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► **To cite this version:**

Dina Waked. Antitrust Enforcement in Developing Countries: Reasons for Enforcement & Non-Enforcement Using Resource-Based Evidence. 2022. hal-03605609

HAL Id: hal-03605609

<https://hal-sciencespo.archives-ouvertes.fr/hal-03605609>

Preprint submitted on 5 Apr 2022

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**Antitrust Enforcement in Developing Countries:
Reasons for Enforcement & Non-Enforcement using Resource-Based Evidence**

Dina I. Waked*

Abstract

This paper empirically investigates whether developing countries can enforce their antitrust laws or not by measuring potential antitrust enforcement using two proxies: budgets and staffing levels of antitrust authorities. Data was collected from 40 developing countries since the adoption of the law until 2009. This dataset presents an alternative method to measure antitrust enforcement compared to the widespread use of formal enforcement proxies. The data shows that most developing countries actually are capable of enforcing their competition laws but with varying intensities. This finding challenges the assumption that developing countries only adopt antitrust laws to secure trade agreements and constantly fail to enforce these laws. Using this dataset the paper then assessed what issues contributed to the variation of antitrust enforcement across developing countries, using panel data estimation techniques to examine the relation between the potential antitrust enforcement proxies and variables representing macroeconomic, political, legal and institutional environments. The paper finds that the factors that heavily impact the level of potential enforcement are economic development, openness to trade and corruption.

I. INTRODUCTION

Developing countries have been increasingly adopting specialized laws aimed at regulating competitive behaviour and prohibiting anticompetitive activities. By 2007, out of the world's 151 developing countries¹, 77 had an antitrust law in force and an agency set up to enforce the adopted law, a surge from less than 10 before 1990.² The trend to

* SJD Candidate, Harvard Law School. I would like to thank my supervisor Einer Elhauge for continuous discussions and support. I also want to thank Mark Roe for co-supervising the work on which this paper is based. I am very thankful to the help and support I received from Lionel Nesta, Ludovic DiBiaggio and Maryam Nasiriyar. I am also very grateful to the assistance I received while working at SKEMA Business School (Sophia Antipolis, France).

¹ According to the World Bank classifications based on gross national income (GNI) per capita. (Economies are divided according to 2008 GNI per capita, calculated using the World Bank Atlas Method. The groups are: low income, \$975 or less; lower-middle-income, \$976 - \$3,855; and upper-middle-income, \$3,856 - \$11,905.)

² These include 7 countries, which are considered developing according to International Monetary Fund (IMF) classification, but are considered high-income economies according to the World Bank. See IMF 2008 World Economic and Financial Surveys, World Economic Outlook, Database – WEO Groups and Aggregate Information. These countries are: Barbados, Croatia, Czech Republic, Estonia, Hungary, Saudi

adopt these laws in the developing world has been a phenomenon of the 1990s, where the number of countries adopting antitrust laws post 1990 is astonishing, compared to the decades before (Figure 1). (Table 1 lists all developing countries with a competition law).

This raises the question of why did these countries adopt them in the 1990s and not before? And also, why did *so many* of them suddenly become interested in competition law adoption? There is no simple answer to either, except to say that many countries had provisions either in their penal codes, civil codes or commercial legislations dealing with competition law issues before formally adopting a legislation that is solely concerned with competition matters.³ This made them less interested in adopting particular laws seeing that they had general provisions in other legislations dealing with the same issues. With regards to the second question, why so many became suddenly interested in these kind of laws in the 1990s, it is simplistic to argue, yet quite true, that many countries were entering trade agreements in the 1990s that made the adoption of competition law a prerequisite to the implementation of the trade deals.⁴ These treaties were either trade agreements creating free trade zones, or were part of structural programs that intended to open up the developing world economies and facilitated the entry of foreign entities that considered a competition law a necessity and guarantee for their work abroad, in particularly in a developing country.⁵ More generally, the 1990s are considered the era where developing world countries started to put an end to their former protectionist policies that were either inspired by communist or socialist regimes or simply by efforts to industrialize and strengthen national champions and local producers. The 1990s introduced the new era of international trade, encouraging foreign direct investment, and membership in regional trade agreements or the World Trade Organization (WTO). With the emergence of many of these structural changes, open door policies and participation in world trade relations, competition laws were suddenly prescribed as necessities to facilitate much of the impending changes. It is important to understand the role played by the WTO in encouraging and often requiring new members to adopt these laws in order to understand the surge in the developing world.⁶ Similarly, the role played by the EU in encouraging new members and trade partners to adopt competition law is even more

Arabia, and Slovak Republic (where the Czech Republic and the Slovak Republic were considered developing in the 2008 IMF Survey and are no longer so in the 2009 survey).

³ See for example Egypt's Penal Code of 1937 in Article 345 prohibits raising or lowering prices to achieve illegal benefits. Also, Law 241 for 1959 states that it is prohibited for any distributor to have a monopoly in distributing any domestically produced good that is subject to an import ban.

⁴ Francisco Marcos, *Do Developing Countries Need Competition Law and Policy?*, 3 (September 2006).

Available at SSRN: http://papers.ssrn.com/ezip-prod1.hul.harvard.edu/sol3/papers.cfm?abstract_id=930562&download=yes

(“[Competition Policy] mandates are also contained in most of the bilateral trade agreements and Free Trade Agreements in which young and developing countries take part. Parties to those treaties normally are required to have in place a domestic antitrust regime as one of the main conditions before entering into the agreement.”)

⁵ See e.g. The Euro-Mediterranean Association Agreement between the EU and Egypt in Article 72 states that, a “financial cooperation package shall be made available to Egypt” focused among others on “the accompanying measures for the establishment and implementation of competition legislation.” Similar provisions are found in other Euro-Mediterranean Association Agreements which have been concluded between the EU and each of the following: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestinian Authority, Tunisia, and Turkey.

⁶ World Trade Organization; Paper of 18 September 1998; WT/WGTCP/W/80.

straightforward.⁷ Adopting these laws seemed to many as the missing link to assure growth and development.⁸

In many instances these newly adopted competition laws are replicas of laws developed in the West. The problem of adopting laws that are not tailored to address local needs is that often these laws are nothing but ink on paper. Theories on legal transplant abundantly show that copy-and-pasting laws leads to inefficiency of these laws and prove their uselessness.⁹ With this in mind, it is intriguing to see what the developing countries do with their antitrust laws after they adopt them, regardless of the reasons behind adopting these laws and the format that inspired their drafting.¹⁰

The literature on antitrust in developing countries is rather meager with little research explaining the realities post adoption. Most studies focus on analyzing the adoption phenomenon and the kinds of laws adopted. In their analysis, measuring and quantifying enforcement is ignored or simply assumed to naturally follow adopting these laws. Many studies that attempt to see whether these laws are important, in terms of development, only look at the *adoption* as the event that should trigger economic development. These studies look at the *kind* of law adopted, whether it is one that addresses local needs or one that replicates the laws of the developed countries, to conclude about the effects resulting from the kind of law adopted.

