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Diffusion and Adaptation of Competition Policy in Asia

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## **Diffusion and Adaptation of Competition Policy in Asia**

**Reiko Aoki, Toshiko Igarashi, Takayuki Kai, Eri Satake, Tetsushi Sonobe, Yasuyuki Sawada, and Shintaro Ueda<sup>1</sup>**

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### **Abstract**

This paper discusses issues regarding the diffusion and adaptation of competition policy in Asia. We test the hypothesis that the increase in the adoption of competition policy was inextricably linked with the growing globalization using cross-country panel data on the enactment of competition law and the budget of competition authorities. Empirical results show: a country tends to enact a competition law before accession to GATT/WTO; market-oriented reforms, triggered by AFC, seem to play a critical role in an adaptation of competition policies; and governance level matters in adopting competition laws and policies. We also discovered a robust correlation between the perceived effectiveness of competition policy and the level of local competition based on novel survey data. The findings in this paper hold significant policy implication for competition policy development in Asia such as early adaptation of competition law, role of market-oriented reforms and governance quality.

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## 1 Introduction

After World War II, the number of competition law jurisdictions worldwide increased slowly until the 1980s and rapidly in the 1990s to date from about 30 to more than 130 (e.g., Voigt 2006; Cheng 2020). Most adopters in the recent few decades were developing countries. These observations seem natural for at least two reasons. First, it is well known in the literature on the diffusion of innovation that the cumulative rate of adoption, whether adoption concerns new ideas or products, is often represented by an S-shaped curve (e.g., Rogers 2003). Competition law and policy could be viewed as an innovation that took place in North America before World War II. Second, after the Cold War ended in December 1989, many former-socialist economies became transition economies in the early 1990s, and civil wars and other violent conflicts in Africa and Latin America considerably decreased in the 1990s and 2000s (Fukuyama 1992; Collier 2009). Thus, one can view that the increase in the adoption rate of competition law and policy was a natural result of the rise in market economies and the increased need to promote and maintain market competition.

These views are not necessarily satisfactory, however. The S-shape curve theory is not able to explain the timings of adoption by individual countries. It explains an overall tendency but not individual cases. The end of the planned economy and the arrival of peace are not able to explain why many peaceful and market-oriented developing economies did not adopt competition laws and policies earlier but only around the same time as newcomers. Even though their delays may be attributable to idiosyncratic reasons, there may also be a common reason that has not been articulated clearly or supported by data.

This paper is an attempt to provide additional and common reasons why many developing countries adopted competition laws and policies in the 1990s and thereafter. It takes an Asian perspective but uses worldwide cross-country panel data. Following ADB (2020), in our definition, Asia includes some former Soviet Union countries, such as Kazakhstan, and unitary socialist states with a market-oriented economy, such as Vietnam,

as well as democratic states, such as the Philippines. Competition law was adopted by Kazakhstan in 2008, Vietnam in 2004, and the Philippines in 2015 (OECD 2016; Ravago et al. 2021). Asia also includes the People's Republic of China (PRC) and India, the two most populous developing countries in the world, which adopted a competition law in 2007 and 1969, respectively. These individual country cases seem to suggest that both common and idiosyncratic factors induced adoption to occur in one to two decades in random order.

This paper reviews the history of the diffusion of competition law and policy in Asia, where many adopters have been active participants in the global value chains and recipients of growing foreign direct investment. It hypothesizes that their adoption was intended to get the full benefit from the new phase of globalization characterized by a rapid increase in offshore production. We also hypothesized that the adoption and adaptation of competition policies have been triggered by financial crises and resulting market-oriented reforms. These hypotheses are tested with global cross-country panel data using regression analysis which identifies those explanatory variables that represent common reasons for adoption and adaptation, as opposed to idiosyncratic reasons. Consistent with the hypotheses, we find that the adoption and adaptation of competition policy have been inextricably linked with globalization in a broad sense.

The paper is organized as follows. The next section reviews the history of the enactment of competition law in Asia and advances some hypotheses. In Section 3, we explain the empirical strategy. Section 4 describes econometric models and data, followed by Section 5 which discusses the regression results. Section 6 provides concluding remarks.

## **2 Historical Background and Our Hypotheses**

The history of competition law in Asia began with Japan's enactment of the Antimonopoly Act in 1947, when Japan underwent the process of economic democratization under the US occupation. The process included land reform and the break-up of Zaibatsu. At the time,

Japan was the third country, only to Canada and the United States, to have comprehensive competition law that includes regulation on cartels, mergers and unilateral conduct.



Laws regulating anti-competitive practices have been enacted since the late 1960s following the original introduction of the competition law in Japan. Similar laws were introduced in India in 1969, Pakistan in 1970, South Korea in 1975, Thailand in 1979, and Sri Lanka in 1987. However, many of these countries that introduced competition laws between the 1970s and 1980s often included provisions for excessive interventions in business activities and price controls to regulate conglomerates such as Chaebols in Korea. In some of those countries, revisions took place in the 1980s that either abolished the excessive control and regulations or provided only the anti-monopolistic type of regulations (Honjo 2001). The next adopters of the revised laws in Asia were two of the four Asian NIES (Newly industrialized economies), Korea which enacted the Monopoly Regulation and Fair Trade Act in 1980 and Taipei, China which passed the Fair Trade Act in 1991. In the Pacific, Australia and New Zealand introduced competition laws in 1974 and 1986, respectively (Figure 1).

**Figure 1: Timeline of Enactment of Competition Law in Asia**

Note: Southeast Asia – 9 countries with competition law, 1 with draft (Cambodia), 1 no competition law (Timor Leste); East Asia – 5 countries + H.K. with competition law, 1 no competition law (North Korea). South Asia - 5 countries with competition law, 1 draft (Afghanistan), 1 – competition policy (Bhutan); 1 no competition law (Maldives)

Source: Ravago et al. (2022).

This sequence of adoption in Asia is consistent with the hypothesis that the diffusion of competition policy was driven by the development of a market economy and the influence

of the United States, the pioneer of competition law. To capture the development of a market economy, Ravago et al. (2021) uses GDP per capita together with indicators of economic freedom and regulatory quality as explanatory variables in their regression equation explaining whether a country has already enacted competition law. To capture the US influence, they use an indicator of political freedom as well as that of economic freedom. They find that the logarithm of GDP per capita has a highly significant coefficient, even though the coefficients on the indicators of freedom and regulatory quality are statistically insignificant.

From the mid-1980s, discussion and negotiation on international trade and investment became intense in various fora, such as the GATT Uruguay Round, for promoting free trade. This trend culminated in the commencement of WTO in January 1995. Many Asian countries joined WTO immediately, including Bangladesh, Brunei, Hong Kong, China, India, Indonesia, Japan, Malaysia, Pakistan, Philippines, Republic of Korea, Singapore, Thailand, and, even though some other Asian countries joined it later, such as Cambodia, PRC, Taipei, China, Vietnam.<sup>2</sup> At the same time, the importance of competition policy was increasingly widely recognized, as reflected by the fact that more than 20 countries/economies globally introduced competition laws between 1989 and 1994 as shown in (Voigt, 2006).

In our view, the increased globalization and the rapid diffusion of competition policy did not occur independently, but they are closely related to each other. As Baldwin (2016) argues, globalization in the 1990s and onward was not new, but it was globalization's second acceleration, which was caused by both the end of the Cold War and the rapid development of information and communication technology. These two causes drastically expanded the scale of international trade and capital flow while reducing the cost of communication

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<sup>2</sup> See, for example, [https://www.meti.go.jp/shingikai/sankoshin/tsusho\\_boeki/fukusei\\_boeki/pdf/2017\\_04\\_02.pdf](https://www.meti.go.jp/shingikai/sankoshin/tsusho_boeki/fukusei_boeki/pdf/2017_04_02.pdf)

drastically, thereby reducing drastically the cost or difficulty of offshore production in the form of foreign direct investment or global value chains, or both. Baldwin (2016) christened these changes the “Second Unbundling.”

Although Baldwin (2016) does not mention it, the Second Unbundling has essential and obvious implications for the need for competition law and policy. Consider a number of producers or vendors in a developing country assembling final products or producing intermediate inputs for a global buyer headquartered in a developed country. The global value chain will fail to grow if developing-country producers are merged by a small number of tycoons into highly concentrated markets, which means higher prices and also makes cartels easier to execute. The government of the developed country might have incentives to put pressure on the developing country government to introduce a competition policy and to provide technical assistance to the latter for the development of competition policy including the enactment of competition law. In East and Southeast Asia, regional value chains play equally important roles in economic growth as global value chains. Thus, similar concerns about disruption due to market concentration in procurement markets are likely to exist within this region. In other words, there could be pressure from other developing countries as well as developed countries. Moreover, developing countries might have another incentive to introduce a competition policy because they are interested in protecting domestic consumers from monopolization of domestic markets by foreign firms.

As is well known, increased globalization was associated with the proliferation of free trade agreements (FTAs) and economic partnership agreements (EPAs). Consistent with the above arguments, both FTAs and EPAs, whether bilateral or multilateral, have competition chapters to deal with anti-competitive activities in accordance with relevant laws to promote trade and investment, which would facilitate competition legislations and competition institution building.

As we can see from Figure 2, the first wave of Asian FTAs that surged in the 1990s was mostly traditional ones with only border policies. They primarily focused on trade in

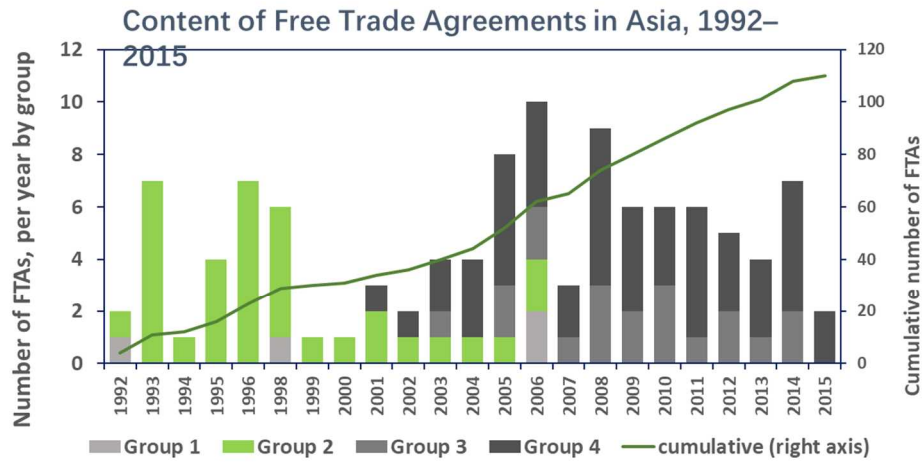


goods and centered on tariffs and other border measures that directly affected market access. The continued reduction of trade barriers in some parts of Asia through the GATT/WTO and FTAs made particularly East Asia and Southeast Asia even more attractive to foreign investment. In the last decade, the newly- agreed FTAs basically contained multiple behind-the-border policies including competition policies and other regulatory frameworks. This trend seems to be accelerated especially after PRC's accession to the WTO in 2001. According to WTO's Working Group on the Interaction between Trade and Competition Policy (WGTCP), WTO has been influencing adoption of competition laws of its members. Chronologically, WGTCP has been established after the Ministerial Conference in Singapore of 1996. Under the Doha Ministerial Declaration in 2001), WGTCP has focused on competition issues such as: Core principles, including transparency, non-discrimination and procedural fairness; provisions on hardcore cartels; modalities for voluntary cooperation; and support for progressive reinforcement of competition institutions in developing countries through capacity building (WTO 2023).

