Antitrust Policies and Profitability in Non-Tradable Sectors *

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Abstract

Firms in tradable sectors are more likely to be subject to external competition to limit market power while non-tradable firms are more dependent on domestic policies and institutions. This paper combines an antitrust index available for multiple countries with firm-level data from Orbis covering more than 10 million firms from 90 countries, covering 20 sectors over 10 years and finds that profit margins of firms operating in non-tradable sectors are significantly lower in countries with stronger antitrust policies compared to firms operating in tradable sectors. The results are robust to a wide variety of empirical specifications.

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1 Introduction

This paper examines how institutions designed for enforcing competition in markets affect economic performance. A central role of the state in building a market economy is to guarantee that there are benefits of competition to ensure static and dynamic efficiency. But the way that this is done varies across sectors of the economy. Those sectors that are subject to international competition have natural exposure to competition if trade is liberalized, while those that are not are more dependent on domestic policies that encourage entry and limit the abuse of market power.

The core empirical implication that we explore here, is that the institutions that affect competition policy should have a heterogenous effect on tradable and non-tradable sectors. To investigate this, we require firm-level data. Hence, we have assembled a dataset of 10 million firms covering 20 sectors across 90 countries over a period of 10 years (2006-2015) based on Orbis (2016). To measure antitrust policy, we exploit the Total Scope Index Score constructed by Hylton and Deng (2007) which is based on assessments of competition law made by legal experts and practitioners. This is available for a wide variety of countries/economies.

Our core findings exploit variation in antitrust both across and within different sectors and countries. Using the Orbis profitability measure, we show that profitability is related to an index of antitrust policy but *only* in non-tradable sectors. The results that we present are robust to a variety of alternative specifications.

Our baseline results are based on a cross-country and cross-sector analysis where we show evidence of systematic heterogeneity in the relationship between antitrust policies and firm outcomes. We show that, in countries with stronger antitrust policies, the profit margins of firms operating in non-tradable sectors are significantly lower than those operating in tradable sectors. The results are economically meaningful suggesting, for example, that if China adopted France's antitrust index, we would expect a 19% fall in the average profit margin. We also find that concentration is lower in non-tradable sectors when antitrust policy is strong. In contrast, changes in antitrust are associated with negligible effects on tradable sectors, in line with the hypothesis that international markets serves to discipline firms in such sectors.

These findings underline the limits of trade liberalization as a means of promoting competition since, in our sample, about 82% of firms operate in non-tradable sectors. So, without rigorous competition policy, there may be limited scope to introduce more competition into important sectors such as wholesale, retail, transportation, construction, and real estate.

Our results are consistent with the idea that institutions matter, in the form of competition law and enforcement, for sectors of the economy where international competition is weak. Moreover, the finding in our paper is specific to the antitrust measures; other measures of "good institutions" do not appear correlated with profitability in the non-tradable sectors of the economy. It therefore adds a new dimension to debates about how a strong institutional environment can be conducive to growth and development beyond the previous focus on such things as lowering the threat of expropriation (La Porta et al., 1998), minimizing rent extraction (Acemoglu et al., 2001) or securing legal protection and infrastructure (Besley and Persson, 2011).

The remainder of the paper is organized as follows. The next section discusses related literature. In section 3, we present the conceptual framework that motivates the test that we use. Section 4 presents the data and section 5 presents the core empirical results. In section 6, we discuss a key concern about interpreting the results along with some robustness checks. Section 7 contains some concluding remarks.

2 Related Literature

The paper is related to an emerging body of literature on antitrust policy and its consequences. Our findings complement recent work studying the role of antitrust and firm margins in the United States (Gutiérrez and Philippon, 2017, De Loecker et al., 2020), that we extend to additional countries and across sectors with different degrees of tradability. Debates about the role of antitrust and its ability to affect firm behavior are long-standing. Block et al. (1981) show that antitrust efforts and penalties generate a deterrent effect on cartels, that lead firms to set a price between the competitive the oligopolistic price. Gutiérrez and Philippon (2017) find that the profitability and concentration of US industries increased in the past two decades due to decreasing domestic competition, in line with Grullon et al. (2019). These results are consistent with our antitrust measure showing a

decline in the stringency of antitrust policies in the United States, as highlighted by Faccio and Zingales (2017) for the telecommunication sector.

Gutiérrez and Philippon (2017) study the increase in competitiveness in Europe, showing that increased antitrust enforcement has led to lower concentration and profits, without negative effects on innovation. Alfaro et al. (2016) show that higher prices in the product market induce more integration, exploiting plausibly exogenous variation induced by trade policies. This result is in line with our findings on declines in both firm profits and concentration as antitrust policy intensifies.

The paper also relates to the large literature on the impact of trade liberalization by showing that antitrust policies may help to offset the absence of external competition for non-tradable sectors.Devarajan and Rodrik (1989) study how imperfect competition and scale economies affect the size and scope of trade liberalization. Pavcnik (2012) investigates the effects of trade liberalization on plant productivity in Chile and finds evidence of within plant productivity improvements, leading to higher aggregate productivity, in line with Krishna and Mitra (1998) in India and Amiti and Konings (2007) in Indonesia. Bernard et al. (2011) offer a general equilibrium model of multiple-product, multiple-destination firms, with heterogeneity in productivity across firms as well as product attributes within firms. This illustrates the heterogeneous effects of trade liberalization across countries, across and within firms. Using a structural model and matched plant-product data, De Loecker (2011) shows that the gains from trade liberalization are substantially smaller than previously estimated.

While there is a large and growing literature on the impact of trade liberalization on tradable sectors, much less is known about non-tradables. Among the prominent contributions in this smaller field, Goldstein et al. (1980) develop and estimate a general import function with tradable and non-tradable goods, finding a marginal role for non-tradable goods. Xu (2003) examines how trade liberalization can affect the boundary between tradable and non-tradable goods, leading firms to switch the tradability of their products. Rodrik et al. (2004) estimate the contributions of institutions, geography, and trade in determining income levels, finding that institutional measures are key, particularly in codetermining trade patterns. Finally, Kovak (2013) develops a specific-factors model of regional economies showing that prices of non-tradable goods and services move in line

with tradable goods prices following liberalization.

Finally, the paper is related to a large literature on the benefits of competition for consumers (see Vickers, 1995 for an overview). In static models, these typically come from driving prices closer to marginal cost while, in dynamic models, there is a role for competition in encouraging the development and adoption of cost-reducing technologies and also in product innovation (*e.g.* Aghion et al., 2001). There is an increasing realization that the benefits of competition has not been emphasised sufficiently in the design of development strategies, where incumbents often enjoy unchecked market power (see, for example, UNCTAD, 2008).

3 Empirical Hypotheses

The paper tests two hypotheses relating antitrust policies and profitability. Equilibrium profit margins depend on ex-post price competition, entry and exit, all of which are affected by competition policy in general and antitrust policy in particular. While there is a range of potential models that could be used to motivate this, many make ambiguous predictions about the relationship between competition and profitability once entry and exit are allowed, especially when firms are heterogenous (see, for example, Syverson (2019) and Covarrubias et al. (2019)).

Effective antitrust institutions try to regulate market conduct by powerful firms through faciltating entry of new and more efficient firms, thereby benefitting consumers directly. This will creates which tend to lower prices and profits. Firms that face international competition through imports face additional pressure on prices and profitability that non-tradable firms do not get exposed to.[1] This yields:

Prediction 1 *All else equal, profit margins will tend to be higher in non-tradable industries.*

Our second hypothesis makes a stronger claim that we should observe a stronger marginal effect from an improvement in antristrust institutions in non-tradable sectors, *i.e.,*

[1] Although domestic regulators might also have a say about mergers of foreign firms if they operate in domestic markets, this is likely to be hard to detect in the data.

Prediction 2 *Strengthening antitrust policies will tend to lower profit margins in non-tradable industries more than in tradable industries.*

Although we regard this as plausible given that competition is likely to be weaker in non-tradable goods sectors, it is not a direct implication of some models. There are direct effects of antritrust policies on prices that will tend to have a higher marginal impact where competition is weaker as we would expect in non-tradable sectors. But things are somewhat less clear cut in models where antitrust policy affects entry and exit.

Ultimately, it is an empirical question whether we find a relationship between antitrust policies and profit margins which is stronger in non-tradable sectors. This is what we explore for the remainder of the paper.

4 Data

In this section, we describe core features of the data; Online Appendix A fills in the details. Our core sample is based on the universe of firms contained in Orbis (Bureau van Dijk, BvD) from 2006 to 2015.[2] The dataset contains each firm registered and reports financial statements.[3] Each firm in the data is assigned to a sector using the reported NACE Rev. 2 section code.

We will differentiate between whether a firm operates in a *tradable* or a *non-tradable* sector. In the baseline, tradable sectors are Agriculture, forestry and fishing (A), Mining and quarrying (B) and Manufacturing (C). All other sectors are labelled as non-tradable. As a robustness check, we follow Mian and Sufi (2014), and include Information and communication (J) among the *tradable* sectors.[4]

Profitability Our core variable is the firm-specific profit margin according to the Orbis Handbook defined as the Profit/Loss before Tax and External Items over Operating Revenue (times 100).[5] The main analysis uses the average profit margin of all firms in the

[2] In 2015 there are only 109,043 firms with a non-missing observation for the profit margin. In all other years there are at least 5.5 million. (The results are robust to dropping 2015 completely, see Column 5, Appendix Table D.5.)

[3] It is not possible to distinguish firms going out of business from firms simply not reporting data

[4] We excluded the sector "Activities of extraterritorial organisations and bodies (U)" altogether.

[5] Profit/Loss before Tax and External items is the sum of Operating Profit (which is equal to Gross Profit, *i.e.* Operating Revenue minus Costs of Goods Sold including any interest payments on this, minus Other Op-

country-sector after having computed the average profit margin for each firm over the ten year period. We trim the top/bottom 1% of the firms to account for reporting errors, and in a robustness check we also trim at the top/bottom 5% of the country-sector cells, see Appendix Table D.8.[6] The core sample is defined for 20 sectors and 94 countries containing over 12 million firms of which about 10 million are classified as operating in a non-tradable sector.

