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Discussion Paper

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J'Accuse! Antisemitism and Financial Markets in the Time of the Dreyfus Affair*

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Abstract

This paper studies discrimination in financial markets in the context of the "Dreyfus Affair" in 19th century France. We analyze the market performance of firms with Jewish board members during this historical episode. Building on empirical evidence and a model with antisemitic and unbiased agents, we show how investors betting on firms with Jewish connections earned higher returns during the media campaign organized to rehabilitate Dreyfus, the unfairly accused Jewish officer at the center of the Affair. Our paper provides novel evidence that discrimination can affect stock prices and create rents for some market participants. While these rents may attract betting against discriminators, the uncertainty surrounding discriminatory beliefs can limit the extent of arbitrage and allow discrimination to survive in the long run.

JEL Classifications: J15, J71, N23, G14, G41

Keywords: Antisemitism, Financial Markets, Discrimination

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1 Introduction

Discrimination, in theory, generates rents. Unbiased agents may capture these rents as long as other agents with biases or incorrect beliefs are willing to forego profitable investment opportunities. In the case of labor markets, rents accrue to employers paying employees from the group exposed to discrimination a wage below their marginal product (Becker, 1957). Financial markets in theory provide an ideal setting to identify these rents from discrimination. Stock prices provide a continuous measure of the perceived value of firms, potentially reflecting societal changes in discriminatory attitudes.

A recent literature shows that ethnic or nationalistic preferences can distort investment and firm value (Fisman et al., 2014; Kumar et al., 2015; Hjort et al., 2019). Others have studied the heterogeneity in access to capital across ethnic groups, as a result of discrimination or information asymmetries (Banerjee and Munshi, 2004; Fisman et al., 2017). There is less evidence on when and how investors can exploit the mispricing engendered by discrimination through arbitrage. We show that arbitrage against discriminators allows investors to earn excess returns. However, the uncertainty surrounding discriminatory beliefs can limit arbitrage in practice and allow discrimination to survive in the long run.

We exploit a historical case study to estimate the response of financial markets to exogenous shocks in antisemitism. The context of our analysis is the "Dreyfus Affair" in 19th century France. The Affair was centered around Alfred Dreyfus, a French Jewish army officer who was wrongfully convicted for treason in late 1894. This prompted an antisemitic outburst and revealed the ubiquity of antisemitism in French society. We study the French stock market during this historical episode and show that the Affair affected firms with Jewish board members in several ways. Our key result is that firms with Jewish board members experienced higher returns during the media campaign organized to rehabilitate Dreyfus, starting with the publication of a famous editorial (known by its title,"J'Accuse...!") in January 1898. We argue that these excess returns reflected persistent discrimination by some investors against Jewish-connected firms, allowing other investors to capture the rents from this discrimination.

Our analysis combines stock market data, media coverage data, and comprehensive data on the board composition of publicly traded firms during the Dreyfus Affair, which we hand-collected from archival sources. We identify Jewish board members using genealogical data on French Jewish families from the seminal work by Grange (2016). We then investigate whether firms with Jewish board members underperform or outperform other firms following major episodes of the Dreyfus case. Our analysis combines a standard event-study approach with a difference-in-differences strategy exploiting the exogenous timing of "J'Accuse", an unexpected and widely publicized editorial that denounced the antisemitic conspiracy against Dreyfus and started a media campaign demanding his rehabilitation.

Our results can be summarized as follows. First, we show that four salient episodes of the Affair affected the stock returns of firms with Jewish board members in the short run. This analysis estimates firm-specific cumulative abnormal returns (CARs) in narrow time windows around each event. The four episodes include Dreyfus' military degradation in January 1895, the publication of "J'Accuse" in January 1898, the appointment of the pro-Dreyfus Waldeck-Rousseau cabinet in June 1899, and the pardon of Dreyfus in September 1899. The first of these episodes marked a peak in France's antisemitic outburst, while the last one brought the most controversial phase of the Affair to an end. All four episodes are

recognized by historians as major turning points of the Dreyfus Affair (Section 2.2 provides a detailed timeline). Firms with Jewish board members experienced large negative CARs after the degradation of Dreyfus, a robust result that holds across a range of specifications. "J'Accuse" had a negative, but more imprecisely measured effect in the short run. In later stages of the Affair, Jewish-connected firms then experienced positive CARs around Waldeck-Rousseau's appointment and the pardon of Dreyfus. Other important events of the Dreyfus Affair did not affect the CARs of firms with Jewish board members.

We then examine the differential performance of firms with Jewish connections during the media campaign waged to rehabilitate Dreyfus. To identify the causal effects of this campaign, we estimate a difference-in-differences specification comparing Jewish-connected firms with other firms before and after the publication of "J'Accuse" in January 1898. Firms with Jewish board members experienced higher returns on average, and a faster growth of their market valuation throughout this campaign. While the stock volatility of these firms also increased, the higher returns more than compensated investors for the increased risk. For example, having a Jewish CEO increased risk-adjusted returns by 0.17 SD after "J'Accuse". Our identification strategy ensures that these findings are not driven by time-invariant firm characteristics, time-varying sector characteristics, or the daily market-level response to the Affair. To support our empirical strategy, we show that the returns of Jewish-connected firms did not experience differential trends before "J'Accuse", and that the Affair had no effects on the composition of firm boards.

We further show that news revelations about Dreyfus on average contributed to the higher returns experienced by firms with Jewish board members, relative to others. Those news are manually collected from five most relevant, major contemporaneous newspapers, through a process of screening and reading more than 61,000 paragraphs in historical archives that are not machine-recognizable. The positive relationship between news coverage and the returns of Jewish-connected firms is driven by pro-Dreyfus coverage (coverage by *L'Aurore* and by *Le Siècle*), while anti-Dreyfus coverage by Catholic or antisemitic outlets has the opposite effect. Media revelations about Dreyfus' innocence likely contributed to change beliefs among investors, allowing those who bet on Jewish-connected firms to earn excess returns.

To explain these findings, we focus on the existence of antisemitic investors with overly pessimistic views of Jewish stocks. This is consistent with historical evidence documenting the ubiquity of antisemitism in late 19th century France (Byrnes, 1950; Wilson, 2007). Building on De Long et al. (1990)'s seminal overlapping-generations 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.[1] Jewish stock prices suffer from three sources, including (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 and behaviors that further reduces demand for Jewish stocks.

Our main results can be interpreted in light of this model. Salient outbursts of antisemitism at the onset of the Affair—such as Dreyfus' degradation—produced idiosyncratic shocks on the bias of antisemitic investors, leading to short-lived negative market reactions on Jewish stocks. Later events related to Dreyfus' rehabilitation had similarly short-lived but opposite effects. The publication of "J'Accuse"

[1]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.

rattled and polarized beliefs in French society, which increased uncertainty about antisemitic biases and decreased Jewish stock prices in the short run. However, "J'Accuse" also sparked off a media campaign aiming to rehabilitate Dreyfus, which contributed to both debiasing and reducing uncertainty about fundamental antisemitic beliefs. Both led to a sustained appreciation of Jewish stocks in the long run.

It is useful to compare our model of discrimination in financial markets to theories of taste-based discrimination in labor markets since Becker's (1957) seminal analysis. In a similar vein, our model shows how discrimination creates rents that can be exploited at the expense of discriminating agents. However, as uncertainty about biases matters to risk-averse investors, everyone generically chooses to buy or sell some amounts 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 sharp contrast with the phenomenon of segregation of minority workers in labor markets, in which the most 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. In financial markets, (i) the model has to incorporate uncertainty and risk-aversion, and (ii) investors' holding of the discriminated stocks is not bounded below by zero, unlike the number of employed discriminated workers.

Without debiasing, can antisemitism thrive in financial markets in the long run? While antisemitic investors underinvest in Jewish stocks, resulting in rents exploited by unbiased ones, their over-optimistic beliefs in non-Jewish stocks also push them to invest excessively in those stocks. Since all stocks are underpriced because of the uncertainty about antisemitic biases, excessive holdings of non-Jewish stocks yield excess returns for biased investors, which may even offset their losses due to the underinvestment in Jewish stocks. Consequently, biased investors may earn better expected returns than unbiased ones, hence survive in the market in the long run. Our model thus highlights a novel reason why discrimination may persist, in spite of Becker's and Arrow's (1972) insight that biased employers tend to incur losses and will be eventually driven out of the market. Unlike other explanations emphasizing various market imperfections (e.g., Black 1995; Lang et al. 2005) to explain the persistence of discrimination, ours is based on the limitation of arbitrage due to uncertainty in beliefs.

Empirically, the evidence of gradual debiasing also underscores the resilience of discrimination in financial markets. While arbitrage by some investors led to a convergence of the value of firms with Jewish connections towards the price predicted by their fundamentals, all the effects of discrimination likely did not disappear at the end of the Affair. Indeed, antisemitism remained widespread in France in the aftermath of Dreyfus' pardon (Reinach, 1901; Byrnes, 1950; Wilson, 2007). Our model highlights how changes in the distribution of biases allowed investors to capture rents from discrimination by betting more on Jewish firms. However, such arbitrage against discriminators is neither riskless nor instantaneous in a world of risk-averse investors facing uncertain biases.

We provide additional empirical evidence to rule out alternative mechanisms. Another potential explanation could be that the Dreyfus Affair changed expectations about the future profitability of Jewish-connected firms, due to political uncertainty (Kelly et al., 2016) or anticipated discrimination by the market or the state. Overall, we find little evidence supporting this explanation. First, there is no decline in

the market valuation of Jewish-connected firms after Dreyfus' arrest, between 1894-97. Second, Jewish-connected firms that were not vulnerable to a backlash by the state or the market (state-guaranteed firms and firms without retail activities) also experienced higher returns during Dreyfus' rehabilitation campaign. Third, firms did not change the composition of their boards in response to the Dreyfus Affair. Fourth, the actual profitability of Jewish-connected firms (proxied by dividends) did not change relative to other firms throughout the course of the Dreyfus Affair. Section 5.4 provides a detailed discussion of these alternative mechanisms.

Our finding of excess returns for firms with Jewish connections after the publication of "J'accuse" is, to the best of our knowledge, the first successful attempt to empirically demonstrate the existence of rents from discrimination in financial markets. In related work, Szymanski (2000) shows that English soccer clubs employing more Black players achieve higher league rankings controlling for the wage bill. Pager (2016) shows that firms engaging in hiring discrimination are less likely to survive in the long run. 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. In contrast to these studies, we exploit exogenous antisemitic shocks that are plausibly orthogonal to firms' unobservables.

Several studies have explored the distortionary impacts of ethnic preferences on investment and firm value. Fisman et al. (2014) show that deteriorating Sino-Japanese relations in 2005 and 2010 adversely affected the performance of firms involved in bilateral economic exchange. Kumar et al. (2015) document an abnormal decline in investment flows to funds with managers with Middle-Eastern-sounding names after 9/11. Hjort et al. (2019) show that ethnic discrimination by investors lowers value creation among publicly listed firms in Kenya. Hong and Kacperczyk (2009) show that "sin stocks" associated with alcohol and tobacco products are less likely to be held by norms-constrained investors, and have higher expected returns than comparable stocks. 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).

We also contribute to a growing literature on the economics of ethnic and religious discrimination, including antisemitism. Our paper estimates the short-term impacts of exogenous shifts in antisemitic attitudes, rather than the long-term determinants and persistence of antisemitism. Several studies have explored the origins of antisemitism and its link with financial development in historical Germany (Becker and Pascali, 2019; D'Acunto et al., 2018; Voigtländer and Voth, 2012) and Russia (Grosfeld et al., 2019). Ferguson and Voth (2008) study the performance of 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, the seminal paper by Huber et al. (2019) explores the consequences of mass dismissals of Jewish managers in Nazi Germany. In contrast to the economic environment in Huber et al. (2019), where firms experienced drastic changes in their corporate management as a result of Nazi policies, Paris-based firms with Jewish connections during the Dreyfus Affair did not

experience structural changes and did not face the likely prospect of government discrimination.[2] While our main focus is on diagnosing discrimination in financial markets, we make two distinct contributions to the literature on antisemitism: we provide novel evidence on the consequences of the Dreyfus Affair, and we study the contemporaneous effects of shifts in antisemitic sentiment before and after "J'Accuse".

This last contribution hinges on our empirical setup, which allows us to study negative as well as positive shocks to antisemitism in the context of Dreyfus' degradation and his rehabilitation through a media campaign. The debiasing mechanism speaks to a large literature on the impact of information (Adida et al., 2018; Grigorieff et al., 2018), evaluations (Bohren et al., 2019), and quota policies (Beaman et al., 2012) on destigmatization and the debiasing of prejudice (see also Bertrand and Duflo, 2016). We provide evidence that destigmatization can affect price movements in financial markets.

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 our conceptual framework. Section 7 concludes.

2 The Dreyfus Affair

We first describe the social and political context that led to high levels of antisemitism in late 19th century France. We then provide a detailed timeline of the Dreyfus Affair.

2.1 Political and Social Context

At the end of the 19th century, France was a democratic republic. The regime, known as Third Republic was established after the Franco-Prussian War of 1870-71 and lasted until 1940. 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. The country's public and secular primary education system was established in 1882. In 1905, a landmark law introducing a strong separation between the church and the state was introduced. This law has remained in effect to this day.

In this context, Jewish citizens enjoyed full civic and political rights. The process leading to the social integration of ethnic and religious minorities started with the French Revolution and continued throughout the 19th century, during which many Jewish citizens increasingly followed a path of assimilation. This process implied not only a larger participation in French society, but also a progressive abandonment of Jewish traditions and the adoption of a new social identity. By the end of the 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"). 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 undermining the Catholic fabric of the country and fomenting the corruption

[2] 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, no viable political force advocated for antisemitic policies.

of French culture. 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. Thus, while Jewish citizens nominally enjoyed the same civic rights as other citizens, antisemitism and antisemitic propaganda were rife at the onset of the Dreyfus Affair.

2.2 Timeline of the Dreyfus Affair

On September 27, 1894, a French agent working undercover at the German Embassy in Paris discovered a note announcing the delivery of confidential French military documents. This information reached General Mercier, the Minister of War, who mandated an intelligence officer named Colonel Henry to identify the author of the note (known as the *bordereau*). Henry manufactured a file against Captain Alfred Dreyfus, essentially 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 martial court in December 1894, and deported to Devil's Island in French Guiana in February 1895.

The Dreyfus case was first made public on November 2, 1894, when *La Libre Parole* revealed the arrest of a Jewish captain on accusations of espionage. As described above, this occurred in a social context particularly prone to antisemitism. 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—panel (a) of Figure A.1 shows the frontpage of *Le Petit Journal* after this episode.[3] Antisemitic outlets emphasized the Jewish origins of Dreyfus and provided derogatory coverage denigrating all French Jews. Figure A.2 provides two graphic 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 named Picquart uncovered evidence suggesting the real culprit was a different officer named Esterhazy. This information was dismissed by Picquart's hierarchy. On January 11, 1898, Esterhazy was found innocent 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 the writer Emile Zola on the frontpage of the newspaper *L'Aurore*. This editorial revealed all the facts pointing to the wrongful conviction of Dreyfus. In addition, the pamphlet 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).

[3] 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).

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' culpability and signaled the beginning of a broader campaign demanding his rehabilitation.[4] During this campaign, the press became increasingly divided between antisemitic and anti-Dreyfusard outlets and a moderate press that became overtly pro-Dreyfus. 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 locations in metropolitan France between October 1898 and December 1899, compared to 23 anti-Dreyfusard meetings outside Paris in the same period.