### **Figure 2: Content of Free Trade Agreements in Asia, 1992-2015<sup>3</sup>**

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<sup>3</sup> Border policies cover tariff reductions in manufacturing and agriculture, anti-dumping, countervailing measures, Agreement on Trade-Related Investment Measures, Agreement on Trade-Related Aspects of Intellectual Property Rights, customs, export taxes, sanitary and phytosanitary measures, technical barriers to trade, and the movement of capital. Behind-the-border policies cover state enterprises, state aid, competition policy, intellectual property rights, investment, public procurement, and the General Agreement on Trade in Services. The categorization of border and behind-the-border policies is based on the methodology of Hofmann, C., A. Osnago, and M. Ruta. 2017. Horizontal Depth: A New Database on the Content of Preferential Trade Agreements. Policy Research Working Paper. No. WPS 7981. Washington, DC: World Bank. Data source of this figure is: World Bank. Content of Deep Trade Agreements. <https://datacatalog.worldbank.org/dataset/content-deep-trade-agreements> (accessed 4 June 2019).



Group 1 = Free Trade Agreements (FTAs) that only have border policies.  
 Group 2 = FTAs with less than five border policies and less than five behind-the-border policies.  
 Group 3 = FTAs with five or more border policies and less than five behind-the-border policies.  
 Group 4 = FTAs with five or more border policies and five or more behind-the-border policies.

Source: ADB 2020.

Moreover, the competition chapters in FTAs and EPAs also have provisions on international cooperation, sometimes including cooperation for capacity building and technical assistance concerning competition law and policies. Table 1 lists the bilateral/multilateral trade agreements concluded by Japan that had a competition chapter.

**Table 1: Trade Agreements with Competition Chapter Concluded by Japan**

|    | <b>Country / Region</b> | <b>Signature Date</b> | <b>Effective Date</b> |
|----|-------------------------|-----------------------|-----------------------|
| 1  | Singapore               | 2002.1                | 2002.11               |
| 2  | Mexico                  | 2004.9                | 2005.4                |
| 3  | Malaysia                | 2005.12               | 2006.7                |
| 4  | Philippine              | 2006.9                | 2008.12               |
| 5  | Chile                   | 2007.3                | 2007.9                |
| 6  | Thailand                | 2007.4                | 2007.11               |
| 7  | Indonesia               | 2007.8                | 2008.7                |
| 8  | ASEAN                   | 2008.4                | 2008.7                |
| 9  | Vietnam                 | 2008.12               | 2009.10               |
| 10 | Switzerland             | 2009.2                | 2009.9                |
| 11 | India                   | 2011.2                | 2011.8                |
| 12 | Peru                    | 2011.5                | 2012.3                |
| 13 | Australia               | 2014.7                | 2015.1                |
| 14 | Mongolia                | 2015.2                | 2016.6                |
| 15 | TPP11                   | 2016.2<br>2018.3      | 2018.3                |
| 16 | European Union          | 2018.7                | 2019.2                |
| 17 | United Kingdom          | 2020.10               | 2021.1                |
| 18 | RCEP                    | 2020.11               | 2022.1                |

Sources: The JFTC Homepage and the Japan Ministry and Foreign Affairs Homepage

Although not shown in Table 1, Japan started technical assistance to the competition agencies of developing economies in the 1990s. For example, the Japan Fair Trade Commission (JFTC) began a Group Training Course in 1994, focusing on competition law and policy, enforcement techniques etc., for developing countries worldwide. As of FY2022, JFTC also provides bilateral technical assistance for Vietnam, Mongolia, Malaysia, and Thailand through the framework provided by Japan International Cooperation Agency

(JICA)<sup>4</sup> and technical assistance under the Japan-ASEAN Integration Fund (JAIF).<sup>5</sup>

At both regional and global levels, multilateral international cooperation to promote competition policy in developing countries began in the 1990s. The Asia Pacific Economic Cooperation (APEC) discussed at the 1994 Ministerial Meeting to promote understanding of competition issues and study how competition law and policy influence the trade and investment flow in the region. Its workshop on competition policy started in 1995. The Competition Policy and Deregulation Group (CPDG) was organized in 1996 under the APEC Committee on Trade and Investment. CPDG was moved to the Economic Committee (EC) in 2007 and renamed as the Competition Policy and Law Group (CPLG).<sup>6</sup> Similarly, other competition agencies of developed countries, OECD, and UNCTAD considerably provided technical assistance for introducing competition laws and policies to developing countries.

In response, many developing countries in the region enacted competition laws and established competition agencies, as shown in Figure 1. While some ASEAN countries had specific competition-related regulations (e.g. the Philippines), the introduction of competition law and institutions has yet to prevail in the mid-1990s. In 1997, however, the Financial Crisis hit Asian economies, particularly severely Indonesia, Korea, Malaysia, and Thailand. In response, these badly affected economies tried to stabilize their economies using varying approaches. Indonesia, Korea, and Thailand opted for IMF programs supported by bilateral and multilateral partners including ADB, which were tied to conditions such as raising interest rates and cutting government spending. Malaysia, in contrast, under the leadership of Prime Minister Mahathir Mohamad, decided not to go to the IMF for help and instead resorted to capital controls and a pegged exchange rate (ADB 2020). Under the IMF program, Indonesia and Thailand were required to undertake economic reforms which resulted in the introduction

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<sup>4</sup> See JFTC Annual Report FY2022 ([https://www.jftc.go.jp/en/about\\_jftc/annual\\_reports/2022.html](https://www.jftc.go.jp/en/about_jftc/annual_reports/2022.html))

<sup>5</sup> See <https://jaif.asean.org/project-brief/technical-assistance-for-asean-competition-authorities-to-strengthen-competition-law-enforcement-in-asean-region-second-phase/>

<sup>6</sup> For details, see the homepage of the Japan Ministry of Foreign Affairs and that of CPLG: <https://www.mofa.go.jp/mofaj/gaiko/apec/soshiki/cplg.html>  
<https://www.apec.org/Groups/Economic-Committee/Competition-Policy-and-Law-Group>

of competition laws in 1999.<sup>7</sup> Particularly for Indonesia, to receive emergency support during the financial crisis, the country exchanged a signed letter with the IMF to hasten the enactment of the competition law. That letter must have played a significant role for Indonesia in introducing the competition law: Indeed, the Letter of Intent (LoI) between the Indonesian Government and the International Monetary Fund (IMF) and Memorandum of Economic and Financial Policies by the Indonesian Government dated July 29, 1998 stated that the government will present the Bill on Business Competition by no later than the end of December 1998 (Maarif 2001). Particularly, the LoI played a major role in accelerating the formulation of the Draft of Business Competition Law, which was enacted as Law No. 5 of 1999 concerning the Monopolistic Practices Prohibition and Unfair Business Competition (Maarif 2001). In sum, the 1997 economic crisis gave a new life to the development of business competition law in Indonesia (Maarif 2001).

Korea has encountered the financial crisis in 1997 and 98 triggered by substantial depreciation of its currency at the end of 1997 after which the government opted for IMF programs supported by bilateral and multilateral partners including the Asian Development Bank (ADB). Under pressure from the IMF, the government amended the Monopoly Regulations and Fair Trade Act (MRFTA) in 1998 and 99 to facilitate economic and corporate restructuring and set robust competition environment (Jung and Chang 2006).

This possible channel of enacting the competition law, triggered by an economic crisis, may be seen as a “natural experiment” caused by the unexpected crisis. While the conduct of macroeconomic policy has been heterogeneous across different economies of Asia, there was little doubt that by and large, governments in the region were able to successfully manage their economies even during several difficult decades (Stiglitz 1996). For example, despite the advent of the Latin American debt crisis in the 1980s and European currency crises in the 1990s, the frequency of economic crises in Asia has been under control

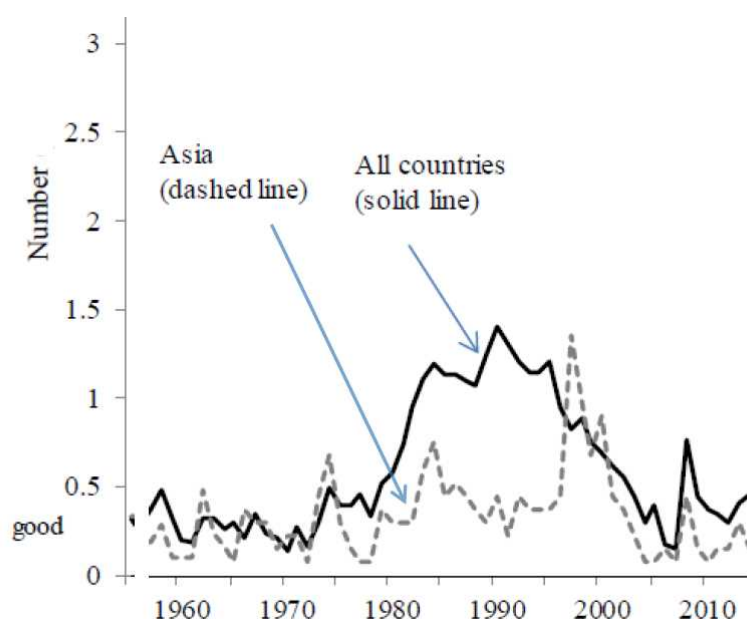
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<sup>7</sup> While Indonesia established independent competition authority quite soon, Thailand had long been under the influence of the trade ministry and did not establish independent competition authority (TCC) until recently. Such differences may have an influence on the activeness of competition law regulation and enforcement.

until the Asian Financial Crisis (AFC) in the late 1990s. Hence, as we can see from Figure 3, AFC can indeed be regarded as an unusual event in the history of Asia and the World.

The AFC precipitated a series of comprehensive reforms within the region, characterized by the adoption and adaptation of competition policies. Consequently, while competition policy found its place within bilateral trade agreements, a substantial proportion of these accords primarily pertained to intraregional dynamics, exemplifying the internal impetus within Asia to cultivate more efficacious markets. It is noteworthy that this momentum was not invariably instigated by external coercion emanating from developed economies. For instance, Japan's trade agreements, as elucidated in Table 1, remained predominantly oriented towards the Asian sphere until the advent of the Trans-Pacific Partnership (TPP) 11 in 2016 and the agreement with the European Union (EU) in 2018. Therefore, the nexus between the AFC and the trajectory of trade agreements is indelibly interwoven, illustrating the profound influence of the former on the evolution of the latter.

### **Figure 3: Frequency of Economic Crises in Asia and the World**



Source: Reinhart and Reinhart 2015.

