How America Lost Its Competitive Edge: A Study of Institutional Drift

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March 2018

Abstract

Until the 1990’s, U.S. markets were more competitive than European markets. Today, European markets have lower concentration, lower excess profits, and lower barriers to entry. We document this surprising outcome and propose an explanation using a model of political support. Politicians care about welfare and about the profits of certain industries. We show that when politicians from different countries set up a common regulator, they deliberately make it more independent and more pro-competition than if the same politicians all lived in the same country. This explains why, even though they appear broadly similar, European institutions are often granted a higher degree of independence than American institutions. We find support for the predictions of the model. In Europe, countries with weak institutions benefited more from the delegation of antitrust enforcement to the EU level. Political and lobbying expenditures have increased more in America than in Europe, and using data across industries and across states, we show that these expenditures explain the relative rise of concentration and market power in the US.

The United States invented modern antitrust in the late nineteenth and early twentieth century, and American consumers have enjoyed relatively competitive markets for goods and services ever since. Meanwhile, the American antitrust doctrine has spread globally, and, by the 1990’s, a broad international consensus had emerged among policy makers in favor of US-style regulations for most markets. This was particularly true in Europe. The U.S. retained a head-start, however, and it had a longer history of independent enforcement. Given these initial conditions, an outside observer would certainly have predicted that U.S. markets would have remained more competitive than European markets, although one could certainly have hoped for some convergence.

Since the early 2000s, however, US markets have experienced a continuous rise in concentration and profit margins. Perhaps more surprisingly, European markets have not experienced these trends and today they appear more competitive than their American counter-parts. Figures 1 and 2 show that profit rates and

*We are grateful to Luis Cabral, Janice Eberly, Steve Davis, and seminar participants at NBER, University of Chicago, and New York University for stimulating discussions.
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Figure 1: Profits Rates: US vs. EU

Note: Annual data. Profit rates for Non-Agriculture Business sector excluding RE, from OECD STAN. EU series based on weighted average across those EU-28 countries for which data is available in STAN.

the sales-weighted average 8-firm concentration ratios have increased in the U.S. yet remained stable in Europe, respectively. Our goal is to explain these trends, with a focus on Product Market Regulation and Antitrust Enforcement.

Our paper makes four main contributions. First, we document the trends in Figures 1 and 2. Second, we propose a model to explain the relative evolution of Europe and the US. Third, we test the predictions of the model using European and American data. And fourth, we show that we can use Europe as a control group to shed light on the identification of the impact of lobbying expenditures.

Several recent papers have documented the rise in concentration, profits, and markups in the U.S. Grullon et al. (2016) show that concentration and profit rates have increased across most U.S. industries. Furman (2015) and CEA (2016) argue that the rise in concentration suggests “economic rents and barriers to competition.” Barkai (2017) also find an increase in excess profits and De-Loecker and Eeckhout (2017) argue that markups have increased. Gutiérrez and Philippon (2017) link the decline in competition to the decrease in corporate investment. Gutiérrez and Philippon (2018) study the role of governance and its interaction with concentration. Not all concentration is bad, of course. Alexander and Eberly (2016) and Crouzet and Eberly (2018) argue that the rise in intangible investment can account, in some industries (e.g. retail trade) for the rise in concentration and the decrease in measured investment.

What is missing from most of the literature, however, is an analysis of why and how concentration and markups have increased in the US. Our paper is a first attempt to fill this gap.

We start by providing a brief history of Antitrust and Competition Policy in the U.S. and Europe. We highlight the overall convergence of ideas and institutions until the 1990s. By that time, an impartial outside observer would have concluded that the institutions were broadly similar, in part because the EU borrowed some best practice ideas from the US. Leucht and Marquis (2013) provide a balanced discussion of the American influence on the EU antitrust framework. On the other hand, U.S. markets were broadly more competitive, mostly thanks to a stronger historical tradition of antitrust enforcement. What the outside
observer would certainly not have predicted is the reversal that happened over the following 20 years.

We propose an explanation for this puzzling result. Our explanation has two parts: why initial conditions were different in a subtle way; and how they interacted with a subsequent trend.

We first argue that, although EU institutions resemble American ones in terms of goals, scope and doctrine, they are often granted more political independence than their American counterparts. This is true of the two leading supranational institutions: the European Central Bank (ECB) is not subject to the same level of parliamentary oversight as the Federal Reserve Board (Fed); and the Directorate-General for Competition (DG Comp) is more independent than the Department of Justice (DoJ) or the Federal Trade Commission (FTC). This is surprising because it appears to contradict the conventional wisdom about European and American preferences. Do Europeans really believe more in Milton Friedman than Americans? Do they believe more in free markets? We argue that they probably do not, but instead that the Nash equilibrium among sovereign nations leads to supra-national institutions that are more politically independent than what the average politician would choose. Roughly speaking, French and German politicians might not like a strong and independent antitrust regulator, but they like even less the idea of the other nation exerting political influence over the institution. As a result, if they are to agree on any supra-national institution, it will have a bias towards more independence.

This, in our view, explains why DG Comp is structurally more insulated from political and lobbying pressures than the DoJ or the FTC. Interestingly, this does not imply a complete lack of democratic accountability as evidenced by the evolution of DG Comp from an entirely independent organization to an increasingly democratic one following the 2004 reforms (First and Weber Waller, 2013).

We then focus on the implementation of Regulation and Antitrust laws across regions. Using indicators of product market regulation and competition law and policy from the OECD, as well as recent enforcement trends, we argue that enforcement has remained stable (or even tightened) in Europe while it has become

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1 Faure-Grimaud and Martimort (2007) summarize the prevailing view about EU institutions: “the European Central Bank remains the most spectacular example of delegation to a new European institution,” but the EU “has also created a dozen of independent agencies over the last thirty years or so [...] For instance, in the field of merger control, the European Commission was delegated the competence to regulate mergers under the 1989 Merger Control Regulation.”
laxer in the U.S.

Last, we focus on the US and show that political expenditures have decreased enforcement and increased regulatory barriers to entry. For enforcement, we gather political expenditures and cases at the federal and state-level; and show that industries and states with rising political expenditures exhibit lower levels of non-merger enforcement. This is remarkable, since we would expect lobbying to increase when cases are anticipated – which introduces an upward bias in the estimated coefficient. We then use Europe as a control group to de-bias the coefficient, which doubles the effect. The de-biased coefficient implies that a doubling of relevant lobbying expenditures reduces the number of cases in a given industry by 11.5%; a sizable effect, considering that lobbying nearly tripled from 1998 to 2008.

For Regulation, we gather industry-level measures of business dynamism from the Census’ Business Dynamics Statistics and regulation from the Mercatus Center (also known as RegData). We show that rising ***

Our paper is related to several strands of literature. We discuss key references here, and provide more detailed discussions throughout the paper. To begin with, our paper relates to the literature on political economy, commitment and institutions. A classic idea from monetary economics is that rules dominate discretion when optimal policies are time-inconsistent (Kydland and Prescott, 1977; Calvo, 1978). Reputation can sustain some rules (Barro and Gordon, 1983) but external commitments can be necessary, such as appointing conservative policy makers (Rogoff, 1985) or implementing a currency board or a monetary union. We argue that this idea also applies to anti-trust and we provide supporting evidence from EU countries. Faure-Grimaud and Martimort (2003) and Faure-Grimaud and Martimort (2007) analyze the issue of regulatory independence. They argue that regulatory independence can insulate policies from political cycles, but can increases the scope for regulatory capture. More broadly, our paper sheds light on how effective enforcement can change over time. This is a particular example of change in economic institutions as pioneered by North (1990) and discussed by Acemoglu et al. (2005). The main difference is that we emphasize recent changes in developed and democratic societies and that we emphasize independence from political influence.

Second, our paper relates to the active debate regarding the evolution of antitrust enforcement and regulation in the US. Kwoka (2015) shows that between 1996 and 2008 the FTC stopped enforcing mergers down to 5 or 6 competitors; and Bergman et al. (2010) find that the EU was tougher than the US for dominance mergers – at least up to 2003. Regarding regulation, Davis (2017) argues that barriers to entry also arise from excessively complex regulations.

The remainder of this paper is organized as follows. Section 1 presents our model of regulatory independence. Section 2 focuses on antitrust enforcement. It begins by discussing the history and evolution of relevant institutions and ideas in both sides of the Atlantic, before contrasting recent enforcement trends. It then focuses on the US and studies the effect of political expenditures on industry and state-level enforcement. Section 16 moves to product market regulation. It again discusses the history and evolution of relevant institutions as well as recent trends, before studying the effects of rising regulation on business dynamism in the US. Section 4 concludes.
1 Model

There are two goods, two periods, and either one or two countries. Roughly speaking, we interpret the first period as the 1980’s and 1990’s, when EU institutions are designed, and we interpret the second period as the 2000’s when we start noticing the surprising evolution of the US relative to Europe.

1.1 One country

As usual the mode is solved by backward induction so we start with the second period, where the regulator is in place.

Technology, Preferences and First Best Allocations The economy produces and consumes two goods indexed by \( i \in \{1, 2\} \). Let \( x \) denote consumption and \( n \) denote labor. Households’ preferences are

\[
\sum_{i=1}^{2} u(x_i) - n
\]

where we assume that \( u \) is strictly increasing and strictly concave. The technology has constant returns to scale and uses only labor \( x_i = n_i \). Labor market clearing requires \( n = \sum_{i=1}^{2} n_i \). The planner’s problem is

\[
\max \sum_{i=1}^{2} u(x_i) - x_i
\]

The planner solution is \( x_1^* = x_2^* \equiv x^* \) and \( u'(x^*) = 1 \). We will later study the particular case where the utility function is log: in that case \( x^* = 1 \) and \( n^* = 2 \).

