THE EFFECTIVENESS OF COMPETITION LAW IN PROMOTING ECONOMIC DEVELOPMENT

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—Abstract —

Enforcement of competition law can promote economic development in developing countries. Competition law can stimulate economic development through its impact on intensity of competition and through a signaling effect to investors and entrepreneurs. There is evidence that a country that has enacted and applied a competition law has on average a higher GDP per capita than a country without a competition law. This quantitative impact is half as large as the impact of an institutional variable such as rule of law. The characteristics of competition law also matter. *De facto* independence of the competition agencies and the substantive contents of the law matter for economic development.

Key Words: *Competition law, Economic development, Competition policy*
JEL Classification: *K21, O17, O4*

1. INTRODUCTION

1.1 Objective of paper

Most papers have attempted to assess the impact of competition, rather than competition law per se, on measures of economic development such as economic growth and total factor productivity growth but with mixed results (Krakowski, 2005; Voigt, 2006). The premise of this paper is to investigate whether and how competition law impact on economic development. We borrow from the analytical framework of Krakowski (2005) to investigate whether the existence and effective application of competition law promote economic development, as measured by economic growth. First the analytical framework is presented,

followed by the model and finally the estimation results from the model are discussed.

2. ANALYTICAL FRAMEWORK AND ESTIMATION RESULTS

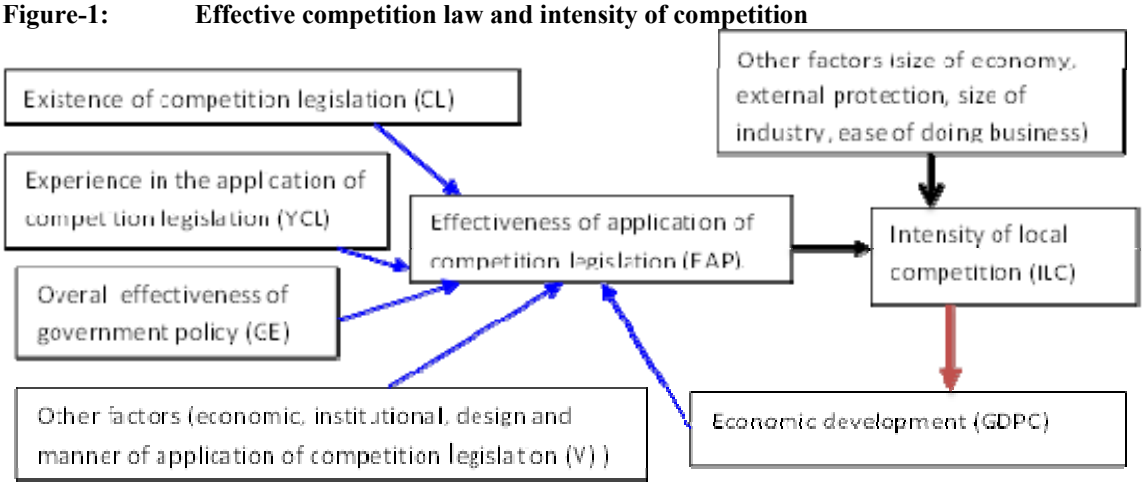
2.1. Competition law, intensity of competition and economic development

The methodological framework of this paper is reflected in Figure 1 based on Krakowski (2005). It is posited that the effectiveness of competition policy in promoting competition depends not only on whether a competition law exists (CL) but also on how effectively the competition legislation is applied (EAP). The effectiveness of application of competition legislation (EAP) depends on several factors (Krakowski, 2005). In case a competition law exists, it is easier to apply competition legislation if institutional structures, such as a competition agency, are created to accompany the implementation of the law. EAP also increases with the experience of the competition agency reflecting the number of years the competition law is applied (YCL). Furthermore, it is assumed that such competition legislation is more effectively applied in countries where governments have a good track record of applying policies and ensuring an effective application of laws in general. The greater the effectiveness of government (GE), the greater is the expected EAP (Krakowski, 2005). Similarly, the stronger the rule of law (RULELAW) and the lesser the extent of corruption (CORRUPTION) in the country, the stronger is the expected EAP.