In the 2000s, the PRC and India as well as a few ASEAN economies such as Vietnam and Singapore enacted competition laws and established competition authorities, as mentioned earlier. In 2007, ASEAN agreed to establish the ASEAN Community until 2015 and adopted the ASEAN Economic Community Blueprint to create a level playing field, which made the member countries commit themselves to introducing national competition policy and law (CPL) by 2015. This spurred the enactment of competition law in Malaysia (2010), the Philippines (2015), Brunei (2015), Myanmar (2015), Lao PDR (2015), and finally in Cambodia (2021). In addition, Thailand and Vietnam made revisions to their law to enhance their effectiveness in 2017 and 2018, respectively.

Major international fora for helping these new competition law jurisdictions include OECD (Annual Global Forum on Competition started in October 2001), ICN (International Competition Network, established in October 2001), UNCTAD (Expert Meeting on Competition Policy held in Geneva in 1997 and Intergovernmental Group of Experts on

Competition Law and Policy held annually since 1998).<sup>8</sup> UNCTAD had a voluntary peer review with Indonesia in 2009, Mongolia in 2012, Pakistan in 2013, the Philippines in 2014, and Bangladesh in 2022. In August 2007, the ASEAN Economic Ministers endorsed the establishment of the ASEAN Experts Group on Competition (AEGC) as a regional forum to discuss and cooperate on competition policy and law (CPL). There has been technical assistance by AEGC in cooperation with the support of various development partners, especially Australia, New Zealand, Germany, and Japan through the AANZFTA Economic Cooperation Support Programme -Competition Law Implementation Programme since 2010, ASEAN-German Competition Policy and Law in ASEAN Programme since 2010, and Technical Assistance for ASEAN Competition Authorities to strengthen Competition Law Enforcement in ASEAN since 2016. ASEAN also works with multilateral organizations such as the OECD and UNCTAD to promote competition policy in the region.

At the regional level, an annual meeting called the East Asia Top Level Official's Meeting (EATOP) was initiated by the JFTC in collaboration with the Asian Development Bank Institute (ADBI) in 2004. OECD/Korea Policy Centre, Competition Programme started in May 2004 and has worked with competition authorities in the Asia-Pacific region to develop and implement effective competition laws and policies. In these fora, information and experience on competition policy were shared and exchanged among regional stakeholders.

More recently, cooperation memorandums/arrangements including technical assistance provisions are concluded between competition agencies. Table 2 lists the inter-agency cooperation memorandums/arrangements concluded by JFTC. Similarly, ASEAN Competition Action Plan (ACAP) 2016-2025 was drafted recently to strengthen further competition law and policy as well as promote regional cooperation.<sup>9</sup>

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<sup>8</sup> For details, see <https://unctad.org/meetings-search?f%5b0%5d=product%3A1453>

<sup>9</sup> See <https://www.asean-competition.org/about-aegc-asean-competition-action-plan-acap-2016-2025>





**Table 2: Inter-Agency Cooperation Memorandums/Arrangements including Technical Assistance Provisions Concluded by JFTC**

| <b>Country / Region</b> | <b>Counterpart Agency</b>                                  | <b>Signature Date</b> |
|-------------------------|--|-----------------------|
| Philippines             | Department of Justice of the Republic of the Philippines   | 2013.8                |
| Viet Nam                | Competition Authority of the Socialist Republic of Vietnam | 2013.8                |
| Brazil                  | Administrative Council for Economic Defense (CADE)         | 2014.4                |
| Republic of Korea       | Korea Fair Trade Commission                                | 2014.7                |
| Australia               | Australian Competition and Consumer Commission             | 2015.4                |
| Kenya                   | Competition Authority of Kenya                             | 2016.6                |
| Mongolia                | Authority for Fair Competition and Consumer Protection     | 2017.3                |
| Canada                  | Competition Bureau   | 2017.5                |
| Singapore               | Competition Commission of Singapore                        | 2017.6                |
| China                   | State Administration of Market Regulation                  | 2019.6                |
| India                   | Competition Commission of India                            | 2021.8                |

Source: JFTC Website.

In view of the proliferation of FTAs and EPAs along with Globalization's Second Unbundling, together with their competition chapter and technical assistance provision, it seems natural to hypothesize that the increase in the adoption of competition policy was inextricably linked with the growing globalization in the 1990s and subsequent period.

### 3 Empirical Strategy and Data

In this section, we describe the empirical procedure to test our hypotheses: The observed increases in the adoption of competition policy especially among emerging countries have been closely linked with the growing globalization and the economic crises during the recent period. The first hypothesis considers Asian countries that have obtained their membership of GATT/WTO, embracing the global trade liberalization regime since the initiation of GATT and WTO, respectively, in 1948 and 1995. We test the impact of GATT/WTO accession on the adoption of competition policy. The second hypothesis places its focus on the role of post-financial crisis policy reforms in introducing competition laws and policies. In testing these two hypotheses, we also investigate the role of domestic governance in adopting competition policy. We also analyze both the adoption of competition law and the adaptation of competition policies.

#### 3.1 Econometric Models

As the empirical framework, we postulate the following regression model:

$$(1) \quad D_{it} = Z_{it}\beta + u_{it},$$

where  $D_{it}$  is an indicator variable that takes one if a country  $i$  adopts or adapts a competition law at time  $t$ , and zero otherwise,  $Z_{it}$  is a set of covariates including country and year fixed effects, and  $u_{it}$  is a well-behaved error term.

In examining the adoption of competition policies, the dependent variable,  $D_{it}$ , is quantified by two variables: First, “**Law**” which is an indicator variable that takes one when a competition law was in place for that given country-year, and zero otherwise; and second, “**Fine**” that takes one if the competition law provides for fines violating the law, and zero

otherwise. In other words, the former variable captures the statutory status whereas the latter captures its ability to impose effective sanctions. As for the adaptation of competition policies, we employ the “**Budget Size**” of each country’s competition agency as a dependent variable.

There are three main independent variables: The first one is “**WTO<sub>it</sub>**” which takes one if country  $i$  is a member of GATT/WTO in year  $t$ , and zero otherwise. We also include three-year leads and lags of the WTO variable so that we can capture preparation and time lag in adopting competition policies. Second, we include an indicator variable, “**CRISIS<sub>it</sub>**,” which takes one if a country is hit by, at least, one of the six crises, i.e., a banking crisis, an exchange rate crisis, a stock market crisis, an excessive sovereign debt growth, and a default of debt repayments. For our analysis, we employ six data sources of economic crisis as described in the following section. Third, as part of determinants of adoption and adaptation of competition law,  $Z_{it}$ , we include aggregated governance level of each country, “**WGI<sub>it</sub>**.”

### 3.2 Data

As for data, we construct cross-country panel data sets, combining multiple data sources. First, on overall competition law characteristics, we employ Comparative Competition Law (CCL) data which covers the years from 1850 to 2010 originally from which we use a subset after 1945, depending on the country. The data is amended by Ravago et al. (2021), covering the period between 1947 and 2018 for Asia.

The governance variables are taken from the Worldwide Governance Indicators (WGI) project database which reports aggregate and individual governance indicators for over 200 countries and territories over the period 1996–2021 for six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. These aggregate indicators combine the views of a large number of enterprise, citizen and expert survey respondents in industrial and developing countries. They are based on over

30 individual data sources produced by a variety of survey institutes, think tanks, non-governmental organizations, international organizations, and private sector firms (Kaufmann, Kraay, and Mastruzzi, 2010). We constructed our governance variable, “ $WGI_{it}$ ,” by taking a simple average of governance sub-indicators.

Data on economic crises have been taken from the Global Crises Data. These include cross-country panel data on banking crises, exchange rate crises, stock market crises, sovereign debt growth and default. For our analysis, we employ six data sources of economic crisis. First, an indicator variable on the banking crisis variable which takes one if the following event arises: (i) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions; or (ii) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions. Second, an indicator variable of systemic crises which takes one when either (i) a country’s banking system exhibits significant losses resulting in a share of nonperforming loans (NPLs) above 20 percent or bank closures of at least 20 percent of banking system assets or (ii) fiscal restructuring costs of the banking sector are sufficiently high, exceeding 5 percent of GDP. Third, external debt crises involve outright default on the payment of debt obligations incurred under foreign legal jurisdiction, including nonpayment, repudiation, or debt restructuring into terms less favorable to the lender than in the original contract. Fourth, a currency crisis is defined as a situation where annual depreciations exceed the threshold of 15 percent per annum. Fifth, an inflation crisis is defined using a threshold of 20 percent per annum. Sixth, hyperinflations are defined as episodes where the annual inflation rate exceeds 500 percent. Based on these six sources of different crises, a crisis is defined as a situation where at least one out of the six crises happens.

Table A1 in Appendix shows definitions and summary statistics of the variables used in this study. The working sample for the analysis of competition law and fine with or without the economic crisis and governance variables is an unbalanced panel of 189 countries over

the span of 1950 to 2020 (Table B1, Appendix B). As for the regression analysis of budget size of competition agencies, we need to confine our unbalanced panel data set to that of 43 countries covering the period from 2005 to 2020 (Table B2, Appendix B).

#### 4 Empirical Results

Table 3 shows the estimation results of empirical equation (1) for the adoption of competition law in which we include leads and lags of crisis and WTO/GATT accession as the main independent variables. Few important empirical findings emerge. First, the estimated coefficient on the three-year lead of the GATT/WTO variable,  $WTO_{it+3}$ , is positive and statistically significant both for “**Law**” (i.e., an indicator variable for a competition law) and “**Fine**” (i.e., the competition law specifying fines for violating the law) in all the specifications. This means that three years before accession to GATT/WTO, a country has a higher probability of enacting and implementing competition law. We believe this strongly supports our hypothesis of the globalization and competition policy nexus. Second, per capita GDP has positive and significant coefficients on most of the specifications, indicating that economic development, usually accompanying structural transformation to nonfarm sectors, induces a country to adopt competition law. Indeed, the share of the service sector in GDP has positive and statistically significant coefficients in specifications (3) and (9), suggesting that the expansion of services in each economy facilitates adoption of competition policies.

In Table 4, we report estimation results of the encompassing specification for the adoption of competition law with leads and lags of crisis and WTO/GATT accession. First, the lead WTO variable continued to be positive and statistically significant, supporting the hypothesis of the institutional globalization leading to the enactment of competition law. Second, we observe that the contemporaneous and three-year lag of the CRISIS variable is statistically significant in Specification (1), (2), and (3). This is consistent with our hypothesis that a financial crisis may induce the crisis-hit country to adopt competition law as part of

post-crisis, market-oriented economic reform, although its robustness may not necessarily be warranted because in the specifications (4), (5), and (6), with country fixed effects, its statistical significance disappears. Third, as for the average governance indices, “WGI,” the quality of contemporaneous governance plays a key role in adopting competition law. In contrast, its two and three years lag variables have a negative and statistically significant coefficient. This may represent substitutability between de jure regulation of fair competition and de facto governance levels suggesting that having good governance may delay adoption of a statutory framework. Finally, as before, per capita GDP has positive and significant coefficients, respectively, in Specifications (3) and (6). These results imply that economic and market development might have incentivized a country to adopt competition law.