Moreover, the general assumption is that developing countries do not enforce their antitrust laws, it is argued that “antitrust laws have been on the books of several developing countries for a long time, but they have done little to reduce anticompetitive behavior. This suggests that the laws have been ignored [...]”¹¹ Whether this quote is true or not is what this paper is attempting to assess. The focus of this paper is what actually happens in developing countries after antitrust laws are adopted. The aim is simply to ask whether developing countries are capable of enforcing their competition laws or not. To answer this simple query this paper looks at antitrust enforcement activities in developing countries since the adoption of the law until 2009. Then the paper analyzes the variables affecting the potential for enforcement and non-enforcement of these laws by studying the respective national environment that resulted in the varying degrees of enforcement potential across countries. By doing that, the paper is basically analyzing the macroeconomic, political, legal and institutional environment that need to

⁷ See The Euro-Med Association Agreements, *supra* note 5.

⁸ See Organization for Economic Cooperation and Development (OECD), *Implementing Competition Policy in Developing Countries* in Promoting Pro-Poor Growth: Private Sector Development 39 (2006). (“There are strong links between competition policy and numerous basic pillars of economic development ... There is persuasive evidence from all over the world confirming that rising levels of competition have been unambiguously associated with increased economic growth, productivity, investment and increased average living standards”).

⁹ Michal S. Gal, *The “Cut and Paste” of Article 82 of the EC Treaty in Israel: Conditions for a Successful Transplant*, 9(3) EUR. J. L. REFORM 647, 648 (2007).

¹⁰ For an analysis of these questions see Dina Waked, *Competition Law in the Developing World: The Why and How of Adoption and its Implications for International Competition Law*, 1 GLOBAL ANTITRUST REV. 69, 70-75 (2008).

¹¹ A. E. Rodriguez and Mark D. Williams, *The Effectiveness of Proposed Antitrust Programs for Developing Countries*, 19 N.C. J. INT’L L. & COM. REG. 209, 223 (1993-1994).

be in place to guarantee potential enforcement of these laws. To investigate the effects of these factors on potential antitrust enforcement the paper utilizes panel data estimation techniques. The aim of the paper is simply to illustrate what developing countries do with their antitrust laws after they adopt them and what affects their varying enforcement potential.

The paper is organized as follows: Section II describes the data used to measure potential antitrust enforcement in developing countries and the variables used to study what affects the intensity of enforcement potential. Section III introduces the empirical methodology. Section IV discusses the results and empirical findings. Section V concludes.

II. DATA

This article develops alternative measurements of potential antitrust enforcement using the resources of the antitrust authorities. These measurements capture the intensity of potential enforcement based on budgetary resources and staffing levels. The budgets and staffing levels of antitrust authorities in developing countries were gathered through questionnaires sent to the various authorities or through published annual reports when available. The data was collected since the adoption of the antitrust law in each country up till 2009. To assess what impacts the intensity of potential antitrust enforcement in developing countries variables across the macroeconomic, political, legal and institutional environments were assessed.

The majority of empirical studies on law enforcement focus on measuring *formal enforcement*. It is the most widespread method used to measure enforcement and has been dubbed measures of ‘laws on the books’. This methodology uses positive law as an alternative measurement of enforcement. Writers who use ‘laws on the books’ look at one of two things: (1) the breadth of the law and its comprehensiveness; (2) the powers allocated in the law to the regulatory agency in charge of enforcing that law.

A. Resources-based Enforcement Measurement (Dependent Variable)

“Understandably, formal legal rules are easier for economists to code, measure, and incorporate into their regression equations, but they have little to do with reality of actual practice, particularly in developing countries.”¹²

In an attempt to capture the reality of actual enforcement potential in developing countries this paper diverges from the literature by focusing on antitrust enforcement data measured using budgets and staffing levels across antitrust authorities.¹³ The data was

¹² John C. Coffee, Jr., *Law and The Market: The Impact of Enforcement*, 156 U. PA. L. REV. 229, 244 (2007-2008).

¹³ Measuring budgets and staffing levels to proxy enforcement is inspired by Howell E. Jackson and Mark J. Roe, *Public Enforcement of Securities Laws: Resource-based Evidence*, 93 J. FIN. ECON. 207 (2009).

collected for 40 countries, out of a total of 77 developing countries that have adopted a competition law by 2007 (see Table 1).

The method of data collection was either direct contact with the competition authority in the respective countries or collection of published antitrust data. The published data on antitrust enforcement are mainly found in the competition authorities' annual reports or OECD reports. Data collected through published materials represent only 23% of the countries studied. The rest of the data was collected by contacting the competition agencies and asking the director of the respective agency to fill a questionnaire about enforcement data on a yearly bases since the antitrust law has been adopted in his or her country. Therefore, for the 40 countries included in the research one of these criteria are satisfied: (1) published annual reports by the respective competition authorities with antitrust enforcement data is available, (2) other published resources that include actual enforcement data are found (mainly OECD or UNCTAD, CUTS, APEC reports or databases), (3) personal access to the competition authority that is willing to share enforcement data is established.¹⁴

Both budgets and staffing levels are used as dependent variables representing potential antitrust enforcement. Budgets are normalized by the size of the economy and staffing levels are normalized by the size of the population. Both measurements indicate government commitment towards enforcement and yet each looks at this commitment from a different angle. Money and people are obviously measuring different aspects and they also have different weights to different countries. One country might find it easier or cheaper to show commitment to enforcement by well staffing its authority, especially in countries where wages are low, compared to others that prefer providing long term deep funding. Table 3 and Figures 2 and 3 report the average normalized budgets and staffing levels across developing countries.

B. Explanatory Variables

After assessing the antitrust enforcement activities in developing countries, it is interesting to investigate why some are capable of implementing their competition laws while others are not. Also, it is intriguing to investigate the factors that affect the intensity of enforcement capacity.

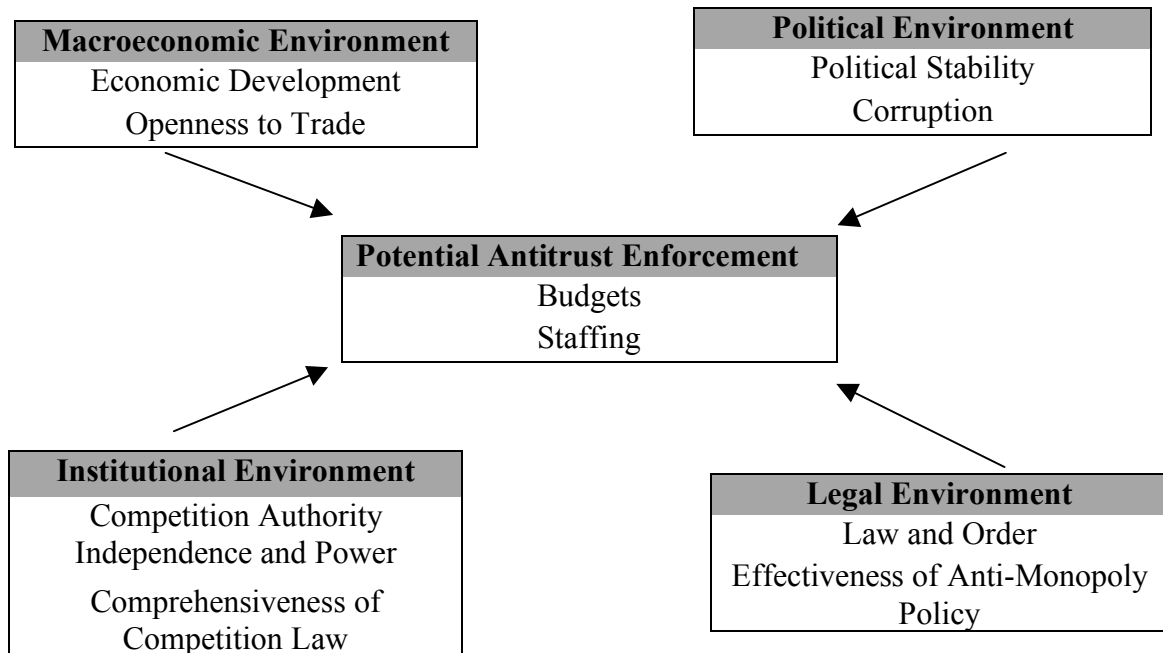
Using inputs of the antitrust agencies as measurements for antitrust enforcement potential, the relationship with regards to the macroeconomic, political, legal and institutional environment is tested. The effects of these factors are tested on budgets and staffing levels. This investigation identifies the factors that need to be in place to assure that the antitrust authorities are capable of implementing the adopted antitrust laws.