On June 22, 1899, subsequent to a judicial decision to authorize a revision of the Dreyfus trial, a new French president (Emile Loubet) appointed the liberal politician Waldeck-Rousseau as head of government with 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 attenuating circumstances. However, at the request of the Waldeck Rousseau government, Loubet extended a presidential pardon to Dreyfus on September 22, 1899. Dreyfus was 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 Figure A.3 shows that media coverage of the Affair peaked after "J'Accuse" and fell rapidly after Dreyfus' pardon.

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. Conceived as a centralized marketplace for financial trading, the Stock Exchange fell under the purview of a monopolistic organization controlled by the government, the *Compagnie des Agents de Change* (CAC) in charge of registering, authorizing, and supervising all transactions. 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 which minimized transaction costs thanks to very efficient settlement and compensation procedures," analogous to other major marketplaces of this era. Throughout the 19th century, the Stock Exchange experienced rapid growth as well as several scandals including the controversial crash of a major bank named *L'Union Générale* in 1882, and a corruption scandal associated the construction of the Panama Canal in 1892.[5]

[4] 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).

[5] Both episodes are considered milestones in the history of French antisemitism. In 1889, *La Croix* wrote: "*L'Union Générale* was assassinated because it was competing with the Jews, because its directors were leading Catholics... The Panama Company is

Data Sources. To conduct the analysis presented in this paper, 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 market capitalization, stock returns, and various 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 1894-1899, including 131 firms listed during the entire period.[6]

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 the time. The list of families comes from Grange (2016), a comprehensive study on this topic which identifies 40 large French Jewish families between 1870 and 1940. Examples of such dynasties include the Pereire, Rothschild, Stern, and Louis-Dreyfus families. We identify a board member as Jewish if the individual's first and last name exactly match a full name in the Grange (2016) list. In total, we observe 45 unique Jewish individuals out of 1,244 board members between 1894-1899. Our two measures of Jewish connections are the fraction of Jewish board members and an indicator for firms with a Jewish chairman of the board (CEO). We also use a different registry from Lévy (1960) to check the accuracy of the Grange (2016) list.[7] The measures of Jewish connections computed using both databases are strongly correlated. For example, the correlation between the fraction of Jewish board members in Grange (2016) and the corresponding fraction in Lévy (1960) is 0.83.

Importantly, individuals with a name listed in Grange (2016) or Lévy (1960) may have held religious beliefs other than Judaism. Indeed, Section 2.1 argues that many French Jewish citizens forged a secular social identity throughout the 19th century. Nonetheless, it is reasonable to assume that these individuals were exposed to the antisemitic sentiment prevailing in this time period, to the extent that they were

left to die because it tried to get along without placing itself under the tutelage of Jewish financiers" (Wilson, 2007).

[6]The first row of Table A.1 shows that on an average day 69% 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.9 that our results are not driven by low liquidity.

[7]The Lévy (1960) database is less accurate since it only includes last names.

perceived as being connected to prominent Jewish families. These families were, in fact, targeted by the antisemitic press which regularly published lists of prominent 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 Rothschild" (Wilson, 2007).

At the time of the Dreyfus Affair, board members (*membres du conseil d'administration*) typically acted as non-independent directors with various degrees of involvement in corporate management. Given the much discussed high concentration of ownership in French firms and the prevalence of strong control by founding families (Landes, 1949, 1969), board members were most commonly the firm's founders, the founders' offspring, and/or the largest shareholders.[8] The chairman of the board (*président du conseil*) typically exerted the function of CEO (*président directeur général* or PDG in French).

Because of the tight links between many French 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 Hottinguer family was associated with the founding of the Ottoman Bank and various railways firms, while the Louis-Dreyfus dynasty established by Léopold Dreyfus (1833-1915) was closely associated with naval shipyards and food processing.

Appendix Table A.2 provides descriptive statistics on Jewish connections across the full sample, and by sector. Overall, 14% have a Jewish CEO, and the average fraction of Jewish board members is 6.7%. These families are most represented in the gas/electricity, railways, and banking sectors (panel a). Panel (b) looks at correlates of Jewish connections in terms of other firm characteristics. Firms with Jewish board members are more likely to be headquartered abroad, and are slightly more capitalized in nominal terms. In our analysis, we either control for these characteristics, or we include firm fixed effects absorbing all time-invariant firm characteristics. Jewish connections are stable throughout the period since few firms experience changes in their board composition, as we show in Appendix Table A.3.

3.3 Media coverage

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*. *Le Siècle*, a mainstream outlet perceived as liberal and close to moderate republicans, started to actively support Dreyfus starting in late 1897. *La Croix*, a Catholic newspaper still in circulation today, was anti-Dreyfusard throughout the period and played a key role in the diffusion of antisemitism (Sorlin, 1967)—in 1890, *La Croix* proclaimed itself to be "France's most anti-Jewish Catholic newspaper." *L'Aurore* was the leading outlet for the Dreyfusard (pro-Dreyfus) camp and published Zola's "J'Accuse...!" in January 1898. It went into circulation in mid-October 1897. *La Libre Parole* was an antisemitic outlet founded by Edouard Drumont, the leading antisemitic public figure of this era. The outlet's only goal was to spread hatred against French Jews. Finally, *Le Petit Journal*

[8] We are not aware of any historical data source of 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.

was another popular anti-Dreyfusard 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 absolute terms 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,[9] 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 Dreyfus Affair across the 5 newspapers between January 2, 1894 and December 30, 1899. After "J'Accuse", these newspapers together dedicate 84 paragraphs on average (24% of the total coverage) to Dreyfus. This coverage is approximately equally split between Dreyfusard and anti-Dreyfusard outlets (see Appendix Table A.1).

4 Empirical Framework

4.1 Event study framework

We first estimate the short-term effects of major episodes of the Dreyfus Affair on the 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 (i.e., stocks tradable in cash or as cash and forward), guarantee type (a dummy indicating whether a stock is guaranteed by the French state), a dummy for whether the firm has investments abroad, foreign ownership, and the number of outstanding shares. We include all available controls from the information contained in the CAC stock broker yearbooks (see section 3.1).

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 [-300,-60] estimation window before the news of Dreyfus' arrest on November 2, 1894. In the Appendix, we also use a 3-factor 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. The 1-factor model is similar to a CAPM while the 3-factor model approximates a Fama-French model. 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 narrow time windows ([-1,1]

[9]The filter contained the following words: *Dreyfus*, *capitaine* (captain), *affaire* (affair), *traitre* (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.

or [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.

In Table 1, cumulative abnormal returns are estimated via a 1-factor model and summed over a [0,2] window around 4 major episodes: the degradation of Dreyfus, the publication of "J'Accuse", the appointment of the Waldeck-Rousseau cabinet, and Dreyfus' presidential pardon. We provide background on these episodes in the next section, and we examine other episodes in Appendix Tables A.5 and A.6.

4.2 Difference-in-differences

The Dreyfus Affair took a dramatic turn on January 13, 1898, with the publication of "J'Accuse" in *L'Aurore*. "J'Accuse" provided new evidence about the Dreyfus case and signaled the beginning of a media campaign aiming to rehabilitate Dreyfus. Appendix Figure A.3 illustrates the dramatic increase in the media coverage of the Affair by two widely circulated outlets: *Le Siècle* and *La Croix*.

Our next specification estimates the effect of this media campaign starting with "J'Accuse":

$$y_{it} = \alpha + \beta JewishConnections_i \times \mathbf{1}\{t \geq \text{J'Accuse}\}_t + \delta_i + \delta_t + \delta_{sm} + \varepsilon_{it} \tag{2}$$

where i, s, d and m denote firm, sector, trading day, and month, respectively. We estimate equation (2) on the balanced panel of 131 firms. We use several measures of returns and valuation as the dependent variable y_{it}: stock returns, growth in market capitalization, growth in the market-to-book ratio (a proxy for Tobin's Q), squared returns (a proxy for volatility), and risk-adjusted returns (the Sharpe ratio).[10]

$JewishConnections_i$ 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 based on Grange (2016). In our baseline specification, we use the average of these measures throughout the period. Appendix Table A.3 shows that firms with Jewish connections did not experience differential changes in board composition during the Dreyfus Affair. In addition, Appendix Table A.10 shows that our results are robust to using an intent-to-treat measure of Jewish connections, namely Jewish board membership measured at the beginning of the Dreyfus Affair on November 2, 1894. The baseline specification includes firm fixed effects δ_i, day fixed effects δ_d, and sector by month fixed effects δ_{sm}. Standard errors are heteroskedasticity-robust and clustered by firm. Tables 2 and 3 report estimates from equation (2).

The key identifying assumption for equation (2) is a parallel trends assumption—conditional on firm, day, and sector by month fixed effects, firms with Jewish connections should not have yielded excess returns in the absence of the rehabilitation campaign. Figure 1 supports this assumption by showing the absence of pre-trends. We also show in Appendix Table A.3 that the campaign did not affect the board composition of firms, an important check to interpret our difference-in-difference estimates as causal.

[10]The intuition behind our difference-in-differences is related 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 sector-by-month and firm fixed effects, thus better addresses firm-specific determinants of stock performance over the period as well as any sector-wide monthly 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).

4.3 Media Coverage

We also examine the relationship between daily coverage of the Dreyfus Affair and the stock returns of firms with Jewish connections. To do this, we estimate:

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

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, δ_t. In Section 5.3, we also disentangle the effects of Dreyfusard (pro-Dreyfus) and anti-Dreyfusard coverage by interacting $JewishConnections_i$ separately with coverage by Dreyfusard newspapers (*Le Siècle* and *L'Aurore)* and coverage by anti-Dreyfusard 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. We provide evidence on the effects of media coverage in Table 4.

5 Results

The Dreyfus Affair could have affected the returns of firms with Jewish board members in a number of ways. In the short run, investors may have divested these assets in response to news arrivals about the alleged treason of Dreyfus, if these events contributed to increase antisemitic prejudice. Events leading to Dreyfus' rehabilitation would have had the opposite effect. We test these hypotheses in Section 5.1.

In the long run, media revelations about Dreyfus' innocence may have made antisemitic biases more salient and induced debiasing among some investors. This would have encouraged arbitrage and increased demand for Jewish-connected stocks after the publication of "J'Accuse". Section 5.2 presents these results and Section 5.3 explores the impact of media coverage. Finally, Section 5.4 examines whether the differential returns of Jewish-connected firms can be explained by expectations of future discrimination by the market or the state.

5.1 Short-Term Effects

We first explore the short-term effects of salient episodes of the Affair on firm-specific abnormal returns. Table 1 reports estimates from equation (1) for 4 major events: the military degradation of Dreyfus, the publication of "J'Accuse", the appointment of the Waldeck-Rousseau cabinet, and Dreyfus' pardon. 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.

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 Figure A.1).[11] On January 7, 1895, the newspapers in our data dedicated 15% of their coverage to Dreyfus. Column 1 of Table 1 shows that firms with a greater fraction

[11] We center the event window around Monday January 7, 1898, which is the first trading day occuring after the degradation.

Table 1: Cumulative Abnormal Returns of Firms with Jewish Connections

Four Major Episodes of the Dreyfus Affair

	January 5, 1895 Degradation of Dreyfus (1)	January 13, 1898 "J'Accuse" (2)	June 22, 1899 Waldeck-Rousseau Cabinet (3)	September 19, 1899 Pardon of Dreyfus (4)
% Jewish Board Members	-4.524***	-1.891	6.473**	2.499**
	(1.507)	(1.484)	(3.099)	(1.202)
Constant	-0.260	-0.680	-0.193	-0.225
	(1.041)	(1.019)	(0.669)	(0.579)
Observations (Firms)	134	138	137	137
R^2	0.17	0.19	0.30	0.16

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 Dreyfus' arrest on November 2, 1894. 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, type of admission in the Paris Stock Exchange, guarantee by the French state, whether the firm has investments abroad, foreign ownership, and the number of outstanding shares. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

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.5) and large in magnitude: a firm with 100% Jewish board members would have experienced a 4.5 percentage point decline in returns relative to a firm without Jewish board members. The rest of the market did not experience abnormal returns after this episode.

"J'Accuse" was published by the newspaper *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 a state conspiracy owing to his Jewish origins. On the other hand, those holding antisemitic prejudice could have been confirmed in their beliefs about the existence of a conspiracy against the state.[12] Finally, the editorial could have increased expectations that French society would polarize further around the Dreyfus case. Overall, in column 2 of Table 1 we find that firms with a greater share of Jewish board members experienced negative, non-significant abnormal returns of about 2 percentage points immediately around the publication of "J'Accuse". Figures 1 and 2, discussed below, suggest this may also have been accompanied by a short-term increase in volatility. As with the degradation of Dreyfus, the rest of the market is unaffected by this episode.

We then look at another major turning point of the Dreyfus Affair: 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 3 of Table 1 shows that firms with Jewish connections expe-

[12]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).

rienced abnormal positive returns following Waldeck-Rousseau's appointment. This estimate is robust to other methods for computing CARs (see Appendix Table A.6). The increased demand for Jewish-connected stocks could have reflected a more optimistic climate around these firms following the appointment of Waldeck-Rousseau. Or, this appointment could have convinced investors that these stocks were overlooked by other investors and to bet on Jewish-connected firms themselves. Yet, Appendix Table A.6 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 4 of Table 1 shows that Jewish-connected firms also experienced abnormal positive returns following the pardon of Dreyfus on September 19, 1899. We report this estimate as Loubet's pardon led to Dreyfus' release and brought the salient phase of the Affair to an end—even though Dreyfus was not fully reinstated until 1906. Appendix Table A.5 shows that this coefficient remains positive but loses statistical significance when we use alternative ways of computing CARs.

Overall, the positive coefficients in columns 3 and 4 of Table 1 indicate that firms with a larger fraction of Jewish board members experienced positive returns around episodes associated with the rehabilitation of Dreyfus. In the following section, we show that these firms experienced, in fact, higher returns throughout the media campaign organized to obtain Dreyfus' rehabilitation starting in January 1898. In Section 6, we explain both effects in the context of a model of antisemitic traders where exogenous antisemitic shocks affect stock prices and volatility in the short run and the long run.

Importantly, among the four events examined in Table 1, only "J'Accuse" is likely to have occurred as a total surprise to investors. As a result, similar to Huberman and Regev (2001), the investors' short-term response to these events 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' guilt or innocence. We return to this interpretation in Section 6.

Robustness Checks. Appendix Tables A.4 through A.6 present robustness checks on the findings in Table 1. Appendix Table A.4 looks at alternative measures of Jewish connections while Appendix Table A.5 shows robustness to alternative estimation strategies and looks at additional episodes of the Affair. Finally, Appendix Table A.6 reports event study results around each government cabinet change.

In Appendix Table A.4, we estimate equation (1) using eigher the fraction of Jewish board members based on Lévy (1960) or an indicator for firms with a Jewish CEO on the right-hand side. Results obtained using the Lévy (1960) list are similar to those in Table 1. The negative coefficient on the degradation falls in magnitude and loses significance when estimating the effect of Jewish CEOs, suggesting that investors responded to Jewish board membership along the intensive margin.