**Table 3: Effect of Participation in GATT/WTO on Competition Policy**

| VARIABLES                      | (1)<br>Law             | (2)<br>Law               | (3)<br>Law               | (4)<br>Law            | (5)<br>Law                | (6)<br>Law                | (7)<br>Fine           | (8)<br>Fine              | (9)<br>Fine              | (10)<br>Fine          | (11)<br>Fine              | (12)<br>Fine              |
|--------------------------------|------------------------|--------------------------|--------------------------|-----------------------|---------------------------|---------------------------|-----------------------|--------------------------|--------------------------|-----------------------|---------------------------|---------------------------|
| <b>WTO<sub>it+1</sub></b>      | 0.0375**<br>(0.0181)   | 0.0292<br>(0.0184)       | 0.0327*<br>(0.0183)      | 0.00933<br>(0.0195)   | 0.00913<br>(0.0194)       | 0.00957<br>(0.0194)       | 0.0285<br>(0.0192)    | 0.0287<br>(0.0187)       | 0.0303<br>(0.0187)       | 0.0222<br>(0.0194)    | 0.0214<br>(0.0193)        | 0.0218<br>(0.0193)        |
| <b>WTO<sub>it+2</sub></b>      | 0.0970***<br>(0.0208)  | 0.0649***<br>(0.0201)    | 0.0599***<br>(0.0195)    | 0.000215<br>(0.0190)  | 0.00142<br>(0.0189)       | 0.00248<br>(0.0189)       | 0.0336**<br>(0.0157)  | 0.0307*<br>(0.0157)      | 0.0244<br>(0.0153)       | 0.00817<br>(0.0158)   | 0.00962<br>(0.0157)       | 0.00900<br>(0.0157)       |
| <b>WTO<sub>it+3</sub></b>      | 0.103***<br>(0.0327)   | 0.121***<br>(0.0291)     | 0.0831***<br>(0.0293)    | 0.104***<br>(0.0306)  | 0.106***<br>(0.0297)      | 0.103***<br>(0.0297)      | 0.146***<br>(0.0323)  | 0.135***<br>(0.0302)     | 0.103***<br>(0.0297)     | 0.0670**<br>(0.0316)  | 0.0734**<br>(0.0310)      | 0.0699**<br>(0.0308)      |
| <b>WTO<sub>it</sub></b>        | 0.0250*<br>(0.0133)    | 0.0244*<br>(0.0133)      | 0.0289**<br>(0.0127)     | 0.0172<br>(0.0143)    | 0.0179<br>(0.0143)        | 0.0181<br>(0.0144)        | 0.0122<br>(0.0137)    | 0.0117<br>(0.0137)       | 0.0153<br>(0.0136)       | 0.00296<br>(0.0151)   | 0.00414<br>(0.0151)       | 0.00370<br>(0.0154)       |
| <b>WTO<sub>it-1</sub></b>      | 0.00551<br>(0.00818)   | 0.00394<br>(0.00808)     | 0.000252<br>(0.00838)    | -0.00368<br>(0.00888) | -0.00320<br>(0.00886)     | -0.00349<br>(0.00894)     | 0.0164<br>(0.0107)    | 0.0148<br>(0.0107)       | 0.0105<br>(0.0111)       | 0.00520<br>(0.0112)   | 0.00584<br>(0.0112)       | 0.00503<br>(0.0113)       |
| <b>WTO<sub>it-2</sub></b>      | 0.0247***<br>(0.00918) | 0.0182**<br>(0.00923)    | 0.0165*<br>(0.00893)     | -0.00399<br>(0.00898) | -0.00317<br>(0.00894)     | -0.00227<br>(0.00903)     | 0.0220**<br>(0.00875) | 0.0173*<br>(0.00892)     | 0.0164*<br>(0.00867)     | -0.00231<br>(0.00868) | -0.00136<br>(0.00869)     | -6.74e-05<br>(0.00865)    |
| <b>WTO<sub>it-3</sub></b>      | 0.123***<br>(0.0217)   | 0.0753***<br>(0.0222)    | 0.0742***<br>(0.0210)    | -0.0394*<br>(0.0214)  | -0.0382*<br>(0.0213)      | -0.0378*<br>(0.0214)      | 0.113***<br>(0.0239)  | 0.0795***<br>(0.0247)    | 0.0781***<br>(0.0240)    | -0.00448<br>(0.0239)  | -0.00498<br>(0.0239)      | -0.00303<br>(0.0242)      |
| <b>Population</b>              |                        | 0.00140***<br>(0.000327) | 0.00124***<br>(0.000272) |                       | 0.000601***<br>(0.000189) | 0.000608***<br>(0.000193) |                       | 0.00135***<br>(0.000386) | 0.00121***<br>(0.000331) |                       | 0.000694***<br>(0.000241) | 0.000711***<br>(0.000237) |
| <b>Services GDP share (%?)</b> |                        |                          | 0.00378**<br>(0.00167)   |                       |                           | -0.00201<br>(0.00158)     |                       |                          | 0.00315**<br>(0.00151)   |                       |                           | -0.000549<br>(0.00153)    |
| <b>Industrial GDP share</b>    |                        |                          | -1.60e-05<br>(0.00172)   |                       |                           | -0.00134<br>(0.00168)     |                       |                          | -0.000817<br>(0.00143)   |                       |                           | -0.00248*<br>(0.00148)    |
| <b>Per capita GDP</b>          |                        | 0.00775***<br>(0.00188)  |                          |                       | 0.000620<br>(0.00142)     |                           |                       | 0.00662***<br>(0.00207)  |                          |                       | 0.00189<br>(0.00121)      |                           |
| <b>Constant</b>                | 0.167***<br>(0.0386)   | 0.0839<br>(0.0566)       | 0.0729<br>(0.0530)       | -0.201***<br>(0.0335) | -0.200***<br>(0.0395)     | -0.214***<br>(0.0432)     | 0.152***<br>(0.0371)  | 0.0959*<br>(0.0549)      | 0.0901*<br>(0.0512)      | -0.191***<br>(0.0333) | -0.185***<br>(0.0375)     | -0.204***<br>(0.0424)     |
| Country FE                     | NO                     | NO                       | NO                       | YES                   | YES                       | YES                       | NO                    | NO                       | NO                       | YES                   | YES                       | YES                       |
| Year FE                        | NO                     | NO                       | NO                       | YES                   | YES                       | YES                       | NO                    | NO                       | NO                       | YES                   | YES                       | YES                       |
| No of Countries                | 189                    | 189                      | 189                      | 189                   | 189                       | 189                       | 189                   | 189                      | 189                      | 189                   | 189                       | 189                       |
| Observations                   | 9,604                  | 9,604                    | 9,604                    | 9,604                 | 9,604                     | 9,604                     | 8,750                 | 8,750                    | 8,750                    | 8,750                 | 8,750                     | 8,750                     |
| Number of id_countrycode       | 189                    | 189                      | 189                      | 189                   | 189                       | 189                       | 189                   | 189                      | 189                      | 189                   | 189                       | 189                       |

Note: Country-level cluster robust standard errors are shown in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, We also included the following variables: dummy variable for missing population variable; dummy variable for missing services GDP share, and dummy variable for missing industrial GDP share



**Table 4: Encompassing Regression of Competition Law**

| VARIABLES                    | (1)<br>Law             | (2)<br>Law                | (3)<br>Law                | (4)<br>Law             | (5)<br>Law                | (6)<br>Law                |
|------------------------------|------------------------|---------------------------|---------------------------|------------------------|---------------------------|---------------------------|
| <b>WTO<sub>it+1</sub></b>    | 0.0294<br>(0.0185)     | 0.0265<br>(0.0181)        | 0.0287<br>(0.0183)        | 0.0142<br>(0.0198)     | 0.0128<br>(0.0198)        | 0.0141<br>(0.0198)        |
| <b>WTO<sub>it+2</sub></b>    | 0.0450**<br>(0.0184)   | 0.0351*<br>(0.0183)       | 0.0351*<br>(0.0180)       | 0.00299<br>(0.0183)    | 0.00418<br>(0.0185)       | 0.00485<br>(0.0183)       |
| <b>WTO<sub>it+3</sub></b>    | 0.0974***<br>(0.0287)  | 0.103***<br>(0.0275)      | 0.0824***<br>(0.0275)     | 0.0886***<br>(0.0297)  | 0.0953***<br>(0.0295)     | 0.0901***<br>(0.0292)     |
| <b>WTO<sub>it</sub></b>      | -0.00570<br>(0.0155)   | 6.86e-05<br>(0.0148)      | 0.00358<br>(0.0143)       | 0.0160<br>(0.0149)     | 0.0175<br>(0.0149)        | 0.0171<br>(0.0150)        |
| <b>WTO<sub>it-1</sub></b>    | 0.0455***<br>(0.0118)  | 0.0364***<br>(0.0110)     | 0.0341***<br>(0.0112)     | -0.00372<br>(0.00901)  | -0.00343<br>(0.00908)     | -0.00361<br>(0.00908)     |
| <b>WTO<sub>it-2</sub></b>    | -0.0634***<br>(0.0150) | -0.0513***<br>(0.0144)    | -0.0491***<br>(0.0136)    | -0.00577<br>(0.00934)  | -0.00461<br>(0.00937)     | -0.00378<br>(0.00946)     |
| <b>WTO<sub>it-3</sub></b>    | 0.0649***<br>(0.0209)  | 0.0423**<br>(0.0209)      | 0.0498**<br>(0.0204)      | -0.0383*<br>(0.0210)   | -0.0392*<br>(0.0206)      | -0.0368*<br>(0.0209)      |
| <b>CRISIS<sub>it+1</sub></b> | -0.00227<br>(0.00659)  | -0.00285<br>(0.00625)     | -0.00399<br>(0.00632)     | -0.000298<br>(0.00647) | -0.000911<br>(0.00646)    | -0.000281<br>(0.00652)    |
| <b>CRISIS<sub>it+2</sub></b> | 0.00217<br>(0.00843)   | 0.000154<br>(0.00810)     | -0.00247<br>(0.00813)     | -0.00373<br>(0.00789)  | -0.00399<br>(0.00781)     | -0.00375<br>(0.00792)     |
| <b>CRISIS<sub>it+3</sub></b> | -0.0214<br>(0.0154)    | -0.0217<br>(0.0150)       | -0.0234<br>(0.0147)       | -0.00940<br>(0.0141)   | -0.0105<br>(0.0141)       | -0.0100<br>(0.0140)       |
| <b>CRISIS<sub>it</sub></b>   | 0.0185***<br>(0.00660) | 0.0154**<br>(0.00630)     | 0.0123**<br>(0.00615)     | 0.00362<br>(0.00599)   | 0.00275<br>(0.00594)      | 0.00279<br>(0.00596)      |
| <b>CRISIS<sub>it-1</sub></b> | 0.00284<br>(0.00862)   | 0.00193<br>(0.00820)      | 0.000309<br>(0.00824)     | -0.00331<br>(0.00718)  | -0.00465<br>(0.00716)     | -0.00434<br>(0.00714)     |
| <b>CRISIS<sub>it-2</sub></b> | 0.0217**<br>(0.00885)  | 0.0187**<br>(0.00866)     | 0.0162*<br>(0.00857)      | 0.00616<br>(0.00847)   | 0.00514<br>(0.00835)      | 0.00546<br>(0.00836)      |
| <b>CRISIS<sub>it-3</sub></b> | 0.0286**<br>(0.0139)   | 0.0270*<br>(0.0139)       | 0.0243*<br>(0.0139)       | 0.0110<br>(0.0140)     | 0.00961<br>(0.0140)       | 0.00965<br>(0.0140)       |
| <b>WGI<sub>it+1</sub></b>    | 0.00659<br>(0.00981)   | -0.00339<br>(0.00984)     | -0.00178<br>(0.00985)     | -0.0160*<br>(0.00912)  | -0.0181*<br>(0.00928)     | -0.0154*<br>(0.00933)     |
| <b>WGI<sub>it+2</sub></b>    | -0.00195<br>(0.0167)   | -0.0158<br>(0.0166)       | -0.00970<br>(0.0166)      | -0.00679<br>(0.0165)   | -0.0135<br>(0.0159)       | -0.00660<br>(0.0159)      |
| <b>WGI<sub>it+3</sub></b>    | -0.00741<br>(0.0158)   | -0.0134<br>(0.0153)       | -0.0118<br>(0.0157)       | 0.0120<br>(0.0160)     | 0.00622<br>(0.0154)       | 0.0114<br>(0.0155)        |
| <b>WGI<sub>it</sub></b>      | 0.0274<br>(0.0219)     | 0.0225<br>(0.0185)        | 0.0203<br>(0.0188)        | 0.0179**<br>(0.00896)  | 0.0162*<br>(0.00905)      | 0.0175*<br>(0.00921)      |
| <b>WGI<sub>it-1</sub></b>    | 0.00592<br>(0.00758)   | 0.00229<br>(0.00764)      | 0.00356<br>(0.00748)      | 0.00715<br>(0.00797)   | 0.00513<br>(0.00809)      | 0.00696<br>(0.00800)      |
| <b>WGI<sub>it-2</sub></b>    | -0.0325**<br>(0.0134)  | -0.0416***<br>(0.0137)    | -0.0278**<br>(0.0134)     | -0.0395***<br>(0.0125) | -0.0419***<br>(0.0127)    | -0.0379***<br>(0.0124)    |
| <b>WGI<sub>it-3</sub></b>    | -0.0353***<br>(0.0129) | -0.0423***<br>(0.0131)    | -0.0285**<br>(0.0128)     | -0.0375***<br>(0.0118) | -0.0392***<br>(0.0119)    | -0.0359***<br>(0.0116)    |
| <b>Population</b>            |                        | 0.000925***<br>(0.000186) | 0.000889***<br>(0.000176) |                        | 0.000552***<br>(0.000176) | 0.000561***<br>(0.000184) |