To ensure the concentration measures are representative of the country-sector firm composition, we impose a minimum number of firms with relevant data for the country-sector to be included in the data. The usual cutoff that we use is 20 firms in a country-sector but as a robustness check, we will vary this cutoff from 0 (i.e., no restriction at all) to 3000 firms per country-sector.[7]

As an alternative way of aggregating data, we compute each concentration measure at country-sector-year level and then we take the average of these concentration measures over the ten years that we study (we will use the label *Average* to refer to the concentration measures computed in this way). To assess robustness, we will also look at year-by-year results.[8] We also compute a Herfindahl-Hirschman Index (HHI) based on Total Assets and Gross or Net Sales for each country-sector: Even though it is less theoretically sound, we regard the HHI-based Total Assets as better measured since sales are missing for many more firms.[9]

The Antitrust Measure To measure antitrust policy at a country level, we use the *Total Scope Index Score (Scope Index)* from Hylton and Deng (2007).[10] They code antitrust

erating Expenses) and Loss with Financial Profit/Loss (which is equal to Financial Revenue minus Financial Expenses).

[6]Trimming is performed at country-sector level after having computed the average profit margin over the ten years period for each firm.

[7]This means that we need at least 20 firms to have at least one financial statement in the data over the ten year period.

[8]We include only those country-sectors where the number of observations is greater than or equal to the cutoff based on the average number of firms used to compute the yearly concentration measures.

[9]We have also experimented with predicting gross (or net) sales using total assets, *i.e.* regressing gross sales on total assets, sector fixed effects and the interaction term at country-year level (or at country level when we predict values of averages over ten years). We then used imputed values where the sales variable is missing (with negative values excluded).

[10]The most recent version of the dataset can be found **here**.

laws and policies around the world (112 countries in the most recent version) in order to have a metric for the strength of antitrust laws. The authors examine the effects of various components of competition law and assign a score depending how the national law specifies procedures, penalties, and enforcement.[11] The total index score is the sum of the scores for each category as elaborated further in Hylton and Deng (2007). The minimum possible total index score is 0 and the maximum is 30. For our analysis, it is important to point out that it is principally (if not exclusively) a *de jure* index; it has no direct measure of the effectiveness of antitrust policies in practice. Section II of Hylton and Deng (2007) discusses the methodology extensively. [12] In the empirical analysis below, we average the index over the ten year period of our data (2006-2015). We will also test the robustness of the results to using the budget allocated to the antitrust regulator using data from Bradford et al. (2019).

The highest value of the index is for France with a score of 26 while the US has a value of 24. China (20) scores below the median value while Mexico (23) and India (22) sit just above and below the median respectively. We show in the Appendix that the antitrust index is correlated in a common sense way with a range of variables which represent the quality of institutions.[13] Although these are not causal connections, they suggest that there are important sources of country-level unobserved heterogeneity that probably affect the

[11] Categories considered: Territorial Scope, Remedies, Private Enforcement, Merger Notification, Merger Assessment, Dominance, and Restrictive Trade Practices.

[12] A special case is represented by Europe. Hylton and Deng (2007) present both regulation from the European Commission and for each country member of the EU, reporting the national antitrust law and the national antitrust law integrated with EU regulation. We consider measures of European-wide Antitrust policies in Appendix Table D.5, in which we consider the European Union to a single country with similar results to our baseline specification.

[13] Specifically, we run the following regression:

$$A_c = \alpha + \chi Z_c + \varepsilon_c$$

where A_c is the *Total Scope Index Score* of Hylton and Deng (2007) and Z_c can be any of the following: the log of GDP per capita, the Economic Freedom, Civil Liberties and Political Rights Indices from Freedom House, the democracy and executive constraints measures from PolityIV and the Rule of Law Index from the World Justice Project. The results in Table C.2 show that countries with higher GDP have a better antitrust regime on average using the measure from Hylton and Deng (2007). The index is positively correlated with economic freedom but negatively correlated with political and civil rights. Countries that are more democratic and have stronger executive constraints also have higher scores on the antitrust index; stronger rule of law is also positively correlated with the index.

antitrust regime, thereby reinforcing the need to include country fixed effects in all our regressions. We will return to this when we evaluate whether it is the antitrust index or some more generalized measures of "good" institutions that is driving the results.

Summary Statistics Summary statistics on the distribution of profitability, concentration, and the antitrust index are given in Table 1. This shows how these variables vary within countries, across sectors and across countries within sectors.

Panel A gives the average profit margin both overall and disaggregated using our tradable/non-tradable distinction. The average profit margin in non-tradable sectors is higher with a mean of 7.58 (standard deviation 9.47) when compared to the tradable sectors with a mean of 5.18 (standard deviation 6.63). These descriptive statistics are consistent with Hypothesis 1 based on the assumption that tradable sectors are, on average, more exposed to international trade. The between-country variation is somewhat greater than the within-country variation, thereby suggesting that country-specific factors are at work in determining these differences. Panel B shows that the HHI measure is also higher on average for the non-tradable sectors. It is 4.87 (standard deviation 9.02) for the non-tradable sectors while for the tradable sectors it is 4.03 (standard deviation 8.83).

In Panel C, we give the fraction of country-sectors in our sample that are classified as tradable according to our baseline definition and that used in Mian and Sufi (2014). Our definition suggests that 17% of country-sector observations are in the tradables sector while using the Mian and Sufi (2014) definition, it is 22%. Summary statistics in Table 2 are consistent with our sample being composed of 10.5 million firms operating in the non-tradable sector out of a total of 12.8 millions firms. It means that tradable sectors represents 17.9% (21.8% using the Mian and Sufi (2014) definition) of our sample. We conclude that most firms are not exposed to international trade and that looking at the competitive impact of trade therefore gives only a partial picture of factors driving firm performance and profitability.

Finally, in Panel D, we report the means and standard deviations of our two core antitrust variables. The wide range of differences in the expenditure measure is particularly striking.

5 Core Results

In this section, we outline the main approach taken and core results.

Empirical Approach Let P_{cs} be a core profitability or concentration measure in country c and sector s. Then our core regression specification is as follows:

$$P_{cs} = \delta_c + \delta_s + \beta_1 [A_c \times N_s] + \beta_2 N_s + \beta_3 A_c + \varepsilon_{cs} \tag{1}$$

where δ_c are country fixed effects, δ_s are sector fixed effects, A_c is the antitrust index and N_s is dummy variable which is equal to one if a sector is classified as non-tradable. P_{cs} and A_c of these variables are averaged within-countries using all data between 2006 and 2015.[14] The standard errors are clustered at country level.[15] The inclusion of country fixed effects absorbs the general background variation due to different economic and political circumstances affecting the environment in which firms operate. And sector fixed effects account for technology and other fixed differences at that level.

A test of Hypothesis 1 is whether $\beta_2 > 0$, *i.e.* profit margins are higher in non-tradable sectors due to the absence of foreign competition. However, this coefficient can be estimated only when we exclude sector fixed effects. Nonetheless, we will report what the data say in that case. Similarly, we cannot estimate β_3 when we include country fixed effects from (1). But when we exclude them, as we do in one of our specifications below, we expect to find that $\beta_3 < 0$.

Hypothesis 2 says that we should have $\beta_1 < 0$ *i.e.* the antitrust measure matters only for non-tradable sectors. Our most demanding test of Hypothesis 2 is where both country and sector fixed effects are included.

Results Table 2 reports the core results.

Column (1) excludes sector fixed effects and finds, in line with Hypothesis 1, that non-tradable sectors tend to have higher profit rates reflecting what we found in the raw

[14] In the robustness check section we repeat the analysis year-by-year.

[15] We have explored alternative clustering of standard errors at country-sector level, equivalent to the Huber-White estimator, and unadjusted standard errors. We have also experimented with weighted regression using the number of firms in each country-sector as a weight. Our results are robust to these changes alternative approaches. See Appendix Table D.8

data and consistent with the hypothesis that they face weaker competition. In this case, Hypothesis 2 also holds as we find that having a higher value of the antitrust index lowers profit margins more strongly in non-tradable sectors.

Column (2) of Table 2 has sector fixed effects but no country fixed effects. There is weak evidence that the antitrust measure is negatively correlated with profit margins. But, once again, there is a stronger negative correlation between the antitrust measure and profit margins in non-tradable sectors.

Column (3) has both country and sector fixed effects so constitutes our main specification against which we will assess the robustness of our findings. Now, we have a negative and significant estimate of β_1 in line with Hypothesis 2. It indicates that a one standard deviation increase in the antitrust index of a country is associated with a decline of 10.3 percent of a standard deviation in the profit margin of firms operating in a non-tradable sector. This corresponds to an absolute decline in the profit margin of 0.88 points, corresponding to 13% drop compared to the mean profit margin. Another way to look at this is to suppose that if China, which has an index value of 20, moved to France's score of 26 (1.45 times the standard deviation of the *Scope Index*) then it would lead to decrease in the average profit margin of $-0.103 \times 1.45 \times 8.53 = -1.27$, which corresponds to a 19% fall in the average profit margin given the sample average of 6.80. So the effect that we have uncovered is economically meaningful.

In Column (4), we show that these findings hold up if we instead use the Mian and Sufi (2014) definition of tradable sector, which reclassifies the Information and Communication sector as tradable along with Agriculture, Manufacturing and Mining. This classifies nearly half a million firms in our sample as tradable. The key coefficient, β_1, is somewhat larger in absolute magnitude. In Column (5), we use a measure of the expenditures allocated for antitrust purposes instead of the antitrust index and the results are qualitatively similar. Finally, Column (6) use the asset-based HHI described above as the left hand side variable. The coefficient β_1 remains negative and significantly different from zero, suggesting that a one standard deviation increase in the antitrust index of a country is associated with the sector operating in a non-tradable sector of that country to be less concentrated by 13.5 percent of a standard deviation. This implies an absolute decline in the HHI of 1.22 points, corresponding to 27.2% drop relative to the mean level of

concentration.[16]

Taken together, these results are supportive of both hypotheses suggested above. Profit margins are higher in non-tradable sectors and, since tradable sectors face more discipline from import competition, the antitrust policy environment matters most for non-tradable sectors.

Sectoral Heterogeneity We have grouped the coefficients *a priori* based on whether the sector is classified as tradable or non-tradable. As a reality check, we allow for a separate relationship between the antitrust index and sector, *i.e.* we estimate

$$P_{cs} = \delta_c + \delta_s + \sum_{\text{non-tradable sectors}} \beta_s \left(\delta_s \times A_c\right) + \varepsilon_{cs} \tag{2}$$

where β_s is the sector specific correlation between the antitrust variable and our outcome of interest. This allows us to assess whether it is the non-tradable sectors that are indeed driving the result. We plot the coefficient β_s for each of our 17 non-tradable sectors where the interval gives the 95% confidence interval in Figure 1. The three tradable sectors represent the reference group (Agriculture, Manufacturing and Mining).

The first thing to note is that no sector has a positive and significant coefficient. Those that have negative and significant coefficients are Transportation and Storage, Accommodation and Food Service, Finance and Insurance, and Real Estate. Electricity, Gas, Steam and Air-conditioning, and Defence and Social Security are borderline significant. When we test whether all coefficients are equal to each other, we reject the null hypothesis (pvalue=0.001). As expected we also reject the null hypothesis that they are all equal to zero at the same time (pvalue=0.0007).

