption for equation (2) is a parallel trends assumption: conditional on firm fixed effects, day fixed effects, and the time-varying controls  $\mathbf{X}'_i \boldsymbol{\theta}_t$ , firms with Jewish connections should not have experienced differential returns in the absence of the Dreyfus Affair. Fig. 1 supports this assumption by showing the absence of pre-trends until 1894. We also show in Appendix Table A.2 that the campaign did not affect the board composition of firms, an important check to interpret our difference-in-difference estimates as causal. Finally, there should have been no correlated shocks affecting Jewish-connected firms differentially after Dreyfus' degradation and after *J'Accuse!*. We provide a battery of robustness checks to alleviate these concerns in Section 5.2.

In addition, to further probe the estimates from equation (2), we implement the synthetic DID approach of Arkhangelsky et al. (2021). Compared to the standard DID approach, this estimation allows for potential violations of parallel trends by constructing a counterfactual set of synthetic control firms which (by construction) follow parallel trends up to the treatment period. This estimation requires a discrete treatment. Thus, we compare firms with a Jewish director at the onset of the Dreyfus Affair in 1894 with synthetic control firms matched on pre-treatment stock returns and our usual set of controls. By construction, Jewish-connected firms and synthetic control firms experience parallel returns during the period 1891–1894. We then study the differential evolution of returns for these firms during the first phase (before *J'Accuse!*) and the second phase (after *J'Accuse!*) of the Affair.

Finally, we resort to the Coarsened Exact Matching procedure of Iacus et al. (2012), which defines and matches exactly by the strata where treatment and control units belong. In a setting where some of the observable pre-treatment variables are not balanced, the CEM procedure helps selecting a sample that minimizes covariate imbalances and the risk that they may bias the estimated treatment effects.

## 5. Results

Antisemitic episodes that shook French society in the 1890s could have affected the stock returns of firms with Jewish board members in several ways. In the short run, investors may have divested these assets in response to news arrivals about the Panama scandal or the alleged treason of Dreyfus. In the long run, revelations about Dreyfus' innocence may have encouraged investment in Jewish-connected stocks. Section 5.1 presents the results from an event-study analysis focusing on short-term effects, while Section 5.2 reports estimates from the empirical strategy described in Section 4.2.

### 5.1. Short-term effects

We first explore the short-term effects of salient episodes of the Affair on firm-specific abnormal returns. Table 2 reports estimates from equation (1) for five major events: the first revelations about the Panama scandal in *La Libre Parole*; the suicide of Jacques de Reinach in November 1892; the military degradation of Dreyfus in January 1895; the publication of *J'Accuse!* in January 1898; the appointment of the Waldeck-Rousseau cabinet in June 1899; and Dreyfus' pardon in September 1899. Cumulative abnormal returns are estimated using a one-factor arbitrage pricing model (i.e., the market model where the factor is the market) and summed over a  $[0,2]$  window around each event.

While the Panama Company went bankrupt in 1889, the scale of the bankruptcy and its consequences for tens of thousands of French shareholders were not immediately known to the public. On September 5-6, 1892, *La Libre Parole* launched a series of articles documenting the fraud and corruption scheme linked with the bankruptcy. At the heart of these revelations were two Jewish financial intermediaries, Jacques de Reinach and Cornelius Herz, accused of bribing politicians to manipulate the Company's stock issuances. This coverage caused a nationwide scandal and drastically increased *La Libre Parole*'s circulation

**Table 2**  
Cumulative Abnormal Returns of Firms with Jewish Connections.

	Sep 5, 1892 Panama revelations (1)	Nov 20, 1892 Reinach (2)	Jan 5, 1895 Degradation (3)	Jan 13, 1898 "J'Accuse" (4)	Jun 22, 1899 Waldeck-Rousseau (5)	Sep 19, 1899 Pardon (6)
% Jewish Board Members	-3.073** (1.327)	-1.184 (1.797)	-4.372** (1.935)	-3.457* (2.010)	11.339** (4.609)	1.786 (1.701)
Constant	-0.662 (2.262)	-3.273 (3.003)	-0.837 (4.727)	1.279 (3.171)	-2.050 (4.955)	3.315 (3.505)
Observations (Firms)	124	124	124	124	124	124
R <sup>2</sup>	0.17	0.11	0.14	0.14	0.26	0.09

Notes: This table reports estimates from equation (1). The dependent variables are cumulative abnormal returns estimated over a [0,2] time window around each event. Firm-specific betas are estimated via a 1-factor model in a [-300,-60] estimation window before the first Panama revelations on September 5, 1892. Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). See Section 3 for details. All regressions control for sector dummies, admission type, guarantee by the French state, political connections, whether the firm operates abroad, and log market capitalization at the beginning of the period. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors in parentheses.

and profile. Consistent with a short-term outburst of antisemitic sentiment, Table 2 shows that the first Panama revelations led to abnormal negative returns among firms with Jewish board members (column 1). Reinach's suicide confirmed Drumont's allegations to the wider public a few weeks later in November 1892, but contrary to the revelations from *La Libre Parole*, this event did not affect the returns of Jewish-connected firms (column 2).<sup>18</sup>

The remaining columns of Table 1 examine events related to the Dreyfus Affair. The degradation of Dreyfus took place on January 5, 1895, in front of a large crowd shouting antisemitic abuse. This event received widespread media coverage and marked a peak of France's antisemitic outburst (see Section 2.2 and Fig. A.1).<sup>19</sup> On January 7, 1895, the newspapers in our data dedicated 15% of their coverage to Dreyfus. Column 3 of Table 2 shows that firms with a greater fraction of Jewish board members experienced abnormally negative returns after the degradation, which we interpret as the result of a major antisemitic outburst. This result is robust to a range of alternative methods for calculating CARs (see Appendix Table A.3) and large in magnitude: a firm with 100% Jewish board members would have experienced a 4.38 percentage point decline in returns relative to a firm without Jewish board members.

*J'Accuse!* was published by *L'Aurore* on January 13, 1898. A major turning point of the Dreyfus Affair, the editorial could have affected the stock market in a number of ways. On the one hand, the evidence uncovered in the editorial may have convinced investors that Dreyfus had been the victim of an antisemitic conspiracy. On the other hand, those holding antisemitic prejudice could have been confirmed in their beliefs about the existence of a conspiracy against the state.<sup>20</sup> Finally, the editorial could have increased expectations that French society would polarize further around the Dreyfus case. Overall, in column 4 of Table 2 we find that firms with a greater share of Jewish board members experienced negative abnormal returns of 3.45 percentage points immediately around the publication of *J'Accuse!*. As with the degradation of Dreyfus, the rest of the market is unaffected by this episode.

We then look at the appointment of the Waldeck-Rousseau cabinet on June 22, 1899. Waldeck-Rousseau was given the mission to form a unity government to solve the Dreyfus Affair. Column 5 of Table 2 shows that firms with Jewish connections experienced abnormal posi-

tive returns following this appointment. While the increased demand for Jewish-connected stocks could have reflected a more optimistic climate around these firms, Appendix Table A.7 shows that Jewish-connected firms did not experience similar upswings in returns around other cabinet changes. For example, the appointment of the Dreyfusard Brisson cabinet in June 1898 did not lead to positive returns, while successive anti-Dreyfusard governments did not yield negative returns for Jewish-connected firms.