How effectively competition legislation is applied is likely to depend on whether governments are also actively pursuing trade and industrial policies and whether such policies conflict or not with the objectives of stronger competition. In countries with an open trade regime (TRADE), it is expected that exposure of domestic firms to foreign competition will strengthen EAP, as foreign competitors are likely to report anti-competitive practices in the country to competition authorities. In countries pursuing industrial policies or where the industrial sector is large and commands special attention from government (INDUSTRY), it is expected that EAP may be weakened to secure industrial objectives. How effective laws including competition law is applied can also depend on a country's level of economic development (GDPC) with more developed countries being more effective at applying laws due to greater capacities and resources. EAP can also depend on the design and contents of the law itself (V). For instance,

competition agencies that operate independently from government have greater scope in applying the law without undue political interference.

Figure-1: Effective competition law and intensity of competition



Source: Author: 2013, based on Krakowski: 2005: 6

2.2. The model

Equation 1 below describes how EAP can be explained by variables CL, YCL, GDPC, GE, RULELAW, CORRUPTION, TRADE, INDUSTRY and V, representing respectively a dummy variable for the existence of competition law, number of years competition legislation has been applied, GDP per capita as a measure of economic development, measures reflecting government effectiveness, strength in the enforcement of the rule of law, extent of corruption, openness to trade, size of industrial sector in the economy and characteristics of competition law and its operational framework. It is to be noted that the model allows for an effective application of competition legislation even if a competition law does not formally exist (CL=0). The rationale here is that even if no competition law exists, there may be other policies that perform the same pro-competition role as a competition law, for instance sectoral competition policies (Krakowski, 2005).

(1) $EAP = \alpha_0 + \alpha_1 GE + \alpha_2 CL + \alpha_3 YCL + \alpha_4 GDPC + \alpha_5 RULELAW + \alpha_6 CORRUPTION + \alpha_7 TRADE + \alpha_8 INDUSTRY + \alpha_9 V$

(2) $ILC = \beta_0 + \beta_1 EAP + \beta_2 GDP + \beta_3 TAXTRADE + \beta_4 INDUSTRY + \beta_5 GOVT$

(3) $GDPC = \gamma_0 + \gamma_1 ILC + \gamma_2 RULELAW + \gamma_3 CORRUPTION + \gamma_4 TELEPHONE + \gamma_5 M2GDP + \gamma_6 GCF + \gamma_7 POPDEN + \gamma_8 LIFEEXPEC + \gamma_9 TRADE + \gamma_{10} INDUSTRY + \gamma_{11} DOMCREDIT + \gamma_{12} GOVT + \gamma_{13} CL$

Where GDP = Gross domestic product at constant US dollars
GDPC = Gross domestic product per capita at constant US dollars
The expected priors are that:
$\alpha_1 > 0$, $\alpha_2 > 0$, $\alpha_3 > 0$, $\alpha_4 > 0$, $\alpha_5 > 0$, $\alpha_6 > 0$, $\alpha_7 > 0$, $\alpha_8 < 0$, α_9 ?
$\beta_1 > 0$, $\beta_3 < 0$, $\beta_4 < 0$, $\beta_5 < 0$, β_2 ?
$\gamma_1, \gamma_2, \gamma_3, \gamma_4, \gamma_5, \gamma_6, \gamma_8, \gamma_9, \gamma_{10}, \gamma_{11}, \gamma_{13} > 0$, $\gamma_{12} < 0$, γ_7 ?

