The Value Gap: Europe Cannot Scale*

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Abstract

In 2008, the aggregate market value of U.S.-listed firms was roughly one-third higher than that of European-listed firms. By 2023, it was more than 300% higher, a difference of $34 trillion. The valuation gap is broad-based, rather than concentrated among a few superstar firms, and is driven by differences in firm values, not in the number of listed firms. Across sectors, the gap is larger in R&D-intensive industries and in industries with high returns to scale. European firms' size is strongly correlated with home-country GDP, whereas U.S. firms' size is unrelated to home-state GDP. Smaller European firms also face a particularly large cost-of-capital gap and do not appear able to substitute debt for limited access to equity financing, including venture capital. Taken together, these facts suggest that financial and product-market frictions constrain European firms' ability to scale.

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I. Introduction

In 2008, the aggregate value (market capitalization) of U.S. publicly listed firms exceeded that of European firms by a third. By 2023, the U.S. stock market value exceeded Europe's by more than 300%. The gap has risen from 3 trillion to 34 trillion USD, more than the value of U.S. GDP. This divergence is not a matter of exchange rate movements or the current size of the economy: scaled by GDP, U.S. market capitalization rose from 78% to 177% between 2008 and 2023, while Europe's rose from 43% to just 63%. It is not a reflection of migration by European firms: cross-listing explains little of the gap. Instead, the main driver is the addition of several generations of younger firms with immense growth potential (and, in several cases, the realization of that potential), and with very high valuations. This simply has not happened in Europe.

What explains the lower valuation of European firms? Differences in the number of listed do not explain the value gap, which is entirely driven by an increase in the average value of U.S. firms relative to European firms, i.e. this is a valuation gap. The valuation gap does not reflect sectoral composition—the average within-sector (where sectors are defined using the 4-digit SIC taxonomy) U.S.-Europe gap is 50%, while the unconditional gap is 62%. It is not driven by a handful of superstar firms. Therefore, broad-based valuations differences drive behind the gap. When we examine how firms are valued, we find that the gap in value is largest among younger, and more R&D-intensive firms, and within industries where scale economies are important.[1] The U.S.-Europe gap, in other words, is driven by growth opportunities: in the number, size, and quality of high-growth firms.

Our results are consistent with a technological change that has raised the returns to scale. Recent technologies—information technology, software, and intangible capital—disproportionately reward firms that can grow large (Bloom et al., 2012; Schivardi and Schmitz, 2020; Lashkari et al., 2024; De Ridder, 2024). Firms in the United States have adopted and exploited these technologies faster than European firms. A shift of this kind raises the value of exactly the firms where we find the largest differences: younger, smaller, R&D-intensive firms, and in industries where the winners can scale up quickly.

Why, then, has Europe not kept pace? We argue the constraint is not driven by lack of ideas or skills but rather by the ability to scale businesses. European firms face at least two types of frictions. In product markets, Europe remains fragmented along national lines, so a firm's growth is tethered to its home economy: European sales rise close to one-for-

[1] Since we suspect firms in Europe struggle to take advantage of scale economies, we assess scale in the population of U.S. publibcly listed firms. Our preferred measure relates profitability to size at the indursty level.

one with home-country GDP, a dependence that is absent across U.S. states. In financial markets, high-growth European firms face a higher cost of capital, late-stage equity is scarce, and bank lending does not substitute for the equity that scaling firms require. Debt supply does not compensate, and in fact U.S. firms borrow more. Together these frictions cap the value of growth in Europe—and the value gap reflects these constraints.

Our analysis combines aggregate and firm-level data. We construct aggregate stock market values for the United States and Europe using data from the World Federation of Exchanges and the World Bank, correcting for the fact that many European exchanges are reported at the exchange-group rather than country level. We use Compustat North America and Compustat Global to study firm-level valuations, balance sheets, age, sectoral composition, and entry and exit from 2008 to 2023. Finally, we combine these data with information on corporate credit, bond markets, bank lending, venture capital, interest rates, exchange rates, and macroeconomic aggregates.

We begin by documenting the divergence of total market values. Between 2008 and 2023 the gap in value grew by more than 30 trillion USD: U.S. equity markets quadrupled in value while Europe's rose 70%. Scaling by GDP does not eliminate the gap—U.S. market capitalization went from 78% to 177% of GDP, Europe's only from 43% to 63%. The U.S.-Europe valuation gap is not explained by differences in the number of listed firms, but by an increase in the average market value of U.S. firms relative to European firms.

Several factors appear less important to explaining the gap. It is not driven by European firms relocating to U.S. exchanges. Sectoral composition does not explain the gap. The unconditional gap between U.S. and European firms is close to 62%. The U.S.-Europe valuation gap within 4-digit SIC industries is 50%. The valuation gap is also not driven by firm observables—controlling for firm characteristics increases the U.S.-Europe valuation gap to 77%.

Instead, the strongest patterns concern firm life cycles and industry scale. The valuation difference is largest for younger firms: from 2008 to 2023 the gap widened by 82% for the youngest quintile of firms but only by 20% for the oldest. Growth, or the rate at which it is discounted, is key. The gap is largest in technology-intensive sectors, where the value of future growth is greatest, and it is broad-based rather than the work of a few superstars, largest among smaller firms. These results are all consistent with an inability of Europe to create firms that use new technologies to scale up dramatically. We provide some more direct tests of the scaling hypothesis. We sort industries by the importance of scale by looking at the correlation between the return on assets and firm size. The U.S.-Europe gap is wider in industries with higher returns to scale.

Why can't European firms scale? First, they cannot easily grow beyond local markets.

Despite decades of integration, the sales of European firms remain tied to local economic conditions: a one-percent rise in local GDP is associated with a 0.8% rise in firm sales, even within sectors and within tradable industries. U.S. firms show no such dependence, even in non-tradables. European firms remain, in effect, national firms, their growth bounded by the size of the home market.

Second, financing. The conventional view is that European firms substitute debt for equity, so that lower equity valuations are offset by a debt advantage. They are not. European firms fall behind on both margins. They carry lower leverage than U.S. firms, and they are short of the capital scaling requires: the U.S.-Europe venture capital (VC) gap widens by 60 billion USD between 2008 and 2023, concentrated in late-stage financing, and rooted in a thin supply of long-term capital—U.S. retirement assets are worth 153% of GDP, against Europe's largely pay-as-you-go pensions. Venture capital provides the majority of financing for new, fast-growing enterprises, and with less VC in Europe, the pipeline of new firms to the stock market slows down. Debt does not fill the shortfall: the difference in leverage between U.S. and European firms is roughly identical in 2008 and 2023. In fact, debt markets are most likely more benefiical in the U.S. The dominance of banks in European finncial system means that credit provision is very sensitive to bank health, whereas U.S. credit markets offer private credit and bonds, reducing reliance on bank cycles and creating diversity of supply.

These differences are visible in the cost of capital of indiviudal firms. If the ability to fund new high-growth firms is limited in Europe, the size premium—the cost-of-capital difference between small and large firms—should be larger there. It is. The largest European firms face costs of capital similar to their U.S. peers, but the smallest face implied discount rates above 60%, against under 40% for comparable U.S. firms. The small-firm penalty is about twice as large in Europe as in the United States, and larger still within narrow sectors—precisely where growth depends on outside capital.

Taken together, the U.S.-Europe valuation gap reflects the environment in which firms grow. U.S. firms operate in an integrated market and draw on a deep pool of risk-tolerant capital; they can turn growth opportunities into scale. European firms face barriers on both fronts. The most important consequence is that Europe is short on young firms with very strong growth options, something America produces in large numbers.

Related Literature. This paper relates first to work on productivity differences across firms and countries. Rogoff (2025) documents the the evolution of total stock market capitalization in Europe and in the U.S. Bloom et al. (2012) show that U.S. multinationals obtain larger productivity gains from information technology, while Schivardi and

Schmitz (2020) argue that Southern Europe failed to fully benefit from the IT revolution because of weaker management practices.[2] Reichardt and Reis (2026) show that the productivity gap between U.S. and European firms is driven by the higher efficiency of the U.S. financial market, as well as higher costs of operating across the EU's fragmented market. Using historical data, Kuvshinov and Zimmermann (2022) document that, even before WW2, the U.S. represented a large share of the world's market cap. However, at that point in time, U.S. GDP was 40% of world GDP, whereas now it is 24%, meaning that the valuation gap (scaled by GDP) between the U.S. and Europe is much larger today. They also provide suggestive evidence that this valuation gap is associated with higher business dynamism in the U.S.. We build on this work by shifting the object of analysis from productivity to market valuation. Our results show that the U.S.-Europe valuation gap persists within narrowly defined sectors show that the cost of capital for European firms is substantially larger than the one faced by their U.S. counterparts, particularly for smaller firms.

Second, we contribute to the literature on firm dynamism, firm age, and growth. Young firms play a central role in job creation, innovation, and aggregate reallocation (Haltiwanger et al., 2013). At the same time, business dynamism has declined in the United States and other advanced economies, with falling entry rates, weaker reallocation, and a shrinking role for young firms (Decker et al., 2016; Akcigit and Ates, 2021). We add to this literature by linking business dynamism to equity valuations. The U.S.-Europe valuation gap is largest among young firms and declines as firms age. Because European firms age faster and exhibit lower entry and exit rates, shifts in the age distribution may reinforce the aggregate valuation gap.

Finally, the paper relates to work on financial structure, capital markets, and the financing of innovation. Classic work shows that financial development affects firm growth and that sectors more dependent on external finance grow faster in financially developed economies (King and Levine, 1993; Levine and Zervos, 1998; Rajan and Zingales, 1998; Demirgüç-Kunt and Maksimovic, 2002). A related literature emphasizes the distinctive role of venture capital in financing innovation, professionalizing young firms, and supporting entrepreneurial growth (Gompers and Lerner, 1998; Kortum and Lerner, 2000; Hellmann and Puri, 2000, 2002; Samila and Sorenson, 2011; Chemmanur et al., 2011). This distinction is especially relevant in Europe, where financial systems remain more bank-based and fragmented (Langfield and Pagano, 2016). We contribute by showing

[2] A large literature shows that productivity differences are shaped not only by technology, but also by managerial practices, organizational structure, and the ability of firms to exploit new technologies (Bloom and Van Reenen, 2007; Brynjolfsson and Hitt, 2000; Bloom et al., 2012).

that funding structures help explain the valuation gap: European firms deleverage after 2008, rely more heavily on bank credit, and receive substantially less venture capital, especially at later stages. These patterns suggest that differences in financial structure matter not only for investment and growth, but also for the market capitalization of growth opportunities.

Outline. Section II describes the data and Section III presents some stylized facts. Section IV rules out some explanations for the U.S.-Europe valuation gap. Section V provides evidence for lack of scalability of European firms. Section VI concludes.

II. Data

This section documents the main features of our sample and highlights systematic differences between U.S. and European firms. These differences—in size, valuation, balance sheet composition, and investment—provide the empirical backdrop for the analysis that follows.

II.A Data Sources

We describe the main data sources used in our analysis below.

1. Aggregate Stock Market Value. We construct measures of aggregate stock market value for Europe and the United States by combining data from the World Federation of Exchanges and the World Bank. For the United States, total market value is the sum of the market capitalizations of the New York Stock Exchange and Nasdaq. For Europe, we aggregate the market value of all countries in the European Union, the United Kingdom, Norway, Iceland, and Switzerland.[3] Details on the construction of the European aggregate are provided in Online Appendix A.

2. Firm-level Data. We use firm-level data from Compustat North America (for U.S. firms) and Compustat Global (for European firms). All variables are converted to USD using end-of-year exchange rates. Our sample covers the period from 2008 to 2023 and includes 9,117 U.S. firms and 7,015 European firms. In most of our empirical analysis, we

[3] We define Europe as the following set of countries: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, the United Kingdom, Norway, Switzerland, and Iceland.

exclude firms in finance, real estate, and utilities. For U.S. firms, we include only publicly traded companies.[4]

Our analysis focuses on two key variables: market value and Tobin's Q.[5] In Online Appendix Figure B.1, we show that our sample captures, on average, more than 90 percent of total market capitalization in each region.

We also construct firm- and sector-level measures of technological intensity. At the firm level, we define tech intensity as the ratio of R&D expenditures to total assets. At the sector level, we aggregate R&D expenditures and total assets across firms within each 4-digit SIC sector over the period 2000–2005 and compute the corresponding ratio using U.S. firms only.[6] This yields a time-invariant sector-level measure of technological intensity.

3. Sources of Funding. We assemble country-level data on sources of external finance, distinguishing four categories: (1) equity markets, (2) corporate debt markets (excluding banks), (3) bank credit, and (4) venture capital. Equity market size is obtained from the World Federation of Exchanges and the World Bank. Data on total credit to the non-financial sector and on corporate bond markets are drawn from the BIS.[7] Bank credit is computed as the difference between total credit to the non-financial sector and the size of the corporate bond market. Data on venture capital and on the size of pension funds are obtained from the OECD.

4. Other Data. We complement these data with aggregate macroeconomic variables from the Global Macro Database developed by Müller et al. (2025). We obtain country-level risk-free rates from the World Bank. Data on term premia for the United States are sourced from FRED, while European term premia are obtained from the EUTERPE (European Term Premium Estimation) project.[8] Finally, we obtain data on GDP for U.S.

[4] We include only firms in Compustat North America where the stock ownership code (`stko`) is 0 or 3. We don't impose the same filter for European firms because the variable is not well populated in Compustat Global.

[5] For U.S. firms, market value is computed as the product of the end-of-fiscal-year price (`prcc_f`) and the number of shares outstanding (`csho`). For European firms, shares outstanding are measured using `cshoi` when available and `cshr` otherwise, combined with end-of-year prices from the Security Prices dataset. Tobin's Q is defined as the ratio of the market value of assets—computed as the sum of market value, short-term debt (`dlc`), and long-term debt (`dltt`)—to the book value of assets (`at`). We winsorize the logarithm of Tobin's Q at 1% in each tail, within each region-year pair.

[6] We rely on U.S. firms because R&D coverage in Compustat Global is limited for European firms.

[7] We use BIS Table F4.2 for total credit to the non-financial sector, focusing on non-financial corporations, and Table C5 for corporate bond markets, including all maturities.

[8] For the United States, we use the term premium on a 10-year zero-coupon bond (`THREEFYTP10`). European data are available here.

states from the BEA.

II.B *Summary Statistics*

Our sample covers the period from 2008 to 2023 and includes 9,117 U.S. firms and 7,015 European firms. Entry and exit is substantial in both regions, so the number of firms observed in any given year is lower. Figure I reports the time series of firm counts for both regions.

The number of firms in the U.S. is the same in 2008 and in 2023, although it experiences substantial fluctuations in this time period. Most of the fluctuations are driven by changes in firm entry, as we show in Online Appendix Figure B.3. For example, the increase in the number of firms after 2019 is driven by an increase in IPO activity.[9] There is also a substantial change in sectoral composition, which we measure using the Fama-French 48-industries classification. In 2008, the largest sector (in terms of number of firms) is Petroleum and Natural Gas; in 2023, the largest sector was Pharmaceutical Products.