Finally, column 6 of Table 2 shows that Jewish-connected firms also experienced positive returns following Dreyfus' pardon, which brought the salient phase of the Affair to an end. However, this estimate falls short of statistical significance. Importantly, among the four events examined in columns 3–6 of Table 2, only *J'Accuse!* is likely to have occurred as a total surprise to investors. As a result, as in Huberman and Regev (2001), the investors' short-term response likely included a behavioral component—the emotional effect of antisemitic outbursts on portfolio decisions—in addition to the standard effect of new information about Dreyfus' culpability. We return to this interpretation in Section 6.3.

**Robustness checks** Appendix Fig. A.4 shows that the point estimates from the four event studies in columns 3–6 of Table 2 capture distinctive differences between the distributions of CARs of Jewish-connected and non-Jewish-connected firms, and not driven by a small number of outliers. The estimated cumulative distributions of CARs are most separate at the arrival of Waldeck-Rousseau, and closest around *J'Accuse!*, which is consistent with the low precision of the corresponding estimate in Table 2.

Appendix Table A.3 looks at alternative estimation strategies and reports CARs around four additional episodes: the first news of Dreyfus' arrest (November 2, 1894), the conviction of Dreyfus by a court-martial (December 22, 1894), the revelation of the suicide of Colonel Henry, a key actor in the forgery of documents used to incriminate Dreyfus (August 31, 1898), and the announcement that Dreyfus was granted a new trial (October 29, 1898). None of these events appears to have affected the CARs of firms with Jewish board members. Appendix Table A.5 reports the corresponding robustness checks where we use the dummy for having a Jewish CEO as the measure of Jewish connections on the right-hand side of equation (1). Overall, investors responded primarily to salient episodes of the Affair (episodes most likely to generate antisemitic outbursts), as opposed to events with a higher news content such as Henry's suicide or Dreyfus' initial arrest.

Finally, Appendix Table A.7 estimates CARs for each cabinet reshuffle during the Affair. Based on the available historical evidence, four cabinets with a clear stance on the Affair governed during the period: the Méline cabinet (anti-Dreyfusard, appointed in April 1896), the Brisson cabinet (Dreyfusard, June 1898), the Dupuy II cabinet (anti-Dreyfusard, October 1898), and the Waldeck-Rousseau cabinet

<sup>18</sup> The negative constant in column 2 suggests that the market as a whole may have suffered from this episode. This is consistent with the historical record indicating that the Panama scandal was also perceived as a government scandal, given the large number of public officials involved in the corruption scheme.

<sup>19</sup> We center the event window around Monday January 7, 1898, which is the first trading day occurring after the degradation.

<sup>20</sup> For example, Zola's accusations could have increased distrust towards the elites among readers whose priors conflicted with the new evidence (see Barrera et al., 2020).

**Table 3**  
Stock Returns of Jewish-Connected Firms DID estimates.

	Daily Returns		Monthly Returns	
	(1)	(2)	(3)	(4)
(a) % of Jewish Board Members				
% Board Members × Before <i>J'Accuse</i>	-0.077** (0.037)	-0.073* (0.038)	-2.249* (1.161)	-2.188* (1.244)
% Board Members × After <i>J'Accuse</i>	0.197** (0.099)	0.158** (0.079)	4.485* (2.436)	3.329* (1.981)
R <sup>2</sup>	0.02	0.02	0.10	0.10
Mean Dep Var	0.011	0.011	0.152	0.152
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	339988	339988	13268	13268
(b) Jewish CEO				
Jewish CEO × Before <i>J'Accuse</i>	-0.006 (0.012)	-0.006 (0.013)	-0.276 (0.361)	-0.314 (0.406)
Jewish CEO × After <i>J'Accuse</i>	0.060** (0.025)	0.041* (0.023)	1.369** (0.635)	0.871 (0.581)
R <sup>2</sup>	0.02	0.02	0.10	0.10
Mean Dep Var	0.011	0.011	0.152	0.152
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	339988	339988	13268	13268

*Notes:* This table reports estimates from equation (2). In columns 1–2, the dependent variables (expressed in percentage points) are the daily stock returns calculated as the daily growth rate in stock prices. In columns 3–4, the dataset is at the firm-month level and we look at monthly stock returns. In panel (a), Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). Panel (b) looks at whether the firm has a Jewish CEO. See Section 3 for details. All regressions include firm fixed effects and trading day (in columns 1–2) or month (in columns 3–4) fixed effects. In columns 2 and 4, we additionally control for sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), a dummy for conducting operations abroad, political connections, and initial log market capitalization interacted with the two period dummies corresponding to the two phases of the Dreyfus Affair.

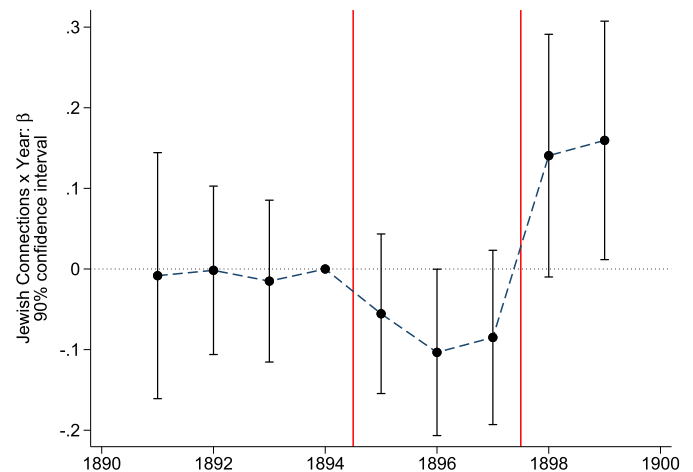
\* p<0.1, \*\* p<0.05, \*\*\* p<0.01. Robust standard errors clustered by firm.

(Dreyfusard, June 1899). Among these, only the Waldeck-Rousseau appointment has a significant effect on the CARs of firms with Jewish connections. In particular, there is no evidence that the two anti-Dreyfusard cabinets (Méline and Dupuy II) negatively affected the short-term performance of these firms.

5.2. Time-varying effects of the Dreyfus Affair

We now examine how Jewish-connected stock returns evolved during the first and second phase of the Dreyfus Affair. Fig. 1 shows that Dreyfus’ degradation, and to a larger extent, *J'Accuse!* represented important turning points for the market performance of these firms. The figure reports time-varying coefficients on the effect of Jewish connections on daily stock returns, estimated via standard DID. We interact the fraction of Jewish board members with year dummies and we control for firm fixed effects, trading day fixed effects, and controls interacted with year dummies. Relative to the 1891-1893 period, Jewish-connected firms experience a relative decline in their daily stock returns between 1894 and 1897. This changes dramatically after the beginning of Dreyfus’ rehabilitation campaign initiated by *J'Accuse!*. On average, Jewish-connected firms experience higher daily returns in the 1898-1899 period.

*Stock returns* Table 3 reports estimates from equation (2). We look at daily and monthly returns in columns 1–2 and 3–4, respectively. Returns are calculated as simple proportional returns,  $(p_t - p_{t-1})/p_{t-1} \times 100$ , where  $p$  is the stock value and  $t$  varies either daily or monthly; in the Appendix, we show that our main results are robust to using log-returns instead. All regressions include firm and trading day



*Notes:* This figure reports estimates from the following specification:  $y_{it} = \sum_i \beta_i \text{JewishBoardMembers}_i \times \text{Year}_t + \delta_i + \delta_t + (\mathbf{X}'_i \theta_i) \eta + \epsilon_{it}$ .  $y_{it}$  are daily stock returns measured for firm  $i$  on day  $t$ . The dashed gray lines indicate 90% confidence intervals and standard errors are clustered by firm. The two vertical top-to-bottom lines highlight the beginning of the Dreyfus Affair in late 1894 and the publication of *J'Accuse!* in January 1898, respectively.