Appendix Table A.5 looks at alternative strategies and measures CARs around four additional episodes: the first news of Dreyfus' arrest (November 2, 1894), the conviction of Dreyfus by a martial court (December 22, 1894), the revelation of the suicide of Colonel Henry, a key actor in the forgery of documents that supported Dreyfus' initial sentencing (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. 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.6 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 (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 Rehabilitation Campaign

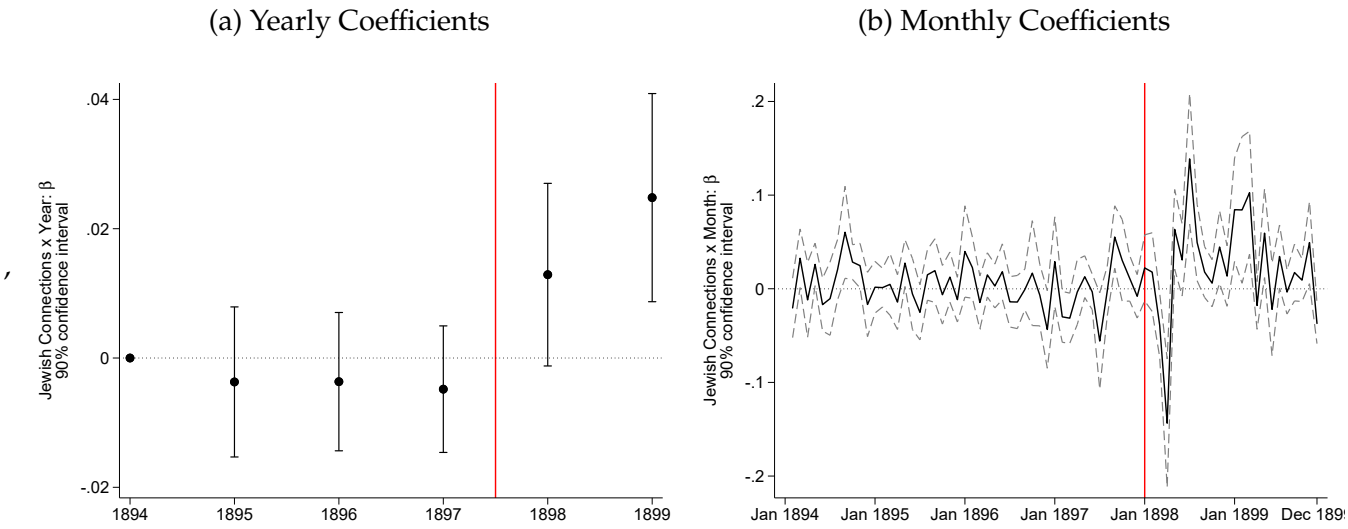
We now turn to our exploration of how Dreyfus' rehabilitation campaign, initiated with the unexpected publication of "J'Accuse", affected the returns of firms with Jewish board members.

Figure 1 shows that "J'Accuse" represented a turning point for the market performance of these firms. Here we report time-varying coefficients on the effect of Jewish connections on daily stock returns. We interact Jewish connections with yearly dummies and monthly dummies in panels (a) and (b), respectively, and we control for firm fixed effects, trading day fixed effects, and sector-by-month fixed effects as in equation (2). Jewish connections are measured as a standardized index of the fraction of Jewish board members and an indicator for firms with a Jewish CEO, the two right-hand side variables used in panels (a) and (b) of Tables 2 through 5.

Between 1894 and 1897, the returns of Jewish-connected firms do not differ markedly from those of other firms. This changes dramatically in 1898, the year when Dreyfus' rehabilitation campaign began in earnest. On average, Jewish-connected firms experience higher daily returns in both 1898 and 1899 (panel a). Panel (b) shows that Jewish-connected firms first experience a decline in returns after January 1898, before experiencing a substantial rebound that more than offsets the initial drop. This is consistent with the short-term estimate presented in Table 1, column 2. Overall, firms with more Jewish board members experience consistently higher returns between mid-1898 and late 1899. Investors who bet on Jewish-connected firms either before or shortly after "J'Accuse" would have captured excess returns.

Stock Returns and Valuation Gains. Table 2 reports estimates from equation (2). We look at different indicators of market performance: daily and monthly stock returns in columns 1 and 2, daily and monthly gains in firm value in columns 3 and 4, and daily and monthly gains in the firm's market-to-book ratio in columns 5 and 6, respectively. Stock returns are measured as the growth rate of stock prices between period (day or month) $t-1$ and t, minus the growth rate of the risk-free asset. Gains in firm value are defined analogously as the growth rate of a firm's market capitalization (listed price times the number of outstanding shares), while the market-to-book ratio is defined as the ratio of the stock's listed price to its nominal price. The market-to-book ratio approximates the average Tobin's Q given the available data, which does not include corporate debt.

Figure 1: Daily Returns of Jewish-Connected Firms Before and After "J'Accuse"



Notes: This figure reports estimates from the following specification: $y_{it} = \sum_t \beta_t JewishConnections_i \times Period_t + \delta_i + \delta_t + \delta_{sm} + \varepsilon_{it}$, where $Period$ denotes years in panel (a) and months in panel (b). y_{it} are daily stock returns measured for firm i on day t. δ_i, δ_t, and δ_{sm} are firm, day, and sector-by-month fixed effects, respectively. $JewishConnections_i$ is a standardized index of the two measures of Jewish connections we use in Tables 2 through 5, namely the fraction of Jewish board members and a dummy for firms with a Jewish CEO. In panel (b), the dashed grey line indicates 90% confidence intervals. Standard errors are clustered by firm. The red line highlights the publication of "J'Accuse" on January 13, 1898.

Panel (a) of Table 2 looks at the fraction of Jewish board members on the right-hand side of equation (2)—the same measure used in Table 1 and Figure 1. Columns 1 and 2 show that a firm with 100% Jewish board members would have experienced a 0.2 percentage point increase in daily returns and a 5 percentage point increase in monthly returns after "J'Accuse". Both estimates are significant at 5%. In addition, these firms experienced a faster growth of their market valuation (columns 3 and 4) and of their market-to-book ratio (columns 5 and 6).[13]

In Panel (b) of Table 2, we interact the post-"J'Accuse" dummy with an indicator for firms with a Jewish chairman of the board. The presence of a Jewish CEO could have rendered a firm's Jewish connections particularly salient to investors. Indeed, the difference-in-differences coefficient is again positive and statistically significant across all columns. For example, having a Jewish chairman increases daily returns by 0.06 percentage points and monthly returns by 1.6 percentage points (columns 1 and 2). The effect of a Jewish CEO on firm value and the market-to-book ratio is of comparable magnitude.

In Section 5.4, we show that this increase in returns after "J'Accuse" was not accompanied by an increase in profitability as proxied by dividends. We also show that excess returns were not driven by shifting expectations of discrimination by the market or the state. Instead, we hypothesize that the improved performance of firms with Jewish board members may have come from diminished antisemitic

[13] A back-of-the-envelope calculation based on the monthly coefficients in panel (b) of Figure 1 suggests that the total rent associated with betting on Jewish-connected firms was at least 17% of the market valuation of these firms measured before "J'Accuse". To calculate this figure, we take the cumulative sum of all 90%-statistically significant coefficients after "J'Accuse".

Table 2: Returns and Valuation of Jewish-Connected Firms After "J'Accuse"

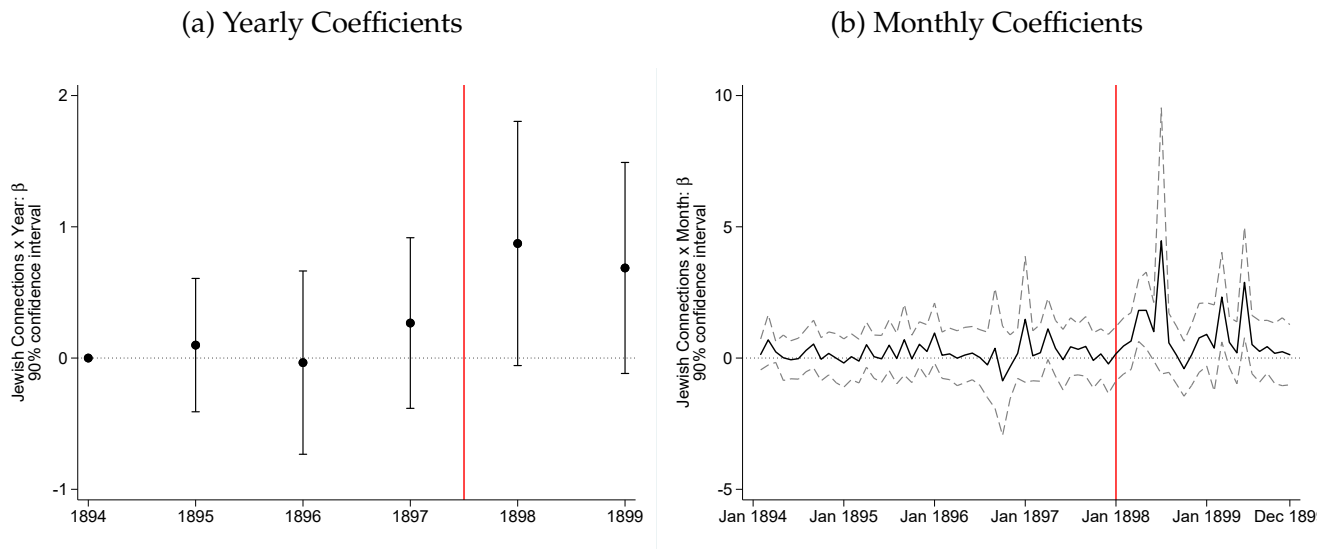
	Raw Returns		Firm Value Growth		Market-to-book	
	(1) Daily	(2) Monthly	(3) Daily	(4) Monthly	(5) Daily	(6) Monthly
	(a) *% of Jewish Board Members*					
% Board Members × Post J'Accuse	0.178**	4.823**	0.171**	6.461**	0.197**	5.488**
	(0.079)	(2.301)	(0.083)	(2.613)	(0.081)	(2.374)
R^2	0.02	0.16	0.02	0.13	0.02	0.16
Mean Dep Var	0.019	0.416	0.023	0.552	0.022	0.472
Firms	131	131	131	131	131	131
Observations	239730	9301	239730	9301	239730	9301
	(b) *Jewish Chairman of the Board*					
Jewish Chairman × Post J'Accuse	0.059**	1.559**	0.049*	1.734**	0.062**	1.582**
	(0.025)	(0.712)	(0.029)	(0.739)	(0.025)	(0.711)
R^2	0.02	0.16	0.02	0.13	0.02	0.16
Mean Dep Var	0.019	0.416	0.023	0.552	0.022	0.472
Firms	131	131	131	131	131	131
Observations	239730	9301	239730	9301	239730	9301

Notes: This table reports estimates from equation (2). In columns 1 and 2, the dependent variables (expressed in percentage points) are stock returns calculated as the daily (column 1) or monthly (column 2) growth rate in stock prices. In columns 3 and 4, the dependent variable is the growth rate of firm value (market capitalization) measured either daily or monthly. In columns 5 and 6, the dependent variable is the growth rate in the firm's market-to-book ratio (a proxy for Tobin's Q) measured daily or monthy. 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 Chairman of the Board (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.

attitudes among some investors. The revelations about the conspiracy against Dreyfus may have convinced these investors that Jewish assets were likely underpriced by the market, and persuaded them to engage in arbitrage. Before turning to this interpretation, however, we explore another potential channel: the possible impact of Dreyfus' rehabilitation campaign on the volatility of Jewish-connected stocks.

Volatility and Risk-Adjusted Returns. The polarization of French society around the Dreyfus case could have increased the stock volatility of firms with Jewish board members, if investors perceived this polarization to increase risk. Indeed, panel (b) of Figure 1 suggests that firms with Jewish connections experienced not only higher returns after "J'Accuse", but also higher stock volatility. We test this hypothesis in Figure 2 and Table 3 by looking at squared returns on the left-hand side of equation (2). We also examine whether the findings in Table 2 are robust to using a measure of risk-adjusted returns.

Figure 2: Stock Volatility of Jewish-Connected Firms Before and After "J'Accuse"



Notes: This figure reports estimates from the following specification: $y_{it} = \sum_t \beta_t JewishConnections_i \times Period_t + \delta_i + \delta_t + \delta_{sm} + \varepsilon_{it}$, where $Period$ denotes years in panel (a) and months in panel (b). y_{it} are squared daily stock returns measured for firm i on day t. δ_i, δ_t, and δ_{sm} are firm, day, and sector-by-month fixed effects, respectively. $JewishConnections_i$ is a standardized index of the two measures of Jewish connections we use in Tables 2 through 5, namely the fraction of Jewish board members and a dummy for firms with a Jewish CEO. In panel (b), the dashed grey line indicates 90% confidence intervals. Standard errors are clustered by firm. The red line highlights the publication of "J'Accuse" on January 13, 1898.

Figure 2 provides suggestive evidence that "J'Accuse" caused a short-term increase in volatility. Analogous to Figure 1, panel (a) and (b) report time-varying (yearly or monthly) coefficients on the effect of Jewish connections on squared demeaned daily returns. These coefficients are imprecisely estimated given the noisy nature of the data on squared returns. Nonetheless, Jewish connections seem to be associated with a rise in stock volatility after January 1898. Panel (b) shows that this effect gradually subsides through 1899, as the uncertainty around the Dreyfus case is gradually resolved.

Table 3 provides additional evidence that the rehabilitation campaign increased stock volatility for Jewish-connected firms. We use two measures of volatility in this table: squared daily, demeaned raw returns (column 1) and the within-month standard deviation of daily returns (column 2). Looking at both measures of Jewish connections, the difference-in-differences estimate is positive and statistically significant in 3 out of 4 cases. For example, having a Jewish CEO is associated with a 0.26 SD increase in monthly volatility after "J'Accuse" (panel b, column 2).

There is some evidence that this increase in volatility was largest in the immediate aftermath of "J'Accuse" and subsided afterwards. Appendix Table A.7 documents this non-monotonic relationship. There, we interact the 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 3, namely squared daily returns in columns 1–2 and the monthly SD of returns in columns 3–4. Columns 1 and 3 of this table show the negative association between volatility and time elapsed since

Table 3: Volatility and Risk-Adjusted Returns After "J'Accuse"

	Volatility		Risk-Adjusted	
	(1) Daily	(2) Monthly	(3) Daily	(4) Monthly
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	4.806*	0.527	0.126***	0.492*
	(2.712)	(0.365)	(0.041)	(0.278)
R^2	0.03	0.49	0.02	0.23
Mean Returns	2.217	1.004	0.017	0.091
Firms	131	131	131	131
Observations	239730	9301	239730	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	1.953**	0.257**	0.032**	0.166**
	(0.911)	(0.103)	(0.015)	(0.084)
R^2	0.03	0.49	0.02	0.23
Mean Returns	2.217	1.004	0.017	0.091
Firms	131	131	131	131
Observations	239730	9301	239730	9301

Notes: This table reports estimates from equation (2). The dependent variables are demeaned squared daily returns in column 1, the monthly standard deviation of daily returns in column 2, and risk-adjusted returns in columns 3–4. Risk-adjusted returns are calculated as raw returns (daily or monthly) 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 Chairman of the Board. 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.

"J'Accuse". Columns 2 and 4, where we additionally interact the relevant terms with dummies for 1898 and 1899, shows that the eventual decline in volatility was strongest during the rest of the year 1898.