6 Robustness

We now discuss two robustness checks; many others can be found in the online Appendix. The first investigates whether it is the antitrust regime that matters rather than just "good" institutions and the second looks at other ways of cutting the data.

[16] Appendix Table D.2 repeats the analysis using an HHI constructed with gross or net sales with similar results.

Antitrust or Other Country Characteristics? We show in Table C.2 that the antitrust index is correlated with variables that we expect to reflect the economic and institutional environment, specifically: the log of GDP per capita, the Economic Freedom, Civil Liberties, and Political Rights Indices from *Freedom House*, the democracy and executive constraints measures from *PolityIV* and the Rule of Law Index from the *World Justice Project*.

This raises a possible concern that our results may be driven by these institutional differences rather than the antitrust environment. To assess this, we take these institutional variables and interact them, one by one, with the non-tradable dummy rather than the antitrust index. Specifically we run:

$$P_{cs} = \delta_c + \delta_s + \beta_1 \left[Z_c \times N_s \right] + \varepsilon_{cs} \tag{3}$$

where Z_c are the variables from Table C.2. If it is the antitrust regime that our measure is capturing then we should not expect to find any significant correlation between Z_c and lower profit margins in non-tradable sectors.

The results are in Table 3, which shows across the board that there is no significant correlation between these other background economic and institutional variables, and a lower profit margin in non-tradable sectors in spite of the fact that Table C.2 found them to be strongly correlated with the index itself. We would particularly flag that this is true for GPD per capita and democracy indicators. This suggests that our findings are indeed driven by something specific to the antitrust environment as measured in Hylton and Deng (2007).

Alternative Ways of Constructing the Data To stress test the data that we have and their reliability, we now explore what happens when we try different rules for assembling our profit margin data, different years, and splitting the sample across observations where the measurement is likely to be more reliable. The results are in Table 4.

To include a country-sector in the data, we required that there were at least 20 observations in a cell. Columns (1) through (3) vary this. In Column (1), we drop any restriction on cell size completely and the core finding is robust. Columns (2) and (3) become more stringent for inclusion with 50 and 200 observations being needed for inclusion. The latter

is particularly demanding for quite a few countries and the sample now falls from 94 countries to 63. Yet the results are robust. In Appendix Table D.3, we reports similar regression results for various other cutoffs, finding results that are in line with Table 4.

We used the data averaged across all years between 2006 and 2015. In Columns (4), (5) and (6) we pick three representative years (2007, 2011 and 2014) to show that size and significance of the main coefficient of interest does not change. This happens despite losing a few countries in each column compared to the full time period. In Appendix Table D.4 and D.5 we provide results for each year separately as well as alternative ways of aggregating data.[17]

Finally, we address the concern that our results could be driven by poor data quality in some countries. Column (7) of Table 4 offers one important robustness check: it restricts the sample to countries that have at least 19 sectors with sufficient data to be included (where 20 is the maximum number of sectors possible). This serves as a check on data quality since some countries have limited data coverage in Orbis that leads to the exclusion of entire sectors. Our findings are not affected by imposing this restriction. In Appendix Table D.7, we present other alternatives with similar conclusions.

7 Concluding Comments

This paper has explored a specific aspect of institutional quality, namely the strength of *de jure* antitrust policy. For tradable goods, exposure to import competition serves as a disciplining mechanism for firms, leading to lower profit margins. However, for non-tradable goods, what firms do depends on how governments set the framework for and implement competition policy. This is important since 82% of all firms in our data opreate in non-tradable sectors and there is little scope for international competition to improve their performance.

To explore this, we have built a global dataset based on Orbis and used an "off-the-shelf" measure of antitrust policy constructed by legal scholars. We find that stronger antitrust policy depresses profit margins but only in non-tradable sectors. This suggests that competition policy is particularly important in parts of the economy that are not exposed to import competition. This is particularly relevant given that we find that there is

[17]The only insignificant sub-sample is for 2015 for which we have a much smaller sample size.

greater concentration in non-tradable sectors. Our data cover a range of diverse economies including some low income and emerging market countries. This has pros and cons; data quality is likely to be lower in less-developed parts of the world, but we benefit from having more variation in the range of antitrust policies to learn from.

Although we find robust results for the measures that we use, we acknowledge that antitrust is only one aspect of what matters in determining profitability and firm performance. Moreover, even though we have ruled out the claim that our findings are simply a reflection of "good institutions" in general, there are some aspects of competition policy that we could be picking up since they may be correlated with the anitrust index that we use, a prime example being the regulation of entry.[18] Future work based on other specific dimensions of policy would therefore be valuable.

The paper fits into wider debates about cross-country developments in competition policy, in particular the respective roles of technology versus antitrust policies in shaping profits.[19] While our findings cannot adjudicate between these views, they do underline a potential role for antitrust policies in explaining cross-country differences in profitability. But it also suggests an interaction between this and how far a country is exposed to international competition. Our results suggest that looking at the benefits of competition across the whole economy is important and perhaps deserves more attention. This is relevant in advanced countries too, such as the U.S., where there are concerns about the potential consequences of "going soft" on competition policy, something which is likely to matter most where there is little competition from abroad. One interesting topic for future research is to investigate whether heavily protected tradables sectors also seem to respond to antitrust institutions similar to non-tradables.

Our paper also contributes to the wider agenda of opening up the "black box" of institutional and policy differences. Competition policy is very specific and, while related to other commonly used measures of institutional difference, seems to have quite specific effects. The findings also support, therefore, for increased efforts to make competition policy more effective.

[18] We have looked at whether the World Bank Doing Business indicator of the regulation of entry yields similar results but have have found no evidence of this.

[19] See, for example, Autor et al. (2020) and Philippon (2019)

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Tables and Graphs

Table 1: **Summary Statistics**

	Obs	Mean	Sd	Sd between	Sd within	Min	Median	Max
Panel A								
Average Profit Margin	1,224	7.27	9.11	10.78	6.58	-18.85	5.52	50.76
Average Profit Margin (tradable)	201	5.18	6.63	6.01	3.58	-9.71	4.33	42.28
Average Profit Margin (non-tradable)	1,023	7.68	9.47	11.34	6.63	-18.85	5.76	50.76
Panel B								
HHI Assets	1,245	4.73	8.91	6.51	7.39	0.00	0.97	89.31
HHI Assets (tradable)	206	4.03	8.33	9.94	4.22	0.00	1.02	88.45
HHI Assets (non-tradable)	1,039	4.87	9.02	6.42	7.47	0.00	0.96	89.31
Panel C								
Tradable sector (Baseline)	1,594	0.17	0.37			0	0	1
Tradable sector (Mian and Sufi)	1,594	0.22	0.41			0	0	1
Panel D								
Total Scope Index Score	1,351	21.38	4.15			8.00	22.40	27.00
Budget USD million (2006-2010)	1,198	19.20	44.09			0.00	6.19	258.12

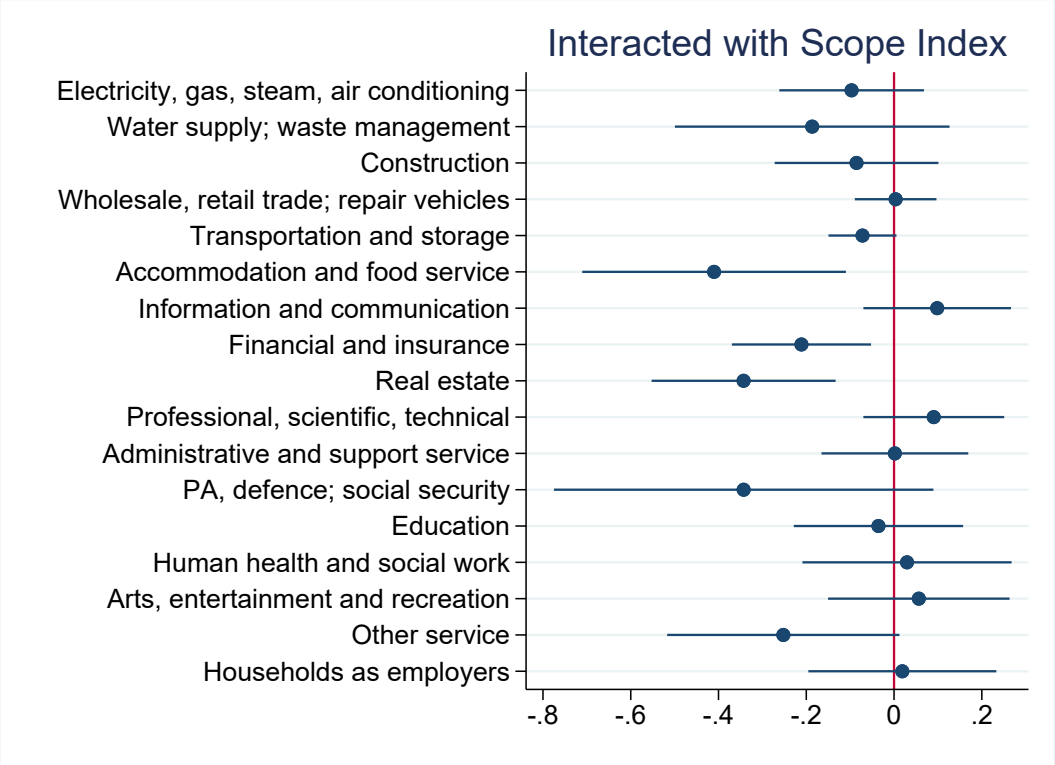
Sample definition: The unit of analysis is a country-sector. In Panel A, C and D we use data on country-sectors with at least 20 firms with non missing data on the average profit margin. In Panel B we consider the country-sectors with at least 20 firms with non-missing data on Assets. All variables are averaged over the entire sample period (2006-2015). The average profit margin and HHI Assets have been calculated after trimming the top/bottom 1% of firms within each country-sector.