Regulated Monopolies Let us now consider the market equilibrium under regulation. To capture in a simple way the main effects of regulation in the goods markets, we assume that the regulator sets an upper bound \( \mu \) on the markup that firms can charge, i.e., firms in industry \( i \) cannot set a markup higher than \( \mu_i \). In equilibrium firms choose the maximum price

\[
p_i = (1 + \mu_i) w
\]
Given prices and wages, household maximize

\[ U = \max \sum_{i=1}^{2} u(x_i) - n \]

\[ \text{s.t.} \sum_{i=1}^{2} p_i x_i = wn + \sum_{i=1}^{2} \Pi_i \]

where \( \Pi_i \) are profits from industry \( i \). Let \( \lambda \) be the Lagrange multiplier on the budget constraint. We have \( u'(x_i) = \lambda p_i \) and \( 1 = \lambda w \). Using (3), we then get

\[ u'(x_i) = 1 + \mu_i \]

So there is simple direct mapping between the markups and the quantities produced in equilibrium. We can therefore think of the regulator as indirectly choosing the quantities \( \{x_i\}_{i=1,2} \). This leads to the indirect utility function for the households

\[ U(\{x_i\}) = \sum_{i=1}^{2} u(x_i) - x_i \]

Profits (in real terms) are

\[ \Pi_i \equiv \pi(x_i) = \mu(x_i) x_i \]

Note that

\[ \frac{\partial \pi}{\partial x_i}(x^*) < 0 \]

This is simply because \( \mu(x^*) = 0 \) and \( \frac{\partial \mu(x_i)}{\partial x_i} < 0 \). We assume for convenience that \( \frac{\partial \pi}{\partial x_i} < 0 \) for the relevant range of values.\(^2\)

**Ex-Post Regulatory Capture**  We think of an economy where firms influence politicians and politicians influence regulators. As in the political support literature, we assume that politicians’ utility is a mixture of social welfare and corporate profits

\[ V(\epsilon) = U + \gamma \Pi_\epsilon \]

where \( \epsilon = 1, 2 \) with equal probabilities. Thus we assume random regulatory capture by one of the two industries. Our specification of the utility function is similar to the one in Grossman and Helpman (1994). The main difference is that we assume that regulation are enforced by regulators, and only indirectly influenced by politicians, to the extent that regulators are not fully independent. Regulators maximize a weighted average of social welfare and politicians’ utilities

\[ \max_{\{\mu_i\}} (1 - \theta) U + \theta V(\epsilon) \]

\(^2\)For instance, if \( u \equiv \log \), then \( x^* = 1 \) and \( \pi_i(x_i) = 1 - x_i \).
The parameter $\theta$ captures the degree of influence of politicians over regulators, which we take as given for now, and endogenize in the next section. The program of the regulator is equivalent to

$$\max_{\{x_i\}} U (\{x_i\}) + \theta \gamma \Pi$$

Let us define $\bar{m}_\theta$ as the solution to

$$u' (\bar{m}_\theta) \equiv 1 - \theta \gamma \pi' (\bar{m}_\theta)$$

In the log-utility case, for instance, we have $\bar{m}_\theta = \frac{1}{1 + \gamma \theta}$. We then have the following Lemma

**Lemma 1.** The equilibrium under regulation is

$$x_i (\epsilon = i) = \bar{m}_\theta$$

$$x_i (\epsilon \neq i) = x^*$$

where $\bar{m}_\theta < x^*$. The indirect utility is

$$U (\epsilon, \theta) = \bar{U} (\theta) = u (x^*) - x^* + u (\bar{m}_\theta) - \bar{m}_\theta$$

and profits are

$$\Pi_i (i, \theta) = \pi (\bar{m}_\theta) > 0$$

and $\Pi_i (i^\gamma, \theta) = 0$.

**Proof.** The regulator sets markup limits to maximize

$$\sum_{i=1}^{2} u (x_i) - x_i + \theta \gamma \pi (x)$$

The first order conditions are then

$$u' (x_i) = 1 - \theta \gamma \pi' (x_i) \mathbb{I}_{\epsilon = i}$$

and $\bar{m}_\theta < x^*$ since $\pi' (x^*) < 0$.

Ex-Ante Design of Regulatory Independence  The first period corresponds to the design of institutions. To be concrete, in the case of Europe, we think of politicians and civil servants setting up the framework for EU antitrust policy in the 1990’s. Formally, these “early” politicians choose $\theta$ to maximize

$$V_0 = \max_{\theta} \mathbb{E} \left[ U (\epsilon, \theta) + \beta \sum_{i=1}^{2} \Pi_i (\epsilon, \theta) \right] = \bar{U} (\theta) + \beta \pi (\bar{m}_\theta)$$
Thus $\beta$ captures the influence of industrialists at this early stage. It is easy to see that the optimal choice is to set $\theta \gamma = \beta$.

**Lemma 2.** In a closed economy (one country), the politicians choose a regulatory framework with influence parameter

$$\tilde{\theta} = \frac{\beta}{\gamma}$$

Formally, the parameter $\beta$ captures the influence of industrialists at this early stage. In reality, there are also important ideological differences between countries in the way they think about regulating markets. To some extent, the UK and the US on the one hand, and France on the other hand, represent polar cases. In France, there is a long tradition of “Colbertism”, which argues for state intervention in the economy and for industrial policy aimed at protecting firms from excessive competition. Historically, the UK, and later the US, have been champions of a more free-market approach, and have been suspicious of politicians exerting direct influence on business decisions. These stereotypes are somewhat simplistic but they capture a first order difference in how countries operate.

**1.2 Two Countries**

The key idea that we want to analyze is the fear that a common regulator would be captured by politicians from another country. To do so, we extend our model to two countries and we assume that production is specialized. For simplicity, in the two country case, we consider the case of log-utility: $u \equiv \log$. The general case is presented in the Appendix. Country $j$ produces good $x_j$. For country 1, we have

$$U_j = \sum_{i=1}^{2} \log (x_{i,j}) - n_j$$

In our notations $x_{1,2}$ is the export of good 1 from country 1 to country 2. Market clearing requires

$$n_j = \sum_{k=1}^{2} x_{j,k}$$

We assume the law of one price. Using the demand curve and the optimal labor supply in each country, we get

$$x_{i,j} = \frac{w_j}{p_i}$$

Balanced trade requires

$$p_1 x_{1,2} = p_2 x_{2,1}$$

This implies $w_1 = w_2$.\(^3\) Given that wages and prices are equalized, so are the quantities consumed: $x_{i,i} = x_{i,j} \equiv x_i$ where

$$x_i = \frac{1}{1 + \mu_i}$$

\(^3\)This is the simplification brought by assuming log preferences. When the demand elasticity is not one, then the relative wage will in general differ from one. This does not change our main results but it complicates the exposition.
Market clearing requires $n_i = x_{i,i} + x_{i,j} = 2x_i$, so in equilibrium, we have

$$U_i = \log(x_i) + \log(x_j) - 2x_i$$

and profits are

$$\Pi_i = 2(1 - x_i)$$

**Ex-Post Regulatory Capture** The countries have designed a common regulator in period 1. Politicians care about domestic welfare and the profits from domestic industries. Politicians from country $i$ have utility $V_i = U_i + \gamma \Pi_i$. Politicians from each country attempt to influence the common regulator and succeed randomly. The regulator therefore maximizes

$$\max_{\mu} (1 - \theta)(U_1 + U_2) + \theta \epsilon$$

With probability $1/2$, country 1 gets to influence the regulator. In that case, $\epsilon = 1$, the regulator solves

$$\max_{x} U_1 + (1 - \theta)U_2 + \theta \gamma \Pi_1$$

This is equivalent to maximizing $(2 - \theta) \log(x_1) + (2 - \theta) \log(x_2) - 2x_1 - 2(1 - \theta)x_2 + 2\theta \gamma (1 - x_1)$. The solution when $\epsilon = 1$ is

$$x_1(1) = m(\theta) = \frac{1 - \theta}{1 + \theta \gamma} < \bar{m}_\theta$$

$$x_2(1) = M(\theta) = \frac{1 - \theta}{1 - \theta} > x^* = 1$$

The allocation is distorted in two ways compared to the one country model. First, politicians perceive a different trade-off between profits and welfare because some of the higher prices are paid by foreign households. This explains why $m(\theta) < \bar{m}_\theta$. Second, the planner imposes lower markups to foreign producers in order to benefit domestic households. This explains why $M(\theta) > 1$. This corresponds to a form of “regulatory overreach”, as emphasized by the Chicago school.

**Ex-Ante Design of Regulatory Independence** Let us consider country 1’s favorite choice of $\theta$ at the design stage

$$V_{0,1} = \mathbb{E}[U_1(\epsilon, \theta) + \beta \Pi_1(\epsilon, \theta)] = \frac{1}{2} (\log(m_\theta) + \log(M_\theta) - 2m_\theta + 2\beta (1 - m_\theta)) + \frac{1}{2} (\log(M_\theta) + \log(m_\theta) - 2M_\theta + 2\beta)$$

$$= \log(m_\theta) + \log(M_\theta) - (1 + \beta)m_\theta - (1 + \beta)M_\theta + 2\beta$$

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4In our simple setup, producers of good $y$ have negative operating profits because we consider a benchmark model where is the natural markup is 0. It is easy to extend the model to include fixed costs and a positive natural markup pinned down by free entry. In that case operating profits would be still positive.
This new program differs from the one country program in two ways. First, \( m(\theta) \) implies a different mapping. This means that, even if we ignored \( M_\theta \), implementing the preferred markup \( \beta \) would require a lower \( \theta \) to match \( m(\theta) = \frac{1}{1+\beta} \). Second, increasing \( \theta \) lowers \( m \) but it increases \( M \). This implies more independence and lower average markups. The following proposition summarizes our results.