The paper follows the footsteps of prior studies trying to link the macroeconomic environment to aspects of competition law. Most of these studies look at the relationship

¹⁴ In many instances some enforcement data were initially collected from published reports yet when contact with the respective competition authority was made, these data were shared to be complemented, reviewed or confirmed.

between these factors and adopting a competition law¹⁵ or the effect they have on the general competition policy across countries¹⁶. This paper is interested in testing these same factors, identified by prior studies as the most important contributors to the antitrust environment. However, instead of looking at the relationship between the macroeconomic, political, legal and institutional factors and the adoption or the general competition environment this paper looks at the effect these factors have on actual enforcement potential, measured using enforcement inputs.

These variables fit into the following 4 categories:



The effect of the macroeconomic environment on potential antitrust enforcement is tested through the relationship between the enforcement proxies and both economic development and openness to trade. Economic development is measured using the log of gross domestic product per capita in current US\$. Openness to trade is measured by the log of total imports of goods and services in current US\$.¹⁷

The influence of the political environment on potential antitrust enforcement is tested using political stability and corruption. Political stability is a measurement developed by Kaufman et al. and reported in the Worldwide Governance Indicators Database.¹⁸ It measures the likelihood that the government will be destabilized or overthrown by

¹⁵ Mark R.A. Palim, *The Worldwide Growth of Competition Law: An Empirical Analysis*, 43(1) ANTITRUST BULL. 105 (Spring 1998).

¹⁶ Franz Kronthaler, *Effectiveness of Competition Law: A Panel Data Analysis* 7 IWH-Discussion Papers (June 2007).

¹⁷ The logs are used to transform the data to resemble a normal distribution.

¹⁸ Kaufman et al., *The Worldwide Governance Indicators (WGI) project*, available at <http://info.worldbank.org/governance/wgi/index.asp>.

unconstitutional or violent means.¹⁹ The corruption measurement used here is developed in the International Country Risk Guide and is concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business.²⁰

With regards to the legal environment, law and order in a country is measured using the index collected in the International Country Risk Guide that assesses the strength and impartiality of the legal system and the popular observance of the law.²¹ The legal environment also tests for the relationship between enforcement and the effectiveness of the antitrust policy, a subjective measurement developed by the World Economic Forum in the Global Competitiveness Reports.²² This variable is often used as a proxy for antitrust enforcement, but is used here as an explanatory variable to investigate the relationship between potential enforcement and the perceived and subjective legal environment surrounding competition policy established in the previous years in a given country.

Finally, the effect of the institutional environment on potential antitrust enforcement is tested by looking at the comprehensiveness of the competition law and the formal independence of the competition authority. Comprehensiveness of the competition law is measured using the index developed by Hylton and Deng, scoring the provisions of each country's antitrust law and summing the score into a formal index.²³ To account for the formal independence and power of the antitrust authority, a measurement call *de jure* independence developed by Stephan Voigt is used.²⁴

Table 2 lists a detailed description of all variables used in the empirical study, their sources and measurement methodology.

¹⁹ *Id.*

²⁰ The PRS Group, *International Country Risk Guide*, available at http://www.prsgroup.com/ICRG_Methodology.aspx.

²¹ *Id.*

²² World Economic Forum, *The Global Competitiveness Report* (1997-2009).

²³ Keith N. Hylton and Fei Deng, *Antitrust Around the World: Empirical Analysis of the Scope of Competition Laws and Their Effects*, 74 ANTITRUST L.J. 271 (2007).

²⁴ Stephan Voigt, *The Economic Effects of Competition Policy Cross-Country Evidence Using Four New Indicators*. ICER Working Paper No.20 (2006). (The exact factors included in this *de jure* independence measurement are listed in Table 2).

III. EMPIRICAL METHODOLOGY

To investigate whether developing countries are capable of enforcing their competition laws or not the paper compares normalized budgets per billion US\$ of GDP and staffing levels per million of population across the developing countries. The results of this comparison are reported in Table 3.

To test the influence of macroeconomic, political, legal and institutional factors on the intensity of antitrust enforcement in developing countries the paper utilizes a panel estimation model. The use of panel data achieves two goals: First, it controls for permanent unobserved heterogeneity in the cross-sectoral model, when controlling for country fixed effects. Second, it allows the study of dynamic cross-sectoral populations.

The model specifications are as follows:

$$Y_{it} = \alpha_i + \beta_i X_{it-1} + \varepsilon_{it},$$

where Y_{it} is the value of enforcement of the respective country i at time t , α_i is a constant, X_{it-1} is the lagged vector of explanatory variables, and ε_{it} is the error term.

The dependent variable is potential antitrust enforcement proxied by two variables: budgets and staffing levels. The independent variables include all macroeconomic, political, legal and institutional factors stated above to explain the varying intensities of enforcement potential. Although several factors can be found to describe each of the macroeconomic, political, legal and institutional environments, it is known that these factors are highly correlated and the effect of one factor could be an interpretation of other factors.

The independent variables are tested for multi-collinearity by investigating the Variance Inflation Factors (VIF) for the variables. All VIFs and their degrees of collinearity (tolerance levels) are found to be of acceptable levels. All the independent variables are lagged one year, assuming that the effects of the environment take time to impact the level of enforcement.

The Hausman test is used to indicate whether the fixed or random effects model is more suitable given the data at hand.

To explore the robustness of the results alternative models are tested to show the consistency of the findings. First, pooled sample OLS modeling is used. Then year fixed effects are added to control for autocorrelation across time. Then both year and country fixed effects are included in the regressions. Finally, instead of fixed country effects random country effects are used, thereby utilizing the GLS model (Tables 5 and 6 report the results).

IV. DISCUSSION AND EMPIRICAL RESULTS

A. Measuring Potential Antitrust Enforcement

Measuring inputs of antitrust authorities is also a measure of potential enforcement, as it is assumed that the higher the budgets and staffing levels the higher the *probability* of enforcement. Collecting budgets and staffing levels of the various antitrust authorities is a burdensome activity, which explains the lack of many studies using this methodology to measure legal enforcement. One of the few studies, by Jackson and Roe²⁵, using a resource-based methodology to measure legal enforcement inspired the assumptions and methodology of this paper. Despite the difficulty in collecting these input data, conducting an empirical study using a resource-based methodology is not impossible. Staffing levels are easier to collect than budgets, the latter being reluctantly shared or not shared at all. Therefore, the number of observations for staffing levels is slightly higher than the number of observations for budgets collected here.