Table 2: **Main results: Profit Margin and Concentration**

	(1)	(2)	(3)	(4)	(5)	(6)
			Average Profit Margin (std)			HHI assets (std)
Non-tradable sector x	-0.171	-0.0819	-0.103	-0.137	-0.0502	-0.135
Antitrust Index - β_1	(0.0512)	(0.0420)	(0.0411)	(0.0374)	(0.0202)	(0.0554)
Non-tradable sector - β_2	0.284					
	(0.0513)					
Antitrust Index - β_3		-0.104				
		(0.0535)				
Antitrust Index	Scope Index	Scope Index	Scope Index	Scope Index	Budget (USD)	Scope Index
Tradable definition	Baseline	Baseline	Baseline	Mian and Sufi	Baseline	Baseline
Sample	2006-2015	2006-2015	2006-2015	2006-2015	2006-2010	2006-2015
Observations	1,110	1,110	1,110	1,110	913	1,122
R-squared	0.402	0.330	0.631	0.633	0.648	0.447
N firms	12,800,308	12,800,308	12,800,308	12,800,308	9,200,182	20,017,937
N firms non-tradable	10,515,246	10,515,246	10,515,246	10,004,777	7,432,724	17,105,026
N countries	94	94	94	94	75	97
N sectors	20	20	20	20	20	20
Mean dependent variable	6.80	6.80	6.80	6.80	6.28	4.49
St. Dev. Dependent variable	8.53	8.53	8.53	8.53	8.00	9.05
Country FE	YES	NO	YES	YES	YES	YES
Sector FE	NO	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is defined as in Table 1. Standard errors are clustered at a country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or loss before tax and external items over operating revenue. The variable Antitrust Index measures the intensity of antitrust activities, as defined by Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. The variable non-tradable is a dummy variable equal to one for all sectors except Agriculture, Manufacturing and Mining in Column 1 to 3, 5 and 6, adding sector J (Information and Communication) following Mian and Sufi (2014) in Column 4; see the Appendix Section A.1.1 for details. In Column (5) the antitrust measure is the Budget in USD from Bradford et al. (2019); see Section 4 for details. Column 5 uses date only for 2006-2010 due to the limited years covered by this antitrust policymeasure. In Column (6) the dependent variable is the Herfindahl - Hirschman Index which measures the industrial concentration based on firm assets, ranging from 0 (perfect competition) to 100 (monopoly). Country fixed effects are included in Column (1), sector fixed effects are included in Column (2), while Column (3)-(6) include both country and sector fixed effects.

Figure 1: **Results by sector: Profit Margin**



Note: This graph augments the analysis of Table 2, Column 3, by including an interaction between the Antitrust Index and a sector dummy. We report these interactions (*i.e.* β_s in equation 2). Excluded sectors are the sectors in the *Baseline* defintion of Tradable (Agriculture, Manufacturing and Mining). The sample is defined as in Table 1, Panel A. Standard errors are clustered at a country level, we report the 95% confidence interval. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index measures the intensity of antitrust activities, according to Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. All specifications include both country and sector fixed effects.

Table 3: **Institutional Indexes**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Average Profit Margin (std)			
Non-tradable sector x	-0.0784	-0.0609	0.0678	0.0701	-0.0374	-0.0323	-0.0782
Institutional Index - β_1	(0.0486)	(0.0550)	(0.0514)	(0.0494)	(0.0539)	(0.0581)	(0.0524)
Observations	1,209	1,183	1,193	1,193	1,140	1,140	984
R-squared	0.630	0.628	0.634	0.634	0.631	0.631	0.628
N firms	13,487,883	13,487,281	13,488,237	13,488,237	13,435,159	13,435,159	13,093,172
N firms non-tradable	11,134,868	11,134,347	11,134,185	11,134,185	11,090,519	11,090,519	10,793,174
N countries	118	112	117	117	110	110	89
N sectors	20	20	20	20	20	20	20
Mean dependent variable	7.20	7.03	7.03	7.03	7.07	7.07	7.09
St. Dev. Dependent variable	9.02	8.89	8.89	8.89	8.84	8.84	8.88
Institutional variable:	Log GDP pp	Economic Freedom	Civili Liberties	Political Rights	Polity IV	Executive Constraints	Rule of Law
Country FE	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 3. The sample is defined in Table 1, Panel A. Standard errors are clustered at a country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The variable denoted as the Institutional Index measurues various country characteristics; see the Appendix Section A.3 for details and sources. All columns include both country and sector fixed effects.

Table 4: **Other robustness**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average Profit Margin (std)						
Non-tradable sector x	-0.123	-0.12	-0.0857	-0.14	-0.148	-0.149	-0.101
Antitrust Index - β_1	(0.0380)	(0.0367)	(0.0482)	(0.0596)	(0.0560)	(0.0355)	(0.0555)
Cutoff	0	50	200	20	20	20	20
Countries	All	All	All	All	All	All	At least 19 sectors
Sample	2006-2015	2006-2015	2006-2015	2007	2011	2014	2006-2015
Observations	1,389	955	769	877	970	904	633
R-squared	0.541	0.688	0.697	0.692	0.582	0.633	0.646
N firms	12,802,233	12,795,362	12,775,024	5,530,434	5,990,410	6,118,058	11,583,782
N firms non-tradable	10,516,750	10,510,797	10,494,919	4,355,641	4,907,369	5,185,113	9,489,360
N countries	109	80	63	83	88	84	33
N sectors	20	20	20	20	20	20	20
Mean dependent variable	7.49	6.24	5.83	8.13	6.30	7.50	5.25
St. Dev. Dependent variable	9.71	8.09	7.64	8.63	7.79	7.76	6.91
Country FE	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is defined as in Table 1, Panel A unless specified. We include the country-sectors with at least 0, 50 or 200 firms with non-missing data to calculate the average profit margin in Columns 1, 2 and 3. Columns 4-6 report the results year-by-year for three years (2007, 2011 and 2014). Column 7 restricts the sample to countries with at least 19 sectors with at least 20 firms with non-missing data to measures the average profit margin. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The variable Antitrust Index measures the intensity of antitrust activities, as defined by Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. The variable non-tradable is a dummy variable equal to one for all sectors except Agriculture, Manufacturing and Mining. All columns include both country and sector fixed effects. In Columns 4-6 the average profit margin is computed after trimming the top/bottom 1% of firms within each country-sector-year.

A Online Appendix – Data Sources and Description

A.1 Orbis Dataset

We collect the universe of firms contained in Orbis (Bureau van Dijk, BvD) from 2006 to 2015.[20] The Orbis dataset reports financial statements for each firm ever registered in the each period. [21] The data includes: a unique firm identifier, country code (ISO, 2 digits), NACE Rev. 2 main section code and yearly data on operating revenue, net income, total assets, profit margin, price earning ratio, number of employees, gross sales, net sales, financial revenues and financial expenses.[22] The profit margin is defined (see the Orbis Handbook) as Profit/Loss before Tax and External Items over Operating Revenue (times 100).[23] The original dataset contains roughly 160 million of observations. However, only 130 million of these report a sector code.

A.1.1 Sectors

We assign each firm to one sector using the NACE Rev. 2 main section code reported in Orbis as the reference (we will refer to this as a firm's "sector" unless otherwise specified). The list of sectors is in Appendix Table C.1. We divide sectors into *tradable* and *non-tradable*. In the baseline, tradable sectors are: Agriculture, forestry and fishing (A), Mining and quarrying (B) and Manufacturing (C).

Missing NACE codes If the NACE Rev. 2 main section code is missing we rely on the following codes present in the data with the following order giving the hierarchy used in filling the gaps:

1. NACE Rev. 2 Core code (4 digits). We convert the 4 digits NACE codes to the main section code using the first two digits as shown in Appendix Table C.1
2. NACE Rev. 2 Primary code(s).
3. NACE Rev. 2 Secondary code(s).

[20] In 2015 there are only 109,043 firms with non missing profit margin. In all other years there are at least 5.5 millions

[21] It is not possible to distinguish firms going out of business from firms simply not reporting data

[22] Operating revenue, net income, total assets, gross sales, net sales, financial revenue and financial expenses are reported in thousands of US Dollars. Profit margin in percentage points

[23] Profit/Loss before Tax and External items is the sum of Operating Profit (which is equal to Gross Profit, *i.e.* Operating Revenue minus Costs of Goods Sold, minus Other Operating Expenses) and Loss with Financial Profit/Loss (which is equal to Financial Revenue minus Financial Expenses)

4. NAICS 2012 Core code (4 digits). We map the 4 digit NAICS 2012 codes to NACE Rev. 2 4 digits code (and then we are able to assign automatically the corresponding NACE Rev. 2 main section). The source of the mapping tables is Eurostat. If more than one NAICS code is assigned to more than one NACE Rev. 2 main section then we conduct manual checks.

5. NAICS 2012 Primary code(s).

6. NAICS 2012 Secondary code(s).

7. US SIC Core code (3 digits). We map the 3 digits US SIC codes (1987 version) to NAICS 2007 codes and then to NAICS 2012 codes (above mapping then applies). Source: US Census. Going through the NAICS codes is necessary as a direct mapping from US SIC to NACE Rev. 2 does not exist. Manual checks were also carried on here to ensure that to each US SIC code only one NACE Rev. 2 main section

8. US SIC Primary code(s).

9. US SIC Secondary code(s).

Creating a unique NACE code By construction, the original dataset has repeated observations for the same firm whenever the firm operates in more than one sector (either it was a main, primary, or secondary sector). Most of the time, the only information that varies is the sector code reported while data from financial statements are constant. Having converted everything, we delete duplicates in NACE Rev. 2 main section. However, some duplicates may remain whenever different NACE Rev. 2 main section codes are reported. As a first step, we look at which sector represents the biggest share of sales. If there are duplicates (mainly due to missing information on sales), we keep the observation with the smallest number of missing observations in the financial statements. If this procedure does not resolve all cases of duplication, we randomly select among the duplicated codes for that observation.

The Mian and Sufi division between tradable and non-tradable sectors As a robustness check in Table 2, following Mian and Sufi (2014), we also include Information and communication (J) among the *tradable* sectors (the *Mian and Sufi* definition).Mian and Sufi (2014) classify 294 4 digit 2012 NAICS industry codes as non-tradable, tradable, construction or other industries. They also report the percentage of the entire 2007 US labour force represented by each industry. We match the 2012 NAICS 4 digits code to NACE Rev. 2 4 digit codes and sum tradable and total labour force by NACE Rev. 2 main section code. We compute the relative share of tradable within each NACE Rev. 2 main section code. Sectors A, B, C, J are the only four sectors with positive shares of the labor

force in tradable sectors according to the Mian and Sufi (2014) definition (6.3%, 60%, 86% and 7.2% respectively). Computing the number of industries classified as"tradable" in each NACE Rev. 2 main section code deliver similar results. In particular: 25% of industries in code A, 80% of code B, 87% of code C, 5.9% of code J are categorized as tradable by Mian and Sufi (2014).

Data Cleaning The original data contains some extreme outliers. We therefore used a trimmed version of all variables. Specifically, we trimmed the top and bottom 1%.[24] This trimming exercise is performed at a country-sector level in the main sample.