**Proposition 1.** With two-countries, politicians choose a degree of independence which is strictly higher than in the one country case, but strictly less than the planner’s solution:

\[
\theta^{(2)} \in (0, \bar{\theta})
\]

As long as \( M'(\theta) > 0 \), the equilibrium also implies more competitive markets: \( m(\theta^{(2)}) > \bar{m}(\bar{\theta}) \).

Proof. \( M \) is a strictly increasing function of \( \theta \). We can thus write \( M(m) \) as a decreasing function and use \( m \) as a choice variable.

\[
m(\theta) = \frac{1 - \frac{\theta}{2}}{1 + \theta \gamma} \Rightarrow \theta = \frac{1 - m}{\frac{1}{2} + m \gamma}
\]

\[
M(\theta) = \frac{1 - \frac{\theta}{2}}{1 - \theta} \Rightarrow M(m) = \frac{\frac{1}{2} + \gamma \frac{1}{2m}}{1 + \gamma - \frac{1}{2m}}
\]

The objective function is then

\[
V_{0,1}(m) = \log (m) + \log (M) - (1 + \beta) m - (1 + \beta) M + 2\beta
\]

The derivative is

\[
\frac{\partial V_{0,1}}{\partial m} = \frac{1}{m} - \left( 1 + \beta + \frac{\partial M}{\partial m} \left( 1 + \beta - \frac{1}{M} \right) \right)
\]

Since \( M > 1, \frac{\partial M}{\partial m} (1 + \beta - \frac{1}{M}) < 0 \) and therefore \( m \) is larger than \( (1 + \beta)^{-1} \). This proves \( \theta^{(2)} < \bar{\theta} \). When \( \theta = 0 \) and \( m = M = 1 \), we have \( \frac{\partial M}{\partial \theta} = \frac{1}{2}, \frac{\partial m}{\partial \theta} = -\frac{1}{2} - \gamma \) therefore

\[
\frac{\partial M}{\partial m} (1) = -\frac{1}{1 + 2\gamma}
\]

Thus

\[
1 + \beta + \frac{\partial M}{\partial m} (1) \beta = 1 + \beta \frac{\gamma}{\gamma + 1/2} > 1
\]

and

\[
\frac{\partial V_{0,1}}{\partial m} (1) < 0
\]

Starting from \( m = 1 \), a marginal decrease in quantities (marginal increase in markups) therefore raises the

\footnote{To achieve the same markup the designer would set \( \theta = -\frac{\alpha}{1+\beta} \). In the case where \( \gamma \) is known in advance this would not really matter. If \( \gamma \) is random, however, then this would have real consequences. An alternative interpretation of recent years could be that EU politicians targeted the same average markup as US politicians, but to do so they had to choose a lower value of \( \theta \). Ex-post, perhaps because of globalization or other technology-driven increase in firm size, there was an unexpected increase in firm lobbying, which led to a higher value of \( \gamma \). Because \( \theta^{UE} < \theta^{US} \), this led to more lobbying and more influence in the US than in the EU.}
ex-ante value function of politicians. This proves $\theta^{(2)} > 0$. QED.

The key insight is that politicians are more worried about the regulator being captured by the other country than they are attracted by the opportunity to capture the regulator themselves.

### 1.3 Extensions

It is straightforward to extend our analysis to the case of $N$ countries. We show in the Appendix that regulatory independence increases with $N$ and converges to a finite value as $N$ becomes large.

**Endogenous Common Market** So far we have assumed that countries choose to set up a common regulator. Let us consider this choice. With two regulators, each one influenced by its own politicians, we would have

$$\max U_1 + \theta_1 \gamma \Pi_1 = \log (x_1) + \log (x_2) - 2 x_1 (1 + \theta_1 \gamma) + 2 \theta_1 \gamma$$

which leads to $x_1 = \frac{1}{2} \frac{1}{1 + \theta_1 \gamma}$. The problem of course is that country 2 does the same thing, so $x_2 = \frac{1}{2} \frac{1}{1 + \theta_2 \gamma}$. Profits are

$$\Pi_1 = 2 (1 - x_1)$$

The ex-ante value for the politicians is

$$V_0 = \mathbb{E} [U_1 (x_1, x_2) + \beta \Pi_1 (x_1)] = \log (x_1) + \log (x_2) - 2 (1 + \beta) x_1 + 2 \beta$$

The preferred choice is $x_1 = \frac{1}{2} \frac{1}{1 + \beta}$. This can be implemented using the same degree of independence as in the closed economy case $\beta = \theta_1 \gamma$. The ex-ante utility of having separate (sep) regulators is

$$V_0 (sep) = 2 \beta - 1 - 2 \log (2 (1 + \beta))$$

Recall that with one regulator (integration, int), the value was

$$V_0 (int) = 2 \beta + \log (m) + \log (M) - (1 + \beta) m - (1 + \beta) M$$

for the optimally chose $\theta = \theta^{(2)}$ and the implied $m (\theta^{(2)})$ and $M (\theta^{(2)})$. We can show the following proposition

**Proposition 2.** **There exist an upper bound on political capture $\bar{\beta}$ such that if $\beta < \bar{\beta}$ the politicians of the two countries decide to set up a common regulator as described in Proposition 1.**

Politicians prefer to integrate as long as $V_0 (int) - V_0 (sep) > 0$. We have

$$V_0 (int) - V_0 (sep) = 1 - (1 + \beta) m - (1 + \beta) M + \log (m) + \log (M) + 2 \log (2 (1 + \beta))$$

When $\beta = 0$, politicians are benevolent. In that case they recognize the benefits from avoiding trade distortions. They choose integration. Formally, when $\beta = 0$, we have seen that $m = M = 1$. Since
2 \log (2) > 1, we have \( V_0 (\text{int}) - V_0 (\text{sep}) > 0 \). By continuity this extends to values of \( \beta \) that are strictly positive. On the other hand, if \( \beta \) is very large, we have \( V_0 (\text{int}) - V_0 (\text{sep}) < 0 \).

It is also important to put the discussion of antitrust in Europe in the broader context of economic integration and the Single Market. Why did European economic integration happen so quickly in the 1980s and 1990s? The answer is far from obvious. The single market was not the by-product of some inevitable process of globalization. An astute observer in 1980 could not easily have predicted the rapid emergence of the single market. Instead, Jabko (2012) argues that the European Commission played to its advantage the idea of the ‘market’ in order to promote European integration. Jabko’s demonstration relies on four detailed case studies: the integration of financial markets, the deregulation of the energy market, structural policies (such as development policies for new member states), and the European Monetary Union (EMU). In all these cases, Jabko argues that the Commission used the idea of the market to promote its agenda of European integration. This idea, however, meant different things to different people. Depending on the audience, it was possible to emphasize the free-market component, the common regulation, or the protection from the economic giants of Asia and America.

Asymmetric Countries So far we have considered equilibria with ex-ante identical countries. It is theoretically and empirically useful to consider asymmetric equilibria. Empirically, some of our tests relate to ex-ante heterogeneity. For instance, whether ex-ante weaker countries benefit more. Consider a country with initially larger \( \beta \) that most other countries. This country has captured politicians, captured regulators, and weak competition. If it joins the single market, it benefits from better regulations. This is fairly obvious. The more subtle question is whether the country’s politicians will be willing to join. From the analysis above, however, we know that as long as \( \beta \) is not too large, the politicians prefer to join.

\[
V_{0,1} (\text{sep}) = 2 \beta_1 - 2 (1 + \beta_1) x_1 - \log (2 (1 + \beta_1)) - \log (2 (1 + \beta_2))
\]

2 Antitrust

2.1 A Brief History of Antitrust Institutions on both Sides of the Atlantic

2.1.1 Antitrust in the US

Antitrust laws are influenced by the evolution of market structures, business practices, and economic analysis. The Sherman Act of 1880 was motivated by the growth of large-scale businesses during the industrial revolution. The Clayton Act of 1914 was the first attempt to deal with anti-competitive mergers and acquisitions. It was motivated by larger mergers that fell outside the purview of the Sherman Act of 1890. The Clayton Act prohibited any company from buying the stock of another company when “the effect of such acquisition may be substantially to lessen competition”\(^6\). In the 1950’s the Clayton Act was expanded to

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\(^6\)This is from Section 7 of the Clayton Act. A distinctive feature of Section 7 is that it lowered the standard of proof for the anti-competitive effects. Under Section 7, mergers could be forbidden when “the trend to a lessening of competition in a line of commerce was still in its incipiency;” whereas the Sherman Act requires proof of extant harm to competition, as explained in Institute (2013). The original Section 7, enacted in 1914, only prohibited the acquisitions of “stock” of one corporation by another corporation, and, by its explicit term, it was not applied to the “assets” acquisitions. As a result, businesses found their ways to
include assets as well as stock acquisitions.

The economic understanding of antitrust has also evolved significantly over time, in particular following the Chicago school revolution, which put economic efficiency at the center of antitrust policy, and the influential book by Robert Bork (Bork, 1978). As Kwoka and White (2014) explain “the skepticism and even some hostility toward big business that characterized the initial period of antitrust have been replaced by current policy that evaluates market structure and business practices differently.” For instance, high concentration does not necessarily imply market power. These evolutions are reflected in the various vintages of the Merger Guidelines, initially developed by the DoJ’s Antitrust Division in 1968. Major revisions to the guidelines took place in 1982 and 2010.