The assumptions made in studies using budgets and staffing are as follows. First, “[h]igher budgets and greater staffing allow the regulator to examine allegations of wrongdoing, to write rules carefully, to conduct market surveillance and review filings, and to act more often to remedy, prevent and punish wrong-doing.”²⁶ Second, even “a not-very-independent regulator with a high budget and strong staffing indicates that political and market authorities have given the agency the go-ahead to enforce [...] [the] rules”.²⁷

The limits to using inputs as measurements of enforcement include the following: Higher budgets and more staffing do not always allow a regulator to do all the things listed above. It is arguably pending certain formal powers that the agency is equipped with, for example, a well-funded and well-staffed agency may simply not have the authority, by law or its executive regulation, do impose fines, write rules, examine allegations etc. Therefore, these input measurements, of staffing levels and budget values, should be studied together with formal powers allocated to the respective regulatory body under study, which is done in this paper. Here, measures for formal power, covering the comprehensiveness of the law and the independence of the antitrust authority, are added in the regression analyses to account for the effect these institutional variables have on potential antitrust enforcement.

Another limitation is that high budgets and strong staffing do not necessarily indicate political and market support to such a regulator. This funding and staffing could be merely put in place to make the regulator *seem* to be powerful. This is especially true for nations where the setting up of different regulatory bodies has been orchestrated by international bodies or donor institutions. Not only that, the funding often comes from these institutions themselves. It is often the case, that players such as the World Bank, the International Monetary Fund or the like, require developing countries to set up regulatory

²⁵ Jackson and Roe, *supra* note 13.

²⁶ *Id.* at 210.

²⁷ *Id.*

bodies in various fields to assure compliance to international standards and rules adopted by the receiving countries. In this case, the budgets and staffing levels may be, like the presence of the law itself, a mere “window dressings” that the countries put in place to *please* and signal compliance to the mandating authority. And if the budgets are donations, so-to-speak, they may even say nothing at all about where the political will lies. However, this critique may be unfounded, if the budgets remain high over a certain period as it would make little sense, even in terms of persuading and pretending power, to keep money idle in authorities that do nothing. Therefore, it may be true, that high budgets and well staffed regulators that maintain such budgets and staffing over a longer period are indeed signaling political will.

Moreover, ample resources do not mean that they will be used wisely or that they are deployed for the purposes for which they were dedicated.²⁸ This means that measuring resources is not a measure of enforcement efficiency, only one of potential enforcement. Also, crony-oriented appointees or lazy bureaucrats may result in nothing being done to enforce the laws.²⁹

Despite the various shortcomings of input measurements they do have their merit. They are especially informative once they are investigated in tandem with output measurements.³⁰ They also offer themselves for comparative analysis between different countries once the budgets are normalized by GDP and the staffing levels are normalized by population.

B. Do Developing Countries Enforce their Antitrust Laws?

Table 3 presents the results of antitrust enforcement potential measured using average budgets and staffing. From the table one can see that all developing countries included in this study have the potential to enforce their competition laws with varying intensities. The only countries that have no potential to enforce their competition laws are India, Mauritius and Syria.

The average staffing level of all developing countries is around 11 staff per million of population. Figure 2 illustrates the variation between average staffing levels across countries. The graph shows that the variation in staffing levels is quite stark between developing countries. The majority of developing countries have staffing levels ranging from 2 to 18 per million of population. Some countries, like Barbados, Panama and Estonia highly exceed the mean levels. Both Barbados and Panama have competition authorities that are staffed at more than 7 fold the average staffing levels across developing countries. On the other hand, countries like Peru, Indonesia, Egypt, Tunisia, Kenya and Argentina are far below the average levels of staffing with numbers below 1 per million of population.

²⁸ *Id.* at 211.

²⁹ *Id.*

³⁰ *Id.* at 237. (Jackson and Roe acknowledge this fact by arguing that it is more useful to collect information on the actual enforcement activities undertaken, such as how many cases prosecuted each year, how many sanctions imposed and with what level of monetary penalty, how many criminal convictions obtained, etc.)

The average budget of competition authorities across developing countries is around \$55,500 per billion US\$ of GDP. Figure 3 ranks developing countries according to their average budgets. From the graph one can see that the variation between countries in terms of budgets is less stark than their variation in terms of staffing. The majority of developing countries have budgets below \$50,000 per billion GDP. Few countries have average budgets slightly higher than \$50,000 and only 3 countries are far above this level affecting the mean budget level across the developing world. These are Turkey, Panama and Papua New Guinea. The countries with the lowest budgets are Kenya, Argentina and Peru.

Comparing Argentina with Panama, both upper middle economies, one can easily see that Panama reports 79 regulators staffing their competition authority per million of population whereas Argentina has only 1 staffer per million of population. Similarly, the budget of the competition authority in Panama is around \$285,000 per billion of GDP whereas the budget of the Argentinean competition authority is roughly equal to \$4,600 per billion of GDP. This comparison shows that the competition authority in Panama is more intensely staffed and better funded compared to its counterpart in Argentina. It can indicate that the government of Panama has put a stronger commitment to competition enforcement in Panama than Argentina. It also shows that the Panamanian competition authority will have more resources to actively enforce their competition law compared to Argentina.

On average staffing levels vary by 20 regulators per million population between countries and budgets vary by almost \$86,000 per billion US\$ of GDP. This raises the question of why these competition authorities have such varying resources across the developing world.

While comparing potential enforcement, it is important to take into account the actual size of the population and GDP. Countries with large populations will by default have a smaller ratio of staff over population. Similarly, countries with higher GDP will have a smaller ratio for their budgets over GDP. For example, comparing Papua New Guinea with Egypt, both considered low-income economies, the former has an average budget per million population of 8.65 and the latter of 0.58. One explanation of this difference is that Papua New Guinea is dedicating more resources to their antitrust authority compared to Egypt, hence indicating stronger commitment to potential antitrust enforcement. Another explanation could be that because Papua New Guinea's population is much smaller than Egypt's, the former being around 6 million and the latter being close to 80 million, their relative potential enforcement measurement proxied by staffing shows drastic differentiation. Nevertheless, only by normalized staffing and budgets can one compare different countries. Whether this translates into more actual enforcement or not needs to be further investigated and the validity can only become apparent when measurements collecting actual enforcement outputs, such as decisions and convictions, are combined with input data.

C. What affects the intensity of Potential Enforcement?

Table 4 reports the results of the regressions. The Hausman test recommends the use of country random effects instead of fixed effects and therefore the model used in Table 4 is GLS. The random effects are also more relevant here seeing that the numbers of observations per country are relatively low. Also, using random effects allows the analysis to include the institutional environment variables that all lack temporal variation. The significance and effect of the results does not change much when fixed effects are used instead (this can be seen in Table 5 which presents alternative regression models to test for robustness).

Column (1) includes the variables representing the macroeconomic, political and legal environment. Column (2) adds the institutional variables to the analysis. The reason for this sequential addition is that the numbers of observations for the institutional variables are lower than the other variables and thereby reducing the total observations and countries included in the regressions.