Columns 3 and 4 of Table 3 look at a measure of risk-adjusted returns: daily returns (column 3) and monthly returns (column 4) divided by the within-firm standard deviation of returns (the Sharpe ratio). We use the standard deviation calculated within firm-month (for daily returns) in column 3 and within firm-year (for monthly returns) in column 4.[14] Across both measures of Jewish connections, the difference-in-differences estimate is positive and significant, and effect sizes are in line with those reported in Table 2. 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 0.13 SD. While stock volatility increased after "J'Accuse" for firms with Jewish connections, investors who bet on these firms

[14]If a stock is not traded in a given month, we impute the standard deviation at the within-firm average SD of returns.

were more than compensated for this increased risk.[15]

Robustness Checks. Appendix Tables A.9 through A.13 report robustness checks for our core results in Tables 2 and 3. Throughout these tables, we look at raw returns and risk-adjusted returns (defined as in column 1–2 of Tables 2 and columns 3–4 of Table 3, respectively) measured either daily or monthly. As we describe below, our results are overall robust to these specification checks.

Appendix Table A.9 shows that our results are not driven by the liquidity of stocks in our data. Compared to contemporary financial data, liquidity is low in our context: 31% of stocks are not traded on any given day. First, we show that the difference-in-differences estimate has little to no impact on liquidity (proxied by trading frequency). We look at two proxies for daily liquidity and monthly liquidity in columns 1 and 2, respectively. Second, we estimate equation (2) on the subsample of stocks with high trading frequency, namely all liquid stocks on any given day (columns 3 and 4) and stocks traded during at least 50% of days in a given month (columns 5 and 6). Our core results hold in this selected subsample.

In Appendix Table A.10, 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.3).

Appendix Table A.11 reports estimates from a modified version of equation (2) including the following controls interacted with the post-"J'Accuse" dummy (in addition to firm and trading day fixed effects): sector dummies, admission type, guarantee type (a dummy for stocks guaranteed by the French state), foreign ownership, whether the firm has investments abroad, and the number of outstanding shares. This specification ensures that our difference-in-differences estimator is not picking up differential effects of these variables after "J'Accuse".

Appendix Table A.12 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.

Finally, in Appendix Table A.13, we replicate the baseline estimates from Tables 2 and 3 and then report the corresponding estimates after dropping each of the ten largest sectors one at a time. Some of these sectors, notably banking, mining, and food products, were often singled out by the antisemitic press as being controlled by Jewish capital (Wilson, 2007). Overall, the positive returns associated with Jewish board members after "J'Accuse" do not seem driven by firms in any particular sector.

5.3 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, coverage that revealed the conspiracy against Dreyfus? Extensive work

[15] We further probe this result in Appendix Table A.8. There, we divide daily and monthly returns by the firm-specific standard deviation of returns measured either before "J'Accuse" (in columns 1–2), or after "J'Accuse" (columns 3–4).

Table 4: Stock Returns and Media Coverage

	Daily Returns		Monthly Returns	
	(1)	(2)	(3)	(4)
	(a) *% of Jewish Board Members*			
% Board Members × Media Coverage	0.161*		5.352**	
	(0.086)		(2.551)	
% Board Members × Dreyfusard Coverage		0.489		24.315**
		(0.401)		(11.761)
% Board Members × Anti-Dreyfusard Coverage		-0.229		-17.314
		(0.341)		(10.625)
R^2	0.02	0.02	0.16	0.16
Mean Returns	0.019	0.019	0.416	0.416
Firms	131	131	131	131
Observations	239730	239730	9301	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Media Coverage	0.049*		1.336	
	(0.027)		(0.810)	
Jewish Chairman × Dreyfusard Coverage		0.124		9.253**
		(0.128)		(3.627)
Jewish Chairman × Anti-Dreyfusard Coverage		-0.040		-8.127**
		(0.112)		(3.256)
R^2	0.02	0.02	0.16	0.16
Mean Returns	0.019	0.019	0.416	0.416
Firms	131	131	131	131
Observations	239730	239730	9301	9301

Notes: This table reports estimates from equation (3). The dependent variables are daily returns in columns 1–2 and monthtly returns 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 Chairman of the Board. See Section 3 for details. Media Coverage is defined as the total number of paragraphs (in hundreds) dedicated to the Dreyfus Affair across the following 5 outlets: *Le Siècle*, *Le Petit Journal*, *La Croix*, *L'Aurore*, and *La Libre Parole*. All newspapers are in circulation during the entire 1894-99 period expect *L'Aurore* (circulation begins in October 1897). In columns 2 and 4, Dreyfusard coverage is the total number of paragraphs dedicated to Dreyfus across *Le Siècle* and *L'Aurore*. Anti-Dreyfusard coverage is the number of paragraphs dedicated to Dreyfus across *La Croix*, *Le Petit Journal*, and *La Libre Parole*. 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 two-way clustered by firm and trading day.

by historians suggests that the newspaper press played a decisive role in triggering shifts in public opinion throughout the crisis (Reinach, 1901; Boussel, 1960; Miquel, 2003). The Affair also coincided with a rapid growth of the written press in France: sales of daily newspapers increased from 2.2 million in 1880 to 10 million in 1914 (Noiriel, 2019).

To explore the role of the press in explaining the excess returns from Tables 2 and 3, in Table 4 we report estimates from equation (3). Compared to our baseline specification, here we replace the indicator for trading days after "J'Accuse" with the total coverage of the Dreyfus case on the previous day across five newspapers: *Le Siècle*, *La Croix*, *Le Petit Journal*, *L'Aurore*, and *La Libre Parole*. Our measure of coverage takes the sum of all newspaper paragraphs dedicated to Dreyfus across all outlets—using the average fraction of paragraphs delivers similar results, as we show in Appendix Table A.14. Section 3.3 provides relevant background on each of the five outlets, and Appendix Figure A.3 illustrates the dramatic increase in coverage of the Dreyfus Affair by *Le Siècle* and *La Croix*.[16]

Table 4 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 of Table 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, Table 4 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.

5.4 Ruling out expectations of future discrimination

One potential explanation for our findings thus far is that investors (correctly or incorrectly) 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 or regulations 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 firms with Jewish connections.

While plausible, these mechanisms are unlikely to be driving our results, for the following reasons. First, most firms traded in the Paris Stock Exchange had little exposure to retail or other face-to-face commercial activities. This would have reduced the likelihood of an antisemitic backlash by customers. Second, while the political class was divided in terms of how to resolve the Dreyfus crisis, there was

[16] 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. However, all our estimates are robust to using December 1897 instead of January 1898 as the turning point.

Table 5: Stock Returns of Jewish-Connected Firms After "J'Accuse"

Heterogeneity by Government and Retail Exposure

	Daily Returns			Monthly Returns		
	(1) Baseline	(2) State Gtd.	(3) No Retail	(4) Baseline	(5) State Gtd.	(6) No Retail
	(a) *% of Jewish Board Members*					
% Board Members × Post J'Accuse	0.178**	0.567*	0.174**	4.823**	15.014*	4.696*
	(0.079)	(0.306)	(0.086)	(2.301)	(8.493)	(2.487)
R^2	0.02	0.05	0.02	0.16	0.14	0.16
Mean Returns	0.019	0.012	0.018	0.416	0.217	0.407
Firms	131	29	114	131	25	113
Observations	239730	53070	208620	9301	1775	8023
	(b) *Jewish Chairman of the Board*					
Jewish Chairman × Post J'Accuse	0.059**	0.134*	0.059**	1.559**	3.322	1.548**
	(0.025)	(0.073)	(0.026)	(0.712)	(1.982)	(0.722)
R^2	0.02	0.05	0.02	0.16	0.14	0.16
Mean Returns	0.019	0.012	0.018	0.416	0.217	0.407
Firms	131	29	114	131	25	113
Observations	239730	53070	208620	9301	1775	8023

Notes: This table reports estimates from equation (2). The dependent variables are daily returns in columns 1 to 3 and monthly returns in columns 3 to 6. 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 Chairman of the Board. Columns 1 and 4 reproduce our baseline estimates from Table 2. Columns 2 and 5 look at the subsamble of state-guaranteed firms. Columns 3 and 6 looks at the subsample of firms with no retail activities. 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.

no viable political force advocating for antisemitic economic policies. In 1898, a handful of legislative candidates did run 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) and the group was disbanded in 1901. Our setting in that sense differs from that of Huber et al. (2019), who study the impact of widespread dismissals of Jewish managers after the introduction of antisemitic policies by the Nazi regime from 1933 onwards. Liberal French governments never enacted or even 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.

Third, Figure 1 shows that investors did not respond to the early stages of the Affair by divesting their Jewish-connected assets—the market valuation of these firms did not substantially change during the period before "J'Accuse". While Dreyfus' degradation did cause negative abnormal returns among

Jewish-connected firms (Table 1), this negative effect was short-lived. Notably, the firms with Jewish connections also did not respond to the Dreyfus Affair by changing their board composition to make their connections less salient to investors (Appendix Table A.3).[17]

Nonetheless, we explore this alternative interpretation in Table 5, where we estimate returns for firms that were not exposed to an antisemitic backlash by the state or the market. We estimate equation (2) for two subsamples of interest: state-guaranteed firms and firms with no substantial retail activities. For comparison, columns 1 and 4 replicate the coefficients from columns 1 and 3 of Table 2. We look at daily returns in columns 1 through 3 and monthly returns in columns 4 through 6.

First, we look at a subsample of state-controlled or state-guaranteed firms. These firms would have been sheltered from the threat of adverse government policies since their economic interests were closely intertwined with the state's. Thus, if our key result of positive returns after "J'Accuse" was driven by changing expectations about policies towards Jewish-connected firms, then there should be no effect of the Dreyfus rehabilitation campaign among firms in this subsample.

There are 29 companies and 3 types of firms included in this subset: firms benefitting from a state guarantee, firms operating a government-granted 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 tool was mainly used by the state to incentivize private investment in transportation infrastructure. State-granted (French or foreign) monopolies gave companies exclusive privileges over a commodity or infrastructure project, for example Vichy waters or the Suez Canal. Finally, government appointments of directors (most common among banks) implied *de facto* supervision by the state.

Columns 2 and 5 of Table 5 show that state-controlled or 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, and 3 out of these 4 coefficients are statistically significant. Since these firms maintained close and constant institutional connections with the state throughout the period, the increase in returns they experienced after "J'Accuse" could only have come from changing antisemitic sentiment among investors.

Second, 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.[18] The firms remaining in the sample should have had little exposure to a market backlash via antisemitic customers. However, in column 3 and 6 of Table 5 we again find strong positive effects on returns among this subsample. Overall, Table 5 suggests that the key findings in Tables 2 and 3 are unlikely to be driven by diverging expectations about the market environment faced by Jewish-connected firms.

[17] In addition, Appendix Figure A.4 shows that the early stages of the Affair did not trigger a capital flight away from the Stock Market as a whole. Total market capitalization experienced a substantial drop in late 1895. This mini-crash occurred as a result of a failed raid against the government of the Transvaal (known as the Jameson raid) leading to political upheaval and uncertainty around gold production in South Africa (Van-Helten, 1985).

[18] 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).

Dividends. Another relevant test involves looking at whether the Dreyfus rehabilitation campaign affected the actual (realized) profitability of firms with Jewish connections. Appendix Table A.15 reports 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 difference-in-differences specification measuring the dividends of firms with Jewish connections before and after "J'Accuse". This is analogous to equation (2) except that the regression is now estimated using a dataset at the firm-year level—the level at which dividends are observed. Firms are exposed to the Dreyfus rehabilitation campaign in 1898 and 1899, while the years 1893-1897 are used as comparison years.

We look at two measures of dividends in Appendix Table A.15: log dividends in columns 1 and 2, and dividends as a fraction of the share price in columns 3 and 4; and we report results with and without sector-by-year fixed effects in even-numbered and odd-numbered columns, respectively. Overall, yearly dividends averaged approximately 4% of the share price during this period. Across both measures of dividends and both measures of Jewish connections, we find no evidence that the profitability of Jewish-connected 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.

6 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 sizeable 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 by the state or the market, e.g. because their stocks were state-guaranteed or because they did not have any retail activities, also experienced this increase in returns.

Our preferred interpretation invokes 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, $U \overset{def}{\equiv} -e^{-2\gamma w}$, where γ 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 μ of the population, hold a bias ρ_t^N on the price p_t^N of non-Jewish stocks and ρ_t^J on the price p_t^J of Jewish stocks:

$$\mathbf{p}_t = \begin{pmatrix} p_t^N \\ p_t^J \end{pmatrix}, \quad \boldsymbol{\rho}_t \overset{def}{\equiv} \begin{pmatrix} \rho_t^N \\ \rho_t^J \end{pmatrix} \sim \mathcal{N}(\boldsymbol{\rho}^*, \boldsymbol{\Sigma}_\rho), \quad \text{with} \quad \boldsymbol{\rho}^* \overset{def}{\equiv} \begin{pmatrix} \rho^{*N} \\ \rho^{*J} \end{pmatrix}, \quad \boldsymbol{\Sigma}_\rho \overset{def}{\equiv} \begin{bmatrix} \sigma_\rho^{N2} & \sigma_\rho^{NJ} \\ \sigma_\rho^{NJ} & \sigma_\rho^{J2} \end{bmatrix}$$

where the average long-term biases ρ^{*J} and ρ^{*N} are respectively negative and positive, and $\boldsymbol{\Sigma}_\rho$ denotes the variance-covariance matrix between the antisemitic investors' two biases. 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).[19] As described in Appendix B, the model is then solved recursively by maximizing each type of investors' utility in a steady state equilibrium.

Under these assumptions, the main asset pricing equation in the model shows that stock prices deviate from fundamentals because of short-term shocks and long-term biases in antisemitic beliefs, as well as antisemitic trader risk:

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

Equation (P) highlights that asset prices deviate from fundamentals (as earnings are normalized to 1) in three ways. First, the second term captures the effect of idiosyncratic shocks $\boldsymbol{\rho}_t - \boldsymbol{\rho}^*$ on antisemitic investors' beliefs. This effect is as short-lived as the shocks. Second, the long-term inherent bias $\boldsymbol{\rho}^*$ matters even more to asset prices. Since $\rho^{*J} < 0$ and $\rho^{*N} > 0$, Jewish stocks are underpriced relative to other stocks in the long run. Third, the last term embodies the importance of the uncertainty of antisemitic investors's beliefs. This uncertainty 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 $\sigma_\rho^{J2} > \sigma_\rho^{N2}$.

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 ρ_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

[19] List (2004) provides experimental evidence that market participants broadly take into account the distribution of the views and attributes of other participants, which can be highly relevant for understanding discrimination against minorities.

short-lived negative CARs among Jewish-connected firms, whereas positive news in later stages, e.g., Dreyfus' pardon, had similarly short-lived but opposite effect.

Fundamentally different from earlier events that pushed public opinion unequivocally against Dreyfus, the publication of "J'Accuse" was a major disruption that 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, especially on biases towards Jewish stocks, "J'Accuse" increased the volatility of Jewish stocks (in σ_ρ^{J2}), which depressed their stock prices by the last term of equation (**P**). This explains the large dip right after "J'Accuse", as seen in Figure 1.