Fig. 1. Daily Returns of Jewish-Connected Firms DID Estimates.

(in columns 1–2) or month (in columns 3–4) fixed effects. In even-numbered columns, we include the full set of controls interacted with dummies for the two periods of interest (before/after *J'Accuse!*), as de-

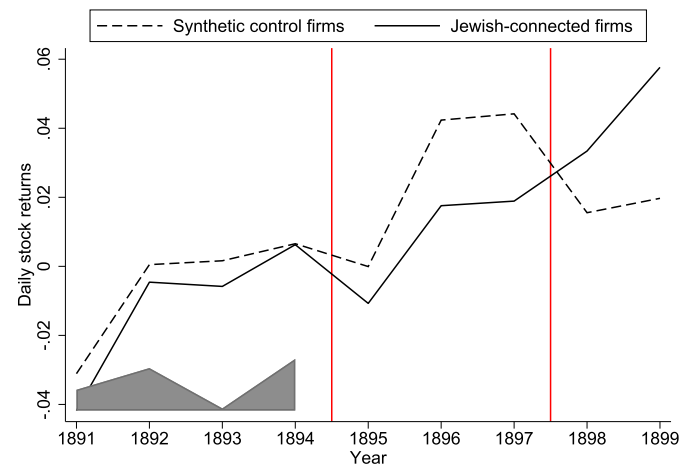
scribed in Section 4. These controls include: sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), a dummy for conducting operations abroad, political connections, and log market capitalization at the beginning of the sample period. These controls ensure that our estimates of interest are not picking up correlated shocks or other differential effects of these variables after *J'Accuse!*.

Panel (a) of Table 3 looks at the fraction of Jewish board members on the right-hand side of equation (2)—the same measure used in Table 2. Columns 1–2 show that a firm with 100% Jewish board members would have experienced a 0.077 percentage point (p.p.) decline in daily returns during the first phase of the Dreyfus Affair, and about a 0.197 p.p. point increase in returns after *J'Accuse!*. These estimates imply that during the two years following *J'Accuse!*, in comparison with the rest of the stock market, investors holding Jewish-connected stocks earned rents amounting to 14.1% of the value of firms with any Jewish connection, and 7.9% of the whole market.<sup>21</sup> In Panel (b), we interact the two period dummies with an indicator for firms with a Jewish CEO. The coefficient corresponding to the second phase of the Affair is again positive and statistically significant across all columns, while the interaction corresponding to the first phase is small in magnitude and non-significant. The magnitude of estimates in panel (b) is approximately 30% the size of the corresponding estimates in panel (a). This means that the effect of a Jewish CEO is approximately equal to that of a 30 p.p. increase in the fraction of Jewish board members, which ranges between 0 and 0.70 with a standard deviation of 0.11. The effect of a Jewish CEO therefore amounts to about a 3-SD increase in the fraction of Jewish board members.

**Synthetic DID** Fig. 2 and Table 4 report the results from the synthetic DID estimation from Arkhangelsky et al. (2021). As described earlier, this estimator identifies optimally weighted combinations of pre-period control observations that effectively re-balance pre-trends across treated and control firms. Because this estimation requires a binary treatment, we define the treated group as firms with a Jewish CEO at the onset of the Dreyfus Affair in 1894. Fig. 2 yields insights similar to the standard DID analysis: Jewish-connected firms experience a relative decline after Dreyfus' degradation, and a substantial differential increase in returns from 1898 onwards.

In Table 4, we use two alternative definitions of the treatment to corroborate these findings: one in which parallel trends hold until Dreyfus' degradation in November 1894, and one where the treatment corresponds instead to the publication of *J'Accuse!* in January 1898. Columns 1–2 and 3–4 report the estimates from these two approaches, respectively. In even-numbered columns, treatment and control units are further adjusted based on our standard set of covariates. As expected, in columns 1–2 the effect of Jewish connections estimated across the entire 1895–1899 period is small in magnitude and not statistically significant, as this estimate combines the initial early negative response with the positive effect on stock returns observed after 1898 (see also Appendix Table A.8, where we report synthetic DID effects separately for the 1895–97 period and for the 1898–99 period relative to the 1891–1894 period). Columns 3–4 show that firms with a Jewish CEO experience a significant increase in returns when the treatment is defined to correspond to the publication of *J'Accuse!*. Strikingly, the magnitude of these SDID estimates is very close to that of the standard DID estimates in

<sup>21</sup> To compute these numbers, we first multiply the coefficient of the interaction % Board Members  $\times$  After *J'Accuse!* from Table 3's panel (a), column 1 (shown in percentage points) with each firm's fraction of Jewish board members, and accumulate it over the considered period after the publication of *J'Accuse!* (599 trading days over 2 years). We then take the weighted average on the subsample of all firms with some Jewish board members and on the full population of all firms on the Paris stock market, weighting each firm by its market value at the publication of *J'Accuse!*.



**Notes:** This figure reports synthetic DID estimates from Arkhangelsky et al. (2021). This estimation is performed on a balanced panel dataset at the firm-year level. The dependent variable is average daily stock returns. The treatment group is defined as firms with a Jewish CEO at the onset of the Dreyfus Affair in 1894, and these firms are considered treated from 1895 onwards, which closely approximates the onset of the Dreyfus Affair (Dreyfus' military degradation and deportation took place in January 1895). The dark-shaded area represents unit and time-specific weights used to construct the synthetic control group in the pre-treatment period. Treatment and control units are further adjusted based on our standard set of covariates, namely sector dummies, admission type, guarantee type, a dummy for conducting operations abroad, political connections, and initial log market capitalization.

Fig. 2. Daily Returns of Jewish-Connected Firms Synthetic DID Estimates.

panel (b) of Table 3, when controls are included, suggesting that violations of parallel trends are not a major issue in our setting. Finally, Appendix Table A.9 shows that the SDID estimates in columns 3–4 of Table 4 are robust to alternative measures of returns: returns relative to the risk-free asset, risk-adjusted returns, and monthly returns.

**Coarsened exact matching** Table 5 shows results obtained using the Coarsened Exact Matching (CEM) method.<sup>22</sup> We match by the set of observable covariates, including sector dummies, admission type, state guarantee type, a dummy for conducting operations abroad, political connections, and the firm's initial market capitalization. After performing the stratification by CEM, we only retain the successfully matched observations (112 firms out of the main sample's 124 firms). The treatment variable is the indicator whether the firm initially had a Jewish CEO. All observations are equally weighted (Appendix Table A.10 reports results using CEM-produced weights, with very similar estimates).

Columns 1 to 3 show the comparison of daily stock returns between treated and control firms through the three major periods, namely before Dreyfus' degradation (column 1), between the degradation and the publication of *J'Accuse!* (column 2), and after the publication of *J'Accuse!* (column 3). Again, we find no difference in the first period, then evidence of relative losses for Jewish firms in the second period before their reversal in the third period. These patterns remain very similar when we combine all three periods together in column 4 in a specification that further applies the DID specification from equation (2) on the matched sample, namely combining within-matched-stratum DID estimates with firm and day fixed effects, as well as sector-by-month fixed effects. Analogously, when we turn to monthly returns in the collapsed

<sup>22</sup> CEM capitalizes on the strength of exact matching without succumbing to the curse of dimensionality. Iacus et al. (2011) shows that CEM belongs to the class of Monotonic Imbalance Bounding multivariate matching methods, which assure a number of desirable balancing properties, and which empirically performs better than other traditional matching methods (e.g., by propensity score) when it comes to balancing over covariates.