In contrast, the number of firms in Europe increases from around 3,500 in 2008 to around 4,000 in 2023, roughly the same number of firms as in the U.S.. Therefore, the differences in stock market value between Europe and the U.S. are not driven by the number of firms. In fact, the U.S. may have too few listed firms, as argued by Doidge et al. (2017) and Doidge et al. (2025).

Table I presents summary statistics for U.S. and European firms in 2023. U.S. firms are larger than European firms across all measures of size—total assets, sales, and market capitalization. Figure II shows that the entire distribution of firm size (measured as the logarithm of total assets) is shifted to the right for U.S. firms.

Valuation differences are equally stark. Our preferred measure, Tobin's Q, is substantially higher for U.S. firms.[10] U.S. firms also exhibit higher leverage, hold more cash relative to assets, and invest more in R&D than European firms.

III. THE U.S.-EUROPE VALUE GAP: STYLIZED FACTS

This section establishes three stylized facts about the difference between the value of publicly listed firms in the U.S. and Europe. First, this gap has widened consistently since 2008 and is by now very large. Second, it is primarily an intensive-margin phenomenon,

[9] In 2020, there are 165 IPOs and in 2021 there are 311 IPOs.

[10] Online Appendix Figure B.2 plots the distribution of the logarithm of Tobin's Q for both regions and shows a significantly thicker right tail for U.S. firms.

driven by large changes in firm valuations, and to a smaller extent by the number of listed firms. Third, the divergence is related to new and young firms.

Fact 1: The U.S.-Europe Value Gap is Large and Increasing. Figure III plots the difference between U.S. and European stock market values between 2008 and 2023, using our constructed time-series for stock market valuation. In 2008, the total market cap in Europe was 8.64 trillion USD. The market cap for the U.S. was 11.59 trillion USD. In other words, the U.S. stock market exceeded its European counterpart by about a third, or about 3 trillion USD, equivalent to about 20% of U.S. GDP. By 2023, this gap had widened by 31 trillion USD, reaching 34 trillion USD—an amount larger than total U.S. GDP.[11]

This divergence reflects both rapid growth in U.S. equity markets and anemic growth in Europe. Between 2008 and 2023, U.S. stock market value quadrupled, while the European stock market increased by only 70%—an average annual growth rate of 3.6%.[12]

The widening gap is not driven by differences in aggregate economic activity. When scaling stock market value by GDP (Online Appendix Figure C.3), the divergence remains pronounced. In 2008, European equity markets represented 43% of GDP, compared to 78% in the United States. By 2023, these ratios had risen to 63% in Europe and 177% in the United States.

A potential concern is that European firms may increasingly list in U.S. markets (Pagano et al., 2002; Doidge et al., 2004; Halling et al., 2008). To address this, we reassign firms based on the location of their headquarters, attributing European firms listed in the U.S. to Europe. Online Appendix Figure C.4 shows that neither the incidence nor the valuation of cross-listed firms accounts for the increase in the U.S.-Europe gap.[13]

Finally, we decompose the increase in the U.S.-Europe valuation gap into three components: (i) the value of European firms cross-listed in the United States, (ii) the value of U.S. firms listed on Nasdaq, and (iii) the remainder. Online Appendix Figure C.6 shows that cross-listing explains very little of the rise in the gap. Instead, most of the increase is driven by the surge in the value of U.S. firms listed on Nasdaq. The remaining component also contributes, but much less. The expansion of the valuation gap is therefore primarily a Nasdaq phenomenon rather than the result of European firms relocating their listings to U.S. exchanges.

[11] We obtain similar patterns using Compustat data. Online Appendix Figure C.1 plots the change (in logs) of total stock market value for the U.S. and Europe relative to 2008 and shows a similarly large divergence.

[12] Online Appendix Figure C.2 plots stock market values in levels and shows that the gap begins to widen sharply after 2014, as U.S. valuations rise while European valuations remain stable.

[13] Consistent with this, Online Appendix Figure C.5 shows that the market share of European firms listed in the U.S. has declined relative to total U.S. market capitalization.

Fact 2: The U.S.-Europe Gap is Driven by Their Average Value, Not by the Number of Firms. The valuation gap documented in Figure III can be divided into two components: changes in the average market value of firms (the intensive margin) or changes in the number of firms (the extensive margin). We decompose the change in aggregate market value for region r (U.S. or Europe) between year t and 2008 as

$$\Delta \log \text{Market Value}_{r,t} = \Delta \log \text{Market} \bar{\text{ }}\text{Value}_{r,t} + \Delta \log N_{r,t},$$

where Market Value$_{r,t}$ denotes the average firm value and $N_{r,t}$ the number of listed firms. Figure IV reports the results of this decomposition.

The increase in the U.S.-Europe valuation gap is explained entirely by the intensive margin. The number of listed firms was roughly constant in the U.S. and rose in Europe, as we showed in Figure I. Therefore, the extensive margin component contributes negatively to the evolution of the U.S.-Europe valuation gap. In contrast, all of the increase in the valuation gao is explained by the intensive margin. In fact, if the value of the average U.S. relative to the average European firm had no changed, the U.S.-Europe valuation gap would have declined. Therefore, explaining the U.S.-Europe gap prmarily requires understanding firm values.

The difference in valuations is not driven by a small number of large firms. In Online Appendix Figure C.7, we repeat the decomposition excluding the top 1% of firms by market value in each region-year. The results are unchanged: the rise in the relative value of the average U.S. firm continues to account for all of the increase in the valuation gap.

Fact 3: The U.S.-Europe Gap is Larger for Younger Firms. Having established that the valuation gap is primarily an intensive-margin phenomenon, we next examine how it varies across the firm lifecycle. In particular, we ask whether the increase in the U.S.-Europe valuation gap is concentrated among younger or older firms. To do so, we require a measure of firm age. We proxy for firm age using the number of years since each firm first appears in Compustat.[14]

We begin by splitting firms into age quintiles. To do so, we restrict attention to firms observed in 2008, assign them to age quintiles, and then follow these cohorts over time,

[14] This listing-based measure is standard in the literature (Pástor and Veronesi, 2003). It introduces measurement error relative to true age equal to the firm's pre-listing years of operation. To the extent that this error is not systematically related to whether a firm is in the United States or Europe, it attenuates estimated coefficients toward zero and biases against finding an effect. Because our specifications rely on age quintiles rather than levels, the relevant variation is ordinal; measurement error affects our estimates only insofar as it reclassifies firms across quintile cutoffs, which requires large and systematically signed deviations between listing age and true age.

which allows us to isolate lifecycle effects from cohort composition. We aggregate the data at the region–age-quintile–year level. For each age quintile and each year, we compute the change in the logarithm of the U.S.-Europe valuation gap relative to 2008. Figure V plots these dynamics.

The increase in the valuation gap is substantially larger for younger firms. Between 2008 and 2023, the gap rises by 82% for firms in the youngest quintile, compared to 20% for firms in the oldest quintile—more than a fourfold difference. More generally, the increase in the valuation gap declines with firm age: with the exception of the first two quintiles, younger firms exhibit systematically larger increases than older firms.[15]

IV. Dissecting the Gap

A natural hypothesis is that the valuation gap reflects differential economic performance. This section shows that several variables capturing broad economic differences account for at most a small part of the value gap. We ask, in turn, whether the gap is driven by aggregate fundamentals—current economic activity, interest rates, exchange rates, and risk premia—by sectoral composition, by observable firm characteristics, by technological intensity, or by the rise of superstar firms. Each explains at most a relatively small part of the gap. The valuation gap is not much affected by controls for firm observables such as sales or book assets; and is broad-based across the size distribution rather than confined to a handful of dominant firms. The valuation gap remains large when we control for sectors dummies. The gap is largest in R&D-intensive industries such as pharma.

While many potential explanations for the gap have little or no explanatory power, the cross-sctor differences hint at one key driver of valuation differences: the prevalanece and valuation of firm with very high growth potential. This is an area where the U.S. excels, and capital markets reward this. The next section examines this hypothesis in more detail.

IV.A Aggregate Fundamentals

The increase in the U.S.-Europe valuation gap could reflect changes in aggregate fundamentals, such as economic activity, the cost of capital, or risk premia. To assess this

[15] We plot the average age of European and U.S. firms in Online Appendix Figure C.8. In 2008, the average U.S. firm is older than the average European firm. In contrast, in 2023, there is no difference in the average age between firms in the two regions. As the number of firms in Europe is either stable or declining in this period (Figure I), this suggests that lower entry in Europe is driving the increase in average firm age.

possibility, we estimate the following specification:

$$\text{(1)}\quad \log Y_{r,t} = \gamma_0 \mathrm{US}_r + \gamma_1 \mathrm{US}_r \mathbf{1}\{t \in [2013, 2018]\} + \gamma_2 \mathrm{US}_r \mathbf{1}\{t \geq 2019\} + \beta X_{r,t} + \varepsilon_{r,t},$$

where $Y_{r,t}$ is either the logarithm of stock market value in region r at time t or the ratio of market value to GDP. The vector $X_{r,t}$ includes time-varying controls: the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal and real interest rates, and the term premium.

The coefficient γ_0 captures the U.S.-Europe valuation gap in the baseline period (2008–2012), conditional on controls. The coefficients γ_1 and γ_2 capture changes in the gap in subsequent periods. If the widening of the valuation gap were driven by aggregate fundamentals, the inclusion of the vector of controls $X_{r,t}$ would greatly attenuate these coefficients.

Table II reports the results. The inclusion of aggregate controls does not eliminate the estimated increase in the valuation gap. Comparing columns (1) and (2), the coefficients on γ_1 and γ_2 remain large and statistically significant even after the controls are included. The magnitude remains large: column (1) implies that, after 2019, the U.S. stock market is approximately 165% larger relative to Europe than in the 2008–2012 period.[16]

This result is robust to alternative measures of valuation. When using the ratio of market value to GDP as the dependent variable, the valuation gap remains large and increasing even after controlling for aggregate fundamentals.

Taken together, these findings indicate that changes in aggregate fundamentals do not account for the rise in the U.S.-Europe valuation gap between 2008 and 2023.

IV.B Sectoral Composition and Firm Characteristics

A natural explanation for the U.S.-Europe valuation gap is differences in sectoral composition. If European firms are disproportionately concentrated in low-growth sectors over the 2008–2023 period, the observed gap may reflect composition rather than differences between otherwise comparable firms. To assess this possibility, we estimate the following specification:

$$\text{(2)}\quad \log Q_{i,t} = \lambda_{s(i),t} + \gamma \cdot \mathrm{US}_i + \beta X_{i,t} + \varepsilon_{i,t},$$

[16] Moreover, the explanatory power of aggregate controls is very low. Adding a vector of aggregate controls only increases the R^2 by 5 percentage points, as we can see in column (2).

where $Q_{i,t}$ is Tobin's Q for firm i in year t, and $\lambda_{s(i),t}$ are sector–year fixed effects, where sectors are defined using the 4-digit SIC taxonomy. These fixed effects absorb all sector-level variation in valuations, so that γ identifies the *within-sector* valuation gap between U.S. and European firms. We include a vector of time-varying aggregate controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. If the aggregate valuation gap were driven by sectoral composition or by firm observables, we would expect γ to be close to zero. Standard errors are clustered at the firm level. Table III reports the results.

The valuation gap remains large when measured using Tobin's Q. In column (1), U.S. firms have Q ratios that are, on average, 62% higher than those of European firms. Controlling for sector–year effects amplifies this difference. For instance, within 4-digit SIC sectors, the estimated coefficient is 0.409, implying that a U.S. firm has a Q that is approximately 50% higher than that of an otherwise comparable European firm operating in the same sector at the same time. The fact that the within-sector gap is very similar to the unconditional gap indicates that sectoral composition cannot account for the U.S.-Europe valuation difference.[17]

Including firm observables or aggregate variables as controls does not change our results. In fact, as we shown in column (6), controlling for observables increases the U.S.-Europe valuation gap from 50% to 77%.

We showed in Section III that most of the increase in the U.S.-Europe valuation gap is driven by U.S. firms listed on Nasdaq. This fact suggests that sectors with higher technological intensity should exhibit larger valuation differences. To examine this, we use the measure of tech intensity described in Section II, defined as the sector-level ratio of R&D expenditures to total assets, where sectors are defined according to the Fama-French 48-industry taxonomy. For each year, we split sectors at the cross-sectional median of this measure and classify sectors above the median as high R&D sectors. Table IV reports the results.

The U.S.-Europe valuation gap is larger for high-tech sectors. In column (3), the valuation gap between U.S. and European firms in low-tech sectors is 75% (or 0.562 log points).

[17]In our main analysis, we winsorize Tobin's Q within each region-year at the 1st and 99th percentile. This may reduce the gap between the U.S. and Europe because the firms above the 99th percentile in the U.S. may have a much higher average Q than their European counterparts. We estimate equation (2) where the outcome variable is Tobin's Q winsorized within each year (and using both regions). The results, presented in Online Appendix Table C.1, show that the gap remains largely unchanged.

However, the valuation gap for high-tech sectors is 87%, which is almost 15% larger. This finding is robust to different specifications. If we fully absorb all variation at the sector level with sector-year fixed effects and at the country level, we still find that the U.S.-Europe valuation gap is larger for high-tech sectors.

IV.C Superstars

Having ruled out fundamentals, sectors, and observables, we turn to a final possibility: that the gap is driven by a small number of high-valuation "superstar" firms. To assess this, we examine how the valuation gap varies across the distribution of firm size.

Specifically, for each percentile $\tau \in (0, 1)$ in the distribution of firm size, we compute the difference in average Tobin's Q between the United States and Europe using the pooled sample over the 2008–2023 period. We report results both for the raw distribution of Q and for a within-sector distribution that removes sector–year shocks.[18]

If the valuation gap were entirely driven by superstar firms, we would expect the valuation gap to be close to zero for low values of τ and to increase sharply in the upper tail of the distribution. Figure VI presents the results using either the book value of assets or firm sales as a measure of size.

The gap is a phenomenon of growth firms (firms in the lower end of the sales or asset distribution), not a superstar one. Across both measures of size, and whether we use the raw or the within-sector distribution, the valuation gap is *larger* among growth firms, and we find no evidence that large firms drive it. The natural suspect—a handful of dominant U.S. firms—is the wrong one.

This is exactly the pattern one would expect if the binding constraint is the ability to scale (Draghi, 2024). Smaller firms are the ones that still have to grow, and their value rests on the option to do so. A gap that widens at the bottom of the size distribution therefore points to differences in growth prospects and discount rates, not in current cash flows.

The value gap is concentrated among the firms whose value is future growth: young firms (Section III), technology-intensive sectors, and smaller firms. This is consistent with a difference in the ability of firms to turn growth opportunities into scale. The next section examines that hypothesis in more detail.

[18] Formally, we construct $\tilde{Q}$ as the residual from a regression of Q on sector–year fixed effects using the pooled sample across regions and years.