Following "J'Accuse", the media campaign of rehabilitation started slowly and steadily to reduce inherent antisemitic biases in the long run in ρ^{*J}, causing a gradual appreciation of Jewish stocks relative to non-Jewish ones. It also slowly reduced the uncertainty about antisemitic beliefs, i.e., lowering σ_ρ^{J2}, which further contributes 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 significantly differs from the Beckerian framework in its emphasis on the inherent importance of risks. Because of risk aversion, every investor in our model, from the most to the least antisemitic, would generically choose 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, even among the most extreme ones, would induce all investors to re-optimize their portfolios, which will eventually affect 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).[20]

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

[20]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 become important, as in our model of discrimination in the financial market, segregation is no longer a generic possibility.

under-priced because of the volatility of biases (the last term in equation (P)), 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. In our data, the gradual pace of debiasing (illustrated by the long period during which Jewish-connected firms experienced excess returns) underlines the potential resilience of discriminatory beliefs in financial markets.

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 a furious outburst of antisemitism, then polarized French society after evidence about the miscarriage of justice began to emerge. Revelations about the conspiracy against Dreyfus exposed the deep entrenchment of antisemitism within all spheres of French society. We show that the stocks of firms with Jewish connections yielded excess returns during this rehabilitation campaign. To the best of our knowledge, this is the first successful attempt to uncover evidence of rents from discrimination in financial markets. The existence of such rents is essential to trigger the competitive dynamics at the core of neoclassical discrimination theory: without investors being able to arbitrage away discriminatory attitudes, market competition cannot act as a positive force in reducing discrimination.

However, the uncertainty surrounding discriminatory beliefs in the market means that arbitraging against discriminators is fundamentally risky. We hypothesize that changing attitudes in society after the publication of "J'Accuse" did encourage some arbitrage and enabled some investors to capture the rents from discrimination. Our conceptual framework illustrates how two competing forces may have affected the returns of Jewish-connected firms during the Dreyfus Affair: revelations about the miscarriage of justice debiased 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 throughout the course of the Affair. 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.

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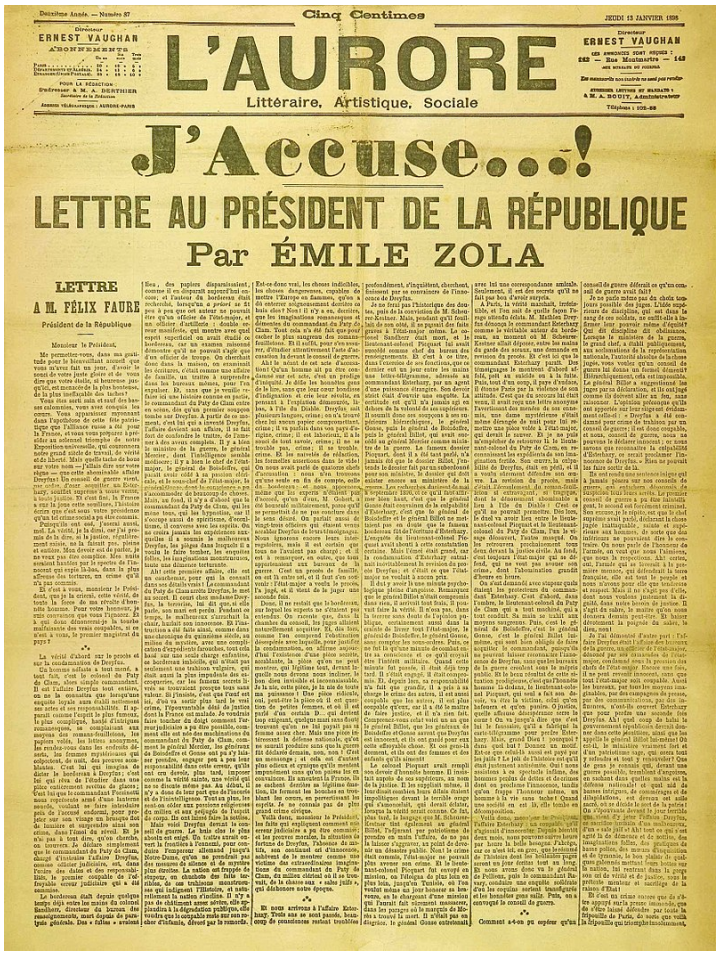
A Additional Empirical Results

Figures

Figure A.1: Coverage of the Dreyfus Affair in Mainstream Media



(a) "The Traitor": Degradation of Dreyfus
January 1895



(b) "J'Accuse"
13 January 1898

Figure A.2: Antisemitic Coverage of the Dreyfus Affair



LA LIBRE PAROLE

La France aux Français !

Directeur : EDOUARD DRUMONT

Le Traître condamné

Dix ans de Détention et la Dégradation

A BAS LES JUIFS !

VIVE L'ARMÉE !

LA CONDAMNATION

LA DÉGRADATION

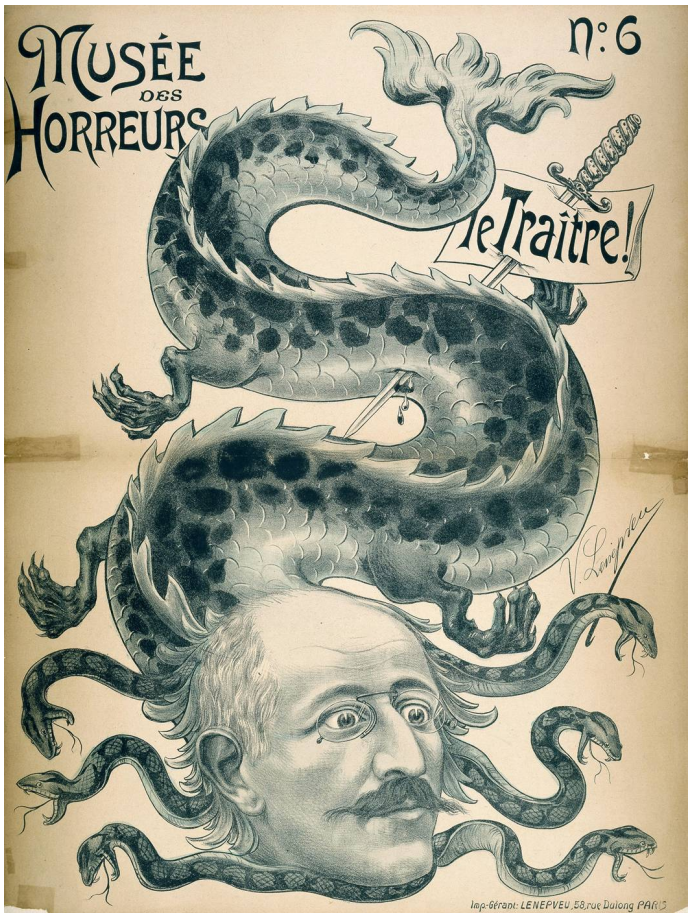
Démission !

Au Conseil de guerre

MANIFESTE

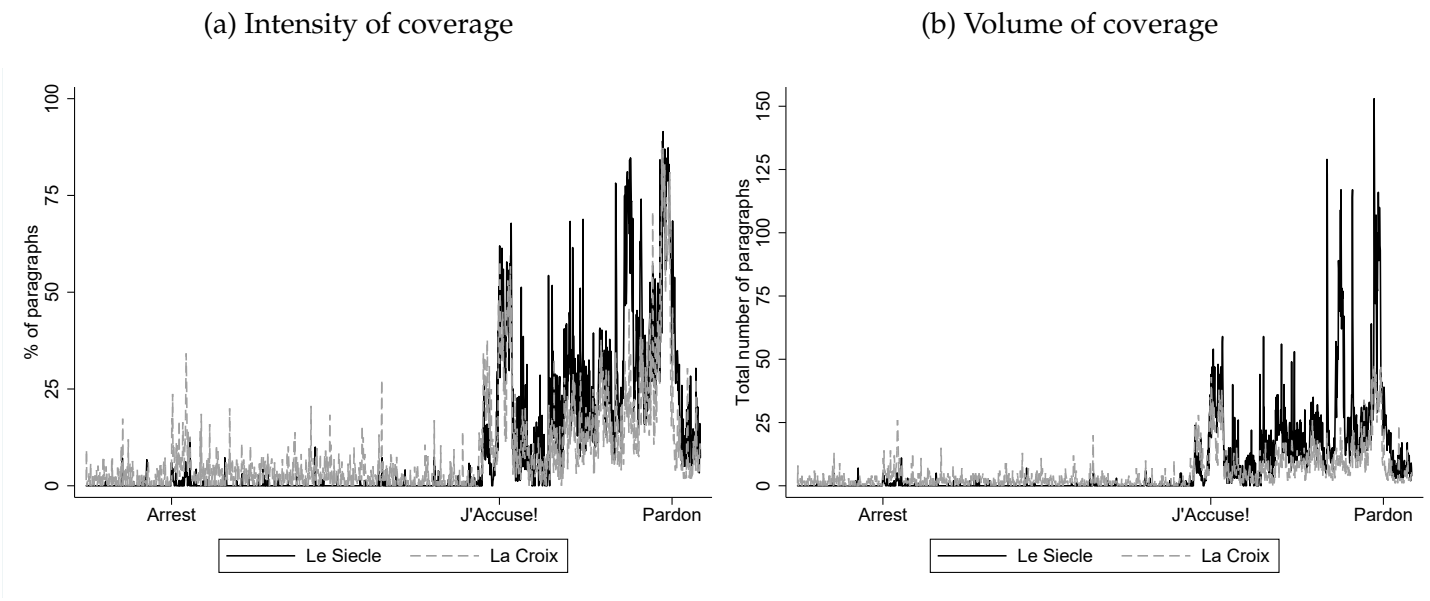
Qui Vive ? France !

(a) Antisemitic Front Page by *La Libre Parole*



(b) Antisemitic Caricature

Figure A.3: Media Coverage of the Dreyfus Affair (1894 - 1899)



Notes: This figure reports the average fraction of paragraphs (panel a) and the total number of paragraphs (panel b) dedicated to the Dreyfus Affair in *Le Siècle* and *La Croix*, the two newspapers with the largest readership on each side of the political spectrum. See Section 3 for details.

Figure A.4: Market Capitalization in the Paris Stock Exchange (1894 - 1899)



Notes: This figure reports the total market capitalization of the Paris Stock Exchange between January 2, 1894 and December 30, 1899. The first vertical dashed grey line indicates the first news of Dreyfus' arrest on November 2, 1894. The second vertical dashed grey line indicates the publication of "J'Accuse" on January 13, 1898. The mini-crash in late 1895 was caused by political upheaval and uncertainty around gold production in South Africa (Van-Helten, 1985).

Tables

Table A.1: Summary Statistics (1894-1899)

	Mean	SD	N
Financial data			
Liquidity (traded on any day)	0.685	0.465	239,730
Stock price (Fr.)	772.478	736.18	239,730
Daily returns	0.019	1.489	239,730
Daily value growth	0.023	1.862	239,730
Monthly returns	0.416	6.554	9,301
Monthly value growth	0.552	8.427	9,301
Market Capitalization (Million Fr.)	91.651	222.261	239,730
Number of shares	99,257.5	154,000	239,730
Capital (Nominal, Million Fr.)	45.823	75.811	239,730
Market-to-Book Ratio	2.603	7.489	239,730
Government guarantee	0.221	0.415	239,730
Headquarters abroad	0.165	0.372	239,730
Board Composition			
Board Size	9.89	4.93	239,730
Number of Jewish Board Members	0.603	0.915	239,730
% Jewish Board Members	0.067	0.11	239,730
Jewish Chairman of the Board	0.155	0.366	239,730
% Jewish Board Members (Lévy list)	0.104	0.132	239,730
Media Coverage			
Media coverage before J'accuse (# paragraphs)	7.76	13.0	160,680
Media coverage after J'accuse (# paragraphs)	84.75	70.09	77,870
Dreyfusard coverage before J'accuse	0.98	4.95	160,680
Dreyfusard coverage after J'accuse	43.98	40.16	77,870
Anti-Dreyfusard coverage before J'accuse	6.78	9.10	160,680
Anti-Dreyfusard coverage after J'accuse	40.77	34.16	77,870

Notes: This table reports summary statistics from our financial data, data on Jewish connections, and data on newspaper coverage. See Section 3 for details. Jewish connections in the board of directors are measured using the Grange (2016) list unless otherwise indicated.

Table A.2: Sectors and Characteristics of Firms with Jewish Connections (1894-1899)

	Firms (1)	**% Board Members** (2)	**Jewish CEO** (3)
Sector		**(a) Jewish Connections by Sector**	
Railways	26	0.078	0.289
Banking	22	0.044	0.178
Mining	19	0.056	0.068
Gas/Electricity	12	0.177	0.386
Insurance/Real Estate	11	0.039	0.091
Iron/Heavy Industry	10	0.012	0.080
Transports	10	0.051	0.149
Food, Liquors & Tobacco	7	0.056	0.143
Water	5	0.087	0
Telephone & Telegraphs	3	0.057	0
Docks/Warehouse	2	0.033	0
Media	2	0.053	0
Other	11	0.083	0
Total (average)	140	0.067	0.155
St. Dev.		(0.111)	(0.362)
Q1		0	0
Median		0	0
Q3		0.111	0
		(b) Firm Characteristics and Jewish Connections	
Liquidity (traded on any day)	0.69	-0.106	-0.017
		(0.18)	(0.05)
Stock price (Fr.)	763.55	9.348	-211.686
		(601.45)	(160.61)
Daily returns	0.02	-0.026	0.011
		(0.02)	(0.01)
Market Capitalization (Million Fr.)	87.04	-3.937	-4.993
		(107.66)	(59.26)
Number of shares	98.22	140.623	52.112
		(141.2)	(49.9)
Capital (Nominal, Million Fr.)	43.99	66.353	28.621
		(69.39)	(24.14)
Market-to-book ratio	2.56	-3.809	-1.655**
		(3.38)	(0.78)
Government guarantee	0.18	0.054	0.102
		(0.29)	(0.11)
Headquarters abroad	0.15	0.798**	0.42***
		(0.4)	(0.12)
Board Size	9.86	-2.224	-.405
		(2.97)	(1.19)

Notes: Panel (a) reports descriptive statistics on Jewish board membership across all sectors in our data. Panel (b) reports the coefficients and standard errors from OLS regressions of the form: $y_i = \alpha + \beta JewishBoardMembers_i + \varepsilon_i$, where Jewish connections are measured as the fraction of Jewish board members (column 2), a dummy for firms with at least one Jewish board member (column 3), or a dummy for firms with a Jewish board chairman (column 4). The sample averages differ slightly from those in 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.