It is then posited that the intensity of competition in local markets (ILC) in the country depends among others on EAP (Equation 2). As proposed by Krakowski (2005), the ILC will also be influenced by other factors that can represent competition policy in a broader sense. Such factors include the size of the economy as measured by Gross Domestic Product (GDP). In larger economies where significant scale economies in production exist, there may be scope to support a greater number of firms in a given sector, such that local competition is more intense. On the other hand, it may be more viable and feasible in a large economy to pursue protectionist policies, as compared to a small economy, in order to create national champions and support industrialization though such policies may distort the competitive process. Whether larger economies face more or less intensive competition in the local markets is thus unclear. Other factors that can influence ILC include government policies such as industrial policies (INDUSTRY) subordinating competition policies and government interference in the economy (GOVT) that creates distortions to the competitive process such as in the case of subsidies. ILC also depends on the level of protection afforded to local enterprises by restricting international competition. For instance, the height of taxes on international trade (TAXTRADE) determines the level of protection given to the local industry and intensity of competition on local markets. The higher the taxes, the more shielded local industry is from international competition and the lower is ILC.

The final assumption is that ILC is a driver of economic development, measured here by improvements in standard of living, which in turn is captured by increases in GDP per capita (GDPC) (that is economic growth). In line with standard economic theory, we recognize 4 sources of economic development, namely investment or physical capital accumulation, financial development such as financial depth, increased trade and other economic policies such as policies promoting human capital accumulation, institutional reform and private sector development (Sala-i-Martin et al, 2000; Acemoglu et al, 2001; Freund and Bolaky, 2008). We include in the GDPC equation (Equation 3) a set of variables

reflecting investment – measured both by gross capital formation in GDP (GCF) and by infrastructure development such as telephone mainlines (TELEPHONE). Population density (POPDEN) is added as a further proxy variable that can reflect availability of facilities and infrastructure that are conducive to economic activity. The quality of institutions and institutional reform as drivers of economic growth are captured by including in the GDPC equation measures for the strength of rule of law (RULELAW) and extent of corruption (CORRUPTION). Financial development is captured by a measure reflecting financial depth, namely Money (M2) as a share of GDP, which is regularly used in the economic growth literature. Openness to trade (TRADE) is added as a driver of economic growth and economic development. The share of industry in GDP (INDUSTRY) is included both to reflect the pursuit of past industrial policies and the degree of industrial development, the latter has been recognized by economists as a major driver of structural transformation and economic development (Szirmai, 2009). Life expectancy (LIFEEXPEC) is added as a variable that captures access to health by the local population, a determinant of standard of living. In the economics literature, life expectancy at birth is also used as a proxy for returns to human capital accumulation; the longer the life expectancy, the greater the incentives to invest in human capital formation. The availability of domestic credit to the private sector (DOMCREDIT) is included to measure ease of access of the private sector to finance. Enterprises in the private sector require access to credit to undertake economic activities that in turn create jobs and incomes. Government expenditure as a share of GDP (GOVT) is added to reflect the impact of government policies on economic development including the impact of potential distortions to economic activity.

The major premise of this paper is that competition law promotes economic development. This hypothesis is tested by adding ILC as a determinant to the GDPC equation. Competition on its own can promote economic development through its impact on efficiency and productivity. To the extent that competition law and its effective application influence the intensity of local competition, it impacts directly on economic development through competition. The indirect impact of competition law on economic development takes place through other levers of economic development. The dummy variable for competition law (CL) is added as well to the GDPC equation to capture any impact that the existence and enforcement of competition law can have on economic development other than through the channel of intensity of competition. For instance the existence of a competition law can have a *signaling* effect, independent of its real effect on the

competitive process. It can lower entrepreneurs' perceived risks and uncertainty about the general economic environment, with a stimulating effect on economic activity and economic development. In the absence of competition legislation, a firm's rivals can engage in anti-competitive practices without any penalties and such practices can lower the firm's returns from investing, innovating and producing, and subsequently lower the firm's rate of investment, innovation and production. The existence of a competition law can alter entrepreneurs' expectations or perceptions about future profits with real effects on the rate of investment and innovation and ultimately on economic growth.