V. Scaling Frictions and the Valuation Gap

Section IV shows that the value gap is strongest among young, smaller, and technology-intensive firms—the firms whose value is not current cash flow but the option to grow. This section examines why that option is not worth as much in Europe. The answer is a single constraint: European firms are less able to scale growth opportunities into value. Scaling demands two things—reaching a large enough market and financing the expansion to serve it—and a firm blocked on either cannot grow, however good its prospects. European firms are disadvantaged on both.

We build the argument in four steps. First, we test the mechanism head-on: the valuation gap is largest in precisely the industries where scale is most valuable, tying it directly to the returns to becoming large. The remaining steps ask why European firms cannot achieve that scale. Second, they remain tied to local demand—their sales move with the size of the local economy, evidence of barriers to expanding across borders that U.S. firms do not face. Third, they face a funding disadvantage—they deleverage after 2008, lean on bank credit, and receive far less venture capital, especially at the late stages when scaling firms need it most. Fourth, this disadvantage is sharpest exactly where our earlier evidence said it should be: among the smaller, younger firms that must raise external capital to grow, and that face a far steeper cost of capital in Europe than in the United States. Constrained on the demand side, the finance side, or both, European firms are unable to turn growth opportunities into value at the same level of their U.S. counterparts.

V.A Scalability and the Valuation Gap

Some businesses are built to become big; others are not. A software firm or a chip designer can, in principle, serve a whole continent from one location; a regional bank or a local builder cannot. Our evidence so far suggests that the U.S.-Europe gap is largest in industries where scale is important: it is concentrated among young and technology-intensive firms, whose value rests on future expansion rather than current cash flow. If that is right, the gap should be widest in the industries where becoming large is most feasible and most valuable, and narrow where it is not. Economies of scale are particularly large in technology industries (Lashkari et al., 2024; De Ridder, 2024; Shapiro and Varian, 1998). We now test that prediction directly.

To measure the importance of scale, we rely on U.S. firm-level data. For each industry and year, we regress the firm-level return on assets—defined as the ratio of EBITDA to lagged total assets—on the logarithm of total assets.[19] We interpret the coefficient as a proxy for how the return on assets increases with firm scale.[20] Industries where the coefficient is high are industries where increasing scale yields higher returns.

For each year, we rank industries according to the coefficient we obtain. We define an industry as an industry with high scalability if its coefficient is above the cross-sectional median. Similarly, industries with a low scalability are industries with coefficients below the cross-sectional median. We rely on this binary classification rather than a continuous measure to reduce the impact of measurement error in our analysis.

We then estimate the following regression:

$$\log Q_{i,t} = \lambda_{s(i),t} + \mu_{c(i),t} + \gamma \cdot \text{US}_i \times \text{High Returns to Scale}_{s(i),t} + \beta X_{i,t} + \varepsilon_{i,t}, \tag{3}$$

where $Q_{i,t}$ is Tobin's Q for firm i in year t, $\lambda_{s(i),t}$ are sector–year fixed effects, $\mu_{c(i),t}$ are country–year fixed effects, and $X_{i,t}$ are firm and aggregate controls. The sector–year fixed effects absorb common shocks and average valuation differences across industries, while the country–year fixed effects absorb aggregate differences across countries over time. The coefficient of interest is γ, which asks whether the U.S.-Europe valuation gap is larger in industries where the returns to scale are higher. If European firms face greater barriers to scaling, then the valuation advantage of U.S. firms should be larger in high-scaling industries, implying $\gamma > 0$. Results are reported in Table V.

The U.S.-Europe valuation gap is more pronounced in sectors with high returns to scale. In column (1), the U.S.-Europe valuation gap is 42% for industries with low returns to scale and 55%–roughly a third larger—for industries with high returns to scale. This finding is robust to a richer set of fixed effects. In column (4), we include both sector-year and country-year fixed effects to fully absorb country and sector-level shocks. With this set of fixed effects, the U.S.-Europe valuation gap is 14 percentage points larger in industries with high returns to scale relative to industries with low returns to scale.

Our results are also robust to different classifications of industries. We can compute the industry-level proxy for returns to scale for each industry, pooling all years together. As we show in Online Appendix Table C.2, this alternative classification yields qualitatively identical findings. We can also use the U.S. firm size distribution to compute a measure of returns to scale. For each industry-year pair, we compute the maximum of

[19]Using the U.S. firm-size distribution rather than the European one, or a pooled distribution, avoids mechanically relating the measure to European valuations. The key identifying assumption is that the ranking of industries is universal.

[20]We define industries using the Fama-French 48-industry classification. We choose a coarser sectoral classification, opposed to the SIC classification, to ensure we have enough observations per industry-year.

the market value. We then standardize this measure across industries - for each year, we subtract the cross-sectional mean and divide by the cross-sectional standard deviation. As shown in Online Appendix C.3, industries with a higher measure of returns to scale exhibit a larger valuation gap.

Our findings suggest that the inability of European firms to scale is an important driver of their lower valuations relative to US firms. The evidence does not point to an absence of growth opportunities, but to a reduced ability to capitalize them. Frictions that limit expansion across markets and constrain access to external finance reduce the growth that investors expect firms to achieve. These lower expected growth rates are then reflected in lower market valuations and, consequently, lower Tobin's Q.

V.B Product Market Fragmentation and Local Demand Dependence

Having established that the gap is about the capacity to scale, we turn to why European firms lack it. The first barrier is market fragmentation. If European firms face greater barriers to expanding across countries, their growth opportunities remain tightly linked to local demand conditions.[21] This would limit their ability to scale and reduce their valuations. To assess this mechanism, we examine the relationship between firm sales and the size of the local economy. In particular, we test whether abfirm's sales are more strongly correlated with country-level GDP in Europe than with state-level GDP in the United States.

We estimate the following specification separately for European and U.S. firms:

$$\log \mathrm{Sales}_{i,t} = \alpha_{c(i),s(i)} + \lambda_{s(i),t} + \beta \log \mathrm{GDP}_{c(i),t} + \varepsilon_{i,t}, \tag{4}$$

where $\mathrm{Sales}_{i,t}$ denotes firm sales, and $\mathrm{GDP}_{c(i),t}$ is the GDP of the country (for European firms) or state (for U.S. firms) in which firm i is headquartered. The specification includes country–industry (or state–industry) fixed effects $\alpha_{c(i),s(i)}$ and industry–year fixed effects $\lambda_{s(i),t}$. The coefficient β captures the sensitivity of firm sales to local economic conditions, after controlling for common sectoral shocks and time-invariant differences in industrial composition. Table VII reports the results.

Our estimates are not intended to capture causal effects. Rather, β measures the extent to which firm sales co-move with local economic activity. Under full market integration, firms would be able to decouple their sales from local demand, implying $\beta \approx 0$.

[21] For example, Draghi (2024), citing estimates by Arnold et al. (2025), argues that internal EU barriers are equivalent to a 45% tariff on goods and a 110% tariff on services.

A positive β therefore indicates that firms remain exposed to local demand conditions, consistent with barriers to geographic expansion.

We find strong evidence of local market dependence in Europe. In our preferred specification (column (3) of Panel A), a 1 percent increase in local GDP is associated with a 0.8 percent increase in firm sales. This relationship remains economically large even in tradable sectors. For tradable sectors, a 1 percent increase in GDP is associated with a 0.46 percent increase in firm sales, even after controlling for Europe-wide GDP, providing evidence of limited cross-country integration.[22]

By contrast, we find no evidence of local market dependence in the United States. Firm sales are uncorrelated with state-level GDP, even in non-tradable sectors. These patterns also hold when using assets instead of sales, as shown in Online Appendix Table C.4.

Taken together, European firms are far more tightly tied to local demand than U.S. firms, consistent with real barriers to expanding across borders. This is one half of a broader integration failure: a ceiling on how far a European firm can grow on the demand side.

V.C Capital Market Fragmentation and the Funding Disadvantage

Reaching large markets is only half of scaling; a firm that can sell across Europe still cannot grow if it cannot finance the expansion. Here European firms face a second, compounding disadvantage. The conventional view holds that this need not matter for valuations: the United States is equity-based and Europe more debt-based, so weaker equity markets in Europe should be offset by heavier reliance on debt. We show that this is not the case. European firms do not substitute debt for equity—they fall behind on both—and they are short of precisely the financing that scaling requires: patient, risk-tolerant capital for young, high-growth firms.

The clearest shortfall is in risk capital. Venture capital, the form of financing most directly tied to scaling young firms, is far more developed in the United States: in 2023, U.S. venture capital investment reaches 0.5% of GDP, while even the most active European country, Denmark, reaches only 0.15% (Figure IX). And the shortfall is starkest exactly where it matters most. Later-stage financing—the capital a firm needs to grow from promising to large—accounts for most of the divergence: between 2008 and 2023, the U.S.-Europe venture capital gap widens by 60 billion USD, driven primarily by late-

[22]We define tradable and nontradable sectors following the classification in Mian and Sufi (2014). Some of the SIC sectors are not classified as either tradable or nontradable, and therefore the number of observations in columns 4 and 5 do not add up to the number of observations in column 3.

stage investment (Figure X). European firms are most constrained precisely when their expansion opportunities are largest.

This shortfall has a structural root in the supply of long-term capital, as shown by Scharfstein (2018). The United States holds roughly 45 trillion USD in retirement assets (153% of GDP), much of it in defined-contribution plans with significant equity exposure. Most European countries instead rely on pay-as-you-go public pensions with small funded components, leaving a structurally smaller pool of long-duration, risk-tolerant capital—the capital best suited to financing high-growth firms and late-stage venture investment.

Nor can European firms make up the shortfall by borrowing. If equity were merely dear in Europe while debt stayed cheap, firms would simply lever up; instead they do the reverse. In 2008, asset-weighted leverage is 0.30 in the U.S. and 0.29 in Europe. However, by 2023, the U.S.-Europe leverage gap had increased from 1 percentage point to 3 percentage points, as we show in Figure VII. This decline is similar to the one documented by Kalemli-Özcan et al. (2022), who show that, after 2008, European firms were forced into a prolonged period of balance-sheet repair, while U.S. firms were able to increase their borrowing.

This retreat is not a composition effect. We estimate

$$\text{Leverage}_{i,t} = \lambda_{s(i),t} + \beta X_{i,t} + \gamma \times \text{US}_i + \varepsilon_{i,t}, \tag{5}$$

where the outcome is firm-level leverage, $\lambda_{s(i),t}$ are sector-year fixed effects, and $X_{i,t}$ collects firm-level controls: the logarithm of assets, the market-to-book ratio, the EBITDA-to-sales ratio, and the ratio of PP&E to total assets (Kaplan and Zingales, 1997). Even within sectors and after these controls, U.S. firms carry higher leverage than European firms (Table VI), and the retreat from debt is broad: only the smallest European firms raise leverage, while all others reduce it (Online Appendix Figure C.11).

The retreat is itself informative. Had only the cost of equity risen while debt stayed cheap, firms would have leaned on debt; the deleveraging instead signals that debt, too, became more expensive in Europe. The equity gap therefore understates the total funding gap. Comparing both sides directly (Figure VIII), the U.S.-Europe equity gap–excluding firms in finance, real estate, and utilities– widens by about 18 trillion USD between 2008 and 2023, as does the U.S.-Europe debt gap. Between 2008 and 2023, the U.S.-Europe debt gap increases from 2 trillion U.S. to 5 trillion USD.

The composition of European debt compounds the disadvantage. European firms rely heavily on bank credit, whereas U.S. firms make greater use of market-based debt (Online

Appendix Figure C.12).[23] Bank-based financing is more exposed to regulatory constraints and bank balance-sheet conditions, which raises its cost and limits risk-taking (Langfield and Pagano, 2016); the post-crisis tightening of bank regulation, such as Basel III, thus fell disproportionately on European firms.[24] Cortina et al. (2021) show that U.S. firms were able to bypass constrained banks after the Great Financial Crisis, while European firms were not. Moreover, the fragmented nature of European credit markets also makes it difficult for European firms to finance themselves with debt (Duval et al., 2017).

Taken together, European firms face a systematic funding disadvantage. They are starved of the risk capital that scaling firms most need, cannot fall back on debt, and depend on a bank-based system that is both costlier and more constrained. This disadvantage falls hardest on young, high-growth firms—the firms whose value is the option to scale—and so bears directly on the valuation gap.

V.D Cost of Capital and Barriers to Scaling

The previous results suggest that European firms face greater barriers to scaling. We have shown that the valuation gap is larger in industries where scale appears most valuable, and that European firms are more exposed to local demand and less supported by risk-tolerant financing. We now examine a direct implication of this mechanism: if financing frictions constrain scaling, they should be especially visible among smaller firms. These are the firms for which external finance is most important and for which growth opportunities are least likely to be funded internally.

We measure firms' cost of capital for all firms in our sample between 2008 and 2020 using the implied cost of capital (ICC) methodology of Hou et al. (2012).[25] The ICC combines market prices with predicted future cash flows to infer the discount rate that rationalizes observed valuations in a discounted-cash-flow model. We describe the methodology in detail in Appendix D. Because the ICC is inferred from prices and expected cash flows, we interpret it as a market-implied discount rate rather than as a direct measure of borrowing costs.

[23] This increased gap exists despite the increase in bond issuance in Europe, as documented by Darmouni and Papoutsi (2026).

[24] A further, related channel is financial repression (Becker and Ivashina, 2018). High European sovereign debt, together with bank regulation that pushes banks to hold government bonds, can crowd out corporate credit. Consistent with this, among European firms a higher debt-to-GDP ratio is associated with a lower Tobin's Q, controlling for GDP and the credit-to-GDP ratio and including sector-year fixed effects (Online Appendix Table C.5).

[25] Computing the ICC requires three years of future data and therefore we can only compute it up to 2020.

Online Appendix Figure D.4 plots the average ICC for European and U.S. firms, measured in excess of the risk-free rate in each region. In 2008, the average ICC is 18% in Europe and 13% in the United States. By 2020, the gap remains close to 5 percentage points. This aggregate comparison, however, masks substantial heterogeneity across the firm-size distribution. In particular, the cost-of-capital gap is much larger among smaller firms than among larger firms.[26]

We therefore examine how the ICC varies with firm size. For each region, we compute the average ICC by percentile of the market-value distribution. Percentiles are defined using the pooled 2008 distribution of U.S. and European firms, so that the size bins are held fixed over time. Figure XI reports the results.

Smaller firms face substantially higher implied costs of capital than large firms in both regions, but the size gradient is much steeper in Europe. The largest European firms have ICCs similar to those of the largest U.S. firms. By contrast, the smallest European firms face implied discount rates above 60%, compared with 40% for similarly small U.S. firms. Thus, the Europe-U.S. difference in the cost of capital is concentrated not among large incumbents, but among the smaller firms for which scaling requires external capital.[27]

We summarize this gradient using a size premium, defined as the difference between the average ICC of firms below the median market value and the average ICC of firms above the median market value, computed separately by region and year. Figure XII plots this size premium for the United States and Europe. In 2008, the size premium is approximately 27 percentage points in Europe, compared with 12 percentage points in the United States. By 2020, the European size premium rises to 49 percentage points, about 28 percentage points larger than in the United States.