Table A.3: Firm Board Changes during the Dreyfus Affair

	% Board Members		Jewish Chairman		$\geq$ 1 Board Member	
	(1)	(2)	(3)	(4)	(5)	(6)
1895	-0.001	-0.000	0.002	0.001	0.008	0.008
	(0.003)	(0.003)	(0.012)	(0.012)	(0.011)	(0.009)
1896	0.001	-0.000	0.001	-0.001	-0.002	-0.000
	(0.003)	(0.003)	(0.016)	(0.015)	(0.013)	(0.012)
1897	-0.001	-0.001	-0.002	-0.001	-0.011	-0.007
	(0.003)	(0.003)	(0.012)	(0.012)	(0.011)	(0.009)
1898	-0.001	-0.001	-0.002	-0.001	-0.011	-0.007
	(0.003)	(0.003)	(0.012)	(0.012)	(0.011)	(0.009)
Constant	0.067***	0.067***	0.155***	0.155***	0.395***	0.393***
	(0.009)	(0.001)	(0.029)	(0.003)	(0.041)	(0.002)
R^2	0.00	0.93	0.00	0.85	0.00	0.95
Mean Dep Var	0.067	0.067	0.155	0.155	0.392	0.392
Firm Fixed Effects		✓		✓		✓
Firms	140	140	140	140	140	140
Observations	816	816	814	814	816	816

Notes: This table reports estimates from the following specification: $y_{it} = \sum_t \beta_t Year_t + \delta_i + \varepsilon_{it}$, where y_{it} is a measure of Jewish board membership for firm i in year t. We report results with and without the firm fixed effects δ_i. The constant indicates the level of Jewish connections as of 1894.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

Table A.4: Cumulative Abnormal Returns: Alternative Measures of Jewish Connections

	January 5, 1895 Degradation of Dreyfus (1)	January 13, 1898 J'Accuse (2)	June 22, 1899 Waldeck-Rousseau Cabinet (3)	September 19, 1899 Pardon of Dreyfus (4)
% Jewish Board Members	-4.524***	-1.891	6.473**	2.499**
	(1.507)	(1.484)	(3.099)	(1.202)
% Board Members (Lévy list)	-4.537***	-0.071	5.285**	1.500
	(1.522)	(1.510)	(2.275)	(1.148)
Jewish Board Chairman	-0.490	-0.407	2.525**	0.965
	(0.524)	(0.419)	(1.090)	(0.671)

Notes: This table reports estimates from equation (1). Each cell reports the coefficient of interest (β) estimated from a separate regression. 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 Dreyfus' arrest on November 2, 1894. In the top panel, Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). See Section 3 for details. In the second panel, we compute the fraction of Jewish board members based on the alternative Lévy (1960) list. The third panel looks at firms with a Jewish CEO. All regressions control for sector dummies, type of admission in the Paris Stock Exchange, guarantee type, whether the firm has investments abroad, foreign ownership, and the number of outstanding shares.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table A.5: Cumulative Abnormal Returns: Robustness

All Episodes, Alternative Specifications

	Abnormal Returns		**Cumulative Abnormal Returns**			
	1-factor	3-factor	1-factor [0,2]	3-factor [0,2]	1-factor [-1,1]	3-factor [-1,1]
	(1)	(2)	(3)	(4)	(5)	(6)
Dreyfus' Arrest	0.151	-0.035	1.608	1.455	1.321	0.861
November 2, 1894	(0.740)	(0.823)	(1.017)	(1.064)	(1.035)	(1.165)
Dreyfus found guilty	-0.029	-0.112	1.281	0.801	0.377	-0.436
December 22, 1894	(0.988)	(0.990)	(1.428)	(1.564)	(1.384)	(1.550)
Degradation of Dreyfus	-2.933*	-2.705*	-4.524***	-4.713***	-3.670**	-3.703**
January 5, 1895	(1.577)	(1.523)	(1.507)	(1.480)	(1.591)	(1.569)
J'Accuse...!	-0.682	-0.196	-1.891	-0.667	-0.411	0.027
January 13, 1898	(0.550)	(0.705)	(1.484)	(1.731)	(1.249)	(1.331)
Suicide of Colonel Henry	-1.006	-0.759	-1.100	-0.965	-0.126	0.004
August 31, 1898	(2.055)	(2.169)	(1.982)	(2.550)	(2.140)	(2.422)
Dreyfus granted new trial	0.124	-0.224	0.507	-1.106	-1.185	-2.141
October 29, 1898	(0.739)	(0.837)	(1.362)	(1.804)	(1.370)	(1.900)
Appeals Court overturns 1894 verdict	-0.978	-1.004	-0.781	-1.488	0.916	0.502
June 3, 1899	(0.740)	(0.777)	(1.120)	(1.703)	(1.572)	(1.883)
Presidential Pardon	0.372	-0.198	2.499**	1.699	0.846	0.464
September 19, 1899	(0.821)	(0.591)	(1.202)	(1.137)	(1.363)	(1.432)
N	137	137	137	137	137	137

Notes: This table reports estimates from equation (1). Each cell reports the coefficient of interest (β) estimated from a separate regression. All regressions control for sector dummies, type of admission in the Paris Stock Exchange, guarantee type, whether the firm has investments abroad, foreign ownership, and the number of outstanding shares. The dependent variables are abnormal returns in columns 1–2 and cumulative abnormal returns in columns 3-6, summed over a [0,2] window in columns 3–4, and over a [-1,1] window in columns 5-6) around each event. Firm-specific betas are estimated in a [-300,-60] estimation window before Dreyfus' arrest (November 2, 1894) using a 1-factor model in odd-numbered columns, and a 3-factor model in even-numbered columns. The 3-factor model 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. Jewish connections are measured as the fraction of Jewish board members based on Grange (2016). See Section 3 for details.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table A.6: Cumulative Abnormal Returns Around Government Changes

	Abnormal Returns		Cumulative Abnormal Returns			
	1-factor	3-factor	1-factor [0,2]	3-factor [0,2]	1-factor [-1,1]	3-factor [-1,1]
	(1)	(2)	(3)	(4)	(5)	(6)
Ribot	-2.416	-2.491	-2.120	-2.153	-2.329	-1.994
January 26, 1895	(1.801)	(1.799)	(2.020)	(2.011)	(1.691)	(1.699)
Bourgeois	-0.569	-0.992	0.232	0.119	0.715	0.442
November 1, 1895	(1.009)	(1.153)	(2.021)	(2.027)	(1.608)	(1.565)
Méline	-0.444	-0.347	1.191	0.868	1.480	1.899
April 29, 1896	(0.541)	(0.567)	(1.084)	(1.174)	(2.075)	(2.220)
Anti-Dreyfusard						
Brisson	-0.711	0.155	1.762	2.580	0.983	1.252
June 28, 1898	(0.768)	(0.997)	(1.603)	(2.142)	(1.595)	(1.962)
Dreyfusard						
Dupuy II	-0.342	-0.883	-0.680	-1.810	0.507	-1.106
October 31, 1898	(1.051)	(1.253)	(1.350)	(1.654)	(1.362)	(1.804)
Anti-Dreyfusard						
Waldeck-Rousseau	6.989**	5.021	6.473**	4.216	6.241**	4.290
June 22, 1899	(3.434)	(3.371)	(3.099)	(3.186)	(3.142)	(3.160)
Dreyfusard						
N	137	137	137	137	137	137

Notes: This table reports estimates from equation (1). Each cell reports the coefficient of interest (β) estimated from a separate regression. All regressions control for sector dummies, type of admission in the Paris Stock Exchange, guarantee type, whether the firm has investments abroad, foreign ownership, and the number of outstanding shares. The dependent variables are abnormal returns in columns 1–2 and cumulative abnormal returns in columns 3-6, summed over a [0,2] window in columns 3–4, and over a [-1,1] window in columns 5-6) around each event. Firm-specific betas are estimated in a [-300,-60] estimation window before Dreyfus' arrest (November 2, 1894) using a 1-factor model in odd-numbered columns, and a 3-factor model in even-numbered columns. The 3-factor model 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. Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). See Section 3 for details.

* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors in parentheses.

Table A.7: Effects on Volatility: Non-Monotonicity

	Daily Volatility		**Monthly Volatility**	
	(1)	(2)	(3)	(4)
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	5.944	8.675**	2.468	7.689*
	(3.861)	(3.878)	(2.413)	(4.351)
DiD × (Time since J'Accuse)	-0.003		-0.018	
	(0.005)		(0.022)	
DiD × (Time since J'Accuse) × 1898		-0.023**		-0.069*
		(0.010)		(0.041)
DiD × (Time since J'Accuse) × 1899		-0.007		-0.062*
		(0.005)		(0.037)
R^2	0.03	0.03	0.49	0.49
Mean Returns	2.217	2.217	1.003	1.003
Firms	131	131	131	131
Observations	239730	239730	9432	9432
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	3.334*	3.824**	1.534	3.500**
	(1.918)	(1.723)	(1.087)	(1.720)
DiD × (Time since J'Accuse)	-0.004		-0.012	
	(0.003)		(0.009)	
DiD × (Time since J'Accuse) × 1898		-0.007***		-0.031*
		(0.003)		(0.016)
DiD × (Time since J'Accuse) × 1899		-0.005		-0.028*
		(0.003)		(0.015)
R^2	0.03	0.03	0.50	0.50
Mean Returns	2.217	2.217	1.003	1.003
Firms	131	131	131	131
Observations	239730	239730	9432	9432

Notes: This table reports estimates from equation (2) interacted with the time elapsed since "J'Accuse". The dependent variables are squared daily returns in columns 1–2 and the within-month standard deviation of daily returns in columns 3–4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. 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.

Table A.8: Additional Evidence on Risk-Adjusted Returns

	Adjusted by SD pre-J'Accuse		**Adjusted by SD post-J'Accuse**	
	(1) Daily	(2) Monthly	(3) Daily	(4) Monthly
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	0.093**	0.639**	0.083**	0.385
	(0.044)	(0.318)	(0.039)	(0.265)
R^2	0.02	0.21	0.02	0.20
Mean Returns	0.016	0.089	0.019	0.097
Firms	131	131	131	131
Observations	239730	9301	239730	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	0.032**	0.246***	0.026**	0.129
	(0.014)	(0.092)	(0.013)	(0.082)
R^2	0.02	0.21	0.02	0.20
Mean Returns	0.016	0.089	0.019	0.097
Firms	131	131	131	131
Observations	239730	9301	239730	9301

Notes: This table reports estimates from equation (2). The dependent variables are risk-adjusted returns calculated as: in columns 1–2, daily or monthly returns divided by the firm-specific standard deviation of returns for each firm **before** 13 January 1898 (the publication date of "J'Accuse"); in columns 3–4, daily or monthly returns divided by the firm-specific standard deviation of returns for each firm **after** 13 January 1898. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. 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.

Table A.9: Stock Returns and Liquidity

			Stocks with Higher Trading Frequency			
	Liquidity (proxy)		**Daily Returns**		**Monthly Returns**	
	(1) Daily	(2) Monthly	(3) Raw	(4) Risk-Adjusted	Raw	Risk-Adjusted
			(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	0.052	0.055	0.290**	0.252***	8.463**	0.840**
	(0.094)	(0.097)	(0.143)	(0.088)	(3.436)	(0.389)
R^2	0.30	0.66	0.03	0.03	0.21	0.27
Mean Returns	0.685	0.685	0.028	0.024	0.635	0.136
Firms	131	131	131	131	131	131
Observations	239730	9301	164204	164204	6919	6919
			(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	0.034	0.036	0.090**	0.048**	2.402**	0.223**
	(0.024)	(0.025)	(0.038)	(0.024)	(0.928)	(0.108)
R^2	0.30	0.66	0.03	0.03	0.21	0.27
Mean Returns	0.685	0.685	0.028	0.024	0.635	0.136
Firms	131	131	131	131	131	131
Observations	239730	9301	164204	164204	6919	6919

Notes: This table reports estimates from equation (2). In column 1, the liquidity proxy is a binary variable equal to 1 if a stock is traded on a given day. In column 2, the liquidity proxy is the average fraction of days during which a firm's stock is traded in a given month. In columns 3 through 6, we restrict the sample to stocks with high trading frequency, namely stocks traded on any given day (columns 3 and 4) or stocks traded during at least half the days in a given month (columns 5 and 6)—the same variables as those used in columns 1 and 2. The dependent variables are raw returns in columns 3 and 5 and risk-adjusted returns (defined as in Table 3) in columns 4 and 6. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. See Section 3 for details. All regressions include firm fixed effects and trading day fixed effects. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

Table A.10: Stock Returns: Intent-to-Treat Estimates

	Daily Returns		Monthly Returns	
	(1) Raw	(2) Risk-Adjusted	(3) Raw	(4) Risk-Adjusted
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	0.142*	0.108***	3.873*	0.402
	(0.074)	(0.039)	(2.130)	(0.283)
R^2	0.02	0.02	0.16	0.23
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	0.043*	0.019	1.303**	0.082
	(0.023)	(0.014)	(0.635)	(0.081)
R^2	0.02	0.02	0.16	0.23
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301

Notes: This table reports estimates from equation (2). The dependent variables are raw returns in columns 1 and 3 (defined as in Table 2) and risk-adjusted returns (defined as in Table 3) in columns 2 and 4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016) and measured on November 2, 1894. Panel (b) looks at whether the firm has a Jewish Chairman of the Board on November 2, 1894. See Section 3 for details. All regressions include firm fixed effects and trading day fixed effects.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

Table A.11: Stock Returns: Robustness to Additional Controls

	Daily Returns		Monthly Returns	
	(1) Raw	(2) Risk-Adjusted	(3) Raw	(4) Risk-Adjusted
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	0.144**	0.127***	3.822**	0.404
	(0.068)	(0.039)	(1.876)	(0.257)
R^2	0.02	0.02	0.09	0.13
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post J'Accuse	0.043**	0.032*	1.116*	0.144*
	(0.021)	(0.017)	(0.577)	(0.081)
R^2	0.02	0.02	0.09	0.13
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301

Notes: This table reports estimates from a modified version of equation (2) including sector dummies, admission type, guarantee type, foreign ownership, whether the firm has investments abroad, and outstanding shares interacted with the post-"J'Accuse" dummy. The dependent variables are raw returns in columns 1 and 3 and risk-adjusted returns (defined as in Table 3) in columns 2 and 4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. See Section 3 for details. All regressions include firm fixed effects and trading day fixed effects.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

Table A.12: Stock Returns: Robustness to the Lévy (1960) list

	Daily Returns		Monthly Returns	
	(1) Raw	(2) Risk-Adjusted	(3) Raw	(4) Risk-Adjusted
	(a) *% of Jewish Board Members*			
% Board Members × Post J'Accuse	0.117**	0.085**	2.864*	0.265
	(0.054)	(0.036)	(1.498)	(0.204)
R^2	0.02	0.02	0.16	0.23
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301
	(b) *Jewish Chairman of the Board*			
J-connections*Post J'Accuse	0.059**	0.032**	1.559**	0.166**
	(0.025)	(0.015)	(0.712)	(0.084)
R^2	0.02	0.02	0.16	0.23
Mean Returns	0.019	0.017	0.416	0.091
Firms	131	131	131	131
Observations	239730	239730	9301	9301

Notes: This table reports estimates from equation (2). The dependent variables are raw returns in columns 1 and 3 and risk-adjusted returns (defined as in Table 3) in columns 2 and 4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Lévy (1960). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. See Section 3 for details. All regressions include firm fixed effects and trading day fixed effects. * p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

Table A.13: Stock Returns of Jewish-Connected Firms After "J'Accuse"

Dropping one sector at a time

	Daily Returns		Monthly Returns	
	(1) Raw	(2) Risk-Adjusted	(3) Raw	(4) Risk-Adjusted
	% of Jewish Board Members			
Baseline (Tables 2-3)	0.178**	0.126***	4.823**	0.492*
	(0.079)	(0.041)	(2.301)	(0.278)
Dropping Banks	0.186**	0.143***	5.064**	0.579*
	(0.084)	(0.043)	(2.434)	(0.305)
Dropping Food, Liquors and Tobacco	0.184**	0.135***	4.916**	0.501*
	(0.082)	(0.042)	(2.374)	(0.287)
Dropping French Railways	0.158**	0.110***	4.365**	0.409
	(0.075)	(0.041)	(2.199)	(0.268)
Dropping Colonial/Foreign Railways	0.095*	0.091**	2.486	0.205
	(0.053)	(0.039)	(1.615)	(0.230)
Dropping Gas and Electricity	0.222**	0.122**	5.933**	0.760**
	(0.102)	(0.052)	(2.845)	(0.296)
Dropping Insurance/Real Estate	0.203**	0.144***	5.560**	0.540*
	(0.091)	(0.044)	(2.651)	(0.320)
Dropping Iron/Heavy Industry	0.176**	0.127***	4.803**	0.486*
	(0.080)	(0.042)	(2.331)	(0.281)
Dropping Mining	0.166**	0.120***	4.539*	0.428
	(0.080)	(0.042)	(2.337)	(0.278)
Dropping Transports (Cars/Ocean Liners)	0.183**	0.128***	4.788**	0.477*
	(0.082)	(0.042)	(2.367)	(0.283)
Dropping Water Supply	0.176**	0.130***	4.812**	0.507*
	(0.081)	(0.042)	(2.348)	(0.286)

Notes: This table reports estimates from equation (2) dropping one sector at a time. The dependent variables are raw returns in columns 1 and 3 and risk-adjusted returns (defined as in Table 3) in columns 2 and 4. Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). 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.