Starting with the variables representing the macroeconomic environment, the results in Table 4 show that economic development, measured using GDP per capita, is positive and significantly related to both staffing and budget levels of antitrust authorities in developing countries. This relationship is maintained even in the sample including the institutional variables. This means that the more developed a country the more its antitrust authority will be funded and staffed. This is rather intuitive and is in line with the literature arguing that the poorer the country, the less it is willing to invest its scarce resources on antitrust enforcement.³¹ Poor countries would rather save these scarce resources to be spent on more pressing issues. A famous quote is worth noting: “Exporting antitrust to Eastern Europe is like giving a silk tie to a starving man. It is superfluous; a starving man has much more immediate needs. And if the tie is knotted too tightly he won’t be able to eat what little there is available to him.”³² The positive and significant effect on both budgets and staffing levels emphasizes the influence of economic development on both these proxies of potential antitrust enforcement.

With regards to openness to trade, measured using imports of goods and services, the relationship is negative and significant with regards to both budgets and staffing levels. This means that the more a country imports the lower the potential antitrust enforcement will be. In other words, the higher the imports the lower the resources a developing country is willing to dedicate to its antitrust enforcement authority. This highlights the positive effects of imports on the functioning of the market place by effectively increasing competition and putting competitive pressure on firms to abide by the antitrust laws. Whether imports in reality reduce the anticompetitive behavior of local firms is not necessarily answered by the results of this regression. The results only confirm that governments will dedicate fewer resources to antitrust enforcement the higher the import levels are. This is a very interesting finding that affirms that potential enforcement is reduced in relationship to increased importation. It could also be read to mean that

³¹ Ajit Singh and Rahul Dhumale, *Competition Policy, Development And Developing Countries*, 7 T.R.A.D.E. Working Papers (November 1999).

³² Paul E. Godek, *One U.S Export Eastern Europe Does Not Need*, REGULATION 15, 21 (1992).

developing countries in order to attract more imports will reduce their antitrust enforcement potential so not to scare imports away by appearing to be an aggressive country with respect to antitrust enforcement. This might confirm the “race to the bottom” arguments made about developing countries in the face of imports and foreign direct investments. Whether the results of this regression can be read to mean this negative connotation or just simply the positive effect imports have on disciplining local firms is impossible to decide. Only when looking at actual enforcement together with potential enforcement can one attempt to settle this issue.

Turning to the relationship between the political environment and antitrust enforcement, the results show that political stability in a developing country positively and significantly affects the potential antitrust enforcement. This result is, however, only maintained when looking at the staffing levels as a proxy of potential antitrust enforcement. This indicates that countries prone to revolutions and upheavals are less willing to commit to antitrust enforcement. This is also an intuitive result, seeing that countries that are plagued with political instability are probably indifferent with regards to antitrust enforcement.

The second variable representing the political environment is corruption. As the measurement of corruption increases, the level of corruption that is present in a country decreases. Corruption seems to be the only measurement that treats both variables capturing potential antitrust enforcement differently. The relationship between corruption and budget intensity is significantly negative, whereas it is positive and significant with regards to staffing. However, the effect of corruption on staffing levels disappears once the explanatory variables are increased to account for the institutional environment. Yet it stays negative and significant once these variables are added to the budgetary levels. The fact that the significance of corruption with regards to staffing is not robust once the explanatory variables are increased might indicate that this relationship is not really remarkable. Also the magnitude of the effect of corruption on staffing is much lower than on budgets. Focusing on the relationship with regards to budget intensities the negative and significant relation to corruption means that countries with less corruption allocate less budgetary resources to their antitrust authorities, i.e. are less concerned with potential antitrust enforcement. This shows that corruption might be related to either more actual or perceived antitrust violations hence requiring more commitment towards enforcement. Therefore, countries with higher levels of corruption will be more committed towards antitrust enforcement than countries with low corruption.

Now turning to the legal environment, the effects of the strength and impartiality of the legal system and law observance is not related to potential antitrust enforcement. This is rather counterintuitive as it is often argued that the imperfections in the legal systems of developing countries are responsible for the lack of antitrust enforcement. This result shows that antitrust enforcement is not necessarily linked to the effectiveness of the legal system. As for the measurement used as a proxy for the antimonopoly policy in a country, these are not robust across the regressions as well. Only after the inclusion of more explanatory variables does the relation between the antimonopoly policy and budget levels become significantly positive. This relation means that the more the subjective legal environment surrounding competition policy in a developing country is

considered effective the higher the potential antitrust enforcement will be. This is an intuitive consequence showing that the competition policy as perceived by people plays a minor role, not as important as other factors discussed before, in affecting the intensity of potential antitrust enforcement.

Finally, to consider the role played by the institutional environment in affecting the intensity of antitrust enforcement the results of the comprehensiveness of the competition law and the formal independence and power of the antitrust authority are assessed. The formal independence of the competition authority is not related to enforcement intensity. However, the comprehensiveness of the competition law only positively impacts the staffing levels. This means that the more comprehensive a law is, the more the authority will be endowed with resources to help it to enforce this law. This may be read to mean that the more comprehensive a competition law the more seriously antitrust enforcement will be taken. A comprehensive law can therefore signal an increasing commitment towards enforcement measured by more resources being dedicated towards antitrust enforcement.

To explore the robustness of the results for each proxy of potential antitrust enforcement, the paper suggests alternative measures in which the control variable of panel data are loosened. For instance, pooled sample OLS removes country effects (fixed and random) and most of the results maintain their significance across the models. Tables 5 and 6 present the results of the robustness checks for both proxies of potential antitrust enforcement respectively. The robustness check does not include the institutional variables as they lower the observations, however running all alternative regressions with the extended variables holds the results constant as the ones reported in Tables 5 and 6.

V. CONCLUSION

Whether developing countries enforce their competition laws or not has been a question that much of the literature on antitrust in developing countries has been struggling to answer. The assumption often made is that most developing countries never enforce their antitrust laws. Due to lack of data on antitrust enforcement in developing countries this assumption has influenced much of what is written on the topic. The few that have taken up this question have focused on formal enforcement measurements, e.g. the comprehensives of the antitrust laws, independence of the competition authorities, or a subjective measurement on the effectiveness of competition policy to assess enforcement in developing countries. To offer an alternative to these measurements this paper collects resources of antitrust authorities to address this question.

This alternative proxy of antitrust enforcement developed in this paper is focusing on *potential* antitrust enforcement by collecting in an original dataset information on budgets and staffing levels of antitrust authorities across a sample of 40 developing countries. The data clearly challenge the assumption of non-enforcement by illustrating that the majority of developing countries dedicate resources towards antitrust enforcement. This can be assumed to mean that actual enforcement does take place. The leap from potential enforcement to actual enforcement is easier to make than from formal enforcement. Nevertheless, measuring enforcement outputs, such as decisions rendered and sanctions imposed would only enrich the conclusions made here. Also, if output variables are examined together with the input measurements presented in this paper, this will allow a more thorough comparison between countries. It will be interesting to investigate whether countries with higher budgets and more staffing actually enforce their laws more or not. This would reaffirm the effectiveness of measuring enforcement using a proxy based on potential enforcement variables.

After establishing that developing countries have the necessary potential to enforce their antitrust laws the paper turns to assess why the potential for enforcement varies across the countries studied. The most important elements that affect antitrust enforcement capabilities were categorized into macroeconomic, political, legal and institutional factors. The relationship between these factors and potential antitrust enforcement was examined using panel data estimation techniques. The results of the regressions show that economic development is strongly correlated with the resources dedicated to antitrust enforcement across developing countries. This affirms that the higher the economic development the higher the level of potential antitrust enforcement. Moreover, the results show that imports also play an important role in antitrust enforcement. The higher the imports the lower the resources allocated to antitrust authorities. This is an interesting correlation and can be either understood to mean that imports positively affect the marketplace by increasing competition and hence lowering the potential of antitrust enforcement or that developing countries, to attract more imports, lower their potential antitrust enforcement. The results also show that the higher the level of corruption the more resources are dedicated towards antitrust enforcement. This entails that countries plagued with high levels of corruption are also more concerned with potential antitrust enforcement. Furthermore, political stability is also found to have positive relation with

regards to staffing levels at competition authorities. Finally, the effects of the legal and institutional environments on potential antitrust enforcement are less significant across the regressions. The results of these influences on potential enforcement are significant across alternative statistical models.