|                                |                      |                         |                        |                       |                        |                       |
|--------------------------------|----------------------|-------------------------|------------------------|-----------------------|------------------------|-----------------------|
| <b>Services GDP share (%?)</b> |                      |                         | 0.00176<br>(0.00157)   |                       |                        | -0.00111<br>(0.00158) |
| <b>Industrial GDP share</b>    |                      |                         | -0.000549<br>(0.00169) |                       |                        | -0.00149<br>(0.00172) |
| <b>Per capita GDP</b>          |                      | 0.00596***<br>(0.00191) |                        |                       | 0.00254**<br>(0.00115) |                       |
| <b>Constant</b>                | 0.171***<br>(0.0362) | 0.117**<br>(0.0489)     | 0.107**<br>(0.0480)    | -0.223***<br>(0.0355) | -0.223***<br>(0.0406)  | -0.232***<br>(0.0441) |
| Country FE                     | NO                   | NO                      | NO                     | YES                   | YES                    | YES                   |
| Year FE                        | NO                   | NO                      | NO                     | YES                   | YES                    | YES                   |
| No of Countries                | 189                  | 189                     | 189                    | 189                   | 189                    | 189                   |
| Observations                   | 9,604                | 9,604                   | 9,604                  | 9,604                 | 9,604                  | 9,604                 |
| Number of id_countrycode       | 189                  | 189                     | 189                    | 189                   | 189                    | 189                   |

Note: Country-level cluster robust standard errors are shown in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ . We also included the following variables: dummy variable for missing population variable; dummy variable for missing services GDP share, and dummy variable for missing industrial GDP share.

#### 4.1 Adaptation and Enforcement of Competition Policies

Enacting competition law and including fines for violating the law may not guarantee actual implementation and enforcement, or in short, “adaptation,” of competition law. To investigate the adaptation of competition policies, we employ the “Budget Size” of each country’s competition agency as a dependent variable. The data has been collected by a unique survey of competition agencies and authorities in Asia conducted by the authors. As before, we included three main independent variables, “WTOit,” “CRISISit,” and “WGIit.” According to the empirical results shown in Table 5, none of the estimated coefficients is statistically significant. Yet, when we use conventional variance and covariance matrices, it is notable that the two- and three-year lagged CRISIS variables, as well as the contemporaneous WGI variable have positive and significant coefficients (Table C1, Appendix C). These results suggest that the role of market-oriented reforms, induced by economic crises, and the overall quality of governance play a crucial role in facilitating the adaptation of competition policies.

**Table 5. Effect on Budget Size of Competition Agencies**

| <b>VARIABLES</b>             | <b>(1)<br/>Budget<br/>Size</b> | <b>(2)<br/>Budget<br/>Size</b> | <b>(3)<br/>Budget<br/>Size</b> | <b>(4)<br/>Budget<br/>Size</b> | <b>(5)<br/>Budget<br/>Size</b> | <b>(6)<br/>Budget<br/>Size</b> |
|------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| <b>WTO<sub>it+1</sub></b>    | -0.537<br>(0.569)              | -0.514<br>(0.544)              | -0.542<br>(0.572)              | -0.191<br>(0.282)              | -0.168<br>(0.262)              | -0.232<br>(0.299)              |
| <b>WTO<sub>it+2</sub></b>    | 0.705<br>(0.707)               | 0.890<br>(0.895)               | 0.844<br>(0.850)               | -0.0122<br>(0.383)             | 0.385<br>(0.478)               | 0.432<br>(0.510)               |
| <b>WTO<sub>it+3</sub></b>    | 0.185<br>(0.287)               | 0.119<br>(0.246)               | 0.237<br>(0.336)               | 0.485<br>(0.656)               | 0.189<br>(0.383)               | 0.185<br>(0.385)               |
| <b>WTO<sub>it</sub></b>      | 0.131<br>(0.139)               | 0.0737<br>(0.0999)             | 0.192<br>(0.198)               | -0.195<br>(0.283)              | -0.309<br>(0.409)              | -0.310<br>(0.418)              |
| <b>WTO<sub>it-1</sub></b>    | -0.752<br>(0.745)              | -0.787<br>(0.782)              | -0.629<br>(0.622)              | -0.626<br>(0.608)              | -0.606<br>(0.589)              | -0.532<br>(0.520)              |
| <b>WTO<sub>it-2</sub></b>    | 0.635<br>(0.643)               | 0.629<br>(0.643)               | 0.504<br>(0.519)               | 1.267<br>(1.284)               | 1.213<br>(1.255)               | 1.115<br>(1.169)               |
| <b>WTO<sub>it-3</sub></b>    | -0.378<br>(0.422)              | -0.497<br>(0.543)              | 0.154<br>(0.202)               | -1.671<br>(1.778)              | -1.641<br>(1.718)              | -1.072<br>(1.186)              |
| <b>CRISIS<sub>it+1</sub></b> | 0.0835<br>(0.0984)             | 0.110<br>(0.130)               | 0.0999<br>(0.121)              | 0.200<br>(0.259)               | 0.234<br>(0.301)               | 0.222<br>(0.295)               |
| <b>CRISIS<sub>it+2</sub></b> | -0.0799<br>(0.0965)            | -0.0931<br>(0.112)             | -0.0728<br>(0.0966)            | -0.0979<br>(0.141)             | -0.135<br>(0.193)              | -0.148<br>(0.208)              |
| <b>CRISIS<sub>it+3</sub></b> | -0.0656<br>(0.0942)            | -0.137<br>(0.161)              | -0.0635<br>(0.0973)            | -0.195<br>(0.219)              | -0.258<br>(0.280)              | -0.235<br>(0.261)              |
| <b>CRISIS<sub>it</sub></b>   | 0.0331<br>(0.0561)             | 0.0154<br>(0.0512)             | 0.0638<br>(0.0748)             | 0.299<br>(0.313)               | 0.284<br>(0.302)               | 0.314<br>(0.333)               |
| <b>CRISIS<sub>it-1</sub></b> | -0.368<br>(0.377)              | -0.382<br>(0.392)              | -0.340<br>(0.350)              | -0.369<br>(0.399)              | -0.396<br>(0.428)              | -0.397<br>(0.427)              |
| <b>CRISIS<sub>it-2</sub></b> | -0.426<br>(0.426)              | -0.413<br>(0.415)              | -0.440<br>(0.444)              | -0.701<br>(0.709)              | -0.719<br>(0.734)              | -0.702<br>(0.719)              |
| <b>CRISIS<sub>it-3</sub></b> | 0.616<br>(0.631)               | 0.668<br>(0.682)               | 0.630<br>(0.644)               | 0.906<br>(0.959)               | 1.033<br>(1.057)               | 1.052<br>(1.073)               |
| <b>WGI<sub>it+1</sub></b>    | 4.353<br>(4.401)               | 4.487<br>(4.537)               | 4.367<br>(4.412)               | 5.555<br>(5.789)               | 5.611<br>(5.805)               | 5.501<br>(5.690)               |
| <b>WGI<sub>it+2</sub></b>    | -3.497<br>(3.444)              | -3.369<br>(3.309)              | -3.462<br>(3.405)              | -3.425<br>(3.432)              | -2.944<br>(3.026)              | -2.956<br>(3.042)              |
| <b>WGI<sub>it+3</sub></b>    | 0.0648<br>(0.151)              | 0.0477<br>(0.140)              | 0.0516<br>(0.144)              | 0.618<br>(0.702)               | 0.498<br>(0.546)               | 0.529<br>(0.572)               |
| <b>WGI<sub>it</sub></b>      | 0.102<br>(0.396)               | 0.134<br>(0.455)               | 0.221<br>(0.502)               | 0.404<br>(0.845)               | 0.123<br>(0.744)               | 0.264<br>(0.791)               |
| <b>WGI<sub>it-1</sub></b>    | -3.512<br>(3.459)              | -3.406<br>(3.366)              | -3.446<br>(3.423)              | -3.687<br>(3.808)              | -3.884<br>(3.996)              | -3.809<br>(3.948)              |
| <b>WGI<sub>it-2</sub></b>    | 1.771<br>(1.735)               | 1.955<br>(1.932)               | 1.767<br>(1.750)               | 1.317<br>(1.474)               | 1.485<br>(1.583)               | 1.381<br>(1.484)               |
| <b>WGI<sub>it-3</sub></b>    | 1.326<br>(1.356)               | 1.616<br>(1.664)               | 1.376<br>(1.431)               | 2.299<br>(2.388)               | 2.875<br>(2.947)               | 2.791<br>(2.879)               |
| <b>Population</b>            |                                | 0.0201<br>(0.0283)             | 0.0163<br>(0.0245)             |                                | 0.103<br>(0.117)               | 0.101<br>(0.114)               |