A.1.2 The cross-section sample

The unit of analysis is a country-sector. For the main analysis, we use the average profit margin constructed by taking the average profit margin of all firms in a country-sector over a ten year window. In this exercise, trimming is performed at a country-sector level. We refer to this as the *mean* concentration measure.

To ensure that these concentration measures are representative of the country-sector firm composition, we require a minimum number of observations for the relevant country-sector for it to be included in the data. The baseline cutoff is at 20. However, as a robustness check we also consider 0 (i.e. no restriction at all), 10, 30, 40, 50, 200 or 3000 firms per country-sector.[25] The baseline cross sectional sample at a country-sector level represents around 13 million firm-level observations.[26]

Appendix Figure C.1 reports the number of firms with non-missing profit margin data disaggregated by continent. This shows that most of our firms are not coming from developed countries. We have a significant number of firms located in Asia, Eastern Europe and Latin America, and relatively few, from North America.

Appendix Figure C.2 reports the number of firms in each sector. This shows the importance of focusing firms outside manufacturing, in contrast to much work on level behavior. We will also be exploiting data from some large sectors such as retail and construction.

Appendix Figure C.3 reports the total number of sectors available for each country averaged by continent when we use our requirement of at least 20 firms per country-sector. It shows that 58 (out of 123) countries have more than 10 sectors with more than 20 firms. Most of them are in Western Europe, Eastern Europe, and North America. This graph,

[24] Results not trimmed and trimming top and bottom 5% are presented as robustness in Appendix Table D.8, no differences arise

[25] As we first compute the average of firms balance sheets it means that we will need at least 20 firms to have at least one balance sheet data reported in the ten years period

[26] Just to recall all the restrictions imposed: we drop all firms not reporting any sector code, we drop all the firms in the top/bottom 1% of the distribution of the variable of interest (*e.g.* profit margin, assets, ...) at country-sector, we drop all firms not part of a country-sector reporting data for the variable of interest for at least 20 firms

combined with Appendix Figure C.1, suggests that some countries (*i.e.* look for example at Latin America) may have many firms reported, but most of them will come from the same sectors, rather than being spread equally among many.

Appendix Figure C.4 reports the percentage of country-sectors with more than 20 firms. It shows that almost every country has at least 20 firms in the Financial and Insurance sector. In addition, 10 sectors (out of 21) have more than 50% of our sample countries represented.

Alternative Aggregation As an alternative way of aggregating the data, we compute each concentration measure at a country-sector-year level before averaging over the ten years (we will call this variable the *average* concentration measure). Results using this alternative aggregation approach (or yearly concentration measures) are similar to the baseline as we show in Appendix Tables D.4 and D.5 below. [27]

The HHI Index as a Measure of Concentration We have also computed Herfindahl-Hirschman Index (HHI) for each country-sector using the total assets and gross or net sales from Orbis. We prefer to use HHI based on total assets for two main reasons: i) when looking at non-tradable sectors, it is not at all straightforward how to consider sales and ii) the sales variables in Orbis contain many missing observations. To mitigate this problem we have tried imputing gross (or net) sales based on the relationship between this variable and total assets. Specifically, we regress gross sales on total assets, sector fixed effects and country$\times$year fixed effects (or at country fixed effects when we predict values of averages over ten years). Predicted values are then imputed only if the original variable (gross sales in the example) is missing. Negative predicted values are also excluded.

Capturing Entry and Exit In the original Orbis dataset, we are unable to observe entry and exit. Specifically, we cannot distinguish whether missing values are due to firm not yet existing/ceasing to exist. We therefore proceed as follows:

We define entry in the following way: a firm enters in year t if we start observing data from the financial statement in year t. We apply this procedure for the 2008-2015 period[28].

We define exit in the following way: a firm exits our sample in year t if we do not observe data from the financial statement in any of the following years. We apply this procedure for the 2006-2012 period.[29]

[27] Defining the cutoff to have the country-sector included in the sample, is straightforward: we include the country-sectors with a number of observations greater than or equal to the cutoff. If we consider the average of these yearly concentration measures we compute the average number of firms used to compute the yearly concentration measures. Trimming top and bottom 1% is performed at country-sector-year

[28] Applying the same procedure in 2006, first year of data, and 2007 may result in wrong entry assignments

[29] Applying the same procedure in 2013-2015 may result in wrong exit assignments. We exclude three years when looking at firm exit because 2015 reports a substantially lower number of firms

Since we are only interested in firms reporting data, we follow these procedures before trimming the variables in the data from financial statements. We compute the share of firms entering (exiting) for each year-contry-sector over the total number of firms in the country-sector. Finally, we compute the average entry (exit) share of firms for each country-sector. In the analysis, we restrict to country-sectors with at least 20 firms reporting data from their financial statements.

A.2 The Antitrust Measure

We use the *Total Scope Index Score (Scope Index)* from Hylton and Deng (2007).[30] They code antitrust laws and policies around the world (112 countries in the most recent version) in order to create a metric of antitrust laws. This is constructed by examining various components of competition law and assign a score depending how national laws govern conduct, penalties or enforcement.[31] The total index score is the sum of the scores for each sub-category. The minimum value is 0 while the maximum is 30. This is mainly a *de jure* index and does not measure the effectiveness of these laws. Section II of Hylton and Deng (2007) discusses the methodology at length. [32] We average the index of our ten year period (2006-2015).

Figure C.5 shows the geographical distribution of this index.

It gives a sense of the country coverage and areas of the world where antitrust laws are rated to be stronger or weaker. There are notable countries without data, including most of sub-saharan Africa.

We show in the Appendix Table C.2, that the antitrust index is correlated in a common sense way with a range of variables which represent the quality of institutions. Specifically, we run the following regression:

$$A_c = \alpha + \chi Z_c + \varepsilon_c \tag{4}$$

where A_c is the *Total Scope Index Score* of Hylton and Deng (2007) and Z_c is variously: log of GDP per capita, the Economic Freedom, Civil Liberties and Political Rights Indices

[30] The most up to date dataset can be found here.

[31] Categories considered Territorial Scope, Remedies, Private Enforcement, Merger Notification, Merger Assessment, Dominance, and Restrictive Trade Practices.

[32] A special case is represented by Europe. Hylton and Deng (2007) present both regulation from the European Commission and for each country member of the EU, reporting the national antitrust law and the national antitrust law integrated with EU regulation. We ignored the purely European Commission law and whenever there was a conflict between purely national and national with EU regulation antitrust law (*i.e.* both reported in the same year) we had the latter to dominate. We consider measures of European-wide Antitrust policies in Appendix Table D.5, in which we consider the European Union to a single country with similar results to our baseline specification.

from Freedom House, the democracy and executive constraints measures from PolityIV, and the Rule of Law Index from the World Justice Project. Appendix Table C.2 shows that countries with higher GDP are classified, on average, as having a better antitrust regime according to Hylton and Deng (2007). The index is positively correlated with economic freedom but negatively correlated with political and civil rights. Countries that are more democratic and have stronger executive constraints also have a higher score on the antitrust index. And stronger rule of law is positively correlated with the index. Although these are not causal relationships, it suggest that there are important sources of country-level unobserved heterogeneity that are likely to affect the antitrust regime, thereby reinforcing the need to include country fixed effects in all our regressions.

To supplement this index, we use Bradford et al. (2019) to measure the budget (in USD) allocated by each country for antitrust agencies as an alternative measure for antitrust policies. This is available only up to 2010. However, we will use it alongside the scope index as robustness check in Table 2. To ensure a valid comparison with other results, we will average the concentration index measures over the period 2006-2010.

We also run the analysis using the Competition Law Index (*CLI*) from Bradford and Chilton (2018). This is similar to the *Scope Index* and covers a larger group of countries. However, it is also only available up to 2010. Results (available upon request) show a negative, although insignificant correlation between this and our measure of profitability in a specification similar to column (3) of Table 2. To ensure a valid comparison we average the concentration index measure only over the period 2006-2010 when we do this.

In an effort to capture the effectiveness of antitrust policies we looked at the yearly Global Competitiveness Report from World Economic Forum. We particularly focus the Executive Opinion Survey question which asks respondents: "In your country, to what extent does anti-monopoly policy promote competition?" where the answer can be from 1 (does not promote competition) to 7 (effectively promotes competition).[33] We compute an average for this variable over the ten years period of analysis (2006-2015). Results (available upon request) show a negative, although insignificant, correlation in our main specification akin to Column (3) of Table 2 when using this alternative indicator of antitrust policy.

A.3 Other variables

We have also collected a range of country-level variables to use in our analysis: GDP per capita, PPP (constant 2011 international $), (source: World Bank); Summary index of Economic Freedom of the World, (source: Fraser Institute); Civil Liberties Index and Political Rights Index, (source Freedom House); Polity IV and Executive Constraints Index,

[33] Nicholson (2008) looks at the relationship between this *De Facto* measure and Hylton and Deng (2007)

(source: Centre for Systemic Peace); Overall score among Rule of Law, (source: World Justice Project). For all these variables we compute the average over the ten years period of analysis (2006-2015).[34]

A.4 Summary Statistics

Summary statistics on the distribution of profitability, concentration, and the antitrust index are given in Table 1. This shows how these variables vary within country across sector and across country within sector. Panel A gives the average profit margin both overall and disaggregated using our tradable/non-tradable distinction. The average profit margin in non-tradable sectors is higher with a mean of 7.58 (standard deviation 9.47) compared to a mean of 5.18 (standard deviation 6.63) for the tradable sectors. These raw data are consistent with Hypothesis 1 based on the idea that tradable sectors are more exposed to international trade. The between country variation is somewhat greater than the within country variation suggesting that country-specific factors are at work in determining these differences. Panel B shows that the HHI measure based on assets is also higher on average for the non-tradable sectors. It is 4.87 (standard deviation 9.02) for the non-tradable sectors while for the tradable sectors it is 4.03 (standard deviation 8.83).

In Panel C, we give the fraction of firms in our sample that are operating in the tradable sectors according to our baseline definition and that used in Mian and Sufi (2014). Our definition suggests that 17% of firms are in the tradables sector while for the Mian and Sufi (2014) definition, it is 22%. Either way, this reinforces the point that most firms are not exposed to international trade and that looking at the competitive impact of trade therefore gives only a very partial picture of factors driving firm performance and profitability.

In Panel C, we give the fraction of country-sectors in our sample that are classified as tradable according to our baseline definition and that used in Mian and Sufi (2014). Our definition suggests that 17% of country-sector observations are in the tradables sector while for the Mian and Sufi (2014) definition, it is 22%. Summary statistics in Table 2 are consistent with our sample being composed by 10.5 million firms operating in the non-tradable sector out of a total of 12.8 millions firms. It means that tradable sectors represents 17.9% (21.8% using the Mian and Sufi (2014) definition) of our sample. We conclude that most firms are not exposed to international trade and that looking at the competitive impact of trade therefore gives only a very partial picture of factors driving firm performance and profitability.