The analysis in this paper can be extended in several directions. First, adding output variables to the input variables used here would enrich the study and improve the quality of the antitrust enforcement proxy developed. Second, alternative proxies measuring antitrust enforcement could be compared with the ones developed here to assess how they relate to each other. Third, the effectiveness of antitrust enforcement in developing countries could be studied by assessing the relationship between the enforcement proxies and antitrust outputs, such as improved competition intensities. These and other extensions of the paper await further research.

FIGURE 1: TIME-LINE OF ADOPTING COMPETITION LAWS IN THE DEVELOPING WORLD

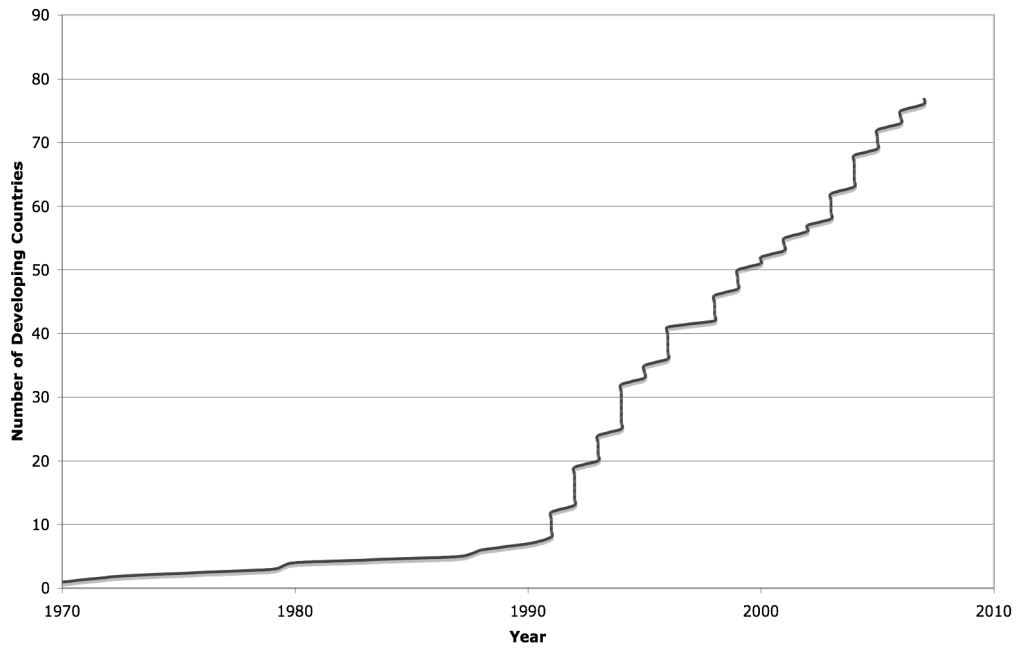


TABLE 1: BREAKDOWN OF ALL DEVELOPING COUNTRIES WITH A COMPETITION LAW BY 2007

##	Country	Region	Year of Adoption	Income Group ²	##	Country	Region	Year of Adoption	Income Group ²
1	Albania*	Europe	1995	Lower middle	40	Mali	Africa	1992	Low
2	Algeria	Africa	1995	Upper middle	41	Mauritius*	Africa	2003	Upper middle
3	Argentina*	Americas	1980	Upper middle	42	Mexico*	Americas	1992	Upper middle
4	Armenia	Asia	2000	Lower middle	43	Moldova	Europe	1992	Lower middle
5	Azerbaijan	Asia	1993	Lower middle	44	Mongolia*	Asia	1993	Lower middle
6	Barbados*	Americas	2002	IMF: Developing ^a	45	Montenegro	Europe	2005	Upper middle
7	Belarus	Europe	1992	Upper middle	46	Morocco	Africa	2001	Lower middle
8	Bosnia & Herzegovina*	Europe	2001	Upper middle	47	Namibia	Africa	2003	Upper middle
9	Brazil	Americas	1994	Upper middle	48	Nepal	Asia	2007	Low
10	Bulgaria*	Europe	1998	Upper middle	49	Nicaragua	Americas	2006	Lower middle
11	Burkina Faso	Africa	1994	Low	50	Pakistan	Asia	1970	Lower middle
12	Cameroon	Africa	1998	Lower middle	51	Panama*	Americas	1996	Upper middle
13	Chile*	Americas	1973	Upper middle	52	Papua New Guinea*	Oceania	2002	Lower middle
14	Colombia	Americas	1992	Upper middle	53	Peru*	Americas	1991	Upper middle
15	Costa Rica*	Americas	1994	Upper middle	54	Philippines	Asia	1992	Lower middle
16	Cote d'Ivoire	Africa	1991	Lower middle	55	Poland*	Europe	1990	Upper middle
17	Croatia*	Europe	1995	IMF: Developing	56	Romania*	Europe	1996	Upper middle
18	Czech Republic*	Europe	1991	IMF: Developing	57	Russia*	Europe	1991	Upper middle
19	Egypt*	Africa	2005	Lower middle	58	Saudi Arabia	Asia	2004	IMF: Developing
20	El Salvador*	Americas	2006	Lower middle	59	Senegal	Africa	1994	Low
21	Estonia*	Europe	1993	IMF: Developing	60	Serbia*	Europe	2005	Upper middle
22	Ethiopia	Africa	2003	Low	61	Slovakia*	Europe	1994	IMF: Developing
23	Fiji	Oceania	1998	Upper middle	62	South Africa*	Africa	1979	Upper middle
24	Georgia	Asia	1996	Lower middle	63	Sri Lanka	Asia	1987	Lower middle
25	Guyana	Americas	2004	Lower middle	64	Syrian Arab Republic*	Asia	2007	Lower middle
26	Honduras*	Americas	2005	Lower middle	65	Tajikistan	Asia	2004	Low
27	Hungary*	Europe	1996	IMF: Developing	66	Tanzania	Africa	2003	Low
28	India*	Asia	2003	Lower middle	67	Thailand	Asia	1999	Lower middle
29	Indonesia*	Asia	1999	Lower middle	68	Tunisia*	Africa	1991	Lower middle
30	Jamaica*	Americas	1993	Upper middle	69	Turkey*	Asia	1994	Upper middle
31	Jordan*	Asia	2004	Lower middle	70	Ukraine*	Europe	1993	Lower middle
32	Kazakhstan	Asia	2001	Upper middle	71	Uruguay	Americas	2000	Upper middle
33	Kenya*	Africa	1988	Low	72	Uzbekistan*	Asia	1996	Low
34	Kyrgystan	Asia	1994	Low	73	Venezuela	Americas	1992	Upper middle
35	Lao, PDR	Asia	2004	Low	74	Vietnam	Asia	2004	Low
36	Latvia*	Europe	1998	Upper middle	75	Yemen	Asia	1999	Low
37	Lithuania*	Europe	1999	Upper middle	76	Zambia*	Africa	1994	Low
38	Macedonia*	Europe	2006	Upper middle	77	Zimbabwe	Africa	1996	Low
39	Malawi	Africa	1998	Low					

Source: Global Competition Forum, World Bank Competition Law Database, World Bank Atlas Method, IMF World Economic and Financial Surveys.