Table A.14: Stock Returns and Media Coverage: Robustness

	Daily Returns		Monthly Returns	
	(1)	(2)	(3)	(4)
	(a) *% of Jewish Board Members*			
% Board Members × Media Coverage	0.579*		19.212**	
	(0.294)		(9.142)	
% Board Members × Dreyfusard Coverage		0.638		24.315**
		(0.526)		(11.761)
% Board Members × Anti-Dreyfusard Coverage		-0.217		-17.314
		(0.559)		(10.625)
R^2	0.02	0.02	0.16	0.16
Mean Returns	0.019	0.018	0.416	0.416
Firms	131	131	131	131
Observations	239730	239599	9301	9301
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Media Coverage	0.186*		4.781	
	(0.099)		(2.924)	
Jewish Chairman × Dreyfusard Coverage		0.081		9.253**
		(0.189)		(3.627)
Jewish Chairman × Anti-Dreyfusard Coverage		0.108		-8.127**
		(0.218)		(3.256)
R^2	0.02	0.02	0.16	0.16
Mean Returns	0.019	0.018	0.416	0.416
Firms	131	131	131	131
Observations	239730	239599	9301	9301

Notes: This table reports estimates from equation (3). The dependent variables are daily returns in columns 1–2 and monthtly returns in columns 3–4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. See Section 3 for details. Media Coverage is defined as the average fraction of paragraphs dedicated to the Dreyfus Affair across the following 5 outlets: *Le Siècle*, *Le Petit Journal*, *La Croix*, *L'Aurore*, and *La Libre Parole*. All newspapers are in circulation during the entire 1894-99 period expect *L'Aurore* (circulation begins in October 1897). In columns 2 and 4, Dreyfusard coverage is the fraction of paragraphs dedicated to Dreyfus across *Le Siècle* and *L'Aurore*. Anti-Dreyfusard coverage is the fraction of paragraphs dedicated to Dreyfus across *La Croix*, *Le Petit Journal*, and *La Libre Parole*. 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 two-way clustered by firm and trading day.

Table A.15: Jewish Connections and Firm Dividends

	Log Dividends		**Dividends/Price**	
	(1)	(2)	(3)	(4)
	(a) *% of Jewish Board Members*			
% Board Members × Post-J'Accuse	-0.173	-0.209	0.001	-0.006
	(0.581)	(0.625)	(0.041)	(0.048)
R^2	0.79	0.81	0.44	0.46
Mean Dividends	2.888	2.888	0.042	0.042
Sector*Year Effects		✓		✓
Firms	131	131	131	131
Observations	917	917	917	917
	(b) *Jewish Chairman of the Board*			
Jewish Chairman × Post-J'Accuse	-0.106	-0.084	-0.012	-0.015
	(0.204)	(0.199)	(0.017)	(0.018)
R^2	0.79	0.81	0.44	0.46
Mean Dividends	2.888	2.888	0.042	0.042
Sector*Year Effects		✓		✓
Firms	131	131	131	131
Observations	917	917	917	917

Notes: This table reports estimates from a modified version of equation (2) where the dataset is at the firm-year level and the dependent variable is an annual measure of dividends. We use the log of 1+ raw dividends in columns 1–2 and dividends divided by the average yearly price in columns 3–4. In panel (a), Jewish connections are measured as the fraction of board members with a Jewish origin based on Grange (2016). Panel (b) looks at whether the firm has a Jewish Chairman of the Board. All regressions include firm fixed effects and trading day fixed effects. In columns 2 and 4, we also include sector by year fixed effects.
* p<0.1, ** p<0.05, *** p<0.01. Robust standard errors clustered by firm.

B Model: Formal Derivations and Discussion

This section extends De Long et al.'s (1990) OLG model of noise traders, who hold biased, uncertain beliefs about asset returns, but are otherwise sophisticated in their understanding of the world and how assets are priced. We introduce two types of risky assets, a representative stock of Jewish firms and one of non-Jewish firms. Noise traders in our model hold antisemitic beliefs about returns on those stocks, which are on average excessively optimistic on non-Jewish stocks and excessively pessimistic on Jewish stocks.[1] All traders, antisemitic or not, are risk averse, hence they do not bet everything they own against the other type (which holds incorrect beliefs in their perception), for fear of continued biases in the second period when they need to liquidate their position to consume.[2] Thus, biased beliefs are not arbitraged away simply by waiting until asset prices eventually converge to their perceived true values.

In this context, the uncertainty inherent to antisemitic traders' beliefs (and unrelated to fundamentals) reduces asset prices. Due to the average biases in their beliefs, in comparison with unbiased traders, antisemitic ones will over-invest in non-Jewish stocks and under-invest in Jewish stocks. In particular, Jewish stock prices suffer not only from their biases on average and from specific shocks to the biases, but also from increased volatility in the distribution of those biases. All investors miss out some rent on Jewish stocks; however, debiasing effectively allows investors to better capture that rent.

If antisemitic investors only hold pessimistic biases on Jewish stocks, as in De Long et al. (1990) they will make less returns than unbiased investors, which invites the Beckerian mechanism that those should get weeded out of the market in the long run, and might not have existed before the Affair. The existence of both types of biases allows the possibility that antisemitic investors may on average earn higher returns on non-Jewish stocks than unbiased traders, which could compensate for their lower returns on Jewish stocks, and keep them in the market for a long time. What eventually happens following the rehabilitation campaign is that debiasing reduces that possibility of survival by antisemitic investors.

B.1 Model Setting

We follow the minimal setting in De Long et al. (1990), in which young agents in a 2-period OLG model only choose an investment portfolio in the first period (there is no labor supply, no first-period consumption, no bequest), only to sell it to consume when old in the second period. We also refrain from fundamental risk, so all three assets, including the riskless asset, the Jewish stock J, and the non-Jewish stock N pay exactly the same fixed dividend r in the second period. All investors hold the correct belief over the riskless rate r of the riskless asset (priced as the numeraire), but their beliefs differ for the other two. Antisemitic traders (representing a share μ of the population of investors) hold a bias ρ_t^N on the price p_t^N of non-Jewish stocks and ρ_t^J on the price p_t^J of Jewish stocks:

$$\boldsymbol{\rho}_t \overset{def}{=} \begin{pmatrix} \rho_t^N \\ \rho_t^J \end{pmatrix} \sim \mathcal{N}(\boldsymbol{\rho}^*, \boldsymbol{\Sigma}_\rho), \quad with \quad \boldsymbol{\rho}^* \overset{def}{=} \begin{pmatrix} \rho^{*N} \\ \rho^{*J} \end{pmatrix}, \quad \boldsymbol{\Sigma}_\rho \overset{def}{=} \begin{bmatrix} \sigma_\rho^{N2} & \sigma_\rho^{NJ} \\ \sigma_\rho^{NJ} & \sigma_\rho^{J2} \end{bmatrix}. \tag{B.1}$$

[1] We can understand the source of antisemitic investors' bias as either antisemitic preferences against Jewish firms and their stocks, which can be inherent in their utility function, or biased beliefs about firm performance.

[2] This feature of the OLG model acts as a liquidity shock that limits arbitrage (Vayanos and Wang, 2012).

We expect the average biases ρ^{*J} and ρ^{*N} to be respectively negative and positive (a net bias against Jewish stocks), and the covariance of the two biases σ_ρ^{NJ} to be negative.

Assume that each agent maximizes a utility function that is a constant absolute risk aversion utility function of wealth when old: $U \overset{def}{=} -e^{-2\gamma w}$, where γ is the coefficient of absolute risk aversion, and w is the expected final wealth. As returns are normally distributed, the maximization problem is equivalent to maximizing $\mathbb{E}(U) = \mathbb{E}[w] - \gamma\mathbb{V}[w]$. Denote the unbiased investor's net holdings of Jewish and non-Jewish stocks as λ_t^{uJ} and λ_t^{uN} respectively, and $\boldsymbol{\lambda}^u = \begin{pmatrix} \lambda_t^{uN} \\ \lambda_t^{uJ} \end{pmatrix}$ (those quantities can in principle be either positive or negative). Her investment decision maximizes the following expression:

$$\max_{\boldsymbol{\lambda}_t^u} \left\{ \mathbf{X}_t' \boldsymbol{\lambda}_t^u - \gamma \mathbb{V}_t \left[\mathbf{p}_{t+1}' \boldsymbol{\lambda}^u \right] \right\} = \max_{\lambda_t^{uN}, \lambda_t^{uJ}} \left\{ \lambda_t^{uN} \mathbb{X}_t^N + \lambda_t^{uJ} \mathbb{X}_t^J - \gamma \mathbb{V}_t \left[\mathbf{p}_{t+1}' \boldsymbol{\lambda}^u \right] \right\}, \tag{B.2}$$

given the vector of expected excess returns from investing in each stock $\mathbf{X}_t = \begin{pmatrix} \mathbb{X}_t^N \\ \mathbb{X}_t^J \end{pmatrix} = \begin{pmatrix} r + \mathbb{E}_t p_{t+1}^N - p_t^N(1+r) \\ r + \mathbb{E}_t p_{t+1}^J - p_t^J(1+r) \end{pmatrix}$, and $\mathbb{V}_t \left[\mathbf{p}_{t+1}' \boldsymbol{\lambda}^u \right] = \mathbb{V}_t \left[\lambda_t^{uN} p_{t+1}^N + \lambda_t^{uJ} p_{t+1}^J \right]$ the variance of the portfolio in expectation in t.

Similarly, denote the antisemitic investor's net holdings of Jewish and non-Jewish stocks as λ_t^{aJ} and λ_t^{aN} respectively. Her investment decisions are taken with respect to his biased beliefs, and mimic equations (B.2) except for an additional term from the biases ρ_t^N and ρ_t^J.

$$\max_{\boldsymbol{\lambda}_t^a} \left\{ \mathbf{X}_t' \boldsymbol{\lambda}_t^a - \gamma \mathbb{V}_t \left[\mathbf{p}_{t+1}' \boldsymbol{\lambda}^a \right] + \boldsymbol{\rho}_t' \boldsymbol{\lambda}^a \right\}. \tag{B.3}$$

As the maximands in (B.2) and (B.3) are concave, the solutions are fully characterized by the first order conditions:

$$\begin{array}{rcl} -2\gamma(\mathbb{V}_t \mathbf{p}_{t+1})\boldsymbol{\lambda}_t^u + \mathbf{X}_t & = 0 \\ -2\gamma(\mathbb{V}_t \mathbf{p}_{t+1})\boldsymbol{\lambda}_t^a + \mathbf{X}_t + \boldsymbol{\rho}_t & = 0 \end{array} \Rightarrow \begin{array}{rcl} \boldsymbol{\lambda}_t^u & = & \frac{1}{2\gamma}(\mathbb{V}_t \mathbf{p}_{t+1})^{-1} \mathbf{X}_t \\ \boldsymbol{\lambda}_t^a & = & \frac{1}{2\gamma}(\mathbb{V}_t \mathbf{p}_{t+1})^{-1} (\mathbf{X}_t + \boldsymbol{\rho}_t). \end{array} \tag{B.4}$$

The market clearing condition that $\mu\boldsymbol{\lambda}_t^a + (1-\mu)\boldsymbol{\lambda}_t^u = \begin{pmatrix} 1 \\ 1 \end{pmatrix} \overset{def}{=} \mathbf{1}$ yields the following expression that serves to calculate asset prices:

$$2\gamma(\mathbb{V}_t \mathbf{p}_{t+1})\mathbf{1} = \mathbf{X}_t + \mu\boldsymbol{\rho}_t = \begin{pmatrix} r + \mathbb{E}_t p_{t+1}^N - p_t^N(1+r) + \mu\rho_t^N \\ r + \mathbb{E}_t p_{t+1}^J - p_t^J(1+r) + \mu\rho_t^J \end{pmatrix} \tag{B.5}$$

Following De Long et al. (1990), we consider steady state equilibria such that the unconditional distributions of $\mathbf{p}_t$ remain stationary and independent of t.[3] Taking equation (B.5) one period ahead and

[3] See De Long et al.'s (1990) further discussion (in footnote 5) on the existence and possible uniqueness of stationary equilibria.

take the expectation in t, we obtain:

$$2\gamma(\mathbb{V}_t\mathbf{p}_{t+2})\mathbf{1} = \begin{pmatrix} r + \mathbb{E}_t p^N_{t+2} - \mathbb{E}_t p^N_{t+1}(1+r) + \mu\rho^{*N} \\ r + \mathbb{E}_t p^J_{t+2} - \mathbb{E}_t p^J_{t+1}(1+r) + \mu\rho^{*J} \end{pmatrix} \tag{B.6}$$

Equation (B.6) can be written and solved recursively for $t+1, t+2, t+3\ldots$. Thanks to the equilibrium's stationarity, the solution obtains from equation (B.6) when we set $\mathbb{E}_t\mathbf{p}_{t+1} = \mathbb{E}_t\mathbf{p}_{t+2}$ (and $\mathbb{V}_t\mathbf{p}_{t+2} = \mathbb{E}_t[\mathbb{V}_{t+1}\mathbf{p}_{t+2}] = \mathbb{V}_t\mathbf{p}_{t+1}$):

$$\mathbb{E}_t\mathbf{p}_{t+1} = \mathbf{1} + \frac{\mu}{r}\boldsymbol{\rho}^* - \frac{2\gamma}{r}(\mathbb{V}_t\mathbf{p}_{t+1})\mathbf{1} \tag{B.7}$$

Replacing (B.7) into (B.5), we obtain the following asset price formula:

$$\mathbf{p}_t = \mathbf{1} + \frac{\mu}{1+r}(\boldsymbol{\rho}_t - \boldsymbol{\rho}^*) + \frac{\mu}{r}\boldsymbol{\rho}^* - \frac{2\gamma}{r}(\mathbb{V}_t\mathbf{p}_{t+1})\mathbf{1}. \tag{B.8}$$

To fully describe asset prices, it remains to calculate $\mathbb{V}_t\mathbf{p}_{t+1}$. Since equation (B.8) contains only one stochastic term $\frac{\mu}{1+r}(\boldsymbol{\rho}_t - \boldsymbol{\rho}^*)$ on the right hand side, we obtain:

$$\mathbb{V}_t\mathbf{p}_{t+1} = \mathbb{V}_t\left[\frac{\mu}{1+r}(\boldsymbol{\rho}_t - \boldsymbol{\rho}^*)\right] = \frac{\mu^2}{(1+r)^2}\boldsymbol{\Sigma}_\rho. \tag{B.9}$$

Asset prices can now be expressed in the following formula involving only parameters:

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

B.2 Interpretation

In short, asset prices deviate from fundamentals (as earnings are normalized at 1) by a term dependent on the short-term shock in beliefs $\boldsymbol{\rho}_t - \boldsymbol{\rho}^*$, a term capturing long-term biases $\boldsymbol{\rho}^*$ (with a potentially large multiplier $\frac{1}{r}$), and the last term that captures the effect of the presence of antisemitic investors among risk-averse unbiased investors, which would drive asset prices downward as much as the variances of noises σ^{N2}_ρ and σ^{J2}_ρ.