These differences could reflect sectoral composition or observable firm characteristics rather than financing frictions. To address this concern, we estimate:

$$\text{ICC}_{i,t} = \lambda_{s(i),t} + \mu_{c(i),t} + \beta X_{i,t} + \gamma_0 \text{US}_i + \gamma_1 \text{Small}_{i,t} + \gamma_2 \text{US}_i \times \text{Small}_{i,t} + \varepsilon_{i,t}, \tag{6}$$

where $\text{ICC}_{i,t}$ is the implied cost of capital for firm i in year t, $\lambda_{s(i),t}$ are sector–year fixed effects, $\mu_{c(i),t}$ are country–year fixed effects, and $X_{i,t}$ is a vector of firm-level controls. Firms are classified as small if their market value is below the region-year median. The coefficient γ_1 measures the size premium among European firms, while γ_2 measures whether

[26] In Online Appendix Figure D.3, we plot the distribution of implied cost of capital for both U.S. and European firms in 2008. The average U.S. firm has a lower cost of capital when compared with the average European firm.

[27] We also compute the average implied cost of capital for each percentile using percentiles computed for each region, as we show in Online Appendix Figure D.5. The results are qualitatively unchanged - the size premium is larger in Europe.

the size premium differs in the United States. A negative value of γ_2 implies that the small-firm cost-of-capital penalty is larger in Europe. Results are reported in Table VIII.

The size premium is substantially larger in Europe than in the United States, even within narrowly defined sectors and after controlling for observable firm characteristics. In our most restrictive specification, reported in column (4), the small-firm premium in the United States is roughly one third of the corresponding premium in Europe.

These results provide a direct link between financing conditions and the scaling mechanism. Large European firms face implied costs of capital similar to those of large U.S. firms, suggesting that the financing disadvantage is not uniform across the firm distribution. Instead, it is concentrated among smaller firms. This pattern is precisely what one would expect if European firms face barriers to scaling: the firms that most need external capital to grow face the highest discount rates. The small-firm cost-of-capital penalty therefore helps explain why growth opportunities are capitalized less strongly in Europe and why fewer European firms scale into large public companies.

Taken together, the two fronts describe a single wall. European firms are hemmed in on the demand side, unable to grow beyond local markets, and constrained on the finance side, unable to fund the growth they could otherwise achieve. Both bind hardest on the younger, smaller firms whose value is the option to scale. This is what the valuation gap ultimately measures: not firms that are worth less today, but firms that cannot grow into being worth more.

VI. CONCLUSION

In 2008, the aggregate market capitalizations of U.S. and European firms was similar. Over our sample period (2008-2023) the a large and conspicuous gap opened up. By 2023, the difference was very large: U.S. firms were worth 34 trillion USD more, or worth more than 330% of the European market.

This gap is not explained by aggregate fundamentals, sectoral composition, firm observables, cross-listing, or a small number of superstar firms. The gap is largest where a firm's value is more closely tied to its future growth—among young, smaller, and technology-intensive firms—and it is largest in the industries where the returns to scale are greatest.

These patterns trace to a broad economic problem: European firms appear less able to scale. There are fewer new firms, and the new firms there are are worth less. Small firms in Europe have a much higher cost of capital than those in America. Lack of equity financing is not compesnated for by bank loan supply; instead U.S. firms have better access to credit. Local market size appears to be a constraint: firm size in Europe is very correlated with home country GDP (something that's not true for U.S. states).

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TABLES AND FIGURES

TABLE I
SUMMARY STATISTICS

	U.S.	Europe	U.S. − Europe
Log Assets	5.666	4.612	1.054***
Log Sales	5.348	4.169	1.178***
Log Market Value	5.767	4.278	1.489***
Log Tobin's Q	0.400	0.041	0.358***
Leverage	0.460	0.248	0.213***
Cash/Assets	0.285	0.167	0.118***
R&D/Assets	0.324	0.112	0.212***
Number of Years in Sample	10.222	12.357	-2.136***
Observations	4,567	4,729	

Notes. This table presents the cross-sectional average for firms in our sample in 2023. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We present the statistics for the logarithm of total assets, the logarithm of sales, the logarithm of market value, the logarithm of Tobin's Q, leverage (total debt over total assets), the ratio of cash holdings to total assets, the ratio of R&D expenditure to total assets, and the number of years in which the firm appears in the sample. Both the logarithm of Tobin's Q and leverage are winsorized at 1 percent in each tail, within each region-year pair. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE II
AGGREGATE VALUATION GAP

	Log Market Value		Market Value/GDP	
	(1)	(2)	(3)	(4)
U.S.	0.122	0.235**	0.315***	0.321***
	(0.108)	(0.094)	(0.071)	(0.069)
U.S. $\times$ Year $\in [2013, 2018]$	0.573***	0.386***	0.451***	0.400***
	(0.105)	(0.118)	(0.066)	(0.088)
U.S. $\times$ Year $\geq$ 2019	1.01***	0.662***	0.754***	0.770***
	(0.098)	(0.158)	(0.080)	(0.143)
Controls		✓		✓
Observations	32	30	32	30
R^2	0.87	0.93	0.91	0.95

Notes. This table presents results of estimating equation (1). The outcome variable is the logarithm of the market value or the ratio of market value to GDP. We include a vector of time-varying controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. We use Newey-West standard errors. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE III
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL

	(1)	(2)	(3)	(4)	(5)	
U.S.	0.481***	0.514***	0.425***	0.413***	0.409***	0.569**
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.222)
Year FE	✓					
1D Industry x Year		✓				
2D Industry x Year			✓			
3D Industry x Year				✓		
4D Industry x Year					✓	✓
Aggregate Controls						✓
Firm Controls						✓
Observations	127,115	127,115	127,115	127,115	127,115	114,614
R^2	0.08	0.11	0.17	0.21	0.23	0.32

Notes. This table presents results of estimating equation (2). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the logarithm of Tobin's Q. We include year fixed effects or sector-year fixed effects. Sectors are defined using SIC codes at 1 digit, 2 digits, 3 digits, or 4 digits. We include a vector of time-varying aggregate controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE IV
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL - ROLE OF TECH

	(1)	(2)	(3)	(4)
U.S.	0.523***	0.534***	0.562**	
	(0.200)	(0.197)	(0.222)	
High R&D/Assets	0.244***	-0.031		
	(0.018)	(0.019)		
U.S. × High R&D/Assets	0.099***	0.048*	0.062**	0.114***
	(0.026)	(0.027)	(0.029)	(0.029)
Year FE	✓	✓		
Sector FE		✓		
Sector x Year FE			✓	✓
Country x Year FE				✓
Aggregate Controls	✓	✓	✓	
Firm Controls	✓	✓	✓	✓
Observations	114,614	114,614	114,614	114,614
R^2	0.22	0.29	0.32	0.36

Notes. This table presents results of estimating equation (2). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the logarithm of Tobin's Q. We include sector-year fixed effects, where sectors are defined as 4-digit SIC codes. We include a vector of time-varying controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. For each year, we split industries—defined using the Fama-French 48-industry taxonomy— into two groups based on their R&D-to-asset ratio according to the cross-sectional median. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE V
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL - SCALING UP

	(1)	(2)	(3)	(4)
U.S.	0.347*	0.484**	0.526**	
	(0.202)	(0.197)	(0.222)	
High Returns to Scale	0.178***	-0.018		
	(0.015)	(0.011)		
U.S. $\times$ High Returns to Scale	0.090***	0.104***	0.096***	0.132***
	(0.021)	(0.020)	(0.023)	(0.023)
Year FE	✓	✓		
Sector FE		✓		
Sector x Year FE			✓	✓
Country x Year FE				✓
Aggregate Controls	✓	✓	✓	
Firm Controls	✓	✓	✓	✓
Observations	114,614	114,614	114,614	114,614
R^2	0.21	0.29	0.32	0.36

Notes. This table presents results of estimating equation (3). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the logarithm Tobin's Q. We include sector-year fixed effects, where sectors are defined as 4-digit SIC codes, and country-year fixed effects. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. Using only data for U.S. firms between 2008 and 2023 and for each Fama-French 48 industry and year pair, we regress firm-level return on assets on the logarithm of total assets. For each year, we define an industry as having high returns to scale if its coefficient is above the cross-sectional median; the industries with a coefficient below the median are classified as having low returns to scale. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE VI
U.S.-EUROPE LEVERAGE GAP

	(1)	(2)	(3)	(4)
U.S.	0.187***	0.066***	0.199***	0.116***
	(0.009)	(0.007)	(0.010)	(0.009)
Sector x Year FE			✓	✓
Firm Controls		✓		✓
Observations	150,987	126,741	150,987	126,741
R^2	0.02	0.18	0.06	0.24

Notes. This table presents the results of estimating a regression where the outcome variable is firm leverage. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We include sector-year fixed effects and a vector of firm-level controls which includes the logarithm of assets, the market-to-book ratio, the EBITDA-to-sales ratio, and the ratio of PP&E to total assets. We present the coefficient associated with an indicator variable that takes the value of one if the firm is in the U.S. and zero if otherwise. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE VII
DEPENDENCE ON LOCAL ECONOMIC CONDITIONS

Panel A. European firms					
Sample:	All	All	All	Tradable	Nontradable
Log Country GDP	0.510***	0.526**	0.756***	0.458*	1.60
	(0.028)	(0.219)	(0.196)	(0.273)	(1.01)
Industry x Year FE	✓	✓	✓	✓	✓
Country FE		✓			
Industry x Country FE			✓	✓	✓
Observations	73,802	73,802	73,802	39,347	3,058
R^2	0.28	0.40	0.62	0.64	0.72

Panel B. U.S. firms					
Sample:	All	All	All	Tradable	Nontradable
Log State GDP	-0.061	0.154	-0.107	0.223	-0.218
	(0.050)	(0.504)	(0.466)	(0.658)	(1.74)
Industry x Year FE	✓	✓	✓	✓	✓
State FE		✓			
Industry x State FE			✓	✓	✓
Observations	42,209	42,209	42,209	24,577	1,872
R^2	0.31	0.35	0.62	0.62	0.67

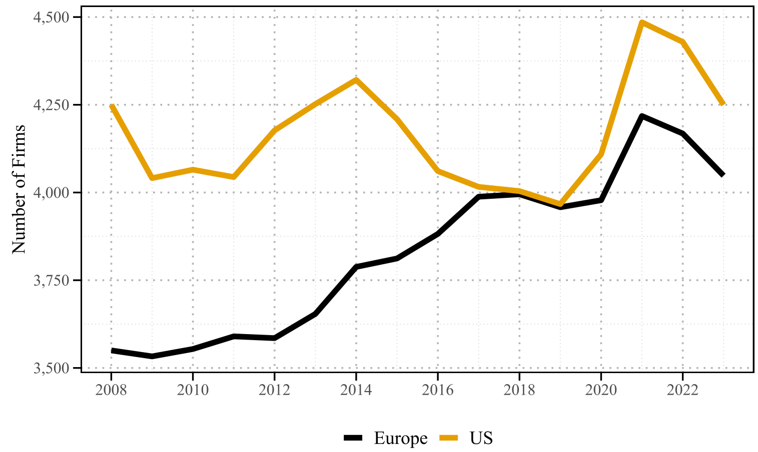
Notes. This table presents results of estimating equation (4). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the log of firm sales. We include industry-year fixed effects, country or state fixed effects, and industry-country or industry-state fixed effects. We define industry as a 4-digit SIC. We also split sectors into tradable and nontradable using the classification in Mian and Sufi (2014). Panel A reports results for European firms and Panel B reports results for U.S. firms. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE VIII
U.S.-EUROPE SIZE PREMIA

	(1)	(2)	(3)
U.S.	-0.086***	-0.075***	
	(0.003)	(0.004)	
Small	0.393***	0.393***	0.317***
	(0.007)	(0.008)	(0.007)
U.S. × Small	-0.193***	-0.192***	-0.234***
	(0.008)	(0.008)	(0.008)
Year FE	✓		
Sector-Year FE		✓	✓
Country-Year FE			✓
Firm Controls			✓
Observations	57,064	57,064	56,357
R^2	0.37	0.44	0.54

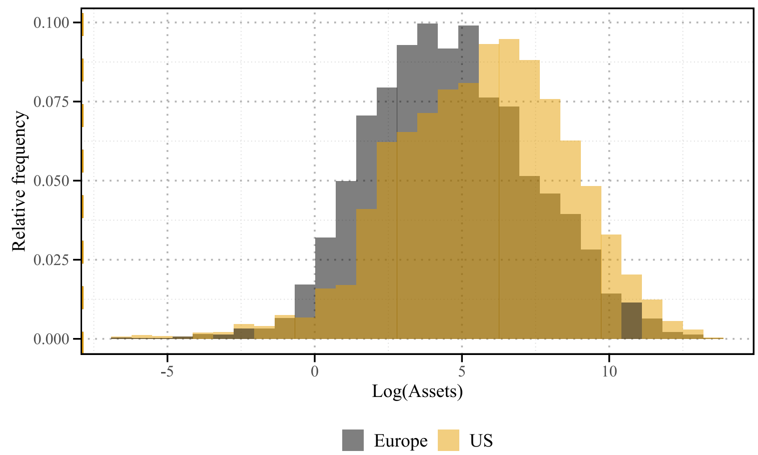
Notes. This table presents results of estimating equation (6). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the firm-level implied cost of capital. We include sector-year and country-year fixed effects. We include a vector of time-varying aggregate controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. For each region-year, we define small firms as those firms whose market values are below the median. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

FIGURE I
Number of Firms per Year



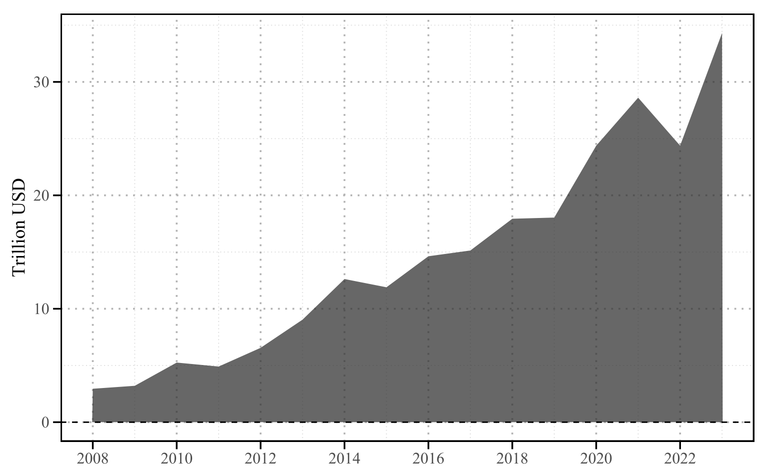
Notes. This figure presents the number of firms per region-year. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE II
Distribution of Firm Size