**Table 4**  
Synthetic DID Estimates.

Treatment:	Dreyfus' Degradation		J'Accuse!	
	(1)	(2)	(3)	(4)
Jewish CEO × Post treatment	0.00286 (0.01508)	0.00328 (0.01679)	0.04320*** (0.01257)	0.04101*** (0.01284)
Controls	No	Yes	No	Yes
Firms	124	124	124	124

*Notes:* This table reports synthetic DID estimates from Arkhangelsky et al. (2021). This estimation is performed on a balanced panel dataset at the firm-year level. The treatment group is defined as firms with a Jewish CEO at the beginning of the sample period in January 1891. In columns (1)-(2), these firms are considered treated from January 1895 onwards. In columns (3)-(4), these firms are considered treated from January 1898 onwards. Treatment and control units are further adjusted based on our standard set of covariates, namely sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), a dummy for conducting operations abroad, political connections, and initial log market capitalization.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01. Standard errors are computed using the placebo method of Arkhangelsky et al. (2021).

**Table 5**  
Coarsened Exact Matching estimates.

Sample period	Daily Returns				Monthly Returns			
	1	2	3	All	1	2	3	All
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Jewish CEO × Before Degradation	-0.004 (0.006)				0.007 (0.249)			
Jewish CEO × Before J'Accuse		-0.022** (0.010)		-0.020* (0.011)		-0.637** (0.305)		-0.722** (0.367)
Jewish CEO × After J'Accuse			0.034* (0.018)	0.044** (0.020)			0.791* (0.431)	0.907* (0.541)
R <sup>2</sup>	0.00	0.00	0.00	0.09	0.00	0.01	0.01	0.22
Mean Returns	-0.007	0.025	0.021	0.010	-0.028	0.012	0.037	0.143
Firms	112	112	112	112	112	112	112	112
Observations	137082	103028	66976	307086	5376	4032	2576	11984
Firm FE	No	No	No	Yes	No	No	No	Yes
Strata FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Strata × time FE	No	No	No	Yes	No	No	No	Yes
Sector × month FE	No	No	No	Yes	No	No	No	Yes

*Notes:* This table reports matching estimates from subsamples created by Coarsened Exact Matching (CEM) (Iacus et al., 2012). CEM is performed by observable covariates including sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), a dummy for conducting operations abroad, political connections, and initial log market capitalization; only matched observations are retained. In columns 1–4, the dependent variables (expressed in percentage points) are the daily stock returns calculated as the daily growth rate in stock prices. In columns 5–8, the dataset is at the firm-month level and we look at monthly stock returns. The three sample periods refer to that (1) before Dreyfus' degradation (columns 1 and 5), (2) from Dreyfus' degradation until the publication of J'Accuse (columns 2 and 6), and (3) after the publication of J'Accuse (columns 3 and 7). In columns 1–3 and 5–7, the treatment variable is the indicator whether the firm has a Jewish CEO. Columns 4 and 8 consider all three periods, and undertake the benchmark regression in equation (2), with the interactions of the treatment with each period's indicator, as well as firm fixed effects, sector by month fixed effects, and matched strata by time fixed effects. All regressions include matched strata fixed effects. See Section 3 for data details.

\* p<0.1, \*\* p<0.05, \*\*\* p<0.01. Robust standard errors clustered by firm and period.

dataset at the firm-month level in columns 5–8, the results remain consistent: firms with Jewish CEOs suffer in terms of monthly stock returns during the period from Dreyfus' degradation until the publication of J'Accuse, but more than recover during the rehabilitation campaign after January 1898.

**Volatility and risk-adjusted returns** Polarization around the Dreyfus case could have increased the stock volatility of firms with Jewish board members, if investors perceived this polarization to increase risk. We test for this by looking at squared demeaned returns on the left-hand side of equation (2). We also examine whether the findings in Table 3 are robust to using a measure of risk-adjusted returns.

Table 6, columns 1–2 show that the rehabilitation campaign in the second phase of the Affair increased stock volatility for Jewish-connected firms. There is some evidence that this increase in volatility was largest in the immediate aftermath of J'Accuse! and subsided afterwards—Appendix Table A.11 documents this non-monotonic relationship.<sup>23</sup> Columns 3–4 of Table 6 look at a measure of risk-adjusted

<sup>23</sup> In Appendix Table A.11, we focus on the period 1894–1899 and we interact the second difference-in-differences term in equation (2) with the time (days or months) elapsed since J'Accuse!. The dependent variables are the same measures of volatility as those used in Table 6. Columns 1 and 3 of this table show the negative association between volatility and time elapsed since J'Ac-

**Table 6**  
Volatility and Risk-Adjusted Returns.

	Volatility		Risk-Adjusted	
	(1)	(2)	(3)	(4)
<i>(a) % of Jewish Board Members</i>				
% Board Members × Before <i>J'Accuse</i>	3.025 (2.016)	2.519 (1.803)	-0.041 (0.032)	-0.036 (0.030)
% Board Members × After <i>J'Accuse</i>	6.411** (3.167)	5.503* (2.785)	0.102** (0.047)	0.096** (0.046)
R <sup>2</sup>	0.02	0.02	0.02	0.02
Mean Dep Var	2.052	2.052	0.011	0.011
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	339988	339988	339988	339988
<i>(b) Jewish CEO</i>				
Jewish CEO × Before <i>J'Accuse</i>	0.407 (0.470)	0.508 (0.537)	0.005 (0.011)	0.008 (0.012)
Jewish CEO × After <i>J'Accuse</i>	1.701** (0.743)	1.564* (0.815)	0.036*** (0.012)	0.031** (0.012)
R <sup>2</sup>	0.02	0.02	0.02	0.02
Mean Dep Var	2.052	2.052	0.011	0.011
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	339988	339988	339988	339988

*Notes:* This table reports estimates from equation (2). The dependent variables are squared demeaned daily returns in columns 1–2 and risk-adjusted returns in columns 3–4. Risk-adjusted returns are calculated as raw daily returns divided by the firm-specific standard deviation of raw returns for each firm. In panel (a), Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). Panel (b) looks at whether the firm has a Jewish CEO. See Section 3 for details. All regressions include firm fixed effects and trading day fixed effects. In columns 2 and 4, we additionally control for sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), a dummy for conducting operations abroad, political connections, and log market capitalization interacted with the two period dummies corresponding to the two phases of the Dreyfus Affair.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by firm.

returns: daily returns divided by the within-firm standard deviation of returns (the Sharpe ratio). Across both measures of Jewish connections, the estimate corresponding to the second phase of the Affair is positive and significant, and effect sizes are in line with those reported in Table 3. For example, the difference in daily returns between a board with 100% Jewish board members and a board with zero Jewish board member is approximately 0.10 SD; this estimate is robust to including the full set of interacted controls. While stock volatility increased after *J'Accuse!* for firms with Jewish connections, investors who bet on these firms were more than compensated for this increased risk.

*Robustness checks* Appendix Tables A.12 through A.18 report robustness checks for the results in Tables 3 and 6. Throughout these tables, we look at daily raw returns and risk-adjusted returns (defined as in column 1–2 of Table 3 and columns 3–4 of Table 6, respectively). As in our main tables, odd-numbered columns report estimates from the baseline equation (2) without controls, while even-numbered columns include the full set of controls interacted with dummies corresponding to the two phases of the Dreyfus Affair. Our results are overall robust to these specification checks.