At the federal level, the relevant responsibilities are mostly divided between the DoJ Antitrust Division and the Federal Trade Commission (FTC), although some industries, such as railways and Telecoms, also have their own regulators. The FTC is a quasi-judicial, independent regulatory agency led by five commissioners. Each commissioner is nominated by the President, confirmed by the Senate, and serves a seven-year term. The terms are staggered and no more than three commissioners can be from the same political party. The President designates one of the commissioners as the Chairman. The DOJ is part of the executive branch, operating under the U.S. Attorney General. An Assistant Attorney General, nominated by the President and confirmed by the Senate, leads the Antitrust Division. The authorities of the FTC and DoJ can overlap, but in practice they tend focus on particular industries or markets. For example, the DOJ typically investigates mergers in the Financial Services, Telecommunications, and Agricultural Industries, while the FTC typically investigates mergers in the Defense, Pharmaceutical, and Retail Industries. Before opening an investigation, the agencies consult with one another. State Attorney Generals also play a role in antitrust enforcement. They can bring actions to enforce their state’s own antitrust laws. They can bring federal antitrust suits on behalf of individuals residing within their states, or on behalf of the state as a purchaser.

2.1.2 Antitrust in the EU

The history of EU antitrust is more recent. In 1957 the Treaty of Rome laid the foundations of European competition policies, building on the Treaty of Paris that established the European Coal and Steel Community (ECSC) in 1951. Article 3(1)(g) of the Treaty of Rome envisions “a system ensuring that competition in the internal market is not distorted”. Council Regulation 17 made the enforcement powers effective in 1962, and the EU Commission made its first decision in 1964. This regulation was modernized by regulation 1/2003, which is has been effective since May 2004. Articles 81 of the Treaty of Rome deals with horizontal conduct, vertical restraint, licensing, and joint ventures. Article 82 deals with the anti-competitive effects of dominant position. Merger regulations were added in 1989. Member states have national competition authorities (NCAs) to deal with cases that have national impact. The European Commissioner for Competition and the Directorate-General for Competition (DG Comp) enforce European competition law in cooperation with the NCAs. DG Comp prepares decisions in three broad areas: antitrust, mergers, and State aid.

An interesting debate – and important for our analysis – concerns the influence of the US on Europe. This debate has evolved in three stages. At first, the common wisdom was that EU laws were direct descendants evade the prohibition by buying target corporation’s assets. Congress amended Section 7 to fix this loophole.
of US laws. Berger (1998) challenged this view and showed that EU laws also had their own “indigenous” traditions. Since then, scholars have reached a more balanced view. For instance, Leucht and Marquis (2013) study the exchange of ideas between the US and Europe and Leucht (2009) explores how the traditionally protectionist economies of Western Europe agreed on common competition rules. Nonetheless, the overall theme is that ideas and institutions have largely converged across regions.

Some changes in recent years have been more qualitative but nonetheless important. In particular, the 2004 changes made the DG Comp more transparent and more accountable to the public. It also clarified the notion of unilateral effects in a way that resembles the US approach. Foncel et al. (2007) focus on important changes in the new EC Merger Regulation of 2004. At the same time, the role of economists within the DG comp has increased during the 2000’s, in particular with the creation of the position of Chief Competition Economist in 2003. The position EU commissioner for competition is prestigious, attracts high caliber politicians, and benefits from strong public recognition.

2.2 Recent Trends in US and EU Antitrust

There is an active debate regarding the evolution of antitrust enforcement in the US. Ghosal et al. (2007) argue that “in the more recent era ... non-merger enforcement in the U.S. has experienced a marked decline.” They show that the number of Sherman Act Section 1 and 2 cases decreased from more than 20 per year before 1980 to less than 5 since then. The last landmark antitrust case was Microsoft on 1999. Ghosal et al. (2007) also show that the fraction of mergers that are challenged has fallen dramatically between the 1970s and the 1990s. Ashenfelter et al. (2014) provide a critical evaluation of the legacy of Bork (1978). And Kwoka (2015) argues that domestic merger enforcement has weakened. Vita and Osinski (2016) respond to the criticism and argue that enforcement has been effective. An important part of the debate concerns the proper definition of the market.

The literature has so far emphasized the rise of the Chicago School – and the associated focus on efficiency – as the primary explanation for declining US enforcement. The timing of this explanation appears correct. The Supreme Court first explicitly noted efficiencies to argue in favor of the pro-competitive effects for the Continental TV v. GTE Sylvania (1977) and Merger guidelines started to shift focus away from market concentration towards efficiencies with the 1984 revisions – precisely when US enforcement started to decrease.

We test this hypothesis by comparing recent enforcement trends in the US and Europe. If ideas and institutions are indeed fully responsible for declining enforcement, we should observe similar trends in both sides of the Atlantic. However, this does not appear to be the case. European Antitrust enforcement has remained active in recent years. Carree et al. (2010) show that, on average, 264 cases of antitrust, 284 cases of merger, and 1,075 cases of State aid were investigated every year from 2000 to 2004. The Commission took several controversial decisions, such as blocking the merger of General Electric and Honeywell that had been approved by the US competition authorities. It also recently ruled against Google, in a case that was dismissed by US authorities five-years prior. Interestingly, however, Carree et al. (2010) find that the decisions are not biased against foreign firms. In fact, “firms from non-European countries have fewer infringements, lower fines, and also lower appeal rates.” Moreover, there is virtually no discussion of weak
Antitrust enforcement in Europe – either in Academia or the media – compared to a growing body of work in the US.

Figure 3 begins with indicators of Competition Law & Policy published by the OECD in 2013 (Alemani et al., 2013). Consistent with our model, DG Comp indeed appears to be tough. It attains the lowest possible score (with lowest being more stringent) in three out of the four – and one of the best scores for the fourth one (Advocacy). It scores higher than most European countries as well as the U.S., which interestingly ranks around the median on all measures.

Do the tougher policies translate to tougher enforcement? It appears so.

Let us begin with Cartel cases, which are typically tried in Criminal Courts in the US. Figure 4 shows that the EU has imposed substantially higher fines just for Cartel Cases than the DoJ has imposed across all cases. The increase in Europe was particularly pronounced after 2000, with total cartel fines increasing exponentially from less than one billion in the 1990s to more than 17 billion from 2005 to 2014 (the last decade with available data). Considering all antitrust cases in Europe and controlling for the number corporations fined we reach similar conclusions. The average fine per corporation imposed by DG Comp increased from less than $30 MM euros before 2000 to nearly $300 MM in 2006-2008 (Carree et al., 2010), while the average fine imposed by DoJ remained under $50 MM euros for most of the 2000s.

Let us move to traditional non-merger enforcement, which is typically tried in civil courts in the US. As shown in Figure 5, the number of civil antitrust cases tried by the DOJ under Sections 1 and 2 of the Sherman Act (which include Restraint of Trade and Monopolization, respectively) decreased from about 30 in the 1970s to less than 5 in the late 2000s. By contrast, the number of total antitrust decisions taken by DG-Comp has remained relatively stable since the 1970s. They increase slightly through 1990 and then decrease in the 2000s – but neither the trend nor the decrease is nearly as pronounced as in the U.S. DG-Comp again
appears tougher than DoJ.\footnote{Note that, because a long time series of EU cases or decisions excluding cartels is not available, Cartel cases are included in the EU series. Either way, we have confirmed that since 2000 – when detailed cases are available in DG Comp’s website – DG Comp still initiated an average of 20 cases per year, including 25 cases in 2017.}

Last, let us consider Merger enforcement. Figure 6 shows that between 1996 and 2008 the FTC stopped enforcing mergers down to 5 or more competitors. Relatedly, Bergman et al. (2010) study a detailed sample of EU and US merger investigations from 1993 to 2003 and find that the EU was substantially tougher than the US for dominance mergers, in particular those involving moderate market shares. Some of the differences dissipate following the 2004 EU Merger Reform, but the EU still appears tougher on mergers involving moderate market shares and now seems to apply a more aggressive collusion policy than the US (Bergman et al., 2016).

### 2.3 Why did Enforcement Decrease More in the US?

Ideas and institutions no doubt played a role in the decline in US (and EU) enforcement. But the different trends in both sides of the Atlantic suggest that another explanation may be at play – one that must be consistent with increased convergence of ideas and institutions yet different outcomes. Our model suggests one such hypothesis – political independence – so we test it empirically in this section. We begin by highlighting the growing role of money and business in US politics, and then test this relationship empirically at the industry- and state-level.

#### 2.3.1 A Growing Role for Money and Business in U.S. Politics

Figure 7 begins by showing the growing role of money and business in US politics. Political campaigns have gotten more and more expensive and the underlying contributions are increasingly concentrated. To
Figure 5: Non-Merger Enforcement Time-Series: US vs. EU

Sources: US- DoJ Annual Reports for the US. Carree et al. (2010) for Europe, extended to 2015 based on DG Comp case database. US series excludes Criminal cases, which typically includes Cartels. EU series includes Cartel cases due to limited data availability, but we have confirmed that – since 2000 – DG Comp still tried an average of 20 non-cartel antitrust cases per year, including 25 in 2017.

Figure 6: Merger Enforcement: US vs EU

Sources: Kwoka (2015)
illustrate this, Panel A shows that the cost of winning a House seat doubled since 1986, while the cost of winning a Senate seat increased by 60%. Panel B shows that business PACs and the top 5% of donors account for the vast majority of campaign contributions, while the share of labor PACs and small donors has decreased.\footnote{See Ansolabehere et al. (2003) for related evidence. Not surprisingly, this has coincided with a growing role for businessmen in politics (Panel C) and a more business-friendly Supreme Court (Panel D).}

Focusing on industry political expenditures, Figure 8 shows that campaign contributions more than tripled since 1990 and total lobbying expenditures nearly doubled since 1998. Lobbying to the DOJ and FTC increased nearly doubled from 1998 to 2016, and reached a peak 3x higher than it’s level in 1998 at the height of the Great Recession. Combined, political expenditures account for X% of industry sales and Y% of operating surplus. These contributions are particularly concentrated in more profitable and more concentrated industries (Figure 9) and – within industries – are made by more profitable and larger firms (Figure 10). See Appendix D for regression results studying the determinants of industry and firm political expenditures.