Equation (P) shows that Jewish stocks are underpriced because of both the long-term and the short-term biases, and non-Jewish stocks are analogously overpriced. Both types are further underpriced because of the existence of uncertain antisemitic beliefs in the market. Reduction in biases would result in less mispricing, compared with fundamentals.

In essence, asset prices in equation (P) are similar to those in De Long et al.'s (1990) case of a single type of risky assets (equation 12), except for the term due to the covariance of belief biases $\frac{2\gamma\mu^2}{r(1+r)^2}\sigma^{NJ}_\rho$. As this covariance is likely negative, the existence of those two classes of Jewish and non-Jewish stocks alleviates the overall effect of antisemitic traders on stock prices.

The paper's empirical findings can be interpreted in light of the price formula in (P). First, let us consider the four major events in Table 1. At the degradation of Alfred Dreyfus, it is likely that antisemitic

traders experience a large, negative shock in ρ^J, resulting in negative CARs among Jewish firms. Similar waves of antisemitism lead to negative market reactions on Jewish stock prices, but they are unlikely persistent and can be quickly reversed when new values of the antisemitic bias ρ_t are drawn.[4] They may only have a lasting negative effect on stock Jewish prices when the shock on belief persists in the long run (in the form of ρ^{J*}) and when the events raised the uncertainty regarding antisemitic beliefs (in σ_ρ^{J2}).

Fundamentally different from the events that pushed public opinion unequivocally against Dreyfus, "J'Accuse" was a major disruption that rattled beliefs in the society. It is thus more similar to a large shock on the variances of the biases, namely a large increase in the variances in $\mathbf{\Sigma}_\rho$. According to (**P**), this would result in a decrease in stock prices, which corresponds to the negative effect on the CARs of Jewish stocks around "J'Accuse" as found in Table 1, albeit the lack of statistical significance.

Following "J'Accuse", the rehabilitation campaign following "J'Accuse" likely had two effects. The first is a significant positive impact on the long-term antisemitic bias ρ^{J*}. During the campaign, news coverage of the Affair by pro-Dreyfus newspapers probably led to improvements in ρ^{J*}, causing a gradual appreciation of Jewish stocks versus non-Jewish ones. Second, the campaign also steadily reduced the uncertainty about antisemitic beliefs (a reduction of σ_ρ^{J2} in comparison with σ_ρ^{N2}), resulting in better relative Jewish stock prices.

The other two major events, namely the formation of the Waldeck-Rousseau government and the pardon of Dreyfus, were also instrumental in significantly reducing uncertainty on the market, especially uncertainty related to antisemitism. Waldeck-Rousseau was specifically tasked to end the Affair, and was well-known also for his pro-Dreyfus stance. The pardon was also long overdue, and sent a strong signal of the end of the polarization of public opinions. Those events can be mapped into a decrease of the variances in $\mathbf{\Sigma}_\rho$ and possibly an improvement in ρ^{J*}, the long-term bias against Jewish firms.[5]

B.3 The Survival of Antisemitic Investors

We have showed that the existence of antisemitic investors can explain stock movements at critical events during the Dreyfus Affair that were otherwise unrelated to the performance of firms with Jewish board members. Friedman (1953) argues that traders with incorrect beliefs must earn lower returns than unbiased traders, and so cannot survive in the market in the long run. In the spirit of De Long et al. (1990), we will show that antisemitic investors need not make lower returns than unbiased ones. In essence, antisemitic investors increase the riskiness of assets. If antisemitic investors concentrate in those assets about which they are overly optimistic, namely non-Jewish stocks, their earnings can be on average higher than those of unbiased investors.

[4] This interpretation comes from the fact that the idiosyncratic belief biases $\boldsymbol{\rho}_t - \boldsymbol{\rho}^*$ are uncorrelated over time. In other words, each period in the OLG model corresponds to a wave of heightened antisemitism beyond the long-term level of antisemitism in $\boldsymbol{\rho}^*$. While this can be relatively short for a "generation" in the OLG model, the important realistic feature of the OLG model lies in the similarity between the second period in the OLG model, in which investors need to liquidate their position to consume, and investors' demand for liquidity in practice. Historically, during this period stock liquidity was rather limited, and it is quite plausible that investors were commonly subject to liquidity shocks.

[5] Remember that this bias is not restricted to investors' inherently incorrect beliefs against Jewish firms, but can also exhibit their beliefs on possible antisemitism in the population. Those two events may debias ρ^{J*} (i.e., pushing it up to zero) by reducing the bias on antisemitism in the population at large.

The difference in earnings between antisemitic and unbiased investors, $\Delta R_{a-u,t}$, can be written as:

$$\Delta R_{a-u,t} = (\boldsymbol{\lambda}_t^a - \boldsymbol{\lambda}_t^u)'\mathbf{X}_t = \frac{1}{2\gamma}\boldsymbol{\rho}_t'(\mathbb{V}_t\mathbf{p}_{t+1})^{-1}\mathbf{X}_t.$$

Replacing equations (B.7) and (B.8) into $\mathbf{X}_t$, we obtain directly the vector of excess returns:

$$\mathbf{X}_t = \frac{2\gamma\mu^2}{(1+r)^2}\boldsymbol{\Sigma}_\rho\mathbf{1} - \mu\boldsymbol{\rho}_t. \tag{B.10}$$

Since $(\mathbb{V}_t\mathbf{p}_{t+1})^{-1} = \frac{(1+r)^2}{\mu^2}\boldsymbol{\Sigma}_\rho^{-1}$, the expected earnings difference between antisemitic and unbiased investors is:

$$\mathbb{E}[\Delta R_{a-u,t}] = \mathbb{E}\left[\frac{1}{2\gamma}\boldsymbol{\rho}_t'\frac{(1+r)^2}{\mu^2}\boldsymbol{\Sigma}_\rho^{-1}\left(\frac{2\gamma\mu^2}{(1+r)^2}\boldsymbol{\Sigma}_\rho\mathbf{1} - \mu\boldsymbol{\rho}_t\right)\right] = \rho^{*N} + \rho^{*J} - \frac{(1+r)^2}{2\gamma\mu}\mathbb{E}\left[\boldsymbol{\rho}_t'\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}_t\right].$$

In the last term, $\mathbb{E}\left[\boldsymbol{\rho}_t'\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}_t\right] = \mathbb{E}\left[\mathbf{tr}(\boldsymbol{\rho}_t'\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}_t)\right] = \mathbb{E}\left[\mathbf{tr}(\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}_t\boldsymbol{\rho}_t')\right] = \mathbf{tr}(\boldsymbol{\Sigma}_\rho^{-1}\mathbb{E}\left[\boldsymbol{\rho}_t\boldsymbol{\rho}_t'\right]) = \mathbf{tr}(\boldsymbol{\Sigma}_\rho^{-1}\left[\boldsymbol{\rho}^*\boldsymbol{\rho}^{*'} + \mathbb{V}\boldsymbol{\rho}_t\right]) = \mathbf{tr}(\boldsymbol{\rho}^{*'}\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}^*) + \mathbf{tr}(\boldsymbol{\Sigma}_\rho^{-1}\mathbb{V}\boldsymbol{\rho}_t) = \boldsymbol{\rho}^{*'}\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}^* + 2$. We thus obtain:

$$\mathbb{E}[\Delta R_{a-u,t}] = \rho^{*N} + \rho^{*J} - \frac{(1+r)^2}{2\gamma\mu}\left[\boldsymbol{\rho}^{*'}\boldsymbol{\Sigma}_\rho^{-1}\boldsymbol{\rho}^* + 2\right]. \tag{B.11}$$

This last equation shows the condition under which antisemitic investors perform on average better than unbiased ones, and therefore can survive in the market in the long run. Concretely, $\mathbb{E}[\Delta R_{a-u,t}] \geq 0$ when the two biases ρ^{*N} and ρ^{*J} sum up positive (i.e., when antisemitic investors are more bullish about non-Jewish stocks than they are bearish about Jewish stocks) and when the last term in equation (B.11) is not too large compared to the biases. This last term is small when the following are large: the absolute risk aversion coefficient γ, the share of antisemitic investors μ, and the variances in $\boldsymbol{\Sigma}$. As risk aversion and the amount of risk raised by the uncertainty of antisemitic beliefs reduce the unbiased investors' willingness to arbitrage, they leave room to the "hold more" effect, manifested in $\rho^{*N} + \rho^{*J}$, according to which biased investors hold more of the risky assets they are bullish about than unbiased investors, and those assets produce net positive excess returns for them in comparison with unbiased investors.[6]

We note that while the rehabilitation campaign has improved Jewish stocks' prices compared with non-Jewish stocks', it does not necessarily worsen antisemitic investors' excess returns (as they become less antisemitic). On the other hand, the reduction of uncertainty due to antisemitic beliefs will allow for more aggressive arbitrage by unbiased ones, which reduces those expected excess returns $\mathbb{E}[\Delta R_{a-u,t}]$.

Finally, in case there are only Jewish stocks that suffer from negatively biased beliefs ($\rho^{*J} < 0$) (similar to the risky assets modeled in De Long et al. 1990), $\mathbb{E}[\Delta R_{a-u,t}]$ will be unambiguously negative, hence antisemitic investors will on average make negative excess returns. The inclusion of non-Jewish stocks permits their survival in the long run.

[6] Apart from this "hold more" effect, De Long et al. (1990) explains the other effects at work in the condition $\mathbb{E}[\Delta R_{a-u,t}] \geq 0$ (pp. 714-15), including Friedman's (1953) effect in the term $-\frac{(1+r)^2}{\gamma\mu}$ that presumably drives out biased investors. Since this effect is mitigated by γ, it may as well be dominated by the "hold more" effect, so antisemitic investors are not weeded out in the long run.

C Data Appendix

Stock Market Data

The stock market data was collected from the *Bulletin de la Cote*, the daily spreadsheets of the Paris Stock Exchange published by the *Compagnie des Agents de Change de Paris* and available from the French National Library at: https://gallica.bnf.fr/ark:/12148/cb32745962x/date. The data includes stock prices, the nominal value of stocks, the number of shares listed for each firm, and the price of French government bonds (namely the *3% Rente*, which we use to calculate the free risk rate). We manually entered all the available data from the *Bulletin de la Cote* for all publicly listed firms (excluding those that were traded less than 20% of days) between 1 January 1894 and 31 December 1899.

Data on yearly dividends was collected from the *Annuaire des Agents de Change de Paris* (stock broker yearbooks) for the years 1893–1900. These volumes were obtained from the *Service des archives économiques et financières* (SAEF) in the Archives of the French Ministry of Finance.

From the *Annuaire des Agents de Change de Paris*, we also collected the following firm-specific information: industrial sectors, type of admission in the Paris Stock Exchange namely stocks traded *au comptant* (spot) or *au comptant et à terme* (spot and forward), and indicators for: firms with investments outside of metropolitan France, firms headquartered outside metropolitan France, firms with capital under a state guarantee, firms with government-appointed board members, and firms operating a government-granted monopoly (*monopole d'exploitation*). When this information was missing for particular firms, we complemented it with data from the *Annuaire Chaix* 1893–1901, the yearbooks published by the Imprimerie Chaix (available at: https://catalogue.bnf.fr/ark:/12148/cb32695714c).

Jewish Board Members

The individual (first and last) names of board members were collected from three different sources: the *Annuaire des Agents de Change de Paris*, the *Annuaire Chaix*, and the *Archives du Crédit Agricole*. We use the same sources to collect information on board size.

The primary source of information for the names of Jewish individuals is Cyril Grange, *Une élite parisienne: les familles de la grande bourgeoisie juive (1870-1939)* (CNRS Editions, 2016). We identify a board member as Jewish if the first and last name matches the full name of an individual listed in Grange (2016). As a secondary source, we use Paul Lévy, *Les Noms des Israélites en France: Histoire et Dictionnaire* (Presses Universitaires de France, 1960). This source is available from the French National Library (https://catalogue.bnf.fr/ark:/12148/cb33078695b) and contains an extensive list of all the French surnames with Jewish origins. As Lévy (1960) does not include information on first names, we identify a board member as Jewish if the last name matches a name listed in Lévy (1960).

Media Coverage

We collected data on media coverage of the Dreyfus Affair from two different sources: the French National Library (Gallica), which allows digital access for a subset of newspaper issues during this period,

and Retronews (www.retronews.fr), an online repository requiring subscription.

The data collection focused on five most relevant contemporary newspapers. *Le Siècle*,[1] a mainstream outlet perceived as liberal and close to moderate republicans, started to actively support Dreyfus starting in late 1897. *La Croix*,[2] a Catholic newspaper still in circulation today, was anti-Dreyfusard throughout the period and played a key role in the diffusion of antisemitism (Sorlin, 1967). *L'Aurore*[3] was the leading outlet for the Dreyfusard (pro-Dreyfus) camp and published Zola's "J'Accuse...!" in January 1898. It went into circulation in mid-October 1897. *La Libre Parole*[4] was an antisemitic outlet founded by Edouard Drumont, the leading antisemitic public figure of this era, in 1892. The outlet's only goal was to spread hatred against French Jews. Finally, *Le Petit Journal*[5] was another popular anti-Dreyfusard newspaper, covering national and international news.

Newspapers in this period typically had four pages. The front-page contained a summary of the important news of the day. The second and third page expanded on the headline items and covered regional and international information. The last page contained advertisements. We manually count the number of paragraphs devoted to the Dreyfus Affair both in absolute terms and as a fraction of total coverage, excluding advertisements. The procedure involved two steps. First, we applied a broad filter containing the following words: *Dreyfus*, *capitaine* (captain), *affaire* (affair), *traitre* (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. Second, 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 Dreyfus Affair across the 5 newspapers between January 2, 1894 and December 30, 1899. After "J'Accuse", these newspapers together dedicate 84 paragraphs on average (24% of the total coverage) to Dreyfus. This coverage is approximately equally split between Dreyfusard and anti-Dreyfusard outlets (see Appendix Table A.1).

[1] *Le Siècle* repository on Gallica: https://gallica.bnf.fr/ark:/12148/cb32868136g/date
[2] *La Croix* repository on Gallica: https://gallica.bnf.fr/ark:/12148/cb343631418/date
[3] *L'Aurore* repository on Gallica: https://gallica.bnf.fr/ark:/12148/cb32706846t/date
[4] *La Libre Parole* repository on Gallica: https://gallica.bnf.fr/ark:/12148/cb328070581/date
[5] *Le Petit Journal* repository on Gallica: https://gallica.bnf.fr/ark:/12148/cb32895690j/date