Appendix Table A.12 shows that our results are not driven by stock liquidity. Compared to contemporary financial data, liquidity is low in our context: 30% of stocks are not traded on any given day. First, in columns 1–2 we show that Jewish connections have no discernible time-varying impact on liquidity (proxied by trading frequency) throughout

*case!*. Columns 2 and 4, where we additionally interact the relevant terms with dummies for 1898 and 1899, show that the eventual decline in volatility was strongest during the rest of the year 1898.

the different phases of the Affair. Second, we estimate equation (2) on the subsample of stocks with high trading frequency, namely all liquid stocks on any given day (columns 3 through 6). Our core results hold in this selected subsample.

Appendix Table A.13 examines log-returns instead of simple proportional returns in our baseline analysis. The point estimates of the effects of Jewish connections are nearly identical in this case. Appendix Table A.14 shows robustness to excluding all observations in a  $[-1, 1]$  time window around dividend payment dates; this check ensures that stocks returns on ex-dividend dates are not driving our results. In Appendix Table A.15, we look at an intent-to-treat measure of Jewish connections on the right-hand side of equation (2): namely Jewish connections measured on November 2, 1894—the day when Dreyfus' arrest was first revealed. This check ensures that our results are not driven by changes in the board composition of firms. Recall that overall, firms experience few changes in their board composition, and firms with Jewish connections are no more likely to experience such changes (Appendix Table A.2).

Appendix Table A.16 looks at Jewish connections computed using Lévy (1960). While our systematic hand-coding of the board membership data makes us confident that we are not overcounting or undercounting Jewish connections in corporate boards (see Section 3.2), the robustness of our results to this alternative measure ensures that our core findings are not driven by (non-classical) measurement error.

Appendix Table A.17 further explores the sensitivity of our results to outliers in returns associated with recapitalization episodes. In our baseline estimation, we exclude observations coinciding with recapitalization episodes (episodes of stock issuances and buybacks), some of which are associated with large fluctuations in the stock value. Ap-

**Table 7**  
Firm Dividends during the Dreyfus Affair.

	Log Dividends		Dividends/price	
	(1)	(2)	(3)	(4)
	(a) % of Jewish Board Members			
% Board Members × Before <i>J'Accuse</i>	-0.936 (0.845)	-1.148 (0.915)	-0.053 (0.042)	-0.059 (0.043)
% Board Members × After <i>J'Accuse</i>	-0.428 (0.990)	-0.293 (0.941)	-0.009 (0.045)	-0.019 (0.042)
R <sup>2</sup>	0.76	0.78	0.63	0.65
Mean Dividends	2.928	2.928	0.045	0.045
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	1115	1115	1115	1115
	(b) Jewish CEO			
Jewish CEO × Before <i>J'Accuse</i>	-0.384 (0.234)	-0.380 (0.236)	-0.023 (0.016)	-0.024 (0.016)
Jewish CEO × After <i>J'Accuse</i>	-0.318 (0.269)	-0.270 (0.255)	-0.016 (0.017)	-0.020 (0.017)
R <sup>2</sup>	0.76	0.78	0.64	0.66
Mean Dividends	2.928	2.928	0.045	0.045
Controls	No	Yes	No	Yes
Firms	124	124	124	124
Observations	1115	1115	1115	1115

*Notes:* This table reports estimates using a panel dataset at the firm-year level between 1891–1899. Dependent variables are log dividends in columns 1–2 and dividends divided by the stock price (averaged by year) in columns 3–4. In panel (a), Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). Panel (b) looks at whether the firm has a Jewish CEO. See Section 3 for details. All regressions include firm fixed effects and year effects. Even-numbered columns, we additionally include the same set of controls as in Tables 3–6 interacted with year fixed effects. \*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors two-way clustered by firm and trading day.

pendix Table A.17 shows that our main results are robust to including these observations in the analysis.

Finally, Appendix Table A.18 delves into the use of abnormal returns and firms' betas in the main specification. Including the interaction between firms' betas and market returns as a control does not change our estimates, either when we use raw returns (columns 1–2) or abnormal returns (columns 3–4) as the dependent variable—note that the main effects of firms' betas and the market return are absorbed by the firm and trading day fixed effects included in all specifications.

## 6. Interpretation

### 6.1. Expected shifts in performance

*Dividends* One potential explanation for our findings thus far could be that investors expected shifts (downwards, then upwards) in the actual profitability of Jewish-connected firms throughout the different phases of the Dreyfus Affair. These shifts could have been induced by changes in the level of antisemitic sentiment prevailing among the customers or the suppliers of firms with Jewish connections.

To examine this mechanism, Table 7 studies effects on dividends. While dividends only imperfectly respond to changes in profitability, this is the best available proxy given the lack of available data on firms' balance sheets. Here, we estimate a similar specification measuring the dividends of firms with Jewish connections before and after *J'Accuse!*, using a panel dataset at the firm-year level—the level at which dividends are observed. Firms are exposed the “high antisemitic sentiment” phase of the Affair during 1895–1897 and to the Dreyfus rehabilitation campaign in 1898–1899, while the years 1891–1893 are used as comparison years. We look at the log of (one plus) dividends in columns 1–2, and dividends as a fraction of the share price in columns 3–4. Overall, yearly dividends averaged approximately 4.5% of the share price during this period. Across both measures of dividends and both mea-

asures of Jewish connections, we find no evidence that the profitability of Jewish-connected firms decreased after 1894, or that it improved in 1898–99, after the publication of *J'Accuse!*. Jewish board membership has a negative effect on log dividends in panels (a) and (b). All estimates in columns 3–4 are small in magnitude and statistically insignificant. Overall, there is no evidence suggesting that the Dreyfus Affair affected the profitability of firms with Jewish board members as measured by dividends.

*Foreign firms* Investors may also have expected an antisemitic backlash against firms with Jewish board members. For example, an antisemitic stance by the government could have translated into adverse procurement policies affecting the returns of firms with Jewish board members. Or, firms engaged in retail activities could have faced an antisemitic backlash from their customer base. These mechanisms, either actual or perceived, could have affected the economic fundamentals of Jewish-connected firms.

While plausible, these mechanisms are unlikely to be driving our results. Both the Dreyfus Affair and the Panama scandal indeed led to political instability, but there was no viable political force advocating for antisemitic economic policies. In 1898, a handful of legislative candidates ran under the banner of an “Antisemitic League” led by Edouard Drumont, but these candidates remained on the fringe of mainstream politics. The few elected MPs were often ridiculed in Parliament (Joly, 2007). The group was disbanded in 1901 and Drumont himself failed to win reelection in 1902. Liberal French governments never enacted or considered antisemitic policies under the Third Republic, spanning 1870–1940, and no viable party advocated for antisemitic policies until the advent of the Vichy regime.

Nonetheless, we explore this alternative interpretation in Table 8, where we focus on firms operating exclusively in foreign territories. These firms are listed in Appendix Table A.19: there are 34 such firms in total, operating in countries such as Austria, Russia, Spain, and the Ottoman Empire. Firms with the core of their business operations abroad should also have been less exposed to the prospect of adverse government policies or regulations.<sup>24</sup> Yet, Table 8 shows that firms operating in foreign countries did, in fact, experience lower returns during the first phase of the Affair, and larger returns after *J'Accuse!* when they had more Jewish board members. This test is informative since these firms should have been less exposed to an antisemitic backlash by the state or the market.