² Income group according to the World Bank Atlas Method or IMF when indicated

^a IMF: Developing: High Income Economies according to the World Bank, but considered developing according to the IMF 2009 classification

* Included in the empirical study of this paper.

TABLE 2: DESCRIPTION OF VARIABLES

Variable	Description/Methodology	Source
Resource-based Antitrust Enforcement Measures		
Budget per billion US\$ of GDP	The budget of antitrust authorities divided by the country's GDP.	Collected through questionnaires sent to the various antitrust authorities or available mainly in published
Staffing per million of population	Size of the antitrust authorities staff divided by a country's population in million.	Collected through questionnaires sent to the various antitrust authorities or available mainly in published annual reports by the authority.
Explanatory Variables		
Log of GDP per capita	The log of GDP per capita in current US\$.	World Development Indicators, World Bank Database
Log of Imports	The log of total imports of goods and services in current US\$.	World Development Indicators, World Bank Database
Political Stability	Political stability and absence of violence/terrorism.	Kaufman et al. in World Governance Indicators Database
Corruption	This is an assessment of corruption within the political system. The measure is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favor-for-favors', secret party funding, and suspiciously close ties between politics and business. Maximum points 6. The higher the value the lower the corruption.	International Country Risk Guide
Law and Order	Law and Order are assessed separately, with each sub-component comprising zero to three points. The Law sub-component is an assessment of the strength and impartiality of the legal system, while the Order sub-component is an assessment of popular observance of the law. Thus, a country can enjoy a high rating - 3 - in terms of its judicial system, but a low rating - 1 - if it suffers from a very high crime rate of if the law is routinely ignored without effective sanction (for example, widespread illegal strikes).	International Country Risk Guide
Effectiveness of Antimonopoly Policy	This indicator is based on a survey of participants in each country asked to rate, on a scale from 1 (lowest value) to 7 (highest value), whether anti-monopoly policy promotes competition.	World Economic Forum, Global Competitiveness Reports
Comprehensiveness of the Competition Law	A measurement of the comprehensiveness of a law, where the presence of certain provisions in a law is used to construct an index. The minimum possible total index score is 0 and the maximum is 30	Hylton and Deng, Antitrust World Reports
Formal Independence and Power of Competition Authority	<i>De jure</i> independence by looking at whether the agency is subjected to the supervision of government, whether it has direct access to court, whether the leading member of the competition agency are appointed through the executive, the length of the term for competition officers, whether the salaries are set by the executive, whether the agency receives instructions by the executive, and finally whether the agency is required to publish its decisions. These are 13 different variables that cover formal independence of the competition agency.	Stephan Voigt, <i>The Economic Effects of Competition Policy Cross-Country Evidence Using Four New Indicators</i>

TABLE 3: POTENTIAL ENFORCEMENT DATA – RESOURCE-BASED RESULTS

Country	Year of Adoption	Years since first enforcement data available	Average Staffing per million of Population	Average Budget per billion US\$ of GDP
Albania	1995	5	7.59	49,882
Argentina	1980	12	0.97	4,642
Barbados	2002	5	109.70	n/a
Bosnia & Herzegovina	2001	4	5.09	50,544
Bulgaria	1998	7	15.55	46,883
Chile	1973	14	3.57	27,600
Costa Rica	1994	14	2.68	13,667
Croatia	1995	12	6.22	33,904
Czech Republic	1991	16	8.93	26,366
Egypt	2005	3	0.58	21,540
El Salvador	2006	3	4.09	76,496
Estonia	1993	15	26.19	n/a
Honduras	2005	3	2.79	60,787
Hungary	1996	11	11.01	60,295
India	2003	7	0.00	0
Indonesia	1999	9	0.45	14,169
Jamaica	1993	16	6.60	68,842
Jordan	2004	5	1.56	n/a
Kenya	1988	18	0.83	483
Latvia	1998	8	18.72	54,428
Lithuania	1999	10	17.61	47,466
Macedonia	2000	8	6.57	58,519
Mauritius	2003	7	0	0
Mexico	1992	15	1.76	21,026
Mongolia	1993	5	12.71	34,307
Panama	1996	13	71.86	284,853
Papua New Guinea	2002	6	8.65	452,192
Peru	1991	14	0.21	5,911
Poland	1990	12	6.33	30,926
Romania	1996	11	7.03	41,149
Russia	1991	10	13.09	23,030
Serbia	2005	3	2.30	38,208
Slovakia	1994	14	12.64	34,386
South Africa	1979	9	1.85	37,616
Sri Lanka	1987	4	n/a	n/a
Syrian Arab Republic	2007	3	0	0
Tunisia	1991	17	0.61	16,686
Turkey	1994	9	4.48	147,377
Ukraine	1993	5	16.87	58,202
Uzbekistan	1996	11	14.70	n/a
Zambia	1994	4	2.18	n/a
Mean		9.20	10.86	55,497
Median		9.00	5.66	34,386
Minimum		3.00	0.00	0
Maximum		18.00	109.70	452,192
Standard Deviation		4.55	20.08	85,643