\footnote{Importantly, our campaign contributions data excludes Super PACs for which donor information is not public. Given that Super PACs are often established by large, politically connected institutions and individuals, including them likely exacerbates the trends.}
Figure 8: Industry Campaign Contributions and Lobbying (BN ’14 USD)

Notes: Data from OpenSecrets.com.

Figure 9: Determinants of Political Expenses: Industry-Level

Notes: Bin-scatter plot. Political expenditures from OpenSecrets.com; Lerner Index from Compustat; Concentration ratio from the US Economic Census. Excludes Finance and Education, which are outliers.
Figure 10: Determinants of Political Expenses: Firm-Level

Notes: Bin-scatter plot. Political expenditures from OpenSecrets.com; Firm-level data from Compustat.
2.3.2 The Effect of Political Expenditures on Antitrust Enforcement

Data
In order to test the effect of political expenditures on declining enforcement, we gather three sets of data: First, we gather political expenditures – including Federal Campaign Contributions and Lobbying – from the Center for Responsive Politics (CRP). The CRP (also known as OpenSecrets.org) consolidates and harmonizes data from Government reports. Campaign contributions are available for every two-year election cycle since 1990, while lobbying data is available on an annual basis since 1998. CRP datasets roughly follow an SIC hierarchy.

Second, we manually gather merger and non-merger case data from the DoJ, FTC and DG-Comp websites. DoJ cases are available starting on 1996, and already include the relevant NAICS or SIC industry segment. FTC cases are also available starting on 1996, but provide no industry information. We therefore manually map cases to NAICS industries based on the firms involved in each case. Last, DG Comp cases are available starting on 1998 following ISIC Rev. 4 segments. Mapping to NAICS (or SIC) industries are provided for most DoJ cases.

Last, we gather a wide range of micro- and macro-economic data to include as controls and to test the real effects of enforcement. Namely, we use US KLEMS and Compustat US data when studying US cases; and a mixture of OECD STAN, EU KLEMS, ECB CompNET and BvD Orbis when contrasting the US and EU evolutions. Throughout our analyses, we use the most granular segments available, that can be mapped to the available datasets. See Appendix B for additional details on the datasets.

Empirical Strategy
We want to explain regulatory enforcement actions in the US \( n_{jt}^{US} \), which are primarily driven by regulatory concern \( u_{jt} \). \( u_{jt} \) depends on a wide range of industry characteristics such as industry concentration, profitability and barriers to entry, as well as actual antitrust violations and technological innovations that may change the market structure (e.g., winner-take-all effects). Faced with increased regulatory scrutiny, incumbents will increase political expenditures \( x_{jt}^{US} \) aiming to reduce the likelihood or severity of antitrust activity. Thus, the system of equations can be denoted as

\[
\begin{align*}
    n_{jt}^{US} &= u_{jt} - \beta x_{jt}^{US}, \\
    x_{jt}^{US} &= \gamma u_{jt} + \varepsilon_{jt},
\end{align*}
\]

where \( \beta > 0 \) measures the elasticity of enforcement action to political expenditures; \( \gamma > 0 \) measures the elasticity of political expenditures to regulatory concern and \( \varepsilon_{jt} \) denotes random noise in political expenditures. Importantly, this system does not imply that all political expenditures are bad. \( u_{jt} \) may be too high (e.g., because of regulatory over-reach, limited consideration of efficiency benefits or technological changes that support a more concentrated market structure) and political expenditures can help educate regulators bring enforcement closer to the social optimum.

Nonetheless, a regression of the form

\[
    n_{jt}^{US} = \beta x_{jt}^{US} + \gamma_j + \alpha_t + \varepsilon_{jt} \quad (4)
\]
will yield a biased coefficient. When using OLS, for example, we would recover

$$\hat{\beta}_{OLS} = -\beta + \frac{\gamma \sigma_u^2}{\sigma_x}$$

where the second term is positive and introduces an upward bias in the coefficient of interest.

That said, we can use enforcement in Europe to address some of these identification concerns. First, assuming that US political contributions have no effect on EU enforcement and that regulatory concern \( u_{jt} \) is equivalent across regions, we can use EU cases to de-bias the US coefficient. Namely, if \( \beta = 0 \),

$$n_{jt}^{EU} = u_{jt} \Rightarrow \text{cov}(n_{jt}^{EU}, x_{jt}^{US}) = \gamma \sigma_u^2,$$

such that

$$\hat{\beta} = -\hat{\beta}_{OLS} + \frac{\text{cov}(n_{jt}^{EU}, x_{jt}^{US})}{\sigma_x^2}.$$

**Base Results.** Table 2 begins by estimating the (biased) effect of increased political expenditures on US antitrust enforcement. Our dependent variable is the number of non-merger cases in the US, for a given industry \( j \) and 2-year election cycle \( t \). We focus on non-merger cases for two reasons. First, Mehta et al. (2017) already provide a thorough study of the effects of political expenditures on Merger enforcement. Second, merger enforcement is heavily dependent on merger activity, which occurs in waves across industries and is therefore hard to control for.

We use a negative binomial specification given the count nature of the dependent variable and the fact that it exhibits over-dispersion. Thus, the number of cases is modeled as a nonlinear function of political contributions \( x_{jt} \) and controls \( y_{jt} \)

$$n_{jt}^{US} \sim \text{Neg. Bin.}(\mu_{jt}, \alpha)$$

$$\mu_{jt} = \exp \{ \log(t_{jt}) + \beta_0 + \beta x_{jt}^{US} + \delta y_{jt} + \gamma_j + \theta_t + \varepsilon_{jt} \}$$

where \( \alpha \) controls the variance of the distribution, \( \gamma_j \) denotes industry fixed effects and \( \theta_t \) denotes election cycle fixed effects. \( y_{jt} \) is a vector of industry controls including those variables that were found to best explain antitrust enforcement activity in the US and Europe. In particular \( y_{jt} \) includes industry and election cycle fixed effects, median \( Q \) and median operating surplus over capital \( (OS/K) \) across all Compustat firms in industry \( j \) at time \( t \), the squared Census-based top 8-firm concentration ratio\(^{10}\) and the share of intangible capital as measured by US KLEMS. Industry fixed effects control for constant industry characteristics; election cycle fixed effects control for long run trends in enforcement activity; and the remaining controls

---

\(^9\)This is a strong assumption that is likely to be violated in some cases. We use it as a benchmark for comparison rather than a well-measured quantity.

\(^{10}\)We use the squared concentration ratio as opposed to the level because it exhibits a better fit. This is consistent with the use of Herfindahls as a proxy of concentration.
correspond to the . Identification, therefore, comes from cross-sectional variation in cases and political expenditures.

Column 1 shows that industries with higher (lagged) lobbying expenditures experienced fewer cases. But not all lobbying expenditures will relate to antitrust activity, so Column 2 focuses on lobbying to the DoJ or the FTC directly and finds a similar effect. In unreported tests, we find that lobbying for issues labeled as “LBR” (which include antitrust).

Column 3 shifts to political contributions – and removes the lag to align with Stratmann (1995), who finds that contributions have a larger effect on contemporaneous decisions. We again find fewer enforcement activity in industries with higher contributions. Column 4 shows that campaign contributions to the party in power have a larger effect on enforcement. Last, we would expect contributions to have a larger effect in industries where politicians can further affect enforcement activity. The FTC is more dependent on political activity, so we interact contributions with an indicator for industries where the FTC is the main regulator in column 5. We again find a stronger response in these industries. Last, column 6 considers total political expenditures (campaign contributions plus lobbying) and shows a similar effect.

Given that Lobbying to the DOJ and FTC represents the most direct measure of political expenditures relevant for antitrust, and is available annually, we use this quantity as our base estimate for the remainder of the paper.

**De-biasing $\beta$.** Let us move on to cases in Europe. We begin by showing that lobbying expenditures in the US predict cases in Europe.\(^{11}\) In particular, Table 3 regresses $n_{j\ell}^E$ on US lobbying expenditures, including cases in the US as a control ($n_{j\ell}^U$) as well as measures of mark-ups, concentration and sales in Europe. As shown, total as well as DoJ and FTC lobbying expenditures in the US predict higher total and non-merger cases in Europe. This is consistent with US industries reacting to higher expected regulatory concern $u_{j\ell}$ by lobbying. The lobbying leads to fewer cases in the US relative to the number of cases in Europe. This is true even controlling for differences in industry structures across regions.

We can therefore use European cases to de-bias our estimate of $\beta$. We use OLS estimates given the ease of transformation and report results using the DOJ and FTC lobbying expenditures. Namely,

$$
\beta = -\tilde{\beta}_{OLS} + \frac{\text{cov}(n_{j\ell}^E, x_{j\ell}^U)}{\sigma_x^2} = -(-0.064) + \frac{0.19}{3.78} = 0.115
$$

As shown, the coefficient on lobbying expenditures nearly doubles, which suggests that the bias is significant. The de-biased coefficient implies that a doubling of lobbying expenditures to the DOJ and FTC reduces the number of cases in a given industry by 11.5%; a sizable effect, considering that such lobbying nearly tripled from 1998 to 2008.