Given that EAP, ILC and GDP per capita are simultaneously or contemporaneously determined, Equations 1 to 3 needs to be estimated under three-stage least squares. The estimation sample of this paper consists of 141 countries for years 1998-2000, 2002, 2004-2005 and 2007-2010 for a total of 10 years. Following Krakowski (2005), we use the World Economic Forum perceptions index on "the effectiveness of anti-trust policy" as a measure of EAP and the perceptions index on "competition in the local market is intense" as a measure of ILC. These measures are collected from opinion surveys and are scaled from 1 to 7, with higher values representing stronger agreement with the statements. Data from the World Bank Governance indicators are used to measure RULELAW and CORRUPTION. The dummy variable on the existence of competition law (CL) was constructed by the author, and takes a value of 1 as from the year a competition law was enacted in the country. It is assumed that the law is effectively applied as from the date of enactment. The variable YCL is constructed as the difference between current year and year of enactment of competition law and is a proxy for the number of years of experience of competition authorities. We use the 4 competition policy variables constructed by Voigt (2006) based on objective data as measures of the characteristics, design and contents of competition law (V). These 4 variables represent (i) substantive content of competition laws (V1) (ii) the degree to which the laws incorporate an economic approach (V2) (iii) formal independence of competition agencies (V3) and (iv) factual independence of competition agencies (V4). All other variables are measured using objective data from the World Bank Development Indicators. The model is also augmented with dummy variables for the regions of Africa, Asia-Pacific, Latin America and the Caribbean, the Arab world and transition economies. The omitted category consists mainly of North America and Western European countries. Yearly dummy variables are also included to control for

business cycle effects. The estimation sample includes both countries that have competition law and those do not.

2.3. Estimation Results

The estimation results under three-stage least squares (3SLS) are reported in Tables 1 and 2 under column heading 3SLS-1. There is evidence at a 5% level of significance that EAP is enhanced by government effectiveness, years of experience in applying competition law, good governance such as strong rule of law as well as by the factual independence of competition agencies. It is the *de facto* rather than *de jure* independence of the competition agency that matters for an effective application of competition law. The existence of a competition law per se has a positive impact on EAP but the result is not significant. On the other hand, the level of economic development of a country, as measured by GDP per capita seems to be negatively correlated with how effective the application of the law is. This can be interpreted as indicating that in lesser developed countries there is greater scope for applying the law effectively in the sense of obtaining larger gains for the economy. Under 3SLS, there is evidence at a 5% level that the effectiveness of application of competition law is the sole non-fixed factor that drives intensity of competition in local markets. Openness to international competition is not a significant factor. Competition law is more effectively applied in Asian and Transition economies as compared to all other regions. In the GDPC equation, under 3SLS, all the coefficients have the expected sign in line with the standard predictions from economic theory, except for openness to trade which has a negative significant impact on standard of living. Good governance, financial depth, good infrastructure and industrial development are found to be significant drivers of economic development while as expected government consumption depresses economic development. An important result here is the positive, significant and large impact of competition law *per se* on economic development, independent of its impact on intensity of local competition. The dummy variable CL is significant at even a 1% level of significance and has the largest positive coefficient of all the variables (excluding regional and yearly dummy variables and rule of law). We find evidence that a country that has enacted and applied a competition law has on average a higher GDP per capita (by $1,585) than a country without a competition law. This quantitative impact is half as large as the impact of an institutional variable such as rule of law. Intensity of local competition has a positive effect on standard of living but the result is significant only at a 10% level. These results seem to imply that the application of a competition law can raise economic development not only through its effect on

competition but also through a signaling effect towards investors and entrepreneurs. Once the intensity of local competition is controlled for, there is no evidence that an investment variable such as the share of gross capital formation in GDP is significant for economic development. It is possible that the impact of investment on GDP per capita is being captured already in both the competition variables and the proxies for infrastructure (TELEPHONE and POPDEN). An important caveat to the estimation so far lies in the use of perception indices to