|                                |         |          |         |         |          |         |
|--------------------------------|---------|----------|---------|---------|----------|---------|
| <b>Services GDP share (%?)</b> |         |          | -0.181  |         |          | -0.119  |
|                                |         |          | (0.191) |         |          | (0.144) |
| <b>Industrial GDP share</b>    |         |          | -0.188  |         |          | -0.162  |
|                                |         |          | (0.197) |         |          | (0.173) |
| <b>Per capita GDP</b>          |         | -0.0249  |         |         | -0.0261  |         |
|                                |         | (0.0281) |         |         | (0.0351) |         |
| <b>Constant</b>                | 0.0196  | 0.288    | -2.430  | 0.297   | -0.843   | -4.442  |
|                                | (0.138) | (0.542)  | (3.160) | (0.433) | (1.276)  | (6.752) |
| Country FE                     | NO      | NO       | NO      | YES     | YES      | YES     |
| Year FE                        | NO      | NO       | NO      | YES     | YES      | YES     |
| No of Countries                | 43      | 43       | 43      | 43      | 43       | 43      |
| Observations                   | 430     | 430      | 430     | 430     | 430      | 430     |
| Number of id_countrycode       | 43      | 43       | 43      | 43      | 43       | 43      |

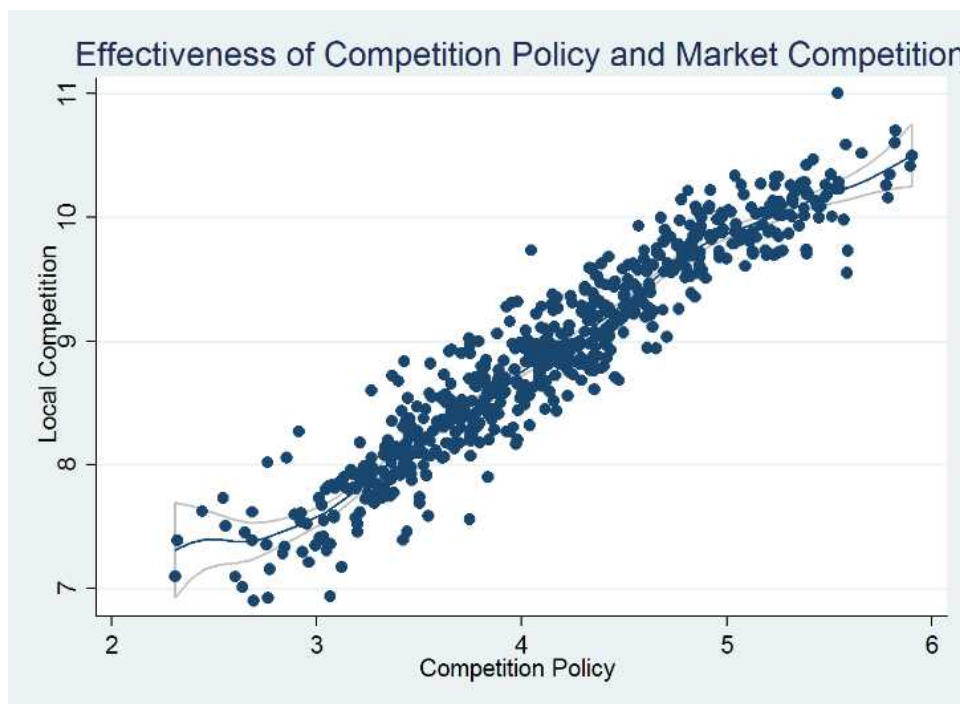
Note: Country-level cluster robust standard errors are shown in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, We also included the following variables: dummy variable for missing population variable; dummy variable for missing services GDP share, and dummy variable for missing industrial GDP share.

To approach the issue of adaptation from an alternative perspective, we have leveraged data from the World Economic Forum's Global Competitiveness Report for the years 2017-2018, focusing on the examination of competition policy enforcement. Within this dataset, a window spanning from 2009 to 2014 offers insights into market competition dynamics. Specifically, we have extracted two key variables: The first variable is the effectiveness of the "competition policy" variable which is based on a question, "In your country, how effective are anti-monopoly policies at ensuring fair competition?" with answer choices ranging from 1=not effective at all to 7=extremely effectively. The second variable is a composite index of "local competition" combining two variables of (1) intensity of local competition based on a question, "In your country, how intense is competition on the local markets?" with answer choices ranging from 1= not intense at all to 7= extremely intense and (2) extent of market dominance based on a question, "In your country, how do you characterize corporate activity?" with answer choices ranging from 1= dominated by a few business groups to 7= spread among many firms.

Figure 4 presents the outcomes of our estimation results obtained through a semi-

parametric regression model of Robinson (1988). This model investigates the relationship between the 'local competition' variable and the effectiveness of competition policy. Notably, our analysis reveals a robust positive correlation between these two variables across the entire spectrum of their values. This finding underscores the notion that effective competition policies exert a favorable influence on market competition dynamics. It is our contention that this empirical observation lends support to the proposition that the efficacy of both de jure and de facto competition policies, both in terms of adoption and adaptation, can significantly contribute to the enhancement of overall market competition."

**Figure 4: Effectiveness of Competition Policy and Market Competition**



## 5 Conclusions

This paper has discussed issues regarding the diffusion and adaptation of competition policy in Asia. To this aim, we postulated and empirically tested a hypothesis that the increase

in the adoption of competition policy was inextricably linked with the growing globalization during the period. Growing globalization “included” the Asian Financial Crisis (AFC) leading to market reforms in the region which was complementary to the development of trade.

As a background, we noted that competition law jurisdictions have proliferated over the last four decades in which the majority of the new adopters are developing countries. Particularly the adopters in Asia first emerged as producers, exporters, and service providers under the proliferation of free trade agreements and economic partnership agreements, many of which explicitly or implicitly required the signatory countries to have competition policies.

We tested the hypothesis using cross-country panel data on the enactment of competition law and the budget of competition authorities. Empirical results using global data show that before accession to GATT/WTO, a country has a tendency to enact a competition law. In an adaptation of competition policies, market-oriented reforms, triggered by AFC, seem to play a critical role. Both years leading to accession and years after crisis variables are significant. We also found that governance level matters in adopting competition laws and policies, using variables that measure perceived government effectiveness and corruption eradication.

Based on novel survey data, we also discovered a robust correlation between the perceived effectiveness of competition policy and the level of local competition. This supports our argument that both the adoption (*de jure*) and implementation (*de facto*) of competition policies work together to foster competitive markets.

The findings in this paper hold significant policy implications for competition policy development in Asia:

1. Early Adoption of Competition Laws: The observation that countries tend to enact competition laws before joining international trade organizations like GATT/WTO implies that nations should prioritize the establishment of competition regulations as part of their

economic reform and development strategies. Early adoption can contribute to creating competitive market environments, which, in turn, can enhance trade and economic growth.

2. **Role of Market-Oriented Reforms:** Market-oriented reforms, particularly in response to financial crises, have a substantial impact on the adaptation of competition policies. Policymakers should recognize the potential of these reforms to facilitate competition policy implementation. In times of economic crisis, efforts to align economic policies with market-oriented reforms can lead to more effective competition policy enforcement.
  
3. **Governance Quality Matters:** The importance of governance quality, as measured by government effectiveness and anti-corruption efforts, in competition law adoption underscores the need for good governance. Policymakers should focus on improving governance quality to create an environment conducive to fair competition. Transparent, accountable, and effective government institutions are essential for enforcing competition policies.

4. Importance of Effective Implementation: The correlation between the perceived effectiveness of competition policies and the level of local competition highlights the significance of not only adopting but effectively implementing these policies. Policymakers should consider that policy adoption (*de jure*) alone is insufficient; equal emphasis should be placed on practical enforcement (*de facto*) to foster competitive markets.

5. Globalization and Trade Agreements: The link between competition policy proliferation and compliance with trade agreements underlines the role of international agreements. Policymakers should recognize that international trade deals often include competition policy requirements. Engaging with such agreements can promote competition policy harmonization and create a conducive environment for cross-border business.

In summary, this paper suggests that governments in Asia should prioritize early adoption of competition laws, leverage market-oriented reforms, improve governance quality, and ensure effective policy implementation. Recognizing the interplay between policy adoption and implementation can enhance competitive market dynamics in the context of globalization and financial crises. Compliance with international trade agreements that involve competition policy provisions is also a strategic move. These policy implications are critical, especially for developing countries, to sustain economic growth and development because the existence of effective competition laws and competition agencies seems to be



closely related to the overall productivity enhancements of national economies with better governance (Voigt, 2009).

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## Appendix A

### Table A1: Summary Statistics of Variables Used

| VARIABLES                | DESCRIPTIONS   | (1)<br>N | (2)<br>mean | (3)<br>sd | (4)<br>min | (5)<br>max |
|--------------------------|--|----------|-------------|-----------|------------|------------|
| year                     | Calender year  | 13,258   | 1,985       | 20.34     | 1,950      | 2,020      |
| competition_law_in_place | This variable is a dummy variable coded as 1 when a competition law was in place for that given country-year   | 10,210   | 0.436       | 0.496     | 0          | 1          |
| remedies_fines           | This variable indicates whether the law provides for fines as a remedy for violating the law   | 8,990    | 0.345       | 0.475     | 0          | 1          |
| pop                      | Population (in millions)   | 9,719    | 33.05       | 119.9     | 0.0403     | 1,434      |
| gee                      | Government Effectiveness   | 3,828    | -0.0405     | 0.982     | -2.447     | 2.437      |
| rqe                      | Regulatory Quality   | 3,827    | -0.0410     | 0.978     | -2.645     | 2.261      |
| rle                      | Rule of Law  | 3,884    | -0.0688     | 0.987     | -2.606     | 2.130      |
| cce                      | Control of Corruption  | 3,837    | -0.0687     | 0.999     | -1.869     | 2.470      |
| wgi_ave                  | Mean of for governance index (gee, rqe, rle, cce)  | 3,827    | -0.0574     | 0.958     | -2.381     | 2.185      |
| services_to_gdp          | Services, value added (% of GDP)   | 7,065    | 50.12       | 12.63     | 4.792      | 98.62      |
| industry_to_gdp          | Industry (including construction), value added (% of GDP)  | 7,521    | 26.96       | 12.50     | 2.365      | 90.51      |
| gdppc                    | Per capita GDP (\$thousand)  | 9,719    | 12.43       | 18.48     | 0.245      | 283.5      |
| gatt_wto_cont            | This variable is a dummy variable coded as 1 when a country has access to the General Agreement on Tariffs and Trade (GATT) or the World Trade Organization (WTO)          | 13,258   | 0.502       | 0.500     | 0          | 1          |
| crisis                   | This variable is a dummy variable coded as 1 when a country experiences any of the following crises: Banking Crisis, Systemic Crisis, Inflation Crisis, or Currency Crisis | 13,258   | 0.126       | 0.331     | 0          | 1          |
| budget_bn                | Budget of the Fair Trade Commission (\$billion)  | 537      | 2.068       | 15.60     | 0.000175   | 139        |