\(^{11}\)See appendix for results using campaign contributions
Table 2: US Political Expenditures and US Non-Merger Enforcement

Table reports negative binomial regression results of the number of non-merger US enforcement cases per election cycle on varying measures of federal political expenditures. All regressions include industry and election cycle fixed effects, as well as controls for industry Q and profitability (from Compustat), concentration (from the US Economic Census) and intangible intensity (from US KLEMS). US cases gathered manually from the DoJ and FTC websites. Industries follow the US KLEMS segments, which roughly map to NAICS level 3. Log-Cont x Party defined as the interaction of contributions to each party times an indicator for whether the party has control of the Senate. Standard errors in brackets. + p<0.10, * p<0.05, ** p<.01.

Again, we find

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24
Table 3: US Political Expenditures and EU Non-Merger Enforcement

Table reports negative binomial regression results of the number of total and non-merger EU enforcement cases per year on total lobbying expenditures on the US. All regressions include industry and year fixed effects, as well as controls for US enforcement cases and EU industry profitability, concentration and sales growth (all from the ECB’s CompNET). Industry segments based on the ECB’s CompNET, which in turn follows ISIC Rev. 4. Antitrust cases gathered manually from the DoJ, FTC and DG Comp websites. Standard errors in brackets. + p<0.10, * p<0.05, ** p<.01.

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Too Much Antitrust in Europe? As noted above, $u_{jt}$ may be too high for either political, technological or institutional reasons. Perhaps regulators over-reach in an attempt to control industries. Perhaps regulators under-estimate the efficiency benefits from large firms; or perhaps they misinterpret recent technological changes that lead to a more concentrated structure for increased monopolistic behavior. Political expenditures – particularly lobbying – is an important channel by which industries can educate regulators about such changes, and potentially bring enforcement closer to the social optimum. This is precisely what the Chicago School achieved in the 1980s, putting efficiency at the forefront of antitrust enforcement.

Could it be that the problem is not too little enforcement in the US but too much enforcement in Europe? We test this by studying the effect of differences in enforcement between the US and Europe on concentration, profitability and productivity across the regions. Higher enforcement will generally lead to lower concentration and lower profit rates. The effect on productivity, however, depends on whether regulators over-reach. If US enforcement is in fact closer to the social optimum, the excess enforcement in Europe would limit efficient growth of the largest firms and therefore result in slower productivity growth. By contrast, if US enforcement is too low, we would expect faster productivity growth in Europe precisely in those industries with higher enforcement.

Table 4 presents the results. Columns 2, 4 and 5 present our base results, where we regress the difference in concentration, profit and TFP growth across regions on the differences in enforcement

$$CR_8^{US-EU,jt-2,t} = \beta \# \text{NonMerger}_{jt}^{EU-US} + \varepsilon_{jt}$$

where $CR_8^{US-EU,jt-2,t} = (CR_8^{US,t} - CR_8^{US,t-2}) - (CR_8^{EU,t} - CR_8^{EU,t-2})$ and $\# \text{NonMerger}_{jt}^{EU-US} = \# \text{NonMerger}_{jt}^{EU} - \# \text{NonMerger}_{jt}^{US}$. Considering the difference across regions controls for common technological changes that may lead to higher concentration or profit rates – and therefore focuses on the effect of enforcement. As shown, industries with more enforcement in Europe relative to the US experienced faster concentration and profitability growth and slower TFP growth in the US relative to Europe – although these are not always statistically significant.

Concentration, profitability and TFP growth are all noisy, so that taking the differences on the dependent variable may introduce substantial measurement error. Columns 1, 3 and 5 report results controlling – rather than subtracting – EU growth in concentration, profitability and TFP. The conclusions remains stable and, consistent with measurement error, the coefficient on EU changes is well-below 1. Figure 11 presents bin-scatter plots of the concentration and productivity relationships, which appear reasonably robust.

Non-merger enforcement is noisy. Upon finding antitrust infringements, regulators often bring several cases against firms in a given industry. Thus, it is not surprising that the results in Table 4 are not always significant. As an additional test, Table 5 studies the effect of lobbying directly, on concentration, profitability and productivity growth. We use the same specification as above, but replace differences in enforcement with US lobbying expenditures to the DOJ and FTC. Consistent with Table 4, industries that lobby more in the US exhibit faster growth in concentration and slower growth in TFP in the US than Europe. The coefficient on profitability is essentially zero. Figure 12 presents the relationships corresponding to columns 1 and 5 graphically by plotting the residuals after controlling for fixed effects. As shown, the relationships appear fairly robust.
Table 4: Real effects of Differences in Cases

Table reports OLS regressions results of the level (columns 1, 3 and 5, respectively) and difference (columns 2, 4 and 6) in US concentration, profitability and TFP growth relative to Europe, on the difference in enforcement activity across regions. Concentration measures based on Amadeus; Profit rates from OECD STAN and TFP growth from EU KLEMS. Antitrust cases gathered manually from the DoJ, FTC and DG Comp websites. Industry segments based on EU KLEMS. Standard errors clustered at the industry-level in brackets. + p<0.10, * p<0.05, ** p<0.01.

\[
\begin{array}{cccccc}
\text{CR}^U_{t-2,t} & \text{CR}^U_{t-2,t} & \text{PR}^U_{t-2,t} & \text{PR}^U_{t-2,t} & \text{TFP}^U_{t-2,t} & \text{TFP}^U_{t-2,t} \\
\#Nonmerger^EUS & 0.042 & 0.160^+ & -0.100 & -0.177 \\
\text{(0.052)} & \text{(0.087)} & \text{(0.146)} & \text{(0.138)} \\
\text{L.}\#Nonmerger^EUS & 0.058^* & 0.062^* & \text{(0.025)} & \text{(0.027)} \\
\text{CR}^EUS_{t-2,t} & 0.039 & \text{(0.085)} \\
\text{PR}^EUS_{t-2,t} & 0.537^{**} & \text{(0.108)} \\
\text{TFP}^EUS_{t-2,t} & 0.421^* & \text{(0.154)} \\
\text{R}^2 & 0.00 & 0.02 & 0.07 & 0.01 & 0.13 & 0.01 \\
N & 300 & 300 & 390 & 390 & 364 & 364 \\
\end{array}
\]

Figure 11: Real effects of Differences in Cases

Notes: Bin-scatter plot of US-EU changes in Concentration and TFP vs. differences in non-merger activity across regions.
Figure 12: Real effects of Lobbying

Notes: Bin-scatter plot of US-EU changes in CR, Profits and TFP vs. US lobbying
### Table 5: Real effects of Lobbying

Table presents panel regressions results of the level (columns 1, 3 and 5, respectively) and difference (columns 2, 4 and 6) in US concentration, profitability and TFP relative to Europe, on US lobbying expenditures. Concentration measures based on Amadeus; Profit rates from OECD STAN and TFP growth from EU KLEMS. Antitrust cases gathered manually from the DoJ, FTC and DG Comp websites. Industry segments based on EU KLEMS. Standard errors clustered at the industry-level in brackets. + p<0.10, * p<0.05, ** p<0.01.

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<td></td>
<td>( CR_{US}^t )</td>
<td>( CR_{US-EU}^t )</td>
<td>( PR_{US}^t )</td>
<td>( PR_{US-EU}^t )</td>
<td>( TFP_{US}^t )</td>
<td>( TFP_{US-EU}^t )</td>
</tr>
<tr>
<td>( \log(\text{LobbyDOJ/FTC})_{t-1} )</td>
<td>0.010( ^+ ) (0.005)</td>
<td>0.013( ^+ ) (0.007)</td>
<td>-0.002 (0.003)</td>
<td>-0.000 (0.003)</td>
<td>-1.148( ^* ) (0.519)</td>
<td>-1.537( ^+ ) (0.883)</td>
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<td>( CR_{EU}^t )</td>
<td>-0.217 (0.283)</td>
<td>0.330( ^* ) (0.150)</td>
<td>0.572 (0.366)</td>
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<td>( PR_{EU}^t )</td>
<td>0.19</td>
<td>0.26</td>
<td>0.29</td>
<td>0.16</td>
<td></td>
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<tr>
<td>( TFP_{EU}^t )</td>
<td>386</td>
<td>386</td>
<td>287</td>
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### 2.4 An Alternate Test: State Cases and Contributions

The main identification concern – that lobbying increases precisely when cases are anticipated – works against the results presented in Section 2.3.2. The fact that we still find a significant relationship suggests that the relationship is fairly strong – an intuition confirmed when de-biasing the coefficient using European antitrust enforcement. Nonetheless, our results cannot rule out all potential concerns for identification. Perhaps technological changes that are unique to the US led to rising profitability and concentration in certain industries. These industries increased lobbying and experienced lower enforcement in the US than in Europe, but for reasons unrelated to lobbying – perhaps just different interpretation of the same ideas.

To mitigate some of these concerns, we present an additional test of the effects of political expenditures on enforcement – one that circumvents industry-specific trends and instead relies on state-level antitrust enforcement. In particular, we gather a list of antitrust enforcement cases initiated by a State Attorney Generals from the Antitrust Multistate Litigation Database\(^{12}\) and campaign contributions for state elections from FollowTheMoney.org. Case data is available since 1990, while contributions are available only after 2000.

Figure 13 shows that – consistent with federal enforcement trends – state-level enforcement decreased since the 1990s. The decrease is particularly pronounced for non-merge cases involving monopolization or collusion. Feinberg and Reynolds (2010) study the determinants of state-level antitrust activity.

\(^{12}\)This database was developed by the National Association of Attorneys General and is available at XXX. Note that some cases include the DOJ as plaintiff but are nonetheless included in our database.
Figure 13: State-level Cases

Notes: Figure plots the number of enforcement cases with state AG’s as plaintiffs, by type. Data from the NAAG’s Antitrust Multistate Litigation Database.