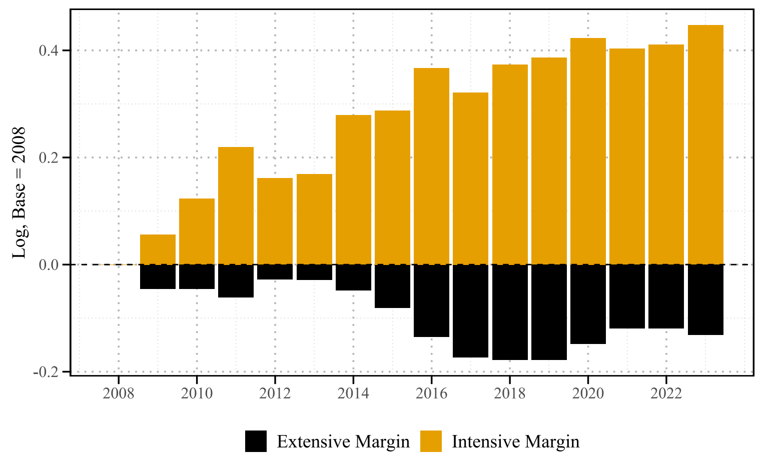
Notes. This figure presents the distribution of the logarithm of total assets for European and U.S. firms in 2023. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE III
U.S.-Europe Gap in Stock Market Capitalization



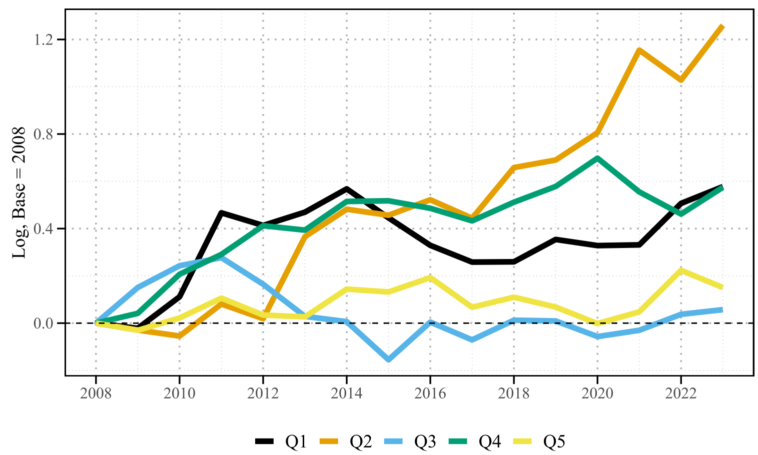
Notes. This figure presents the difference between the U.S. stock market value and the European stock market in trillion USD. We compute the stock market value of both regions using our constructed time-series which uses data from the World Bank, the World Federation of Exchanges, and data from country-level sources.

FIGURE IV
U.S.-Europe Gap in Stock Market Capitalization - Extensive versus Intensive Margins



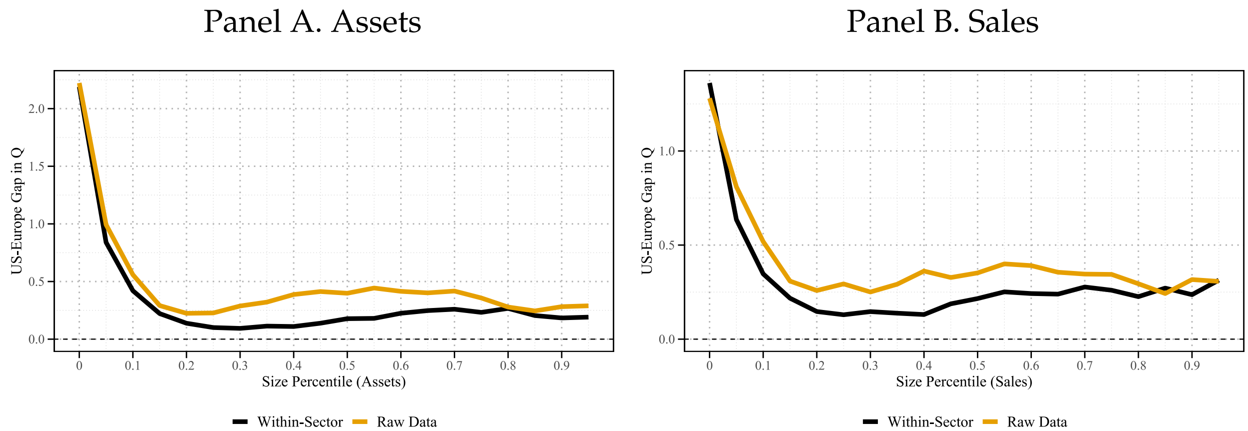
Notes. This figures presents the difference in stock market value between the U.S. and Europe, in logs, and scaled by their 2008 value, using Compustat data. We decompose this gap into the changes that come from the extensive margin (the change in the relative number of firms) and the intensive margin (the change in the relative average firm value). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE V
U.S.-Europe Gap in Stock Market Capitalization - Role of Firm Age



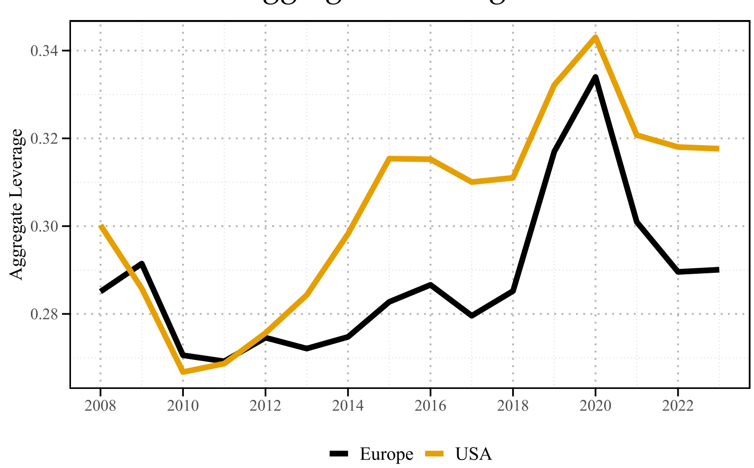
Notes. This figures presents the difference in stock market value between the U.S. and Europe, in logs, and scaled by their 2008 value, for different quantiles of firm age, using Compustat data (Q1 is smallest, Q5 largest). We restrict attention to firms observed in 2008, assign them to age quintiles, and then follow these cohorts over time. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE VI
U.S.-Europe Gap in Stock Market Capitalization - Role of Superstar Firms



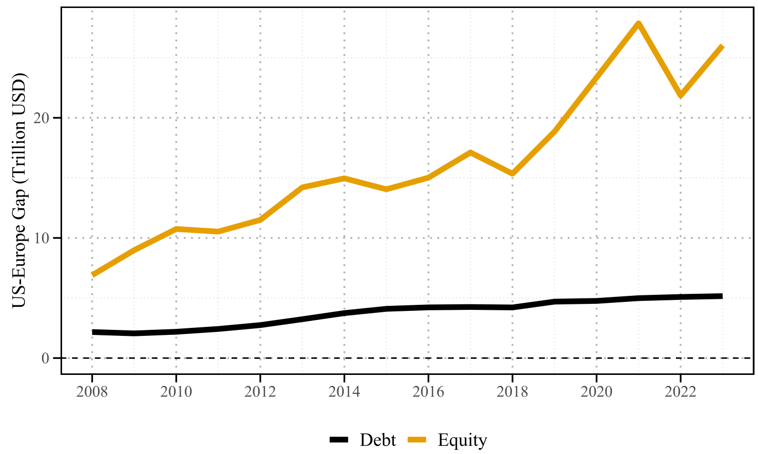
Notes. This figure plots valuation gaps across the size distribution. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). For each percentile τ of firm size (measured by total assets or sales), we compute the average Tobin's Q for firms in that size bin separately for the United States and Europe, and define the gap as the difference between the two. Quantiles and averages are computed using the pooled 2008–2023 sample within each region. We report results for both the raw distribution of Q and for $\tilde{Q}$, defined as the residual from a regression of Q on sector–year fixed effects estimated on the full sample. For the within-sector results, size is also residualized with respect to sector–year fixed effects before constructing quantiles.

FIGURE VII
Aggregate Leverage



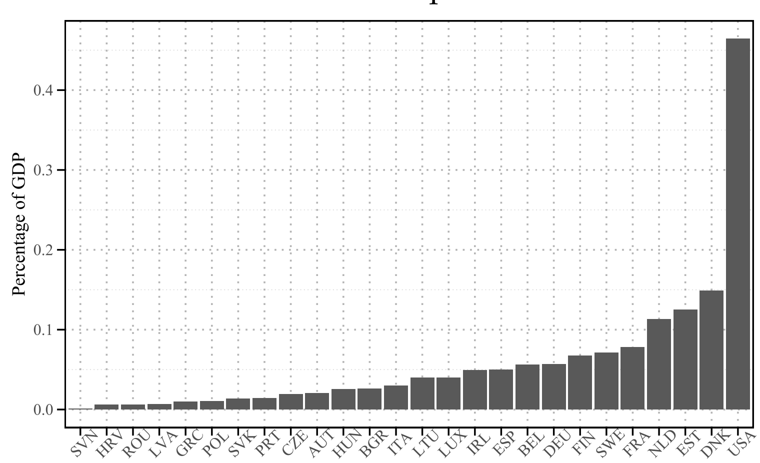
Notes. This figure plots the asset-weighted average leverage for European and U.S. firms. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE VIII
U.S.-Europe Gap in Equity and Debt



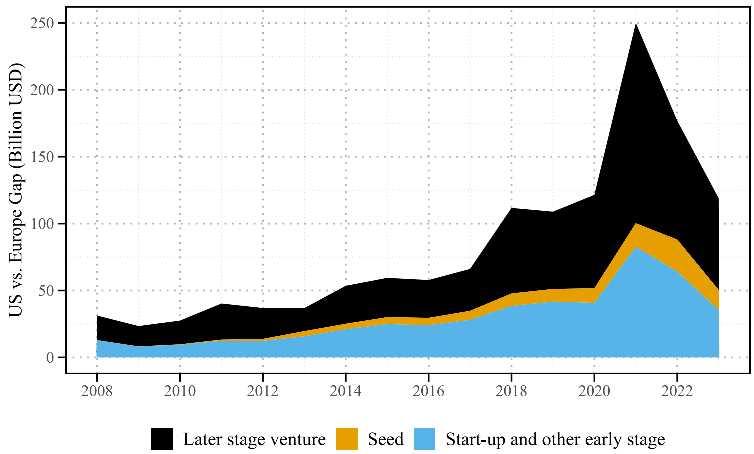
Notes. This figure plots the difference in total market value of equity and total debt between U.S. and European firms. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE IX
Venture Capital



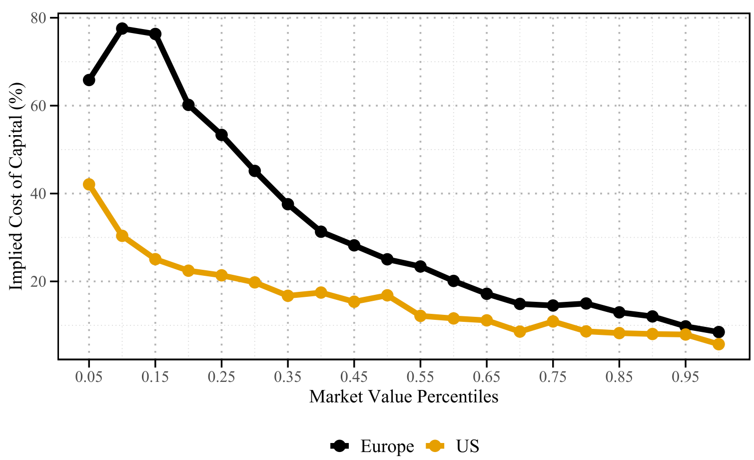
Notes. This figure plots venture capital as a share of GDP in 2023.

FIGURE X
U.S.-Europe Gap in Venture Capital



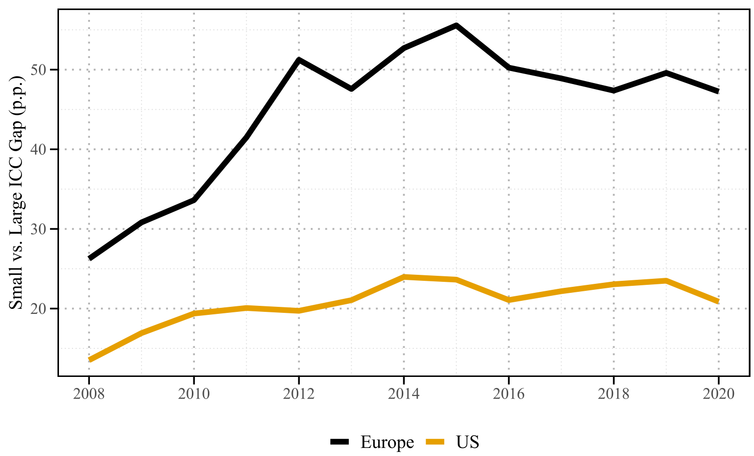
Notes. This figure plots the difference in total venture capital between the U.S. and Europe. We decompose venture capital into seed financing, start-up and other early stage financing, and later stage financing.

FIGURE XI
Cost of Capital by Firm Size



Notes. This figure plots the average implied cost of capital for each region and percentile of market value. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We compute the percentiles using the pooled distribution of market value (including both U.S. and European firms) for each year.

FIGURE XII
Size Premium in Cost of Capital



Notes. This figure plots the size premium for each region-year. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The size premium is the difference between the average implied cost of capital for firms with a market value below the median (computed within each region-year) and the average implied cost of capital for firms with a market value above or equal to the median.

Online Appendix

to

The Value Gap: Europe Cannot Scale

Bo Becker Efraim Benmelech Joao Monteiro

A. Constructing the Stock Market Value of Europe

Constructing a consistent measure of stock market capitalization for Europe is not straightforward. Stock exchanges are owned by corporate groups that often operate multiple exchanges across countries. For example, Euronext operates exchanges in Paris, Amsterdam, Brussels, Lisbon, Dublin, Milan, Athens, and Oslo. These firms report aggregate market capitalization at the *group level*, rather than at the exchange or country level, which makes it difficult to recover country-level values directly.

We begin with country-level data on stock market capitalization from the World Bank, which compiles data from the World Federation of Exchanges (WFE). When exchange-level data are not reported separately—because exchanges are part of a larger corporate group—the World Bank records missing values. We aggregate the available World Bank data across European countries and then fill in missing observations using additional sources.

To avoid double counting, whenever group-level data are available (e.g., for Euronext or the London Stock Exchange Group), we remove the corresponding country-level observations and replace them with the group-level measure.

Specifically, we proceed as follows:

1. We add data for NASDAQ Nordic, which operates exchanges in Copenhagen, Helsinki, Stockholm, Iceland, Tallinn, Riga, and Vilnius.

2. From 2019 onwards, we incorporate data for Euronext, which operates exchanges in Paris, Amsterdam, Brussels, Lisbon, Dublin, Milan, Athens, and Oslo.