In Appendix Tables A.20 and A.21, we additionally consider state-guaranteed firms and firms with no substantial retail activities. State-guaranteed firms were institutionally protected by the state and therefore sheltered from the threat of adverse government policies. We include in this subset firms benefiting from a state guarantee, firms operating a government monopoly, and firms with a government-appointed director. The guarantee scheme was defined in national laws adopted in 1859 and 1883 and committed the state to guarantee some interest rate (usually 4 percent) on the capital invested by the beneficiary companies. This scheme effectively established a regulated lower bound for the prices of these stocks, thus increased expected prices and reduced policy-related uncertainty. State-granted (French or foreign) monopolies gave companies exclusive privileges over a commodity or infrastructure project, for example Vichy waters or the Suez Canal. These privileges provided monopolistic market power, shielding those stocks and their holders from potential shocks to how the government may have treated Jewish-connected firms. Finally, government appointments of directors implied *de facto* supervision by the state, which again indicated the state's own strong interest in those firms' operations, hence

<sup>24</sup> Recall from Appendix Table 1 that firms with Jewish connections are more likely to have foreign connections. In Tables 3 and 6, even-numbered columns show robustness to controlling for the measure of foreign connections interacted with the pre- and post-“*J'Accuse!*” indicators.

**Table 8**  
Risk and Returns among Foreign-Based Firms.

	Raw Returns		Volatility		Risk-Adj. Returns	
	(1)	(2)	(3)	(4)	(5)	(6)
	(a) % of Jewish Board Members					
% Board Members × Before <i>J'Accuse</i>	-0.133 (0.099)	-0.170 (0.110)	2.723 (4.072)	-0.011 (4.630)	-0.059 (0.071)	-0.142* (0.077)
% Board Members × After <i>J'Accuse</i>	0.495* (0.270)	0.535** (0.239)	20.060*** (6.884)	19.343*** (5.771)	0.160 (0.109)	0.113 (0.123)
R <sup>2</sup>	0.06	0.06	0.07	0.07	0.06	0.06
Mean Dep Var	0.009	0.009	2.972	2.972	0.005	0.005
Controls	No	Yes	No	Yes	No	Yes
Firms	30	30	30	30	30	30
Observations	82254	82254	82254	82254	82254	82254
	(b) Jewish CEO					
Jewish CEO × Before <i>J'Accuse</i>	0.010 (0.020)	-0.002 (0.024)	0.331 (0.742)	-0.011 (1.147)	0.031 (0.019)	0.012 (0.025)
Jewish CEO × After <i>J'Accuse</i>	0.110** (0.046)	0.122** (0.051)	3.202** (1.256)	3.090* (1.525)	0.060** (0.022)	0.050* (0.029)
R <sup>2</sup>	0.06	0.06	0.07	0.07	0.06	0.06
Mean Dep Var	0.009	0.009	2.972	2.972	0.005	0.005
Controls	No	Yes	No	Yes	No	Yes
Firms	30	30	30	30	30	30
Observations	82254	82254	82254	82254	82254	82254

Notes: This table reports estimates from equation (2), using only the sample of foreign firms listed in Appendix Table A.19. The dependent variables are raw daily returns in columns 1–2, squared demeaned daily returns in columns 3–4, and risk-adjusted returns in columns 5–6. Risk-adjusted returns are calculated as raw returns divided by the firm-specific standard deviation of raw returns for each firm. In panel (a), Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). Panel (b) looks at whether the firm has a Jewish CEO. See Section 3 for details. All regressions include firm fixed effects, trading day fixed effects, and sector-by-month fixed effects.

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . Robust standard errors clustered by firm.

their limited exposure to potentially discriminatory policies. If our key result of positive returns after *J'Accuse!* was mainly driven by changing expectations about policies towards Jewish-connected firms, then the Dreyfus rehabilitation campaign should have had limited effects on firms in this subsample.

Appendix Table A.20 shows that state-guaranteed firms with Jewish board members did, in fact, experience larger returns after *J'Accuse!*. All the coefficients of interest are larger in magnitude than the baseline estimates obtained with the full sample. Since these firms maintained legally binding institutional connections with the state throughout the period, the increase in returns they experienced after *J'Accuse!* plausibly comes from changing antisemitic sentiment among investors.

Finally, we look at firms without a substantial retail component in their business operations. We drop from the sample firms with the following activities: retail banks, newspapers and press agencies, retail food and water products, and department stores.<sup>25</sup> The firms remaining in the sample should have had little exposure to a market backlash via antisemitic customers. However, in Appendix Table A.21 we again find strong positive effects on returns among this subsample. Overall, the results in Table 8 and Appendix Tables A.20 and A.21 suggest that the key findings in Tables 3 and 6 are unlikely to be driven by diverging expectations about the market environment faced by Jewish-connected firms.

## 6.2. Media coverage

To what extent were the excess returns of Jewish-connected firms caused by an increase in media coverage of the Affair—in particular,

<sup>25</sup> The idea that these sectors were controlled by Jewish finance was a common theme in the antisemitic press. A 1898 pamphlet by *La Croix* wrote: “The emporia and the big stores... are ruining local business. One sees some Lévy or other set up in a place, and by means that the Jew alone knows how to employ, he very soon forces local business to founder in face of the competition which it is impossible to withstand (Wilson, 2007, p.280).”

coverage that revealed the conspiracy against Dreyfus? Extensive work by historians suggests that the newspaper press played a decisive role in triggering shifts in public opinion throughout the Affair (Miquel, 2003).

We collected daily data on the coverage of the Dreyfus case by five contemporary newspapers: *Le Siècle*, *La Croix*, *Le Petit Journal*, *L'Aurore*, and *La Libre Parole*, for a subset of our study period (1894 to 1899). *Le Siècle*, a liberal mainstream outlet, started to actively support Dreyfus starting in late 1897. *La Croix*, a conservative newspaper which proclaimed itself to be “France’s most anti-Jewish Catholic newspaper,” was anti-Dreyfus throughout the period (Sorlin, 1967). *L'Aurore* went into circulation in mid-October 1897 and rapidly became the leading pro-Dreyfus outlet after publishing “*J'Accuse...!*” in January 1898. *La Libre Parole* was an antisemitic outlet founded in 1892 by Edouard Drumont. Finally, *Le Petit Journal* was another popular anti-Dreyfus newspaper, covering national and international news.

Newspapers in this period typically had four pages. We count the number of paragraphs devoted to the Dreyfus Affair both in levels and as a fraction of total coverage, excluding advertisements. This data was manually collected and coded since the low quality of the newspaper scans did not allow for OCR processing. After applying a broad word filter,<sup>26</sup> we systematically read all newspaper issues mentioning the Dreyfus case and hand-coded all the paragraphs discussing the Affair. In total, more than 61,000 paragraphs were dedicated to the Affair across the 5 newspapers between January 2, 1894 and December 30,

<sup>26</sup> The filter contained the following words: *Dreyfus*, *capitaine* (captain), *affaire* (affair), *traître* (traitor), *trahison* (treason), *juif* or *juives* (Jewish), *juiverie* (Jewry, an antisemitic term), *israélites* (Israelites), *cherche-midi* (a prison where Dreyfus was jailed), *Ile-du-Diable* (the island where Dreyfus was sent into exile), *jugement* (judgment), *syndicat* (syndicate, a common term in antisemitic discourse), *espion* (spy), *espionnage* (espionage), as well as the names of key actors of the Affair.