Figure 14 adds total campaign contributions which have nearly doubled since 2003. We use the four-year moving average because contributions exhibit substantial seasonality – increasing with Governor elections.

We then regress the number of State-level enforcement cases for each state election cycle, on campaign contributions. We include state and election cycle fixed effects, as well as state-level output (GSP) and unemployment as controls. We use a Poisson panel regressions because – once controlling for state and year fixed effects – the data no longer exhibits over-dispersion. Consistent with our industry-level results, state-level contributions predict significantly fewer non-merger enforcement cases. The coefficient on merger cases is positive, but this likely depends on state-level merger activity. See Appendix E for additional results using Tobit (where the number of cases is normalized by GSP) and OLS specifications which yield consistent results.

3 Product Market Regulation

Let us now move on to Product Market Regulation (PMR). We provide an overview of governmental institutions relevant for PMR on both sides of the Atlantic and discuss the evolution of PMR across countries. We then focus on the US and study the role of Regulation and lobbying on business dynamism.

---

13 Note that we include the two-year period corresponding to each state’s election cycle, but include only one election cycle fixed effect for every two-year period. See Appendix B for additional details on the timing of election cycles and campaign contributions, which is rather nuanced given the variability across states.

14 Feinberg and Reynolds (2010) identify other predictors for state-level enforcement, but virtually all of these would be absorbed by the fixed effects.
Figure 14: State Political Contributions and # of Non-merger Antitrust Cases

Notes: Case data from the NAAG’s Antitrust Multistate Litigation Database. State campaign contributions from FollowTheMoney.org. We report the four-year moving average contributions given the seasonality of election cycles.

Table 6: State-Level Contributions and Enforcement

Table reports the results of a Poisson panel regression with state and election cycle fixed effects. Regression includes every two-year election cycle. State cases from NAAG. Party contributions from FollowTheMoney.org. State-level output and unemployment from FRED. Robust standard errors in brackets. + p<0.10, * p<0.05, ** p<.01.

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<td># Cases 4Y MA(t)</td>
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<td></td>
</tr>
<tr>
<td>Total</td>
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<td>-0.347*</td>
<td>0.102</td>
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<td>Non-merger</td>
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<tr>
<td></td>
<td>[0.578]</td>
<td>[0.719]</td>
<td>[1.962]</td>
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<tr>
<td>Log(GSP 4Y MA)(t-2)</td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>YES</td>
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</table>
3.1 PMR Institutions on both Sides of The Atlantic

3.1.1 PMR in the US

[TO BE COMPLETED]

3.1.2 PMR in the EU

[TO BE COMPLETED]

Integration of EU Commission policy on individual countries has had a material effect on regulation and enforcement.

3.2 Recent Trends in US and EU PMR

The role of PMR on business dynamism and competition is the subject of a long literature. For instance, Hopenhayn and Rogerson (1993) shows that increasing adjustment costs through regulation reduces job destruction but also decreases job creation, startups, and productivity. And several articles establish an empirical relationship between economic outcomes and regulations. See Section 2.1 in Goldschlag and Tabarrok (2018) for a good literature review. Across countries, the OECD has published PMR indices for most advanced economies since at least 1997. We discuss the underlying trends in this section.\(^\text{15}\)

To begin with, Figure 15 shows that higher PMR was related to higher profit rates in 1998.\(^\text{16}\) Countries like Greece and Poland – which exhibited the highest PMR indices in Europe – also had some of the highest Gross Profit Rates among advanced economies. By contrast, the US and Great Britain scored highest in PMR and exhibited the lowest profit rates. Similar results are obtained for measures of Concentration.

What has happened to PMR indices since then? Figure 16 shows the evolution of PMR indices for the US (line) and European countries (dots). The US was clear leader in PMR in the late 1990s. It scored the second highest score, behind Great Britain. But the trends have since reversed. PMR decreased drastically for all EU economies, yet remained stable in the US. Only Greece and Poland scored worse than the US in 2013, and by a small margin.

Part of these trends are the result of increased convergence in PMR globally, as shown in Figure 17. PMR indices declined more from 1998 to 2013 in countries with initially higher indices. But only the US maintained its PMR index stable. Even countries that started close to or below the US declined their PMR further. Interestingly, the decline is substantially more pronounced in Europe.\(^\text{17}\) Could this be the result of pressure from and delegation to European institutions? If so, we would expect a larger effect for EU countries with initially weaker institutions. Figure 18 tests this theory, by plotting changes in PMR indices against the World Bank’s Corruption Control index, as of 1996. As shown, PMR decreased precisely at those countries with initially weaker institutions in Europe, while the relationship is much weaker in the rest of the world.\(^\text{18}\)

\(^{15}\)The World Bank and the World Economic Forum also publish measures of Regulatory Barriers to competition. We focus on the OECD’s measures because they are more detailed and specific, though Appendix F shows that World Bank measures yield similar conclusions. WEF measures suggest different story, but they are likely less reliable since they are based on a survey of business executives.

\(^{16}\)In unreported tests, we confirm that these relationships are statistically significant in both levels and changes.

\(^{17}\)In unreported tests, we find that the differences in convergence between EU and non-EU countries is statistically significant.
Figure 15: PMR vs. Profits (1998)

![Graph showing PMR vs. GOS/VA (1998)]

Note: PMR from OECD. Profitability from OECD STAN for Non-Agriculture Business sector excluding RE.

Figure 16: Product Market Regulations, US vs EU

![Graph showing Product Market Regulations, US vs EU from 1995 to 2015]  

Note: OECD PMR
world. Importantly, this is not just the result of countries with weaker institutions having higher PMR indices to begin with, which simply converge over time. As shown in Figure 19, countries with weaker institutions do start from higher PMR levels. But PMR indices converge across levels of Corruption Control only in the EU. Non-EU countries continue to exhibit strong positive relationship between PMR and Corruption Control even in 2013.$^{18}$

3.3 Lobbying, Regulation and Business Dynamism in the U.S.

Has the relative increase in regulation affected Business Dynamism in the US? This is, again, the subject of an active debate. Davis (2017) argues that excessively complex regulations has increased barriers to entry in the U.S; and Grullon et al. (2016) point to Regulation as a potential explanation for rising industry concentration and profitability. Moving from aggregate to industry-level, Faccio and Zingales (2017) study the impact of regulation on concentration, competition and prices for the mobile telecommunication sector. They find that pro-competition regulation reduces prices, but does not hurt quality of services or investments. They compare the U.S. and Europe and conclude that “U.S. consumers would gain $65bn a year if U.S. mobile service prices were in line with German ones and $44bn if they were in line with Danish ones.” Moving to the industry-level, Bailey and Thomas (2015) use regulation indices from the Mercatus Center to argue that business dynamism declined in industries with rising regulation. Yet Goldschlag and Tabarrok (2018) use very similar datasets to argue the opposite: that regulation is not to blame for declining business dynamism.

In this section, we reconcile the apparently contradictory results of Bailey and Thomas (2015) and Goldschlag and Tabarrok (2018), and propose an alternate empirical specification that better controls for

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$^{18}$The ending plot includes additional countries which enter the sample. We include all countries in the plot, but note that the relationship is equally strong maintain a stable sample of countries.
Figure 18: PMR Convergence vs. Corruption Control

Source: OECD and World Bank.

Figure 19: PMR Convergence vs. Corruption Control: Starting and Ending Levels

Source: OECD and World Bank.
firm heterogeneity and industry-specific trends. Our proposed specification suggests that regulation had a material impact on business dynamism – particularly the creation and growth of smaller establishments. We then interact regulation with lobbying expenditures which further exacerbates these trends.

**Data.** Like Bailey and Thomas (2015) and Goldschlag and Tabarrok (2018), we measure business dynamism (including entry and exit rates and employment growth) using the Census’ Business Dynamics Statistics and regulatory stringency based on the number of applicable restrictions according to RegData. RegData is a relatively new database – introduced in Al-Ubaydli and McLaughlin (2015) – that aims to measure regulatory stringency at the industry-level. It relies on machine learning and natural language processing techniques to count the number of restrictive words or phrases such as ‘shall’, ‘must’ and ‘may not’ in each section of the Code of Federal Regulations and assign them to industries. This is an improvement relative to simple page counts but, needless to say, measuring regulatory stringency at the industry level is a challenging task. Goldschlag and Tabarrok (2018) provide a detailed discussion of the database and it’s limitations, including with several validation analyses that, for example, compare RegData’s measure of regulatory stringency to the size of relevant regulatory agencies and the employment share of lawyers in each industry. Goldschlag and Tabarrok (2018) conclude that “the relative values of the regulatory stringency index capture well the differences in regulation over time, across industries, and across agencies.” We focus on NAICS-4 industries, over the 1998 to 2014 period.

Figure 20 starts by showing the rise in regulation (based on the median number of restrictions across all NAICS-4 industries) along with the decline in establishment entry rates. These time-series exhibit similar trends and may therefore be connected. But more detailed analyses are required to reach any conclusions.

**Related Literature and Approach.** Bailey and Thomas (2015) use RegData v.2.0 and consider NAICS-
4 industries over the period period 1998 to 2011. They focus primarily on ‘stock’ measures of dynamism (firm births, firm deaths and new hires) while including industry and year fixed effects. They estimate separate regressions for all firms together, as well as small and large firms separately – and broadly find a negative and significant relationship between regulation and measures of business dynamism in the aggregate and for small firms; and a negative but insignificant relationship for large establishments. By contrast, Goldschlag and Tabarrok (2018) use RegData v.2.1 and consider NAICS-3 industries from 1999 to 2013. They focus on ‘flow’ measures of dynamism (start-up, job creation and job destruction rates) and find a positive but insignificant relationship – either in the aggregate or separating small and large firms. They conclude that, if anything, regulation has a positive effect on business dynamism and point to other explanations for declining dynamism such as globalization.