3. For the period 2009–2011, we include data on the Prague Stock Exchange from the Czech Ministry of Finance.

4. For 2012, we add data for the Zagreb Stock Exchange.

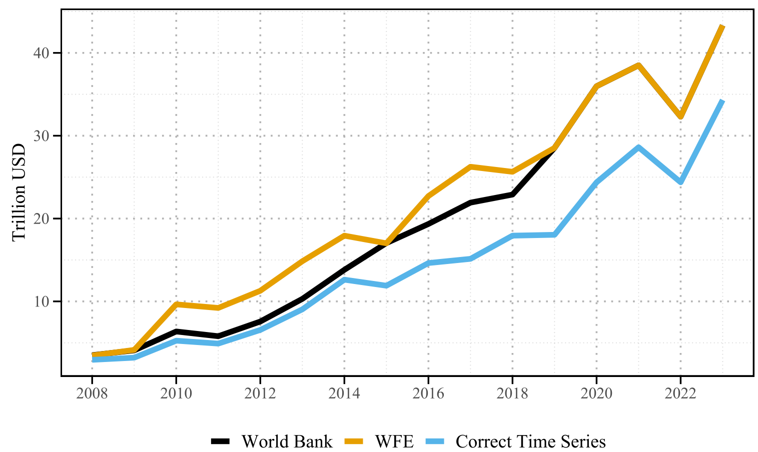
5. For 2017, we include data for the Bulgarian stock market from the Bulgarian Bank Association.

6. For the period 2015–2020, we incorporate data from the London Stock Exchange Group (LSEG), which operates exchanges in the United Kingdom and Italy.

7. For 2018, we include exchange-level data for Amsterdam from Euronext.

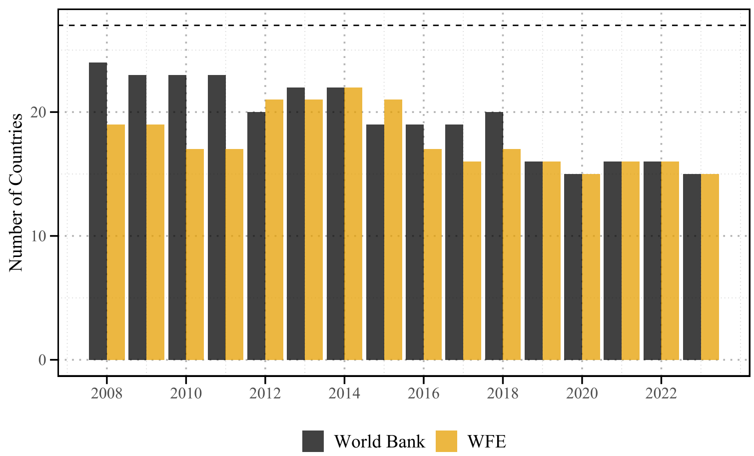
Online Appendix Figure A.1 compares the U.S.–Europe gap in stock market capitalization (in trillion USD) using three alternative measures: (i) World Bank data only, (ii) WFE data only, and (iii) our corrected series. Online Appendix Figure A.2 reports the number of countries with non-missing observations in the World Bank and WFE data.

FIGURE A.1
U.S.-Europe Gap in Stock Market Capitalization



Notes. This figure presents the difference between the U.S. stock market value and the European stock market in trillion USD. We present three measures: (1) the gap computed using only World Bank data, (2) the gap computed using only data from the World Federation of Exchanges, and (3) the gap computed according to our method.

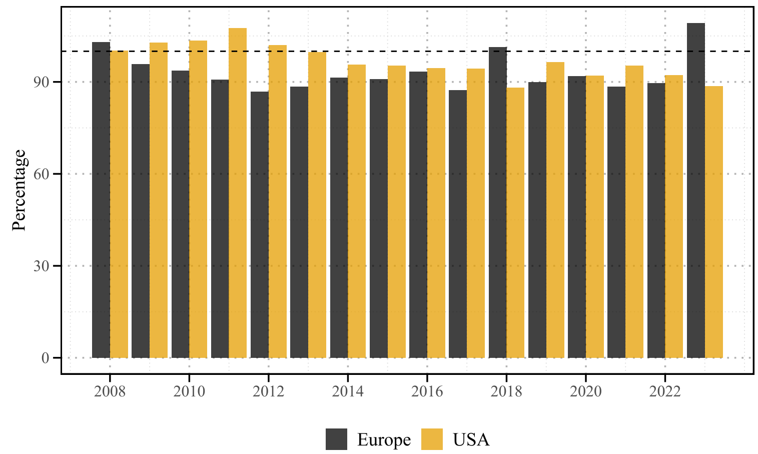
FIGURE A.2
Number of Countries with Non-Missing Data



Notes. This figure presents the number of countries for which we have non-missing data on total stock market capitalization. We produce these statistics for the data from the World Bank and for the data from the World Federation of Exchanges. The dashed horizontal represents the total number of European countries in our sample (27).

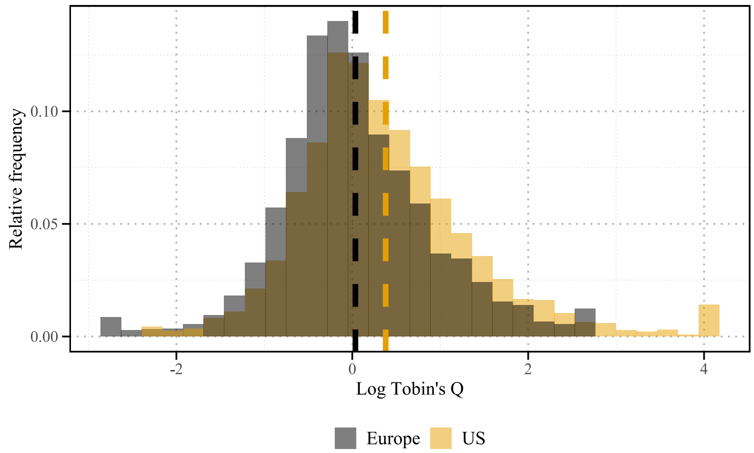
B. SAMPLE COVERAGE AND THE DISTRIBUTION OF VALUATIONS

FIGURE B.1
Compustat Coverage - Market Value



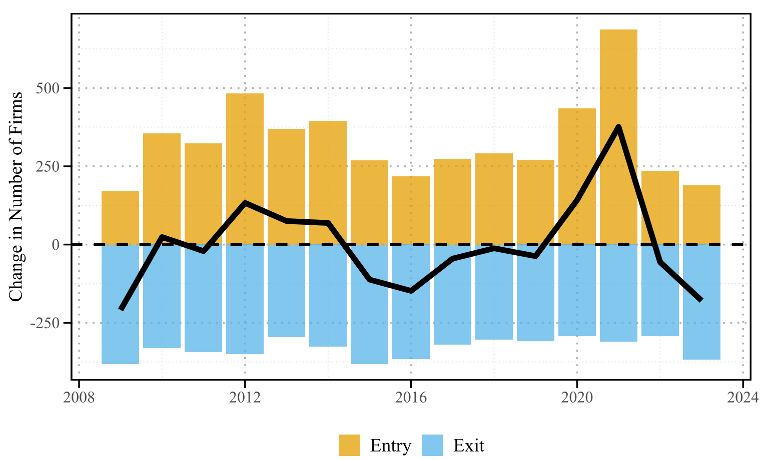
Notes. This figure presents the ratio between the total stock market value computed by adding the market value of firms in Compustat and the stock market value we compute for each region.

FIGURE B.2
Distribution of Tobin's Q



Notes. This figure presents the distribution of the logarithm of Tobin's Q for European and U.S. firms in 2023. The logarithm of Tobin's Q is winsorized at 1% in each tail within each region-year pair. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

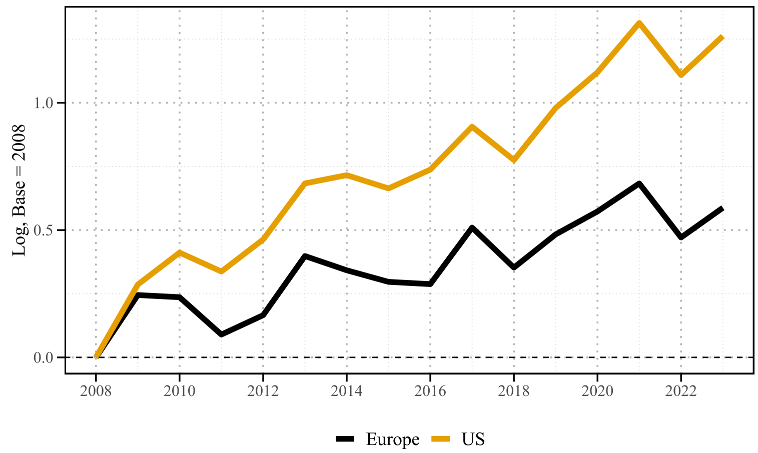
FIGURE B.3
Number of Firms in the U.S. - Entry and Exit



Notes. This figure presents the evolution of the number of firms in the U.S., relative to the previous year. The black line represents the year-on-year change in the number of firms. We decompose the change in two components - entry and exit. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

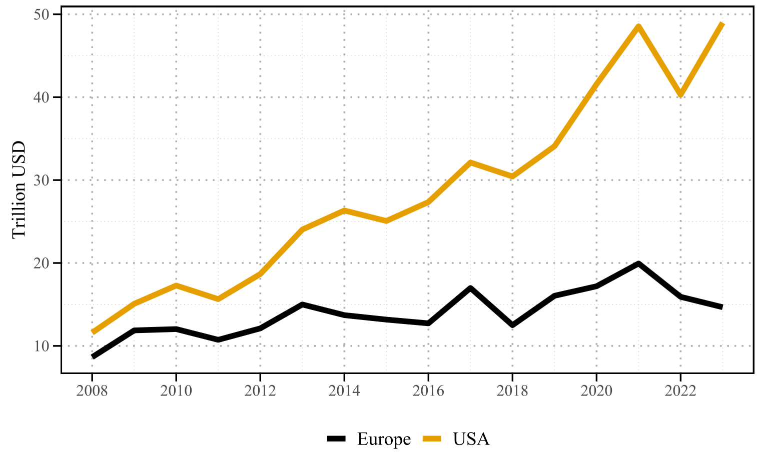
C. Additional Figures and Tables

FIGURE C.1
U.S.-Europe Gap in Stock Market Capitalization - Using Compustat



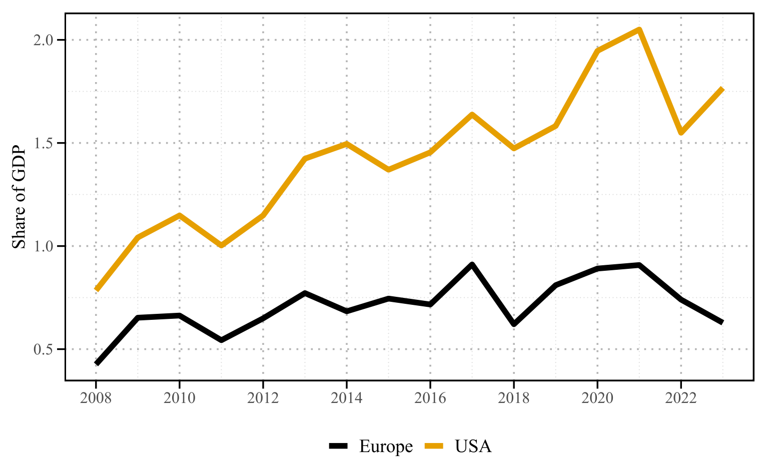
Notes. This figure presents the value of the U.S. stock market and the European stock market, computed using Compustat. Each series is in logs and scaled by their 2008 value.

FIGURE C.2
U.S.-Europe Gap in Stock Market Capitalization



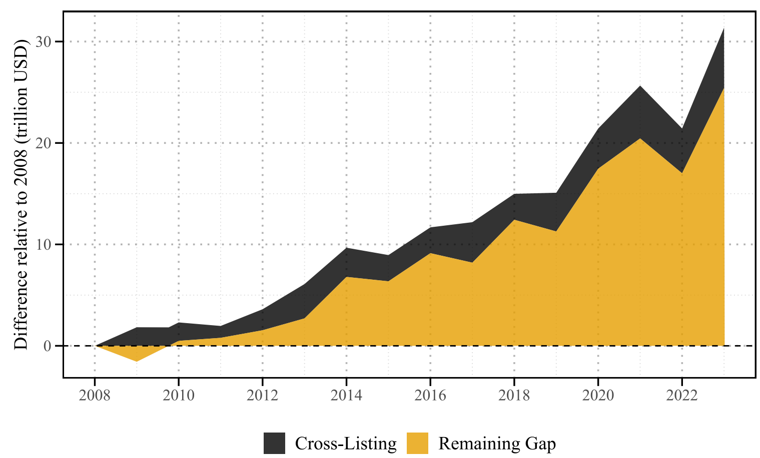
Notes. This figure presents the value of the U.S. stock market and the European stock market, in trillion USD. We compute the stock market value of both regions using our constructed time-series which uses data from the World Bank, the World Federation of Exchanges, and data from country-level sources.

FIGURE C.3
U.S.-Europe Gap in Stock Market Capitalization as Share of GDP



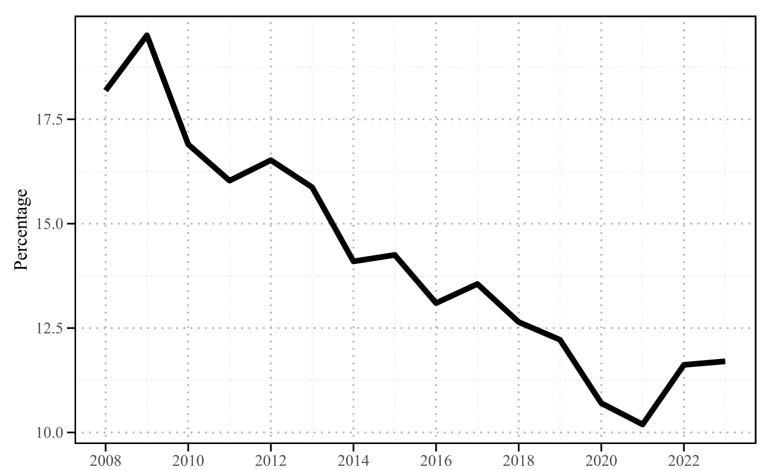
Notes. This figure presents the value of the U.S. stock market and the European stock market, each scaled by their respective nominal GDP. We compute the stock market value of both regions using our constructed time-series which uses data from the World Bank, the World Federation of Exchanges, and data from country-level sources.