Table 1 Estimation results under three stage least squares: Equations 1 and 2

EAP equation	**3SLS-1**	**3SLS-2**	**3SLS-3**	**3SLS-4**	**ILC equation**	**3SLS-1**	**3SLS-2**	**3SLS-3**	**3SLS-4**
Variables	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**		**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
GE	0.131**	0.673**	0.934**	0.621**	EAP	0.610**	0.608**	0.775**	0.629**
CL	0.106	0.008	0.054	-0.035	GDP	6.48e-14	8.48e-14	-7.78e-14	7.36e-14
YCL	0.002**	0.003**	0.038**	0.004**	DUMASIA	0.201**	0.208**	0.204	0.121
GDPC	0.000**	-0.000**	-0.000**	-0.000**	DUMLAC	-0.036	-0.033	-0.240*	-0.078
DUMASIA	0.123*	0.201	0.264	0.058	DUMTRANS	0.293**	0.300**	-0.012	0.250**
DUMLAC	0.144	.0146	0.410**	-0.114	DUMARAB	-0.131	-.0121	-0.430**	-0.179
DUMTRANS	0.172**	-0.920**	-0.667**	-1.446**	DUMAFRICA	0.082	0.095	-0.079	0.130
DUMARAB	0.168	-0.027	-.0103	-0.256	YR1999	-0.169	-0.168	-0.164	-0.144
DUMAFRICA	0.161	-0.018	-0.048	-0.411*	YR2000	-0.039**	-0.039**	-0.315**	-0.362**
YR1999	0.154	0.175	0.157	0.104	YR2002	-0.296**	-0.295**	-0.170	-0.254**
YR2000	0.155	0.071	0.008	0.039	YR2004	-0.186*	-0.185*	-.0134	-0.140
YR2002	0.137	0.0337	-0.153	-0.001	YR2005	-0.021**	-0.200**	-0.140	-0.158
YR2004	0.129	0.086	-0.067	0.052	YR2007	-0.052	-0.053	0.008	-0.005
YR2005	0.130**	0.272**	0.071	0.255*	YR2008	0.104	0.103	0.156	0.154
YR2007	0.133**	0.341**	0.119	0.311**	YR2009	0.043	0.044	0.056	0.096
YR2008	0.134**	0.274**	0.005	0.226	YR2010	Dropped	Dropped	Dropped	Dropped
YR2009	0.135	0.222*	-0.058	0.140	TAXTRADE	0.005	0.004	0.001	0.010*
YR2010	Dropped	Dropped	Dropped	Dropped	INDUSTRY	-0.002	-0.002	-0.007*	0.012*
RULELAW	0.154**	0.601**	0.961**	0.841**	GOVT	-0.001	-0.002	0.010	0.004
CORRUPTION	0.126	-0.127	-0.051**	-0.302**	Intercept	2.390**	2.413**	1.990**	1.780**
TRADE	0.001	0.000	-0.003*	0.004**	R Square	0.752	0.753	0.697	0.726
INDUSTRY	0.004	-0.004	0.000	-0.030**	No of Observations	239	239	177	239
V1	0.197	0.064	0.042	0.598**					
V2	0.141	-0.166	-0.026	-0.132					
V3	0.296	-0.006	-0.0417	-0.094					
V4	0.187**	0.969**	0.867**	1.188**					
Intercept	0.213**	3.729**	4.140**	4.531**					
R Square	0.839	0.800	0.579	0.719					
No of Observations	239	239	177	239					

**significant at a 5% level *significant at a 10% level. INDUSTRY and TRADE are lagged by one year. V1 to V4 were computed in 2000 and enter as fixed factors.