1899, with a sharp increase from January 1898 onwards (Appendix Fig. A.3).<sup>27</sup>

In Appendix Table A.22, we explore the role of the press in explaining the excess returns from Tables 3 and 6. We report estimates from the following equation:

$$y_{it} = \alpha + \beta JewishConnections_i \times MediaCoverage_{(t-1)} + \delta_i + \delta_t + \delta_{sm} + \varepsilon_{it} \quad (3)$$

where  $MediaCoverage_{(t-1)}$  is the number of paragraphs dedicated to the Dreyfus Affair on day  $(t - 1)$  across all newspapers in our data. All other variables are defined as in equation (2). The main effect of  $MediaCoverage_{(t-1)}$  is absorbed by the day fixed effects,  $\delta_t$ . We also disentangle the effects of pro-Dreyfus and anti-Dreyfus coverage by interacting  $JewishConnections_i$ , separately with coverage by pro-Dreyfus newspapers (*Le Siècle* and *L'Aurore*) and coverage by anti-Dreyfus newspapers (*La Croix*, *Le Petit Journal* and *La Libre Parole*). In all these specifications, standard errors are two-way clustered by firm  $i$  and by day  $t$  since  $MediaCoverage_{(t-1)}$  takes the same value for all firms on a given day.

Appendix Table A.22 provides suggestive evidence that media coverage of the Affair affected investors' perceptions of firms with Jewish board members and, in doing so, contributed to the increase in stock returns experienced by these firms after *J'Accuse!*. Panel (a) looks at the fraction of Jewish board members, and panel (b) looks at firms with a Jewish CEO. Columns 1 and 3 show a positive and significant association between stock returns and the interaction of our two measures of Jewish connections with total media coverage of the Dreyfus Affair on the previous day. In columns 2 and 4, we disaggregate this analysis by the type of coverage—Dreyfusard (*L'Aurore* and *Le Siècle*) and anti-Dreyfusard (*La Croix*, *Le Petit Journal* and *La Libre Parole*). The estimates in these columns suggest that the positive effect of media coverage is driven by Dreyfusard reporting by newspapers such as *L'Aurore* and *Le Siècle*. Anti-Dreyfusard coverage by *La Croix*, *Le Petit Journal* and *La Libre Parole* has the opposite effect. The coefficients associated with Dreyfusard and anti-Dreyfusard coverage are significantly different from each other in panel (b) of column 4.

Overall, Appendix Table A.22 shows that the newspaper press likely played an important role in bringing about the excess returns of Jewish-connected stocks after *J'Accuse!*. In the following section, we hypothesize that this media coverage contributed to debiasing antisemitic investors, thereby increasing demand for Jewish-connected stocks and enabling arbitrage by all investors.

### 6.3. Model: antisemitic traders with incorrect, noisy beliefs

Our results thus far can be summarized as follows. On the one hand, major episodes of the Dreyfus Affair had sizable impacts on the stock returns of firms with Jewish board members in the short run. These impacts are negative around Dreyfus' degradation in 1895, the peak of France's antisemitic outburst, and positive around events leading to Dreyfus' rehabilitation. On the other hand, the same firms experienced consistently higher returns after the publication of *J'Accuse!*, the starting point of a media campaign denouncing the antisemitic conspiracy against Dreyfus. This was not accompanied by a rise in actual profitability, as measured by dividends. Firms that were not at risk of an antisemitic backlash because they operated in foreign territories also experienced this increase in returns.

<sup>27</sup> In addition to the spike around *J'Accuse!*, the figure shows a blip in coverage in December 1897. We attribute this to the efforts of two individuals, Emile Zola and the politician Auguste Scheurer-Kestner, to denounce the conspiracy against Dreyfus. Since these efforts really came to fruition with *J'Accuse!*, we use the latter date as the turning point in our difference-in-differences. All our estimates are robust to using December 1897 instead of January 1898 as the turning point.

These checks notwithstanding, it is possible that investors still expected that the ebbs and flows of the Dreyfus Affair would affect the performance of Jewish-connected firms, in a way that cannot be observed in the data. While acknowledging this potential mechanism, in this section we propose a complementary interpretation focusing on the existence of antisemitic investors biased against Jewish stocks. This interpretation builds on the large historical record indicating the ubiquity of antisemitic sentiment in late 19th century France. At the onset of the Affair, antisemitic shocks among these investors produced short-lived abnormal returns for Jewish-connected firms. "J'Accuse", on the other hand, increased perceived risk but reduced antisemitic biases in the long run. The media campaign that followed it made these biases more salient and encouraged some investors to engage in arbitrage.

We illustrate this interpretation with a conceptual framework expanding on De Long et al. (1990)'s seminal model of noise traders. We closely follow the minimal setting in De Long et al. (1990), but we introduce two types of risky assets, and we conceptualize noise traders as biased investors who discriminate against Jewish-connected stocks. This section outlines the main takeaways from the model while Appendix B presents the formal derivations.

**Model** As in De Long et al. (1990), young agents in a two-period overlapping generations model choose an investment portfolio in the first period, only to sell it to consume when old in the second period. Each agent maximizes a CARA utility function,  $U \stackrel{def}{=} -e^{-2\gamma w}$ , where  $\gamma$  is the coefficient of absolute risk aversion and  $w$  is the expected final wealth. Here, agents can hold two types of risky assets: a representative stock of Jewish firms  $J$  and one of non-Jewish firms  $N$ . Both stocks and the riskless asset pay the same fixed dividend  $r$  in the second period. All investors hold correct beliefs over the riskless rate  $r$ , but their beliefs differ for the other two.

Demand for stocks emanates from two types of investors: neutral investors with unbiased beliefs, and antisemitic investors. Antisemitic traders, representing a share  $\mu$  of the population, hold a bias  $\rho_i^N$  on the price  $p_i^N$  of non-Jewish stocks and  $\rho_i^J$  on the price  $p_i^J$  of Jewish stocks:

$$\mathbf{p}_t = \begin{pmatrix} p_t^N \\ p_t^J \end{pmatrix}, \quad \boldsymbol{\rho}_t \stackrel{def}{=} \begin{pmatrix} \rho_t^N \\ \rho_t^J \end{pmatrix} \sim \mathcal{N}(\boldsymbol{\rho}^*, \boldsymbol{\Sigma}_\rho),$$

$$\text{with } \boldsymbol{\rho}^* \stackrel{def}{=} \begin{pmatrix} \rho^{*N} \\ \rho^{*J} \end{pmatrix}, \quad \boldsymbol{\Sigma}_\rho \stackrel{def}{=} \begin{bmatrix} \sigma_\rho^{N2} & \sigma_\rho^{NJ} \\ \sigma_\rho^{NJ} & \sigma_\rho^{J2} \end{bmatrix}$$

where the average long-term biases  $\rho^{*J}$  and  $\rho^{*N}$  are respectively negative and positive, and  $\boldsymbol{\Sigma}_\rho$  denotes the variance-covariance matrix between the antisemitic investors' two biases.<sup>28</sup> The model is then solved recursively by maximizing each type of investors' utility in a steady state equilibrium (see Appendix B).