FIGURE C.4
U.S.-Europe Gap in Stock Market Capitalization - The Role of Cross-Listings



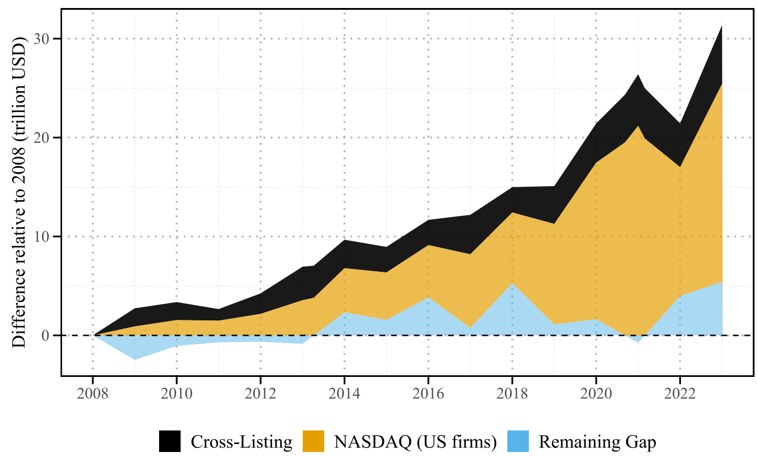
Notes. This figure presents the change in the value of the U.S. and European stock markets relative to 2008, using Compustat data. We reclassify European firms listed in the U.S. as firms listed in Europe using the headquarters of the firm. We then compute the share of the total valuation gap that is explained by cross-listings and the share that is not explained by cross-listings.

FIGURE C.5
Market Value of European Firms Listed in the U.S.



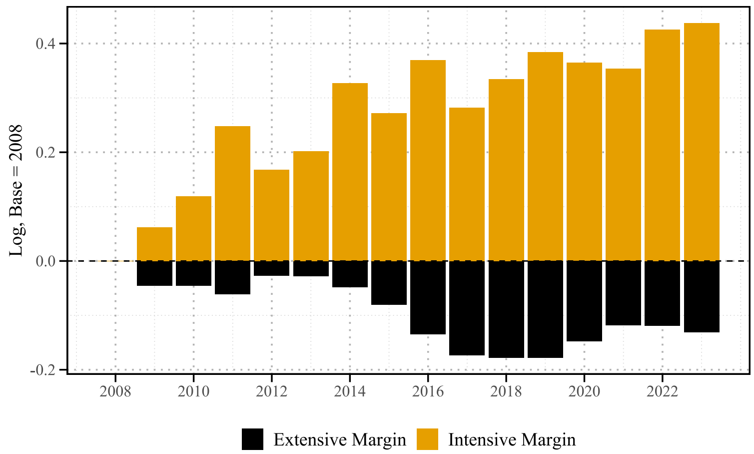
Notes. This figure plots the share of market value of European firms listed in the U.S. stock market as a share of total market value of the U.S. stock market, using Compustat data. We classify European firms listed in the U.S. using the headquarters of the firm.

FIGURE C.6
U.S.-Europe Gap in Stock Market Capitalization - Decomposition by Exchange



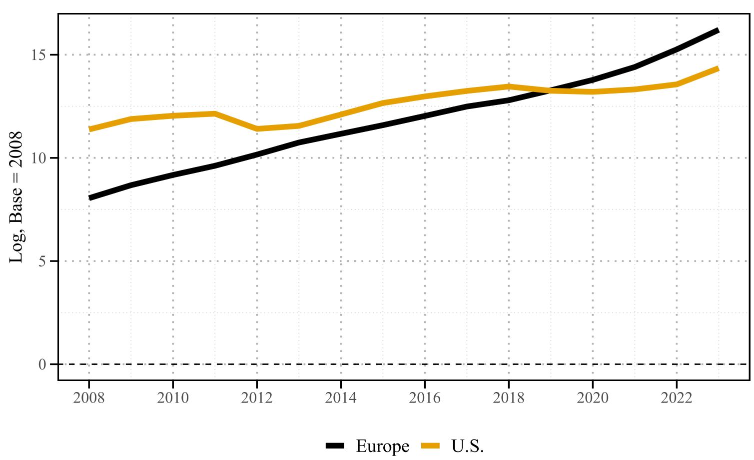
Notes. This figure presents the change in the value of the U.S. and European stock markets relative to 2008, using Compustat data. We reclassify European firms listed in the U.S. as firms listed in Europe using the headquarters of the firm. We then compute the share of the total valuation gap that is explained by cross-listings, the share that is explained by the change in the value of U.S. firms in Nasdaq, and a remainder.

FIGURE C.7
U.S.-Europe Gap in Stock Market Capitalization - Extensive versus Intensive Margins (Excluding Top Firms)



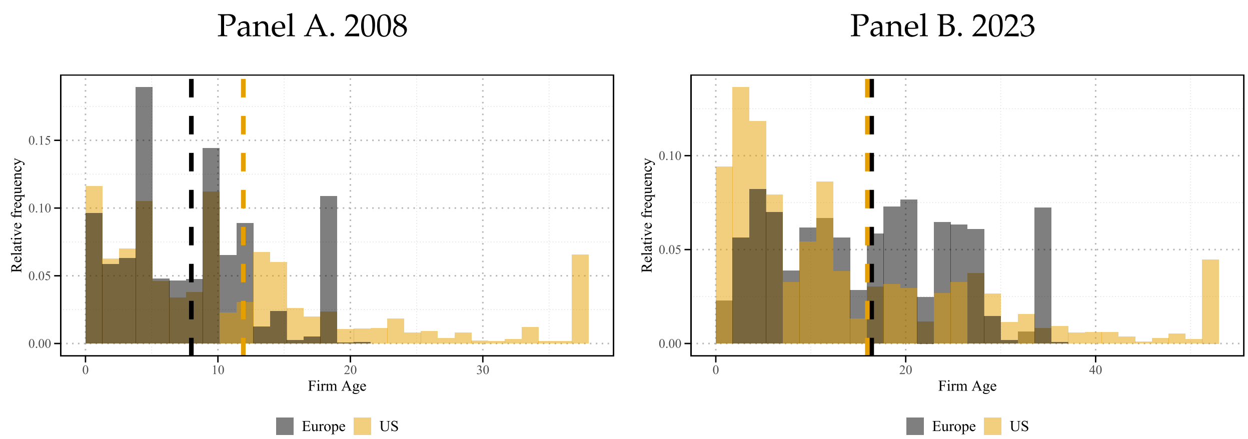
Notes. This figures presents the difference in stock market value between the U.S. and Europe, in logs, and scaled by their 2008 value. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We decompose this gap into the changes that come from the extensive margin (the change in the relative number of firms) and the intensive margin (the change in the relative average firm value). We compute this using Compustat and exclude, for each year-region pair, the firms with a market value that exceeds the 99th percentile.

FIGURE C.8
Average Firm Age



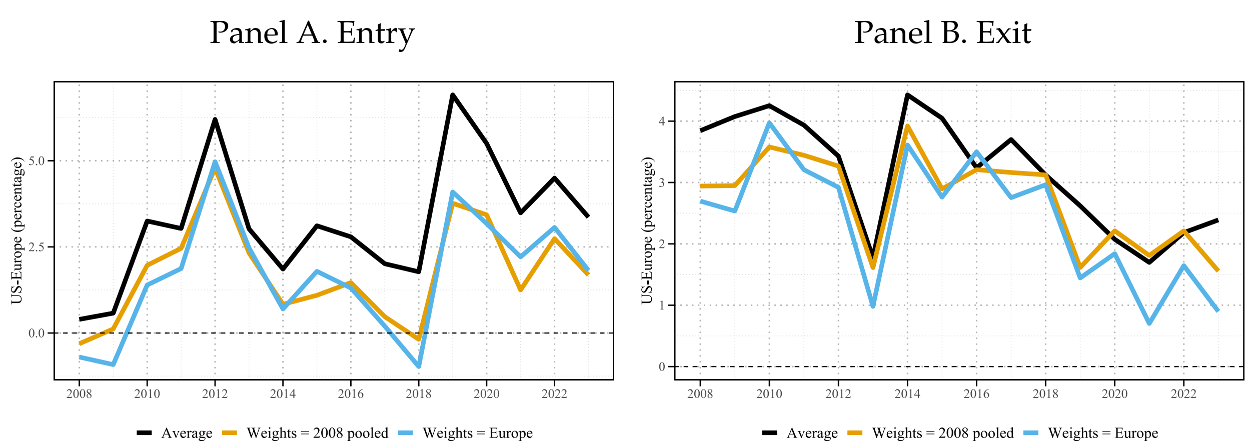
Notes. This figures presents the average firm age for all firms in Europe and in the United States. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE C.9
Distribution of Firm Age



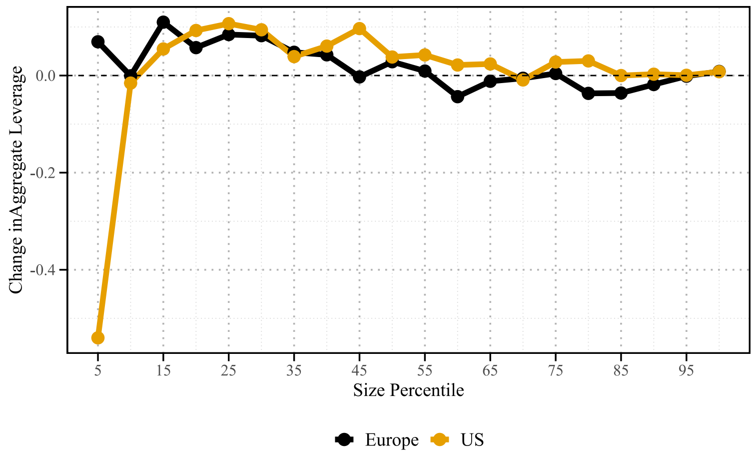
Notes. This figure plots the distribution of firm age for U.S. and European firms, for 2008 and 2023. The dashed vertical lines represent the cross-sectional mean. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE C.10
Firm Entry and Exit Rates



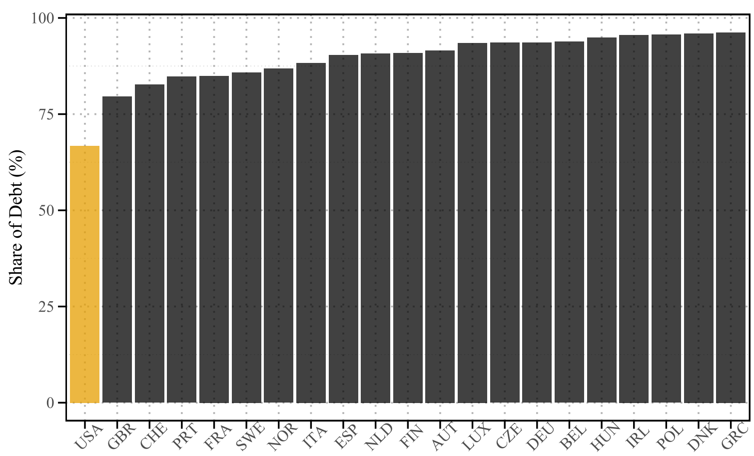
Notes. This figure plots the difference in entry rates and exit rates between the U.S. and Europe. For each region-year-sector, we compute the entry and exit rate. We then aggregate the measure to the region-year level using the total assets of the sector. We use either the assets for each region-year, a common set of weights computed using the pooled sample in 2008, or the weights for European firms. We plot the difference between the U.S. and Europe.

FIGURE C.11
Change in Leverage Across the Size Distribution



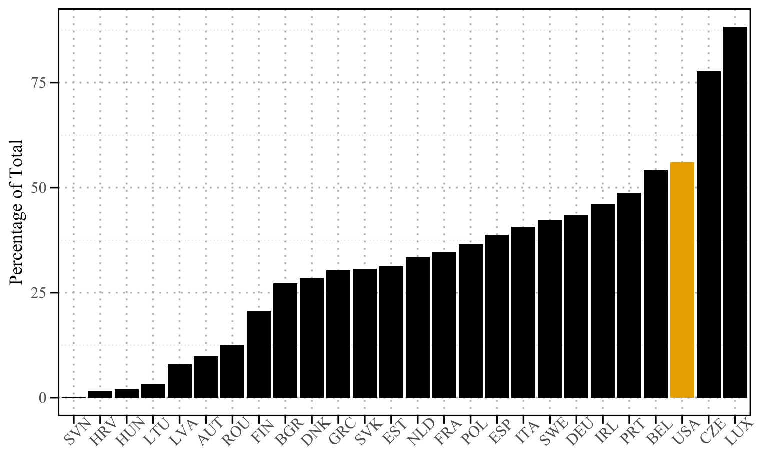
Notes. For each region-year and for each asset quintile, we compute the average leverage inside the quintile. We plot, for each region, the change in average leverage between 2008 and 2023. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE C.12
Share of Bank Debt in Total Debt



Notes. This figure plots the share of bank debt on total debt to the corporate sector, excluding financial firms, in 2023.

FIGURE C.13
Venture Capital



Notes. This figure plots late stage venture capital financing as a share of total venture capital in 2023.