Table 2 Estimation results under three stage least squares: Equation 3

GDP per capita equation	3SLS-1	3SLS-2	3SLS-3	3SLS-4
Variables	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
ILC	1377.323*	-888.178	1800.281**	2220.796**
RULELAW	3039.078**	5102.681**	927.574*	3029.201**
TELEPHONE	167.335**	138.551**	27.027	131.860**
CORRUPTION	1202.673	186.027	-605.500	987.840
M2GDP	30.662**	23.877*	11.341	37.216**
GCF	13.479	55.210	-1.707	18.295
POPDEN	1.965**	1.861**	1.562**	2.513**
LIFEEXPEC	71.105	66.156	138.383**	103.122
DUMASIA	-4832.059**	-4073.519**	-3061.211**	-5035.231**
DUMLAC	-982.025	-2109.833**	34.318	-852.998
DUMTRANS	-5963.822**	-7943.661**	-403.840	-4870.217**
DUMARAB	-5653.346**	-5811.743**	-2611.253**	-5910.257**
DUMAFRICA	-185.763	-1465.471	1121.248*	-576.134
YR1999	-0.5542	-162.300	-80.217	-55.686
YR2000	731.287	118.765	421.721	1051.300
YR2002	1218.383	855.823	261.779	1431.564
YR2004	1513.587	1493.845*	516.788	1470.819
YR2005	1826.729**	2032.205**	192.217	1715.393*
YR2007	1448.415	1927.018**	-252.169	1141.102
YR2008	923.376	1605.238*	-591.306	398.136
YR2009	339.885	845.591	-837.791**	-247.3803
YR2010	Dropped	Dropped	Dropped	Dropped
TRADE	-24.879**	-15.891**	-8.992**	-37.245**
INDUSTRY	108.681**	67.521**	57.287**	15.531
DOMCREDIT	10.138	6.047	19.248**	14.362
GOVT	-290.030**	-225.729**	-15.820	-329.634**
CL	1584.651**	1311.692*	723.374**	1535.668**
V1	..	3303.401**	..	..
V2	..	328.642	..	..
V3	..	-7833.088**	..	..
V4	..	5640.990**	..	..
Intercept	-8919.015	1802.424	-17580.31**	-10882.39
R Square	0.921	0.936	0.798	0.907
No of Observations	239	239	177	239

**significant at a 5% level *significant at a 10% level. INDUSTRY and TRADE are lagged by one year. V1 to V4 were computed in 2000 and enter as fixed factors.

measure ILC and EAP. In order to confirm the impact of competition law on economic development, which is the major premise of that paper, we estimate the model again using 3SLS and adding the objective competition indicators constructed by Voigt to the GDPC equation. Results are reported under column heading 3SLS-2. At a 5% level of significance, there is evidence that the substantive contents of competition laws and de facto independence of competition agencies can directly positively impact on economic development. The formal independence of competition agencies however has a significant and negative impact on economic development, which is counter-intuitive. The existence of a competition law still positively impact on economic development but the variable is now significant only at a 10% level. The intensity of local competition does not significantly matter for economic development.

2.4. Sensitivity checks

The first sensitivity check consists in estimating the model for a group of developing countries only. The model is estimated for a sample of countries with GDP per capita less than $7,666, which is mean GDP per capita in the whole

sample. The results are reported under column heading 3SLS-3. In the sample of less developed countries, there is evidence even at a 1% level that the enactment of a competition law promotes economic development. There is also evidence at a 1% level that years of experience in applying competition law strengthen the effectiveness of application of the law; the latter significantly raises intensity of local competition, which in turn promotes economic development. In less developed countries, competition law matters for economic development through 2 distinct channels: first through its impact on intensity of competition and second through a signalling effect. In less developed countries, competition and the enforcement of a competition law promote economic development. The second sensitivity check consists in estimating the model with a larger set of endogenous variables. Openness to trade, GDP and share of industry in GDP have so far been treated as exogenous variables and were used as instruments for the endogenous dependent variables. When these 3 explanatory variables are treated as endogenous to the system, there is now evidence for the whole sample of countries at a 1% level that both the intensity of local competition and the enactment of a competition law promote economic development by raising standard of living. The results are reported under column heading 3SLS-4.

3. CONCLUSION

There is empirical evidence to support the claim that competition law promotes economic development, be it through its effect on competition or through a signaling effect towards investors and entrepreneurs or both. The empirical evidence relies on both objective and subjective indicators. It is reasonable to argue that competition law can impact on economic development directly through the efficiency and productivity effects of competition and indirectly through its complementary effects on levers of economic development. The evidence also indicates that the characteristics or design of competition law and its manner of enforcement matter when it comes to promoting economic development. Factors that matter include factual independence of the competition agencies and substantive contents of the law.

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