Finally, in Panel D, we report the means and standard deviations of our two core antitrust variables. The wide range of differences in the expenditure measure are particularly striking.

[34] With the exception of Rule of Law index available only in 2012, 2014 and 2015

Appendix Table C.3 presents summary statistics for additional key variables used in the analysis. HHI gross sales and HHI net sales have been computed after trimming the variable of interest in the sample at 1% at country $\times$ sector level. We are also restricting the sample to country-sectors with at least 20 firms reporting data in the variable of interest. In Panel B, we restrict the attention to country-sectors with at least 20 firms reporting average profit margin.

B Online Appendix – Additional Results and Robustness

In this section, we present some additional results and a range of robustness checks.

Entry and exit We investigate one of the many possible mechanisms behind the negative relationship between antitrust, profits, and concentration. Our main hypothesis is that antitrust policy may induce competition by lowering the regulatory burden and fixed costs. A corollary of this may imply that antitrust induces a differentially positive effect on entry and exit in non-tradable sectors compared to tradable ones. As a result, the following equation verifies whether antitrust is associated with the firm entry and exit (measured as described in Appendix, section A.1.2). We regress $Entry_{cs}$, which measures the average entry of firms in country c and sector s on an interaction between the antitrust index, $Antitrust_c$, and the dummy taking unit value for sectors classified as non-tradable, $Non-Tradable_s$, including country and sector fixed effects. The same regression is also presented for the average share of exiting firms:

$$Entry_{cs} = \beta_1 Antitrust_c \times Non-Tradable_s + \delta_c + \sigma_s + \epsilon_{cs}. \quad (5)$$

Column (1) of Appendix Table D.1 shows that one standard deviation higher antitrust index is associated with a 6.78 percent increase in the standard deviation of the share of firms entering in country c and sector s. This is statistically significant, corresponding to an increase of 2.2% relative to the mean. Changes in antitrust policy do not correlate well with the exit of firms, as shown in Column (2). This is true both in terms of significance and the point estimate is an order of magnitude smaller than for entry. The finding in Column (1) is consistent with antitrust policy lowering barriers to entry, which may increase the likelihood of new firms entering (or existing firms growing in size). At the same time, the lack of response on exit is in line with antitrust policy leading to lower profits, but insufficiently so to drive firms from the market.

Alternative HHI We consider alternative concentration measures and verify their robustness with our main results. Column (6) of Table 2 shows that the HHI based on assets, is negatively correlated with the antitrust in non-tradable sectors. We repeat this analysis in Appendix Table D.2 by using two different concentration measures: a) the HHI based

on gross sales in Column (1) and b) the HHI using net sales in Column (2). The results of Appendix Table D.2 are in line with Table 2 both in terms of sign and magnitude.

Cutoff We modify the sample threshold defining our sample as we did in Table 4, Columns 1-3. In Section 5 of the paper, we considered only country-sector cells containing at least 20 firms and disregard all country-sector cells with a smaller number of firms. This generates comparable cells across countries and sectors. Appendix Table D.3 replicates our baseline specification presented in the Column (3) of Table 2, including country and sector fixed effects and only changes the minimum number of firms necessary to include a country-sector cell with cutoffs between 0 and 3000 firms. The results in all columns are statistically indistinguishable from those in Table 2. The loss of statistical significance in columns further to the right is most likely related to power issues.

Alternative samples We show that our results are robust to different sampling strategies as we did in Table 4, Columns 4-6. Appendix Tables D.4 and D.5 explore the specification presented in Column (3) of Table 2 on the sample for the years 2006-2015. In Column (1), we verify that our main result is unaffected if we change the timing of our sample and take the average profit margin over the 2006-2010 period to make it comparable with column (5) of Table 2. Column (2) shows that our main result is unchanged if we analyze the average of yearly average profit margin at country-sector level, rather than first averaging profit margin for each firm over the ten years and then average by country-sector. We then repeat the analysis by defining our sample as the mean over a single year and verify that the results are statistically indistinguishable from the core results. Hence, Columns (3) to (8) of Appendix Table D.4 report our main result for single years: from 2006 to 2011. Appendix Table D.5 reports the same coefficients in a year-by-year fashion from 2012 until 2015 in Columns (1) to (4). The latter is the only year that shows a marginally insignificant estimate, but with a much smaller sample: the number of country-sector cells in 2015 is 167, compared to roughly 900 for all other years, and around 1.5% of the firms reporting data, compared to other years.

To ensure that including 2015 does not alter our results, we look at Column (3) of Table 2 for the years 2006-2014. The results are identical.

We now allow the EU to be treated as a single country; the results are in Appendix Table D.5. Here, we calculate the average profit margin (and the HHI index) treating all EU countries as a single country. The countries considered in the EU in 2006 (the first year of data) are: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, France, Finland, Germany, Hungary, Italy, Ireland, Latvia, Lithuania, Luxembourg, Greece, Malta, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, and Sweden. Bulgaria and Romania (which joined in 2007) and Croatia (which joined in 2013) are excluded. Columns (6), (7) and (8) replicate the specifications in Columns (3), (5) and (6) of Table 2. The basic

findings are robust to aggregating the EU into a single entity. However, the coefficient in Column (6) is not significant although we cannot reject the coefficient being the same as Column (3) in Table 2. In addition to the results shown, we averaged (weighting by size of country-sector) each country-sector within EU (both for our antitrust indexes and the concentration measures) and the results are almost identical.

Weighting Profit Margin by Operating Revenues This sub-section shows that our results are almost identical if, when computing the average profit margin at country-sector, we consider a weighted average by operating revenues instead of the simple average. Results are shown in Appendix Table D.6 in which we replicate Columns (1) to (5) of Table 2. Only Column (5) is not significant although we cannot reject the coefficient being the same as Column (5) in Table 2. All the other coefficients of interest are very similar and, if anything, larger.

Data quality Here we explore whether our results depend on the poor data quality of some countries. Column (7) of Table 4 offers one important robustness check: it restricts the sample to countries that have at least 19 sectors with sufficient data to be included (where 20 is the maximum number of sectors possible). This serves as a check on data quality since some countries may have limited data in Orbis which leads to the exclusion of entire sectors. We now verify that this is not a problem in our setting. Appendix Table D.7 shows a further robustness check based on Column (7) of Table 4 when the minimum number of sectors per country is varied from 5 to 20. The point estimate is unchanged as this threshold moves from 5 in Column (1), to 10 in (2), to 15 in (3) and to 20 in (4). As in previous tests, a higher threshold leads to a small number of observations and firms, weakening the statistical precision but leaving the point estimate unchanged.

Various robustness Additional robustness checks are in Appendix Table D.8. Column (1) presents results from a weighted regression, with the weight given by the number of firms in the country-sector with a non-missing profit margin[35]. The next two columns consider different "trimming" strategies. In our baseline estimates, we had trimmed the top and bottom 1% of firms, in line with much of the literature that uses Orbis data. Our findings are robust to not doing any trimming (Column (2)) and to more restrictive trimming at 5% in Column (3). In Column (4), we also verify that our results are robust to a different way of trimming by removing the top/bottom 1% of concentration measures. Columns (5) and (6) vary the way in which we cluster our standard errors. Column (5) has unadjusted standard errors and Column (6) clusters at a country-sector level (equivalent to robust standard errors).

[35]In this case we want to give more relavance to country-sectors with more firms represented. This is different from what we do in Appendix Table D.6 where we are giving more weight to larger firms when computing average profit margin at country-sector level.

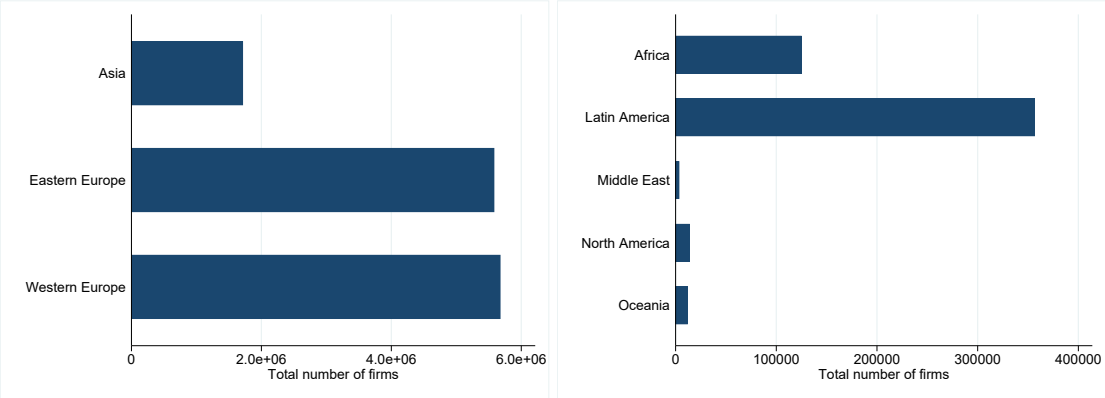
C Online Appendix – Additional Tables and Figures

Table C.1: **Nace Revision 2 codes**

Main section	**Description**	**2 digits**
A	Agriculture, forestry and fishing	01 – 03
B	Mining and quarrying	05 – 09
C	Manufacturing	10 – 33
D	Electricity, gas, steam and air conditioning supply	35
E	Water supply; sewerage, waste management and remediation activities	36 – 39
F	Construction	41 – 43
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	45 – 47
H	Transportation and storage	49 – 53
I	Accommodation and food service activities	55 – 56
J	Information and communication	58 – 63
K	Financial and insurance activities	64 – 66
L	Real estate activities	68
M	Professional, scientific and technical activities	69 – 75
N	Administrative and support service activities	77 – 82
O	Public administration and defence; compulsory social security	84
P	Education	85
Q	Human health and social work activities	86 – 88
R	Arts, entertainment and recreation	90 – 93
S	Other service activities	94 – 96
T	Activities of households as employers; undifferentiated goods and services producing activities of households for own use	97 – 98
U	Activities of extraterritorial organisations and bodies	99