TABLE C.1
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL

	(1)	(2)	(3)	(4)	(5)	(6)
U.S.	0.458***	0.491***	0.402***	0.389***	0.385***	0.515**
	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.221)
Year FE	✓					
1D Industry x Year		✓				
2D Industry x Year			✓			
3D Industry x Year				✓		
4D Industry x Year					✓	✓
Aggregate Controls						✓
Firm Controls						✓
Observations	127,115	127,115	127,115	127,115	127,115	114,614
R^2	0.08	0.11	0.17	0.21	0.23	0.31

Notes. This table presents results of estimating equation (2). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the logarithm of Tobin's Q, which is winsorized each year at 1st and 99th percentiles. We include year fixed effects or sector-year fixed effects. Sectors are defined using SIC codes at 1 digit, 2 digits, 3 digits, or 4 digits. We include a vector of time-varying aggregate controls which includes the logarithm of nominal GDP, nominal GDP growth, the real exchange rate (relative to a basket of currencies), the nominal interest rate, the real interest rate, and the term premium. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE C.2
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL - SCALING UP

	(1)	(2)	(3)	(4)
U.S.	0.4284**	0.5010**	0.5256**	
	(0.2004)	(0.1970)	(0.2218)	
High Returns to Scale	0.1644***			
	(0.0198)			
U.S. × High Returns to Scale	0.1105***	0.0944***	0.1041***	0.1318***
	(0.0271)	(0.0282)	(0.0294)	(0.0291)
Year FE	✓	✓		
Sector FE		✓		
Sector x Year FE			✓	✓
Country x Year FE				✓
Aggregate Controls	✓	✓	✓	
Firm Controls	✓	✓	✓	✓
Observations	114,614	114,614	114,614	114,614
R^2	0.22	0.29	0.32	0.36

Notes. This table presents results of estimating equation (3). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the logarithm Tobin's Q. We include sector-year fixed effects, where sectors are defined as 4-digit SIC codes, and country-year fixed effects. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. Using only data for U.S. firms between 2008 and 2023 and for each Fama-French 48 industry we regress firm-level return on assets on the logarithm of total assets. We define an industry as having high returns to scale if its coefficient is above the cross-sectional median; the industries with a coefficient below the median are classified as having low returns to scale. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE C.3
U.S.-EUROPE VALUATION GAP AT THE FIRM LEVEL - SCALING UP

	(1)	(2)	(3)	(4)
U.S.	0.3344*	0.5389**		
	(0.1974)	(0.2221)		
Returns to Scale	0.0649***			
	(0.0082)			
U.S. × Returns to Scale	0.0377***	0.0272***	0.0386***	0.0414***
	(0.0096)	(0.0104)	(0.0103)	(0.0103)
Year FE	✓			
Sector FE	✓			
Sector x Year FE		✓	✓	✓
Country x Year FE			✓	✓
Aggregate Controls	✓	✓		
Firm Controls	✓	✓	✓	✓
Excluding Top Firm				✓
Observations	114,614	114,614	114,614	114,022
R^2	0.29	0.32	0.36	0.36

Notes. This table presents results of estimating equation (3). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). Column (4) excludes the largest firm (according to market value) for each Fama-French industry and year pair. The outcome variable is the logarithm Tobin's Q. We include sector-year fixed effects, where sectors are defined as 4-digit SIC codes, and country-year fixed effects. The vector of firm controls includes the log of assets, the log of firm age, leverage, profitability (sales/assets), the growth rate of assets, and the ratio of intangible assets to total assets. Using only data for U.S. firms between 2008 and 2023 and for each Fama-French 48 industry and year pair we compute the maximum of the market value distribution. To obtain a measure of returns to scale we standardize the maximum - for each year, we subtract the cross-sectional mean and divide by the cross-sectional standard deviation. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE C.4
DEPENDENCE ON LOCAL ECONOMIC CONDITIONS

Panel A. European firms					
Sample:	All	All	All	Tradable	Nontradable
Log Country GDP	0.421***	0.733***	0.850***	0.712***	0.904
	(0.025)	(0.182)	(0.167)	(0.224)	(0.857)
Industry x Year FE	✓	✓	✓	✓	✓
Country FE		✓			
Industry x Country FE			✓	✓	✓
Observations	77,930	77,930	77,930	42,465	3,095
R^2	0.27	0.40	0.62	0.63	0.75

Panel B. U.S. firms					
Sample:	All	All	All	Tradable	Nontradable
Log State GDP	-0.009	0.318	0.417	0.770	2.13
	(0.047)	(0.458)	(0.412)	(0.522)	(2.16)
Industry x Year FE	✓	✓	✓	✓	✓
State FE		✓			
Industry x State FE			✓	✓	✓
Observations	47,552	47,552	47,552	28,701	1,888
R^2	0.27	0.31	0.59	0.59	0.60

Notes. This table presents results of estimating equation (4). We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The outcome variable is the log of firm assets. We include industry-year fixed effects, country or state fixed effects, and industry-country or industry-state fixed effects. We define industry as a 4-digit SIC. We also split sectors into tradable and nontradable using the classification in Mian and Sufi (2014). Panel A reports results for European firms and Panel B reports results for U.S. firms. Standard errors are clustered at the firm level. $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

TABLE C.5
FINANCIAL REPRESSION AND THE VALUATION GAP

	(1)	(2)	(3)	(4)	(5)
Debt-to-GDP	-0.0010***	-0.001***	-0.002***	-0.002***	-0.002***
	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Log GDP			0.061***	0.014	0.044***
			(0.008)	(0.010)	(0.010)
Credit-to-GDP				0.055***	0.141***
				(0.020)	(0.021)
Sector-Year FE	✓	✓	✓	✓	✓
Observations	60,229	60,229	60,229	55,068	53,932
R^2	0.002	0.26	0.26	0.27	0.30

Notes. This table presents the results of estimating a regression where the outcome variable is the logarithm of the firm-level Tobin's Q. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We use only data for European countries. We include sector-year fixed effects. We include three independent variables: the debt-to-GDP ratio, the logarithm of GDP, and the credit-to-GDP ratio $***$, $**$, and $*$ denote significance at the 1%, 5%, and 10% level, respectively.

D. Implied Cost of Capital

This section describes how we compute the implied cost of capital (ICC). We follow the approach of Hou et al. (2012), who rely on predictive regressions rather than IBES earnings forecasts to obtain estimates of future cash flows. The implied cost of capital r_e is the internal rate of return that equates the present value of future dividends to the current stock price. Dropping i (firm) subscripts for convenience, r solves

$$P_t = B_t + \sum_{\tau=1}^{\infty} \frac{\mathbb{E}_t[\text{EPS}_{t+\tau}] - r_e \mathbb{E}_t[B_{t+\tau}]}{(1+r_t)^{\tau}},$$

where P_t is the current stock price, $\text{EPS}_{t+\tau}$ is the forecast of earnings per share in year $t+\tau$, and B_t is the book value per share. Following Lee et al. (2021), we consider a twelve-year forecast horizon with a terminal perpetuity and so we solve

$$P_t = B_t + \sum_{\tau=1}^{11} \frac{\mathbb{E}_t[(\text{ROE}_{t+\tau} - r_t)]B_{t+\tau-1}}{(1+r_t)^{\tau}} + \frac{\mathbb{E}_t[(\text{ROE}_{t+12} - r_t)]B_{t+11}}{r_t \cdot (1+r_t)^{11}},$$

where we use the fact that the return on equity (ROE) is the ratio of earnings to book equity.

We now need to take a stand on how to compute the forecasted return on equity and book value of equity. For the first three years ahead, we forecast earnings using the methodology in Hou et al. (2012). For each $\tau = 1, 2, 3$, we estimate the following predictive regression

$$\mathbb{E}_t[E_{i,t+\tau}] = \beta_0 + \beta_1 \text{TA}_{i,t} + \beta_2 \text{DIV}_{i,t} + \beta_3 \text{DD}_{i,t} + \beta_4 \text{E}_{i,t} + \beta_5 \text{NEGE}_{i,t} + \beta_6 \text{AC}_{i,t},$$

where $E_{i,t+\tau}$ denotes income in year $t+\tau$, TA denotes total assets, DIV denotes dividends, DD is an indicator that takes the value of one if the firm has nonzero dividends and zero if otherwise, NEGE takes the value of one if the firm is making a loss and zero if otherwise, and AC is working-capital accruals. All dollar variables are winsorized within each region-year at the 1% and 99% levels. For each forecasting horizon, we estimate the regression by pooling the most recent 10 years of data available as of the forecasting date. This model produces forecasts of total earnings, which we scale by lagged book equity to compute the return on equity.

For forecast horizons $\tau = 4, \ldots, 12$, we forecast each firm's ROE using a linear interpolation from the three-year-ahead ROE forecast to the industry median ROE. Following Lee et al. (2021), we compute industry median ROEs each year using available data over the preceding ten years. We classify firms into industries based on the 48 Fama-French industry categories. We exclude loss-making firms when calculating the median industry ROEs.

We then compute forecast for book-equity following Pástor et al. (2022). In particular, book-equity forecasts are given by

$$B_{t+\tau} = B_{t+\tau-1} + E_{t+\tau} - \mathrm{DIV}_{t+\tau}.$$

We assume that the dividend payout ratio remains constant over the entire forecasting horizon and equal to the realized payout ratio at year t. For firms with positive earnings in year t, dividends at year $t+\tau$ are calculated as

$$\mathrm{DIV}_{t+\tau} = d_t E_{t+\tau} = \frac{\mathrm{DIV}_t}{E_t} E_{t+\tau}.$$

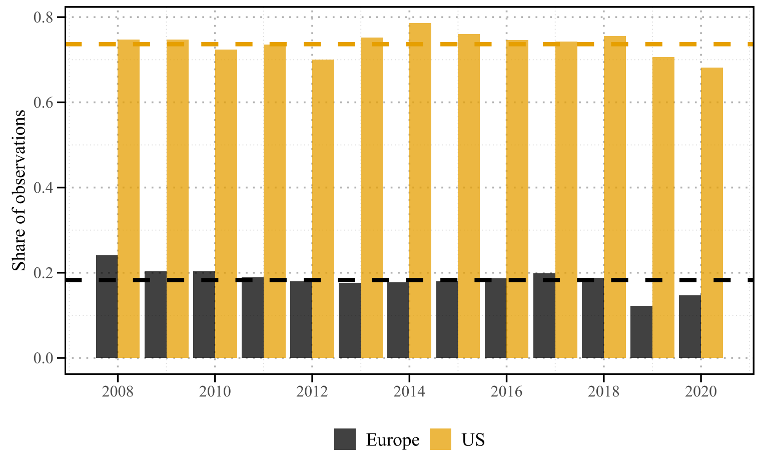
For firms with negative earnings in year t, dividends are given by

$$\mathrm{DIV}_{t+\tau} = \frac{\mathrm{DIV}_t}{0.06 \times \mathrm{TA}_t} \times E_{t+\tau}.$$

Moreover, if the data implies $d_t > 1$, we set $d_t = 1$. Finally, if $B_{t+\tau} < 0$ but $B_{t+\tau-1} > 0$ for some τ, we set $D_{t+\tau} = E_{t+\tau}$.

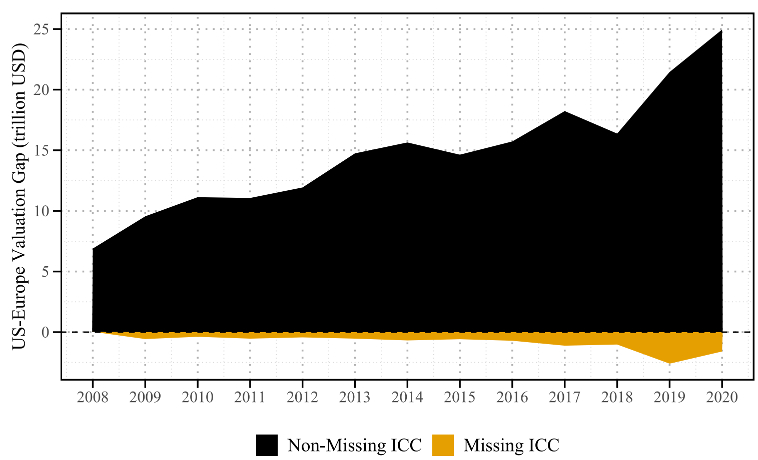
Then, for each firm-year pair, we compute the implied cost of capital that solves the nonlinear present value equation after inputing the forecasts. This procedure produces a large number of missing values. Online Appendix Figure D.1 plots the share of firms with non-missing observations in both the United States and Europe. Europe has a much greater number of missing values. However, as we show in Online Appendix Figure D.2, most of the valuation gap between the United States and Europe is found in firms with non-missing observations.

FIGURE D.1
Share of Non-Missing Observations for ICC



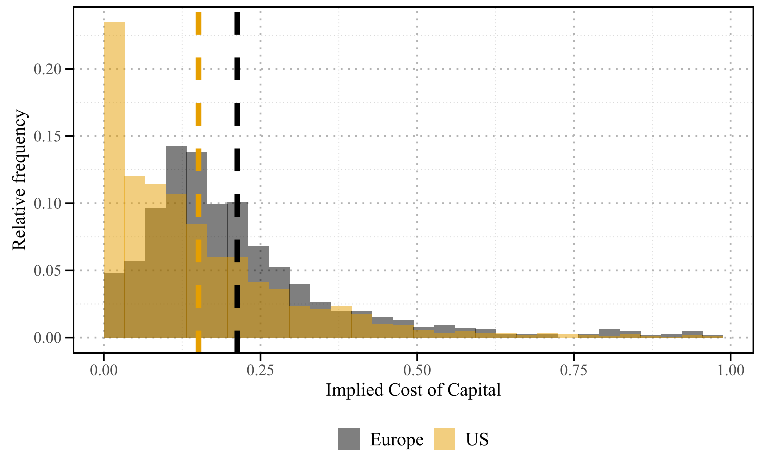
Notes. We plot the share of firms for which we can compute the implied cost of capital for each region and year. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The dashed lines represent the average across all years for each region.

FIGURE D.2
U.S.-Europe Valuation Gap - Role of Missing Observations



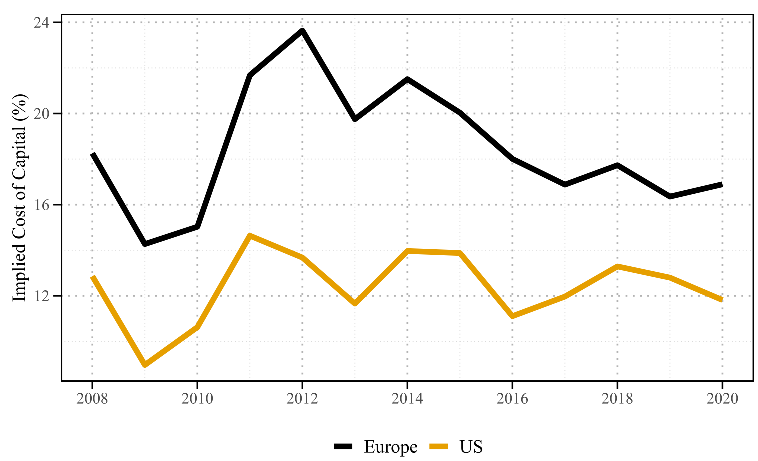
Notes. We aggregate market value for each region and year pair, including firms with non-missing observations for the implied cost of capital and firms with missing observations. We then plot the difference in valuation between the United States and Europe. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE D.3
Distribution of Implied Cost of Capital



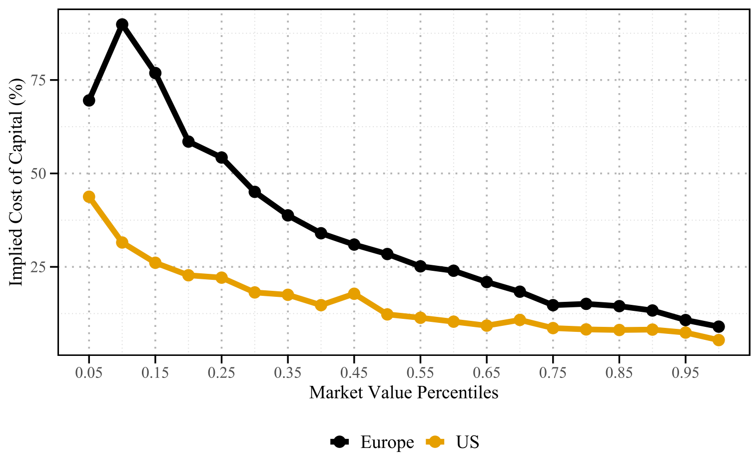
Notes. We plot the distribution of implied costs of capital for both U.S. and European firms in 2008. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). The dashed vertical lines represent the median.

FIGURE D.4
Average Excess Cost of Capital



Notes. We plot the average implied cost of capital for both regions over time, in excess of the risk-free rate in each region. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3).

FIGURE D.5
Cost of Capital by Firm Size



Notes. This figure plots the average implied cost of capital for each region and percentile of market value. We exclude firms in finance, real estate, and utilities. We include only publicly traded U.S. firms (stock ownership code of 0 or 3). We compute the percentiles using the distribution of market value for each region-year pair.