## Appendix B

### Table B1: Coverage of Countries and Years for Tables 3 and 4

| country code | country                          | From | Till |  | country code | country             | From | Till |  | country code | country               | From | Till |
|--------------|----------------------------------|------|------|--|--------------|---------------------|------|------|--|--------------|-----------------------|------|------|
| AFG          | Afghanistan                      | 1950 | 2010 |  | GMB          | Gambia              | 1965 | 2020 |  | NIC          | Nicaragua             | 1950 | 2020 |
| AGO          | Angola                           | 1975 | 2010 |  | GNB          | Guinea-Bissau       | 1974 | 2010 |  | NLD          | Netherlands           | 1950 | 2020 |
| ALB          | Albania                          | 1950 | 2020 |  | GNQ          | Equatorial Guinea   | 1968 | 2010 |  | NOR          | Norway                | 1950 | 2020 |
| AND          | Andorra                          | 1990 | 2010 |  | GRC          | Greece              | 1950 | 2020 |  | NPL          | Nepal                 | 1950 | 2020 |
| ARE          | United Arab Emirates             | 1971 | 2010 |  | GRD          | Grenada             | 1968 | 2010 |  | NRU          | Nauru                 | 1999 | 2010 |
| ARG          | Argentina                        | 1950 | 2020 |  | GTM          | Guatemala           | 1950 | 2020 |  | NZL          | New Zealand           | 1950 | 2020 |
| ARM          | Armenia                          | 1991 | 2020 |  | GUY          | Guyana              | 1965 | 2020 |  | OMN          | Oman                  | 1971 | 2010 |
| ATG          | Antigua & Barbuda                | 1965 | 2010 |  | HND          | Honduras            | 1950 | 2020 |  | PAK          | Pakistan              | 1950 | 2020 |
| AUS          | Australia                        | 1950 | 2020 |  | HRV          | Croatia             | 1992 | 2020 |  | PAN          | Panama                | 1950 | 2020 |
| AUT          | Austria                          | 1950 | 2020 |  | HTI          | Haiti               | 1950 | 2010 |  | PER          | Peru                  | 1950 | 2020 |
| AZE          | Azerbaijan                       | 1991 | 2020 |  | HUN          | Hungary             | 1950 | 2020 |  | PHL          | Philippines           | 1950 | 2020 |
| BDI          | Burundi                          | 1962 | 2020 |  | IDN          | Indonesia           | 1950 | 2020 |  | PLW          | Palau                 | 1994 | 2010 |
| BEL          | Belgium                          | 1950 | 2020 |  | IND          | India               | 1950 | 2020 |  | PNG          | Papua New Guinea      | 1950 | 2020 |
| BEN          | Benin                            | 1959 | 2020 |  | IRL          | Ireland             | 1950 | 2020 |  | POL          | Poland                | 1950 | 2020 |
| BFA          | Burkina Faso                     | 1959 | 2020 |  | IRN          | Iran                | 1950 | 2020 |  | PRK          | North Korea           | 1950 | 2010 |
| BGD          | Bangladesh                       | 1971 | 2010 |  | IRQ          | Iraq                | 1950 | 2010 |  | PRT          | Portugal              | 1950 | 2020 |
| BGR          | Bulgaria                         | 1950 | 2020 |  | ISL          | Iceland             | 1950 | 2020 |  | PRY          | Paraguay              | 1950 | 2010 |
| BHR          | Bahrain                          | 1971 | 2010 |  | ISR          | Israel              | 1950 | 2020 |  | QAT          | Qatar                 | 1971 | 2020 |
| BHS          | Bahamas                          | 1973 | 2010 |  | ITA          | Italy               | 1950 | 2020 |  | ROU          | Romania               | 1950 | 2020 |
| BIH          | Bosnia and Herzegovina           | 1992 | 2020 |  | JAM          | Jamaica             | 1962 | 2020 |  | RUS          | Russia                | 1950 | 2020 |
| BLR          | Belarus                          | 1991 | 2020 |  | JOR          | Jordan              | 1950 | 2020 |  | RWA          | Rwanda                | 1962 | 2010 |
| BLZ          | Belize                           | 1973 | 2010 |  | JPN          | Japan               | 1950 | 2020 |  | SAU          | Saudi Arabia          | 1950 | 2020 |
| BOL          | Bolivia                          | 1950 | 2020 |  | KAZ          | Kazakhstan          | 1991 | 2020 |  | SDN          | Sudan                 | 1956 | 2010 |
| BRA          | Brazil                           | 1950 | 2020 |  | KEN          | Kenya               | 1963 | 2020 |  | SEN          | Senegal               | 1959 | 2020 |
| BRB          | Barbados                         | 1965 | 2020 |  | KGZ          | Kyrgyzstan          | 1990 | 2020 |  | SGP          | Singapore             | 1965 | 2020 |
| BRN          | Brunei                           | 1984 | 2010 |  | KHM          | Cambodia            | 1953 | 2010 |  | SLB          | Solomon Islands       | 1978 | 2010 |
| BTN          | Bhutan                           | 1950 | 2010 |  | KIR          | Kiribati            | 1979 | 2010 |  | SLE          | Sierra Leone          | 1961 | 2010 |
| BWA          | Botswana                         | 1966 | 2010 |  | KNA          | St. Kitts and Nevis | 1968 | 2010 |  | SLV          | El Salvador           | 1950 | 2020 |
| CAF          | Central African Republic         | 1959 | 2020 |  | KOR          | South Korea         | 1950 | 2020 |  | SMR          | San Marino            | 1991 | 2010 |
| CAN          | Canada                           | 1950 | 2020 |  | KSV          | Kosovo              | 2004 | 2020 |  | SOM          | Somalia               | 1960 | 2010 |
| CHE          | Switzerland                      | 1950 | 2020 |  | KWT          | Kuwait              | 1953 | 2020 |  | STP          | Sao Tome and Principe | 1975 | 2010 |
| CHL          | Chile                            | 1950 | 2020 |  | LAO          | Laos                | 1953 | 2020 |  | SUR          | Suriname              | 1975 | 2010 |
| CHN          | China                            | 1950 | 2020 |  | LBN          | Lebanon             | 1950 | 2010 |  | SVK          | Slovakia              | 1992 | 2020 |
| CIV          | Ivory Coast                      | 1959 | 2020 |  | LBR          | Liberia             | 1950 | 2010 |  | SVN          | Slovenia              | 1992 | 2020 |
| CMR          | Cameroon                         | 1960 | 2020 |  | LBY          | Libya               | 1951 | 2010 |  | SWE          | Sweden                | 1950 | 2020 |
| COD          | Democratic Republic of the Congo | 1960 | 2010 |  | LCA          | St. Lucia           | 1968 | 2010 |  | SYC          | Seychelles            | 1976 | 2010 |
| COG          | Congo                            | 1959 | 2010 |  | LIE          | Liechtenstein       | 1972 | 2010 |  | SYR          | Syria                 | 1950 | 2020 |
| COL          | Colombia                         | 1950 | 2020 |  | LKA          | Sri Lanka           | 1950 | 2020 |  | TCD          | Chad                  | 1959 | 2010 |
| COM          | Comoros                          | 1975 | 2010 |  | LSO          | Lesotho             | 1966 | 2010 |  | TGO          | Togo                  | 1960 | 2010 |
| CRI          | Costa Rica                       | 1950 | 2020 |  | LTU          | Lithuania           | 1991 | 2020 |  | THA          | Thailand              | 1950 | 2020 |
| CUB          | Cuba                             | 1950 | 2010 |  | LUX          | Luxembourg          | 1950 | 2020 |  | TJK          | Tajikistan            | 1991 | 2020 |
| CYP          | Cyprus                           | 1960 | 2020 |  | LVA          | Latvia              | 1991 | 2020 |  | TKM          | Turkmenistan          | 1991 | 2010 |
| CZE          | Czech Republic                   | 1992 | 2020 |  | MAR          | Morocco             | 1956 | 2020 |  | TON          | Tonga                 | 1975 | 2010 |

|     |                    |      |      |  |     |                  |      |      |  |     |                                |      |      |
|-----|--------------------|------|------|--|-----|------------------|------|------|--|-----|--------------------------------|------|------|
| DEU | Germany            | 1990 | 2020 |  | MCO | Monaco           | 1963 | 2010 |  | TTO | Trinidad and Tobago            | 1962 | 2020 |
| DJI | Djibouti           | 1977 | 2020 |  | MDA | Moldova          | 1991 | 2020 |  | TUN | Tunisia                        | 1950 | 2020 |
| DMA | Dominica           | 1968 | 2010 |  | MDG | Madagascar       | 1960 | 2020 |  | TUR | Turkey                         | 1950 | 2020 |
| DNK | Denmark            | 1950 | 2020 |  | MDV | Maldives         | 1965 | 2010 |  | TUV | Tuvalu                         | 1979 | 2010 |
| DOM | Dominican Republic | 1950 | 2020 |  | MEX | Mexico           | 1950 | 2020 |  | TWN | Taiwan                         | 1950 | 2020 |
| DZA | Algeria            | 1962 | 2020 |  | MHL | Marshall Islands | 1991 | 2010 |  | TZA | Tanzania                       | 1961 | 2020 |
| ECU | Ecuador            | 1950 | 2010 |  | MKD | Macedonia        | 1993 | 2020 |  | UGA | Uganda                         | 1962 | 2010 |
| EGY | Egypt              | 1950 | 2020 |  | MLI | Mali             | 1959 | 2020 |  | UKR | Ukraine                        | 1991 | 2020 |
| ERI | Eritrea            | 1993 | 2010 |  | MLT | Malta            | 1964 | 2020 |  | URY | Uruguay                        | 1950 | 2020 |
| ESP | Spain              | 1950 | 2020 |  | MMR | Myanmar          | 1950 | 2010 |  | USA | United States of America       | 1950 | 2020 |
| EST | Estonia            | 1991 | 2020 |  | MNE | Montenegro       | 2006 | 2020 |  | UZB | Uzbekistan                     | 1991 | 2020 |
| ETH | Ethiopia           | 1950 | 2020 |  | MNG | Mongolia         | 1950 | 2020 |  | VCT | St. Vincent and the Grenadines | 1968 | 2010 |
| FIN | Finland            | 1950 | 2020 |  | MOZ | Mozambique       | 1975 | 2010 |  | VEN | Venezuela                      | 1950 | 2020 |
| FJI | Fiji               | 1970 | 2020 |  | MRT | Mauritania       | 1959 | 2010 |  | VNM | Vietnam                        | 1954 | 2020 |
| FRA | France             | 1950 | 2020 |  | MUS | Mauritius        | 1968 | 2020 |  | VUT | Vanuatu                        | 1981 | 2010 |
| GAB | Gabon              | 1959 | 2020 |  | MWI | Malawi           | 1964 | 2020 |  | WSM | Samoa                          | 1975 | 2010 |
| GBR | United Kingdom     | 1950 | 2020 |  | MYS | Malaysia         | 1957 | 2020 |  | YEM | Yemen                          | 1990 | 2010 |
| GEO | Georgia            | 1991 | 2020 |  | NAM | Namibia          | 1990 | 2020 |  | ZAF | South Africa                   | 1950 | 2020 |
| GHA | Ghana              | 1957 | 2010 |  | NER | Niger            | 1959 | 2010 |  | ZMB | Zambia                         | 1964 | 2020 |
| GIN | Guinea             | 1958 | 2010 |  | NGA | Nigeria          | 1960 | 2010 |  | ZWE | Zimbabwe                       | 1950 | 2020 |