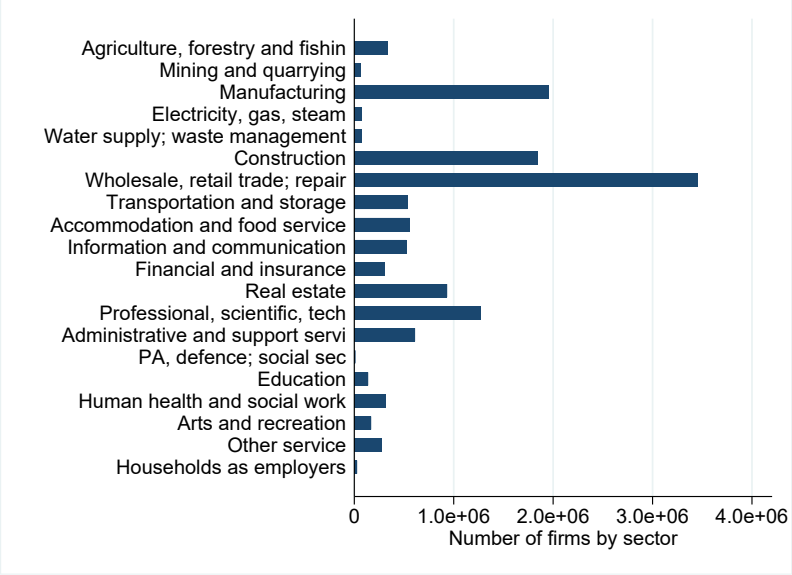
Note: We report Level 1 Sectors in NACE Rev 2

Figure C.1: **Number of firms by continent**



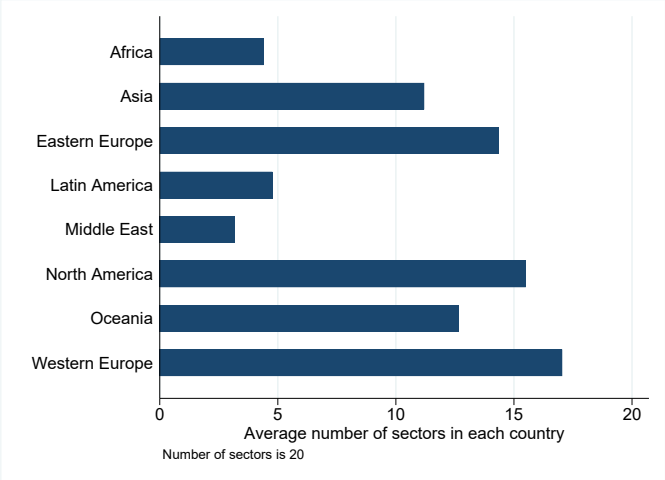
Note: Number of firms with non-missing profit margin in at least one of the ten years of sample period (2006-2015) by continent. The sample is as defined in Table 1, Panel A.

Figure C.2: **Number of firms by sector**



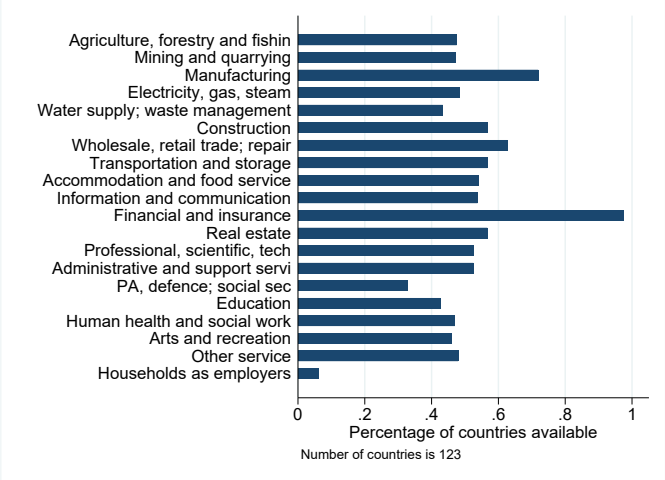
Note: Number of firms with non-missing profit margin data in at least one of the ten years of sample period (2006-2015) by sector. The sample is as defined in Table 1, Panel A.

Figure C.3: **Average number of sectors by continent**



Note: Average number of sectors in each country averaged by continent. Sample defined as in Table 1, Panel A.

Figure C.4: **Percentage of countries with at least 20 firms in the sector**



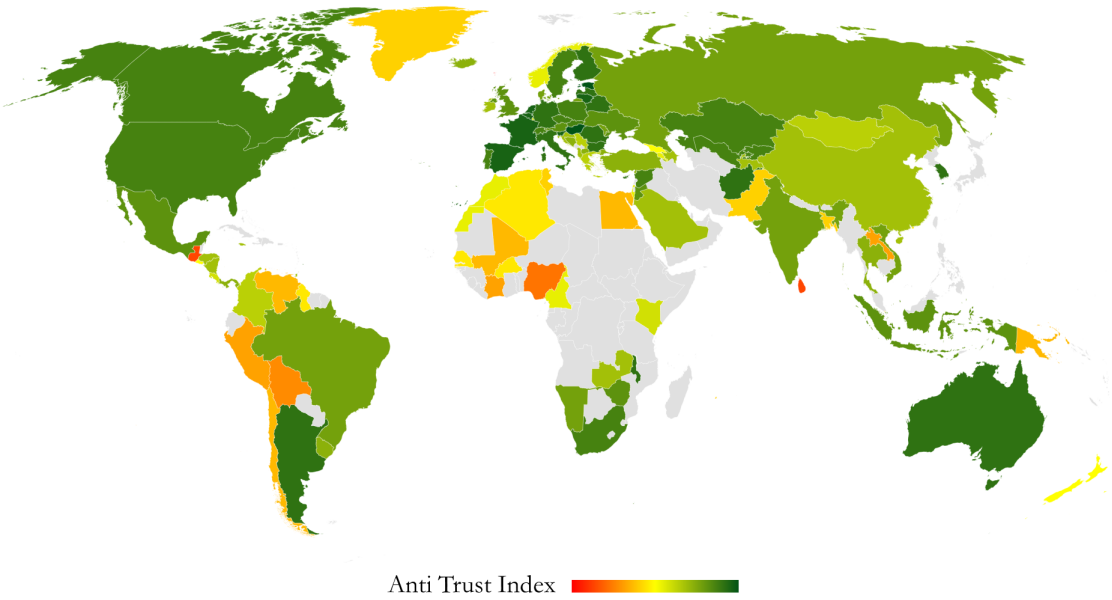
Note: Percentage of countries in each sector. Sample defined as in Table 1, Panel A.

Table C.2: **Antitrust Index**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Antitrust Index (std)			
Institutional Index - χ	0.434	0.248	-0.374	-0.326	0.243	0.303	0.353
	(0.121)	(0.117)	(0.109)	(0.101)	(0.107)	(0.110)	(0.106)
Observations	107	106	108	108	104	104	83
R-squared	0.132	0.053	0.120	0.096	0.048	0.071	0.125
N countries	107	106	108	108	104	104	83
Mean dependent variable	20.06	19.99	20.17	20.17	20.11	20.11	20.29
St. Dev. Dependent variable	4.66	4.63	4.63	4.63	4.69	4.69	4.78
Institutional variable:	Log GDP pp	Economic Freedom	Civili Liberties	Political Rights	Polity IV	Executive Constraints	Rule of Law

Note: This table presents OLS estimates using the specification in equation 4. Standard errors are robust standard errors and reported in parentheses. The dependent variable Antitrust Index is an index measuring the intensity of antitrust activities, as defined by Hylton and Deng (2007). The Institutional Index variable represents various country characteristics, see Appendix Section A.3 for details and sources.

Figure C.5: **Geographical distribution Scope Index (average 2006-2015)**



Note: The geographical distribution Scope Index (averaged for the period 2006-2015). The red areas represent a low value of the antitrust index (minimum equals to 5) while the green areas represent a high value of the antitrust index (maximum equals to 27). We do not have data for grey areas.

Table C.3: **Additional Summary Statistics**

	Obs	Mean	Sd	Min	Median	Max
Panel A						
Number of firms reporting profit margin	1,224	11,023	40,800	20	785	906,758
Number of firms reporting total assets	1,245	16,645	54,686	20	1077	977,687
HHI Gross Sales	1,115	3.56	6.40	0.00	0.47	78.71
Number of firms reporting gross sales	1,115	10,105	34,323	20	568	604,246
HHI Net Sales	1,116	3.56	6.38	0.00	0.46	78.71
Number of firms reporting net sales	1,116	10,186	35,324	20	570	656,511
Pct new firm	1,623	0.09	0.03	0.01	0.10	0.13
Pct closed firm	1,592	0.04	0.03	0.00	0.03	0.14
Panel B						
GDP per capita	1,545	25,462	18,679	637	20814	121,724
Economic Freedom	1,476	7.10	0.76	3.91	7.23	9.03
Civili Liberties	1,548	2.56	1.68	1.00	2.00	7.00
Political Rights	1,548	2.64	1.96	1.00	2.00	7.00
Polity IV	1,477	16.19	5.55	0.00	19.00	20.00
Executive Constraints	1,477	5.86	1.67	1.00	7.00	7.00
Rule of Law (2012, 2014, 2015)	1,233	0.62	0.14	0.33	0.58	0.88

Note: The unit of analysis is country-sector. In Panel A we consider the country-sectors with at least 20 firms with non missing financial statements data to compute the variable of interest. Panel B considers the country-sectors with at least 20 firms with non missing average profit margin. All variables are averaged over the entire sample period (2006-2015). HHI Gross Sales and HHI Net Sales have been computed after trimming the sample at 1% at country-sector level. Net or gross sales present many missing values, we predict non-negative missing values using total assets, sector fixed effect, and the interaction term between sector and total total assets, looking separately at each country.

Table D.1: **Entry and Exit**

	(1)	(2)
	Pct new firm	Pct closed firm
Non-tradable sector x	0.0678	-0.00196
Antitrust Index - β_1	(0.0305)	(0.0224)
Observations	1,367	1,351
R-squared	0.850	0.888
N firms	54,993,643	48,119,148
N firms non-tradable	47,385,227	41,461,838
N countries	100	99
N sectors	20	20
Mean dependent variable	0.09	0.04
St. Dev. Dependent variable	0.03	0.04
Country FE	YES	YES
Sector FE	YES	YES

Note: This table presents OLS estimates using the specification in equation 1, where the unit of observation is a country-sector cell, and the country-sectors contain at least 20 firms with non-missing financial statements data. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. All coumns include both country and sector fixed effects.

D Online Appendix – Additional Results and Robustness

Table D.2: **Alternative HHI indexes**

	(1)	(2)
	HHI Gross Sales	HHI Net Sales
Non-tradable sector x	-0.099	-0.103
Antitrust Index - β_1	(0.0575)	(0.0554)
Observations	1,006	1,008
R-squared	0.366	0.367
N firms	11,136,415	11,236,380
N firms non-tradable	9,589,379	9,668,482
N countries	89	89
N sectors	20	20
Mean dependent variable	3.23	3.25
St. Dev. Dependent variable	6.17	6.18
Country FE	YES	YES
Sector FE	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1 Panel A, unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. The variable Herfindahl - Hirschman Index (HHI) is an index measuring the concentration of an industry based on firm net sales (Column 1) or gross sales (Column 2), it ranges between 0 (perfect competition) and 100 (monopoly). All columns include both country and sector fixed effects.