Under these assumptions, the main asset pricing equation in the model (equation (P)) shows that stock prices fluctuate as a result of short-term shocks, long-term biases in antisemitic beliefs, and antisemitic trader risk:

$$\mathbf{p}_t = \mathbf{1} + \frac{\mu}{1+r}(\boldsymbol{\rho}_t - \boldsymbol{\rho}^*) + \frac{\mu}{r}\boldsymbol{\rho}^* - \frac{2\gamma\mu^2}{r(1+r)^2}\boldsymbol{\Sigma}_\rho\mathbf{1}. \quad (\text{P})$$

Since earnings are normalized to 1, asset prices deviate from fundamentals by a term dependent on the short-term shock in antisemitic investors' beliefs ( $\boldsymbol{\rho}_t - \boldsymbol{\rho}^*$ ), a term capturing their long-term biases ( $\boldsymbol{\rho}^*$ ), and the last term that captures the effect of the presence of antisemitic investors among risk-averse investors. Since  $\rho^{*J} < 0$  and  $\rho^{*N} > 0$ , Jewish stocks are underpriced relative to other stocks. In addition, because

<sup>28</sup> While not needed to deliver the model's key insights, the positive bias towards non-Jewish stocks intuitively ensures that antisemitic investors can survive in the long run. Note however that the fraction of antisemitic traders is fixed in this setup. See De Long et al. (1991) and Palomino (1996) for further theoretical examination of the long-run survival of noise traders with biased beliefs.

of the last term in (P), uncertainty surrounding the behavior of antisemitic traders drives all asset prices downward and limits arbitrage opportunities for all agents. Jewish stocks are more affected by the uncertainty effect if there is more uncertainty regarding antisemitic beliefs, namely  $\sigma_{\rho}^{J^2} > \sigma_{\rho}^{N^2}$ .

Our main results can be interpreted in light of this model. Salient, exogenous outbursts of antisemitism trigger idiosyncratic shocks on antisemitic biases, i.e., changes in  $\rho_t^J$  that only last as long as each event's saliency. Thus, episodes at the onset of the Affair, such as Dreyfus' degradation, produced short-lived negative CARs among Jewish-connected firms, whereas positive news in later stages, e.g., Dreyfus' pardon, had similarly short-lived but opposite effects.

Fundamentally different from earlier events that pushed public opinion unequivocally against Dreyfus, the publication of *J'Accuse!* rattled and polarized beliefs in the French society, and entailed two mechanisms that affected asset prices. Akin to a shock on the variances of antisemitic investors' biases, *J'Accuse!* increased the volatility of Jewish stocks (in  $\sigma_{\rho}^{J^2}$ ), which depressed their stock prices by the last term of equation (P). This explains the large dip right after *J'Accuse!*, as seen in Fig. 1. Following *J'Accuse!*, however, the media campaign started to gradually reduce inherent antisemitic biases in  $\rho^{*J}$ , causing an appreciation of Jewish stocks relative to non-Jewish ones. In the long run, Dreyfus' rehabilitation also reduced the uncertainty about antisemitic beliefs, i.e., lowering  $\sigma_{\rho}^{J^2}$ , further contributing to improve the relative prices of Jewish stocks.

**Comparison with discrimination in the labor market** The model delivers familiar insights when compared to Becker's (1957) seminal analysis of discrimination in labor markets, in the sense that discrimination creates rents that can be exploited at the expense of discriminating agents. In both markets, the market price of the minority factor is depressed due to discriminatory biases, and unbiased investors can arbitrage the price gap to some extent.

However, given the emphasis on discrimination in financial markets, our model differs from the Beckerian framework in its emphasis on the importance of risk. Because of risk aversion, every investor in our model, from the most to the least antisemitic, generically chooses to buy or sell both Jewish and non-Jewish stocks—unlike employers in the labor market, investors can buy or sell any quantity of stocks. As a result, any change in the distribution of antisemitic biases induces all investors to re-optimize their portfolios, which eventually affects equilibrium prices. These insights are markedly different from those drawn from the labor market case, in which the most discriminating employers do not hire any minority workers, and only the marginal employers' bias matters for marketwide discrimination (Heckman, 1998; Charles and Guryan, 2008; Lang and Lehmann, 2012).<sup>29</sup>

The implication that every investor is affected by changes in the distribution of biases raises the perennial question whether biased investors will be driven out of the market in the long run, a prediction originating from Becker's model and emphasized by Arrow (1972). While subsequent work on labor market discrimination has shown several reasons why one need not expect competition to drive out discrimination in the long run, such as imperfect information in job search (Black, 1995), rigidity of wage posting (Lang et al., 2005), and discrimination seen as favoritism (Goldberg, 1982), our model provides a different mechanism to explain the persistence of discrimination. Biased agents in our model prefer to invest more in the stocks for which they hold excessively optimistic valuations. Since all stocks are underpriced because of the volatility of biases (the last term in equation (P)),

<sup>29</sup> The segregation of minority workers across firms is a strong theme in Becker's original model, even if it does not predict perfect segregation, and a key result in the following theoretical literature on taste-based discrimination since Arrow (1972). When the second moment of payoffs becomes important, as in our model of discrimination in the financial market, segregation is no longer a generic possibility.

this behavior leads to stronger returns for biased agents, even though it exposes them to higher risks than they expect. Under certain general conditions, such excess returns offset the excess losses they make from underinvesting in the discriminated stocks. Overall, biased investors may earn higher expected net returns than unbiased ones, and survive in the long run—Appendix B.2 elaborates on this possibility. This mechanism builds on De Long et al.'s (1990) insights on the role of noise traders and limited arbitrage in financial markets, and differs fundamentally from existing analyses of taste-based discrimination in labor markets.

Overall, our model highlights how changes in the distribution of biases allow investors to capture rents from discrimination by betting more on Jewish firms. However, this arbitrage is neither riskless nor instantaneous in a world of risk-averse investors facing uncertain biases.

## 7. Conclusion

Firms with Jewish board members experienced substantial financial unrest during the Dreyfus Affair, a major societal crisis in late 19th century France and a milestone in the global history of antisemitism. The Affair first prompted an outburst of antisemitism, then polarized French society after evidence about the miscarriage of justice began to emerge. While revelations about the Dreyfus case exposed the deep entrenchment of antisemitism in French society, and initially led to small decline in the performance of Jewish-connected firms, Dreyfus' rehabilitation eventually led to its demise as a broad-based ideology. We show that the stocks of firms with Jewish connections yielded excess returns during this rehabilitation campaign. As a potential interpretation, we suggest that shifting attitudes in society after *J'Accuse!* encouraged arbitrage and enabled some investors to capture excess returns.

Our conceptual framework illustrates how two competing forces affect assets associated with a minority group in times when social norms towards this group are rapidly changing. In the case of the Dreyfus Affair, revelations about the miscarriage of justice in the later stages of the Affair may have reduced antisemitic sentiment among some investors and encouraged arbitrage, but the risk and volatility associated with the beliefs of antisemitic investors may have simultaneously deterred and slowed down such arbitrage. The combined effect of these forces led to a gradual appreciation of the market valuation of Jewish-connected firms, after the initial decline. These results highlight the essential role of risk and risk-aversion in the persistence of discrimination in all markets. While arbitrage against discriminators can allow market participants to earn excess returns, the uncertainty surrounding discriminatory beliefs can limit the extent of arbitrage in practice and allow discrimination to survive in the long run.

## CRedit authorship contribution statement

**Quoc-Anh Do:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Roberto Galbiati:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Benjamin Marx:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Miguel A. Ortiz Serrano:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization.

## Declaration of competing interest

The authors hereby declare that they have no relevant or material financial interests that relate to the research described in this paper.

## Data availability

The codes and data of the article can be found at <https://data.mendeley.com/datasets/nkk2cyw4f6/2>.

## Appendix A. Supplementary material

Supplementary material related to this article can be found online at <https://doi.org/10.1016/j.jfineco.2024.103809>.

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