**Table B2: Coverage of Countries and Years for Tables 5**

| Country code | country        | From | Till |  | Country code | country      | From | Till |
|--------------|----------------|------|------|--|--------------|--------------|------|------|
| ARG          | Argentina      | 2005 | 2008 |  | JPN          | Japan        | 2005 | 2020 |
| AUS          | Australia      | 2005 | 2020 |  | KOR          | South Korea  | 2005 | 2020 |
| AUT          | Austria        | 2005 | 2020 |  | LTU          | Lithuania    | 2009 | 2020 |
| BEL          | Belgium        | 2005 | 2020 |  | LVA          | Latvia       | 2014 | 2020 |
| BRA          | Brazil         | 2005 | 2020 |  | MEX          | Mexico       | 2005 | 2020 |
| CAN          | Canada         | 2005 | 2020 |  | NLD          | Netherlands  | 2005 | 2020 |
| CHE          | Switzerland    | 2005 | 2020 |  | NOR          | Norway       | 2005 | 2020 |
| CHL          | Chile          | 2008 | 2020 |  | NZL          | New Zealand  | 2005 | 2020 |
| COL          | Colombia       | 2015 | 2020 |  | PAK          | Pakistan     | 2010 | 2016 |
| CZE          | Czech Republic | 2006 | 2020 |  | PHL          | Philippines  | 2016 | 2020 |
| DEU          | Germany        | 2005 | 2020 |  | POL          | Poland       | 2005 | 2020 |
| DNK          | Denmark        | 2005 | 2017 |  | PRT          | Portugal     | 2005 | 2020 |
| ESP          | Spain          | 2005 | 2020 |  | ROU          | Romania      | 2015 | 2020 |
| FIN          | Finland        | 2005 | 2018 |  | RUS          | Russia       | 2005 | 2020 |
| FRA          | France         | 2005 | 2020 |  | SGP          | Singapore    | 2015 | 2020 |
| GRC          | Greece         | 2005 | 2020 |  | SVK          | Slovakia     | 2006 | 2011 |
| HUN          | Hungary        | 2006 | 2014 |  | SWE          | Sweden       | 2005 | 2019 |
| IDN          | Indonesia      | 2012 | 2020 |  | TUR          | Turkey       | 2011 | 2020 |
| IND          | India          | 2014 | 2019 |  | TWN          | Taiwan       | 2010 | 2020 |
| IRL          | Ireland        | 2005 | 2018 |  | VNM          | Vietnam      | 2010 | 2020 |
| ISR          | Israel         | 2005 | 2020 |  | ZAF          | South Africa | 2005 | 2020 |
| ITA          | Italy          | 2005 | 2020 |  |              |              |      |      |

## Appendix C

**Table C1: Effect on Budget Size of Competition Agencies**

| VARIABLES                      | (1)<br>Budget<br>Size | (2)<br>Budget<br>Size | (3)<br>Budget<br>Size | (4)<br>Budget<br>Size | (5)<br>Budget<br>Size | (6)<br>Budget<br>Size |
|--------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <b>WTO<sub>it+1</sub></b>      | -0.537<br>(3.016)     | -0.514<br>(3.015)     | -0.542<br>(3.097)     | -0.191<br>(2.908)     | -0.168<br>(2.890)     | -0.232<br>(2.890)     |
| <b>WTO<sub>it+2</sub></b>      | 0.705<br>(2.490)      | 0.890<br>(2.493)      | 0.844<br>(2.558)      | -0.0122<br>(2.417)    | 0.385<br>(2.406)      | 0.432<br>(2.407)      |
| <b>WTO<sub>it+3</sub></b>      | 0.185<br>(1.098)      | 0.119<br>(1.098)      | 0.237<br>(1.130)      | 0.485<br>(1.089)      | 0.189<br>(1.095)      | 0.185<br>(1.095)      |
| <b>WTO<sub>it</sub></b>        | 0.131<br>(3.025)      | 0.0737<br>(3.023)     | 0.192<br>(3.106)      | -0.195<br>(2.918)     | -0.309<br>(2.901)     | -0.310<br>(2.902)     |
| <b>WTO<sub>it-1</sub></b>      | -0.752<br>(3.042)     | -0.787<br>(3.040)     | -0.629<br>(3.127)     | -0.626<br>(2.931)     | -0.606<br>(2.912)     | -0.532<br>(2.917)     |
| <b>WTO<sub>it-2</sub></b>      | 0.635<br>(3.043)      | 0.629<br>(3.040)      | 0.504<br>(3.126)      | 1.267<br>(2.934)      | 1.213<br>(2.915)      | 1.115<br>(2.918)      |
| <b>WTO<sub>it-3</sub></b>      | -0.378<br>(2.479)     | -0.497<br>(2.479)     | 0.154<br>(2.584)      | -1.671<br>(2.401)     | -1.641<br>(2.394)     | -1.072<br>(2.432)     |
| <b>CRISIS<sub>it+1</sub></b>   | 0.0835<br>(0.332)     | 0.110<br>(0.332)      | 0.0999<br>(0.342)     | 0.200<br>(0.379)      | 0.234<br>(0.378)      | 0.222<br>(0.379)      |
| <b>CRISIS<sub>it+2</sub></b>   | -0.0799<br>(0.355)    | -0.0931<br>(0.355)    | -0.0728<br>(0.365)    | -0.0979<br>(0.399)    | -0.135<br>(0.397)     | -0.148<br>(0.399)     |
| <b>CRISIS<sub>it+3</sub></b>   | -0.0656<br>(0.347)    | -0.137<br>(0.356)     | -0.0635<br>(0.358)    | -0.195<br>(0.402)     | -0.258<br>(0.400)     | -0.235<br>(0.402)     |
| <b>CRISIS<sub>it</sub></b>     | 0.0331<br>(0.309)     | 0.0154<br>(0.310)     | 0.0638<br>(0.319)     | 0.299<br>(0.354)      | 0.284<br>(0.353)      | 0.314<br>(0.353)      |
| <b>CRISIS<sub>it-1</sub></b>   | -0.368<br>(0.306)     | -0.382<br>(0.307)     | -0.340<br>(0.319)     | -0.369<br>(0.355)     | -0.396<br>(0.354)     | -0.397<br>(0.353)     |
| <b>CRISIS<sub>it-2</sub></b>   | -0.426<br>(0.318)     | -0.413<br>(0.318)     | -0.440<br>(0.328)     | -0.701*<br>(0.364)    | -0.719**<br>(0.363)   | -0.702*<br>(0.362)    |
| <b>CRISIS<sub>it-3</sub></b>   | 0.616**<br>(0.312)    | 0.668**<br>(0.314)    | 0.630*<br>(0.322)     | 0.906**<br>(0.360)    | 1.033***<br>(0.362)   | 1.052***<br>(0.362)   |
| <b>WGI<sub>it+1</sub></b>      | 4.353<br>(2.674)      | 4.487*<br>(2.673)     | 4.367<br>(2.746)      | 5.555**<br>(2.592)    | 5.611**<br>(2.576)    | 5.501**<br>(2.576)    |
| <b>WGI<sub>it+2</sub></b>      | -3.497<br>(2.305)     | -3.369<br>(2.312)     | -3.462<br>(2.368)     | -3.425<br>(2.272)     | -2.944<br>(2.283)     | -2.956<br>(2.280)     |
| <b>WGI<sub>it+3</sub></b>      | 0.0648<br>(0.686)     | 0.0477<br>(0.693)     | 0.0516<br>(0.708)     | 0.618<br>(0.681)      | 0.498<br>(0.681)      | 0.529<br>(0.678)      |
| <b>WGI<sub>it</sub></b>        | 0.102<br>(2.524)      | 0.134<br>(2.526)      | 0.221<br>(2.597)      | 0.404<br>(2.450)      | 0.123<br>(2.437)      | 0.264<br>(2.442)      |
| <b>WGI<sub>it-1</sub></b>      | -3.512<br>(2.450)     | -3.406<br>(2.460)     | -3.446<br>(2.519)     | -3.687<br>(2.367)     | -3.884<br>(2.366)     | -3.809<br>(2.364)     |
| <b>WGI<sub>it-2</sub></b>      | 1.771<br>(2.412)      | 1.955<br>(2.415)      | 1.767<br>(2.477)      | 1.317<br>(2.346)      | 1.485<br>(2.344)      | 1.381<br>(2.332)      |
| <b>WGI<sub>it-3</sub></b>      | 1.326<br>(1.907)      | 1.616<br>(1.912)      | 1.376<br>(1.960)      | 2.299<br>(1.890)      | 2.875<br>(1.894)      | 2.791<br>(1.897)      |
| <b>Population</b>              |                       | 0.0201*<br>(0.0105)   | 0.0163*<br>(0.00965)  |                       | 0.103**<br>(0.0435)   | 0.101**<br>(0.0434)   |
| <b>Services GDP share (%?)</b> |                       |                       | -0.181<br>(0.163)     |                       |                       | -0.119<br>(0.177)     |



|                             |                   |                     |                   |                  |                   |                     |
|-----------------------------|-------------------|---------------------|-------------------|------------------|-------------------|---------------------|
| <b>Industrial GDP share</b> |                   |                     | -0.188<br>(0.155) |                  |                   | -0.162<br>(0.158)   |
| <b>Per capita GDP</b>       |                   | -0.0249<br>(0.0338) |                   |                  |                   | -0.0261<br>(0.0394) |
| <b>Constant</b>             | 0.0196<br>(14.09) | 0.288<br>(13.93)    | -2.430<br>(15.48) | 0.297<br>(2.020) | -0.843<br>(2.202) | -4.442<br>(3.807)   |
| Country FE                  | NO                | NO                  | NO                | YES              | YES               | YES                 |
| Year FE                     | NO                | NO                  | NO                | YES              | YES               | YES                 |
| No of Countries             | 43                | 43                  | 43                | 43               | 43                | 43                  |
| Observations                | 430               | 430                 | 430               | 430              | 430               | 430                 |
| Number of id_countrycode    | 43                | 43                  | 43                | 43               | 43                | 43                  |

Note: Conventional, plain standard errors are shown in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1, We also included the following variables: dummy variable for missing population variable; dummy variable for missing services GDP share, and dummy variable for missing industrial GDP share.