Table D.3: **Alternative cutoffs**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Average Profit Margin (std)						
Non-tradable sector x	-0.123	-0.101	-0.115	-0.132	-0.12	-0.0857	-0.0614
Antitrust Index - β_1	(0.0380)	(0.0443)	(0.0423)	(0.0408)	(0.0367)	(0.0482)	(0.0545)
Cutoff	0	10	30	40	50	200	3000
Observations	1,389	1,193	1,041	994	955	769	394
R-squared	0.541	0.618	0.671	0.679	0.688	0.697	0.761
N firms	12,802,233	12,801,449	12,798,690	12,797,083	12,795,362	12,775,024	12,382,718
N firms non-tradable	10,516,750	10,516,129	10,513,853	10,512,348	10,510,797	10,494,919	10,168,878
N countries	109	104	88	83	80	63	40
N sectors	20	20	20	20	20	20	19
Mean dependent variable	7.49	7.05	6.70	6.50	6.24	5.83	5.78
St. Dev. Dependent variable	9.71	8.78	8.27	8.23	8.09	7.64	7.82
Country FE	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1, Panel A unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. We consider the country-sectors with at least 0, 10, 30, 40, 50, 200 or 3000 firms with non-missing data for the average profit margin in Columns 1 to 7. All columns include both country and sector fixed effects.

Table D.4: **Alternative samples**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
				Average Profit Margin (std)				
Non-tradable sector x	-0.153	-0.129	-0.0676	-0.14	-0.152	-0.0858	-0.188	-0.148
Antitrust Index - β_1	(0.0397)	(0.0356)	(0.0398)	(0.0596)	(0.0632)	(0.0449)	(0.0423)	(0.0560)
Sample	Mean 2006-2010	Average 2006-2015	2006	2007	2008	2009	2010	2011
Observations	1,000	954	845	877	904	923	952	970
R-squared	0.655	0.655	0.682	0.692	0.627	0.647	0.656	0.582
N firms	8,998,328	5,343,366	5,104,345	5,530,434	5,690,555	5,723,592	5,634,093	5,990,410
N firms non-tradable	7,216,377	4,347,578	4,016,206	4,355,641	4,434,258	4,549,090	4,728,485	4,907,369
N countries	89	83	81	83	84	85	86	88
N sectors	20	20	20	20	20	20	20	20
Mean dependent variable	6.62	6.73	7.47	8.13	6.24	5.53	6.65	6.30
St. Dev. Dependent variable	8.34	7.35	8.28	8.63	7.78	8.22	8.11	7.79
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1 Panel A, unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining.

In Column 1 we consider average profit margin over 2006-2010 period. In Column 2 we first take the average by year and then average by country-sector. Columns 3-8 report the results year by year for 2006-2011. In Columns 2-8 average profit margin has been computed after trimming the top/bottom 1% of firms within each country-sector-year. All columns include both country and sector fixed effects.

Table D.5: **Alternative samples**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Average Profit Margin (std)							HHI assets (std)
Non-tradable sector x	-0.135	-0.118	-0.149	-0.185	-0.103	-0.0464	-0.0936	-0.15
Antitrust Index - β_1	(0.0478)	(0.0437)	(0.0355)	(0.110)	(0.0411)	(0.0489)	(0.0238)	(0.0786)
Sample	2012	2013	2014	2015	Mean 2006-2014	EU unique	EU unique	EU unique
Antitrust Index	Scope Index	Scope Index	Scope Index	Scope Index	Scope Index	Scope Index	Budget (USD)	Scope Index
Observations	996	995	904	168	1,110	696	551	704
R-squared	0.632	0.638	0.633	0.682	0.629	0.638	0.669	0.448
N firms	6,631,818	6,923,192	6,118,058	90,270	12,793,410	12,800,468	9,305,869	20,018,149
N firms non-tradable	5,478,139	5,743,993	5,185,113	80,217	10,508,781	10,515,350	7,516,707	17,105,174
N countries	88	88	84	25	94	71	55	74
N sectors	20	20	20	19	20	20	20	20
Mean dependent variable	6.52	7.03	7.50	10.20	6.80	7.89	7.40	5.66
St. Dev. Dependent variable	8.04	8.08	7.76	9.07	8.53	9.30	8.80	9.50
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1 Panel A, unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. Columns 1-4 report the results year by year for the period 2012-2015, where the average profit margin has been calculated after trimming the top/bottom 1% of firms within each country-sector-year. In Column 5, we the average profit margin is for the period 2006-2014. In Columns 6-8, all the countries member of European Union in 2006 are treated as a single country. In Column 7, antitrust index is Budget in USD as defined in Bradford et al. (2019) (see Section 4 for details) and covers the period 2006-2010. In Column 8, the dependent variable is the Herfindahl - Hirschman Index (HHI) measuring the concentration of an industry based on firm assets, ranging from 0 (perfect competition) to 100 (monopoly). All columns include both country and sector fixed effects.

Table D.6: **Weighting Profit Margin by Operating Revenues**

	(1)	(2)	(3)	(4)	(5)
	Average Profit Margin (std)				
Non-tradable sector x	-0.219	-0.0768	-0.151	-0.157	-0.0290
Antitrust Index - β_1	(0.0676)	(0.0640)	(0.0593)	(0.0511)	(0.0447)
Non-tradable sector - β_2	0.0814				
	(0.0730)				
Antitrust Index - β_3		-0.169			
		(0.0635)			
Antitrust Index	Scope Index	Scope Index	Scope Index	Scope Index	Budget (USD)
Tradable definition	Baseline	Baseline	Baseline	Mian and Sufi	Baseline
Sample	2006-2015	2006-2015	2006-2015	2006-2015	2006-2010
Observations	1,066	1,066	1,066	1,066	889
R-squared	0.314	0.376	0.540	0.541	0.547
N firms	12,330,345	12,330,345	12,330,345	12,330,345	8,892,370
N firms non-tradable	10,115,761	10,115,761	10,115,761	9,622,786	7,169,720
N countries	93	93	93	93	75
N sectors	20	20	20	20	20
Mean dependent variable	6.01	6.01	6.01	6.01	6.33
St. Dev. Dependent variable	7.26	7.26	7.26	7.26	7.18
Country FE	YES	NO	YES	YES	YES
Sector FE	NO	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1 Panel A, unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. When aggregating at country-sector we weight firms' profit margin by operating revenues. The Antitrust Index is from Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. All columns include both country and sector fixed effects.

Table D.7: **Restricting number of sectors per country**

	(1)	(2)	(3)	(4)
	Average Profit Margin (std)			
Non-tradable sector x	-0.103	-0.103	-0.105	-0.0800
Antitrust Index - β_1	(0.0458)	(0.0514)	(0.0597)	(0.0469)
Number of sectors per country	5	10	15	20
Observations	1,065	1,004	909	120
R-squared	0.616	0.624	0.626	0.779
N firms	12,797,276	12,791,836	12,772,003	5,200,463
N firms non-tradable	10,513,150	10,509,322	10,496,408	4,585,427
N countries	65	57	49	6
N sectors	20	20	20	20
Mean dependent variable	6.42	5.98	5.72	7.47
St. Dev. Dependent variable	8.21	7.69	7.41	8.07
Country FE	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES

Note: This table presents OLS estimates using the specification in equation 1. The sample is as defined in Table 1 Panel A, unless otherwise specified. In Columns 1 to 4, we consider those countries with at least 5, 10, 15 or 20 sectors and with at least 20 firms with non-missing average profit margin data. Standard errors are clustered at country level and reported in parentheses. The dependent variable, Profit Margin, is defined by Orbis as the profit or losses before tax and external items over operating revenue. The Antitrust Index is from Hylton and Deng (2007). Both of these variables are standardized and averaged between 2006 and 2015. The variable non-tradable is a dummy variable taking the value one for all sectors other than Agriculture, Manufacturing and Mining. All columns include both country and sector fixed effects.

Table D.8: **Other robustness**

	(1)	(2)	(3)	(4)	(5)	(6)
			Average Profit Margin (std)			
Non-tradable sector x	-0.105	-0.105	-0.122	-0.0956	-0.103	-0.103
Antitrust Index - β_1	(0.0528)	(0.0385)	(0.0408)	(0.0406)	(0.0466)	(0.0380)
Observations	1,110	1,123	1,087	1,089	1,110	1,110
R-squared	0.797	0.647	0.639	0.651	0.631	0.631
N firms	12,800,308	13,132,056	11,783,874	12,701,900	12,800,308	12,800,308
N firms non-tradable	10,515,246	10,793,295	9,683,463	10,420,144	10,515,246	10,515,246
N countries	94	96	91	94	94	94
N sectors	20	20	20	20	20	20
Mean dependent variable	6.80	7.09	6.74	6.78	6.80	6.80
St. Dev. Dependent variable	8.53	8.92	8.32	7.79	8.53	8.53
Country FE	YES	YES	YES	YES	YES	YES
Sector FE	YES	YES	YES	YES	YES	YES
Cutoff	20	20	20	20	20	20
Tradable definition	Manual	Manual	Manual	Manual	Manual	Manual
Sample	Mean 2006-2015	Mean 2006-2015	Mean 2006-2015	Mean 2006-2015	Mean 2006-2015	Mean 2006-2015
Weighted	Yes	No	No	No	No	No
Trim at firm level	1%	No	5%	1%	1%	1%
Trim at concentration measure level	No	No	No	1%	No	No
Standard errors	Cluster Country	Cluster Country	Cluster Country	Cluster Country	OLS	Cluster Country-Sector

Note: This table presents OLS estimates from equation 1. The sample defined as in Table 1 Panel A, unless otherwise specified. Standard errors are clustered at country level and reported in parentheses. Column 1 reports the result from a weighted regression where the weights are the number of firms in each country-sector with not missing profit margin. In Column 2, we do not trim our data. In Column 3, we trim top/bottom 5% firms based on average profit margin distribution within each country-sector level. In Column 4, we trim top/bottom 1% country-sectors based on average profit margin. In Column 5, we do not adjust standard errors. In Column 6, we consider standard errors clustered at country-sector level (*i.e.* Robust standard errors. Unless otherwise specified, all columns report the same specification as in Column 3 of Table 2. All columns include both country and sector fixed effects.

E Online Appendix – Additional References

References

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