The new version of RegData (3.0) covers fewer NAICS-3 and NAICS-4 industries, so we were unable to fully replicate their results – but we were able to obtain similar conclusions. The main discrepancy appears to be industry granularity: following the same specification as Goldschlag and Tabarrok (2018) but using NAICS-4 industries we obtain results much closer to those of Bailey and Thomas (2015) – albeit still insignificant (see below).

Rather than dwell on the differences, however, let us propose an alternate specification. We begin by noting that – even assuming that the regulation index is perfectly measured – regressing measures of business dynamism on the regulation index directly suffers from a severe omitted variables problem. Such a specification – when including industry fixed effects – assumes that besides regulation, more regulated industries differ from less regulated industries only in unobservable ways that are fixed over time. This assumption is likely to be violated as – for example – technological change affects both industry dynamism and the need for regulation. Indeed, regulators may focus their attention on growing industries which would yield a spurious positive relationship; or may focus on aging industries, resulting in a negative relationship.

It is instead informative to consider the effect of rising regulation on the composition of entering and growing firms within an industry. Industry trends are common across small and large firms within an industry, such that critical omitted variables are controlled for. And, as Davis (2017) explains, “the burdens of regulation and regulatory complexity tend to fall more heavily on younger and smaller businesses for three reasons. First, there are fixed costs of regulatory compliance... Second, there are one-time costs of learning the relevant regulations, developing compliance systems and establishing relationships with regulators... Third, compared to smaller, newer and would-be competitors, larger and incumbent firms have greater capacity and incentive to lobby for legislative exemptions, administrative waivers, and favorable regulatory treatment.”

In particular, we regress

$$\Upsilon_{jt} = \beta_0 + \beta_1 \ln(\text{Reg Index}_{jt}) + \beta_2 \ln(\text{Reg Index}_{jt}) \times I\{\text{Small}\} + \beta_3 I\{\text{Small}\} + \alpha_j + \eta_t + \varepsilon_{jt}$$

where $\Upsilon_{jt}$ denotes a given measure of business dynamism.
Table 7: Regulation, Lobbying and Dynamism: Changes

Table reports panel regression results of establishment entry rates and employment growth across NAICS-4 industries, on the corresponding measures of regulatory stringency. All regressions include industry and year fixed effects. Columns 1 and 4 consider all establishment sizes simultaneously. Columns 2-3 and 5-6 separate establishments above and below 500 employees. Columns 2 and 5 interact regulatory stringency with a dummy for establishments under 500 employees. Columns 3 and 6 further interact regulatory stringency with lagged total lobbying expenditures. Business dynamism data from the Census’ BDS. Regulation data from RegData. Lobbying expenditures from OpenSecrets.com. Standard errors in brackets clustered at industry-level. + p<0.10, * p<0.05, ** p<0.01.

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Results. Tables 7 reports the results, considering flow measures of regulation as in Goldschlag and Tabarrok (2018). Columns 1 through 3 focus on entry rates while columns 4 to 6 focus on employment growth. Columns 1 and 4 mirror the results of Goldschlag and Tabarrok (2018). They consider all firms and include only the log-regulation index as a predictor. As noted above, we find a negative but insignificant relationship. Separating small and large firms, however, we find a negative and material effect of rising regulation on the establishment and growth of small firms relative to large ones. As shown in column 2, a doubling of the regulation index, leads to a 6% lower start-up rate of small firms relative to large firms – a sizable effect considering that measures of regulation doubled since 1995. Columns 3 and 6 further interact regulation with lobbying, which shows that the burden on small firms is even larger when the corresponding industry lobbies (as expected, since larger firms have greater capacity and incentives to lobby).

4 Conclusion

[TO BE COMPLETED]

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Appendix F includes results for ‘stock’ measures as in Bailey and Thomas (2015), which yield consistent conclusions.
References


Appendices: Not Intended For Publication

A Model: Extension to N Countries

We can also extend our analysis to the case of $N$ countries and $N$ goods. Indirect utilities are given by

$$U_i = \sum_{j=1}^{N} \log(x_j) - Nx_i$$

and profits are

$$\Pi_i = N(1 - x_i)$$

The regulator therefore maximizes

$$\max_{\{\mu\}} \left(1 - \theta \right) \sum_{i=1}^{N} U_i + \theta V_c$$

With probability $1/N$, country 1 gets to influence the regulator. In that case, the regulator solves

$$\max_{\{\mu\}} U_1 + (1 - \theta) \sum_{j=2}^{N} U_j + \theta \gamma \Pi_1$$

This is equivalent to maximizing

$$(1 + (N - 1)(1 - \theta)) \sum_{j=1}^{N} \log(x_j) - N x_1 - N(1 - \theta) \sum_{j=2}^{N} x_j + N \theta \gamma (1 - x_1)$$

The solution is

$$x_1 (\epsilon = 1) = m_1^N = \frac{1 - \frac{N-1}{N} \theta}{1 + \theta \gamma}$$

$$x_j (\epsilon = 1) = M_j^N = \frac{1 - \frac{N-1}{N} \theta}{1 - \theta}$$

Country 1’s favorite choice of $\theta$ at the design stage maximizes

$$\mathbb{E}[U_1 (\epsilon, \theta) + \beta \Pi_1 (\epsilon, \theta)] = \frac{1}{N} \left( \log \left( m_1^N \right) + (N - 1) \log \left( M_1^N \right) - N m_1^N + N \beta (1 - m_1^N) \right) + \frac{N - 1}{N} \left( \log \left( m_1^N \right) + (N - 1) \log \left( M_1^N \right) - (1 + \beta) m_1^N - (N - 1) (1 + \beta) M_1 + N \beta \right)$$

If we abstract first from regulatory over-reach by keeping $M_1^N$ constant, we see that the optimal choice of $m_1^N$ would be again $\frac{1}{1 + \beta}$. From the functional form of $m_1^N$ this requires increasing independence as $N$ increases $\theta^{(N)} = \frac{\beta}{N + (1 + \beta) \frac{N - 1}{N}}$.

If we consider now the full problem, including regulatory over-reach, we see that $M$ is a strictly increas-
ing function of \( \theta \). We can thus write \( M(m) \) as a decreasing function and use \( m \) as a choice variable. The first order condition is

\[
\frac{1}{m} = 1 + \beta + (N-1) \frac{\partial M}{\partial m} \left( 1 + \beta - \frac{1}{M} \right)
\]

Since \( M > 1 \), \( \frac{\partial M}{\partial m} \left( 1 + \beta - \frac{1}{M} \right) < 0 \) and therefore \( m \) is larger than \( (1 + \beta)^{-1} \). This proves \( \theta(N) < \bar{\theta} \). We have

\[
\frac{\partial \log m}{\partial \theta} = \frac{-\gamma}{1 + \gamma \theta} - \frac{N-1}{N} \frac{1}{1 - \frac{N-1}{N} \theta}
\]

and

\[
\frac{\partial \log M}{\partial \theta} = \frac{1}{1 - \theta} - \frac{N-1}{N} \frac{1}{1 - \frac{N-1}{N} \theta}
\]

When \( \theta = 0 \) and \( m = M = 1 \), we have \( \frac{\partial M}{\partial \theta} = \frac{1}{N} ; \frac{\partial m}{\partial \theta} = -\gamma - \frac{N-1}{N} \) therefore

\[
\frac{\partial M}{\partial m}(1) = -\frac{1}{N \gamma + N - 1}
\]

Thus if we estimate at \( m = M = 1 \),

\[
1 + \beta + (N-1) \beta \frac{\partial M}{\partial m}(1) = 1 + \beta \left( \frac{\gamma}{\gamma + \frac{N-1}{N}} \right) > 1
\]

Thus \( \theta(N) > 0 \) but decreasing in \( N \). In the limit of large \( N \), we get a finite slope \( \beta \left( \frac{\gamma}{\gamma + 1} \right) \) starting from the efficient allocation.

**B Data**

[To Be Completed]

**C Detailed Trends in US and EU Antitrust**

[To Be Completed]

**D Determinants of Political Expenditures**

[To Be Completed]
Table 8: Regulation, Lobbying and Dynamism: Levels

Table reports panel regression results of establishment births and job creation on industry-level measures of regulatory stringency. All regressions include industry and year fixed effects, and control for the initial number of establishments/employees. Columns 2 and 5 separate establishments above and below 500 employees, and interact regulatory stringency with a dummy for firm-size. Columns 3 and 6 further interact regulatory stringency with lagged total lobbying expenditures. Standard errors in brackets clustered at industry-level. + p<0.10, * p<0.05, ** p<0.01.

<table>
<thead>
<tr>
<th></th>
<th>log(Births)ₜ</th>
<th>log(JobCreation)ₜ</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>log(RegIndex)ₜ₋₁</td>
<td>-0.089</td>
<td>0.575**</td>
</tr>
<tr>
<td></td>
<td>(0.059)</td>
<td>(0.142)</td>
</tr>
<tr>
<td>log(RegIndex)ₜ₋₁ × &lt; 500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log(RegIndex)ₜ₋₁ × log(Lobby)ₜ₋₁ × &lt; 500</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log(Estab)ₜ₋₁</td>
<td>0.840**</td>
<td>1.144**</td>
</tr>
<tr>
<td></td>
<td>(0.086)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Year FE</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Ind FE</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Cluster</td>
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<td>.82</td>
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<tr>
<td>R2</td>
<td>1,371</td>
<td>2,735</td>
</tr>
</tbody>
</table>

E Additional Results on Political Expenditures and Enforcement

E.1 Industry

E.2 State

F Additional Results on Regulation

F.1 Cross-Country

F.2 USA