FIGURE 2: AVERAGE STAFFING PER MILLION OF POPULATION

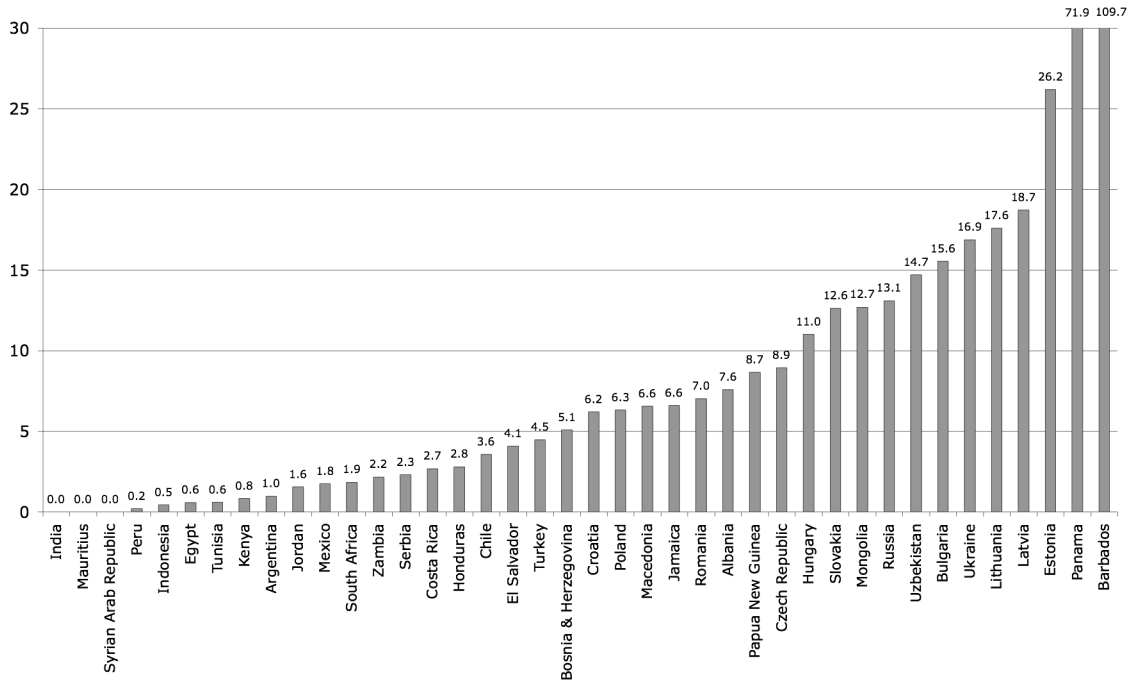


FIGURE 3: AVERAGE BUDGET PER BILLION US\$ OF GDP

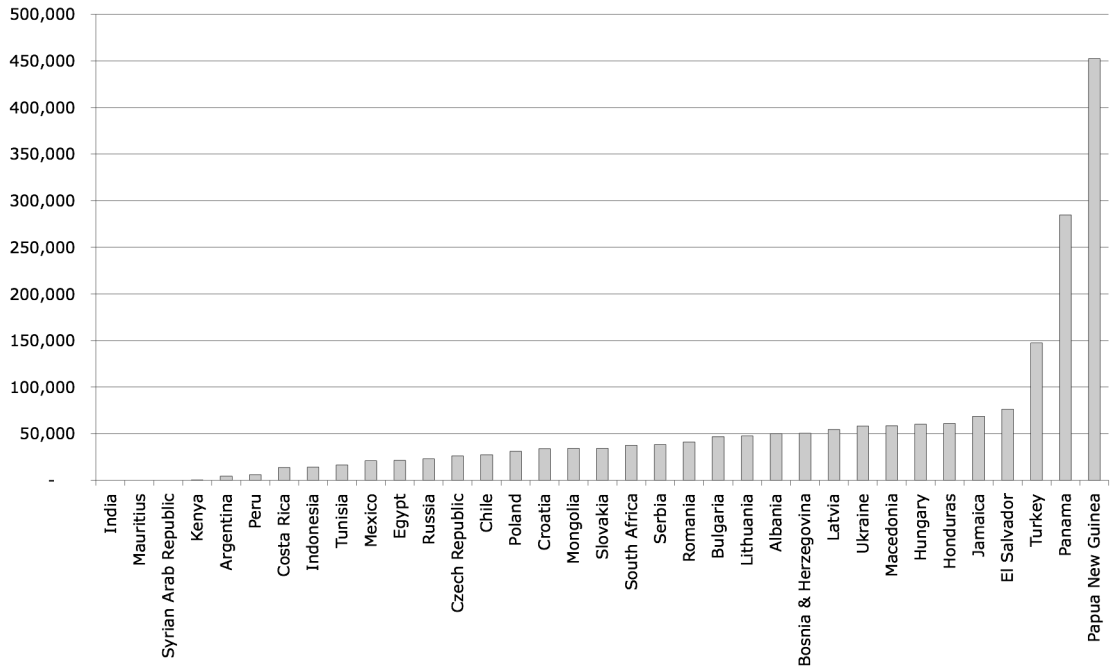


Table 4: EFFECTS ON POTENTIAL ANTITRUST ENFORCEMENT – GLS REGRESSION MODELS

	Log of Budget per billion US\$ of GDP		Log of Staffing per million of Population	
	(1)	(2)	(1)	(2)
Log of GDP per Capita	0.773*** (0.232)	0.663** (0.334)	0.097 (0.156)	0.382** (0.189)
Log of Imports	-0.392** (0.194)	-0.559** (0.262)	-0.370** (0.159)	-0.717*** (0.17)
Political Stability	0.067 (0.178)	0.002 (0.228)	0.304*** (0.099)	0.348*** (0.123)
Corruption	-0.177*** (0.065)	-0.382*** (0.148)	0.076** (0.032)	0.068 (0.046)
Law and Order	-0.103 (0.095)	-0.038 (0.117)	-0.038 (0.049)	-0.046 (0.054)
Effectiveness of Antimonopoly Policy	0.185 (0.115)	0.308** (0.14)	0.071 (0.059)	0.096 (0.067)
Comprehensiveness of Competition Law		0.113 (0.089)		0.201*** (0.065)
Competition Authority Formal Power and Independence		1.833 (2.597)		0.479 (1.902)
Constant	13.554*** (3.605)	14.862*** (4.662)	8.780*** (2.896)	11.115*** (3.125)
Observations	139	94	154	103
Number of Countries	28	17	30	18

Note: Significance levels: * 10%, ** 5%, *** 1%. Standard errors are in parentheses.

Table 5: TESTING ALTERNATIVE REGRESSION MODELS USING BUDGET INTENSITIES

	Log of Budget per billion US\$ of GDP			
	Pooled Sample OLS	OLS with year fixed effects	OLS with both year and country fixed effects	GLS
	(1)	(2)	(3)	(4)
Log of GDP per Capita	0.631*** (0.199)	0.673*** (0.209)	1.463*** (0.452)	0.773*** (0.232)
Log of Imports	-0.123 (0.121)	-0.14 (0.125)	-1.441** (0.558)	-0.392** (0.194)
Political Stability	0.087 (0.225)	0.109 (0.236)	0.158 (0.207)	0.067 (0.178)
Corruption	-0.272** (0.13)	-0.356** (0.155)	-0.201*** (0.067)	-0.177*** (0.065)
Law and Order	0.074 (0.108)	0.073 (0.112)	-0.126 (0.104)	-0.103 (0.095)
Effectiveness of Antimonopoly Policy	0.097 (0.147)	0.117 (0.152)	0.213* (0.122)	0.185 (0.115)
Constant	8.048*** (2.12)	8.283*** (2.244)	33.110*** (10.556)	13.554*** (3.605)
Observations	139	139	139	139
R-squared	0.189	0.207	0.231	
Number of Countries			28	28

Note: Significance levels: * 10%, ** 5%, *** 1%. Standard errors are in parentheses.

Table 6: TESTING ALTERNATIVE REGRESSION MODELS USING STAFFING LEVELS

	Staffing per million of population			
	Pooled Sample OLS	OLS with year fixed effects	OLS with both year and country fixed effects	GLS
	(1)	(2)	(3)	(4)
Log of GDP per Capita	0.579*** (0.189)	0.529*** (0.199)	-0.002 (0.212)	0.097 (0.156)
Log of Imports	-0.087 (0.104)	-0.078 (0.108)	-0.374 (0.251)	-0.370** (0.159)
Political Stability	0.908*** (0.208)	0.939*** (0.217)	0.234** (0.099)	0.304*** (0.099)
Corruption	-0.197 (0.12)	-0.173 (0.143)	0.076** (0.031)	0.076** (0.032)
Law and Order	-0.037 (0.103)	-0.038 (0.106)	-0.026 (0.048)	-0.038 (0.049)
Effectiveness of Antimonopoly Policy	-0.520*** (0.135)	-0.537*** (0.14)	0.093 (0.057)	0.071 (0.059)
Constant	1.49 (1.87)	1.653 (1.945)	10.612** (4.643)	8.780*** (2.896)
Observations	154	154	154	154
R-squared	0.439	0.446	0.475	
Number of Countries			30	30

Note: Significance levels: * 10%, ** 5%, *** 1%. Standard errors are in parentheses.