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Michael W. Nicholson

D. Daniel Sokol

Kyle W. Stiegert

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An Empirical Analysis in Antitrust/Competition Policy**

Michael Nicholson
D. Daniel Sokol
Kyle W. Stiegert¹
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¹ Michael Nicholson, Transylvania University; D. Daniel Sokol, University of Wisconsin-Madison; Kyle W. Stiegert, University of Wisconsin-Madison. Narek Sahakyan provided substantial research assistance for this paper, and Armine Mirzoyan assisted with the data collection. Senior authorship not assigned, authors listed alphabetically. Russ Damtoft, Simon Evenett, William Kovacic, and participants at the 2006 ICN Annual Conference provided helpful suggestions.

Abstract

Effective antitrust is essential to prevent monopolies and cartels from dominating economies and undermining growth and development. Building the capacity of young antitrust institutions in the developing world and in transition economies is a means to improving the capabilities of these agencies to police against anticompetitive conduct. To facilitate the new regulatory order and to constrain retrenchment of these policies, countries increasingly have looked to the implementation/enforcement of antitrust policies through competition agencies. Many nations have augmented their development of competition agencies with technical assistance (TA) support. Determining how best to design TA programs to interact with nascent and financially constrained competition agencies is a difficult and complex matter. The objective of this study is to assess the impacts of the TA-agency partnership. This paper focuses specifically on factors that lead to improved effectiveness of TA as it pertains to improved agency effectiveness. In a field that has been lacking for empirical evaluation, we use a unique dataset of responses from 38 competition agencies that have received technical assistance from the period 1996-2003. Our empirical analysis demonstrates that issues of timing and absorptive capacity of particular forms of technical assistance within a larger political economy consideration maximize the impact and effectiveness of technical assistance provided to competition agencies.

General Field: Law and Economics, International Competition Policy

JEL Classification: L40, L51, O19, K21, F23

Key Words: antitrust law, international policy coordination, international development, regulation, private international law, institutional economics

1. Introduction, Motivation, and Purpose

Effective antitrust is essential to prevent monopolies and cartels from dominating economies and undermining growth and development. Building the capacity of young antitrust institutions in the developing world and in transition economies is a means to improving the capabilities of these agencies to police against anticompetitive conduct. The 1980s and 1990s witnessed a period of rapid global liberalization with nations privatizing over 100,000 firms around the world, particularly in Latin America, East Asia, and the former Soviet block (Nellis and Birdsall, 2005). Countries increasingly abandoned centralized planning and public ownership of companies for market economies and private ownership. As a consequence of this economic structural transformation, countries presently apply legal concepts and tools in regulation that previously had been foreign to them. This application of legal concepts requires setting up an appropriate regulatory framework and disciplines for controlling anti-competitive conduct and eliminating market failures. To facilitate the new regulatory order and to constrain retrenchment of these policies, countries increasingly look to the implementation/enforcement of antitrust policies through competition agencies. Once the purview of only developed countries, antitrust agencies have emerged in dozens of lower income countries.

These young competition agencies face a steep and difficult learning curve. In many cases, new agencies create organizational designs, determine budgets, and hire staff early in the learning process leading to the need for major adjustments later (Krakowski, 2005). Many nations have incorporated formal TA support from developed world institutions that work alongside domestic competition agencies. Several objectives of TA

programs include assisting domestic agencies in resolving design issues, confronting and dealing with emerging international business and legal practices, and providing educational and public consulting to staff and officials making difficult decisions about competition policy implementation (Nicholson, 2005). The dual objectives of most competition agencies are to create a climate that fosters increased efficiency while signaling consistent enforcement of competition laws. Determining how best to design nascent agencies with scarce resources to meet such objectives is a difficult and complex matter.

The degree to which TA programs are successful in assisting competition agencies to reach public policy objectives in rapidly changing and uncertain environment is an important question. The inefficient application of competition policy through ineffective technical assistance or through ineffective allocation of resources within competition agencies is an obstacle to lifting developing countries from poverty. This issue remains under-explored in the existing literature.

A few important studies have emerged to evaluate the role that competition policies have in shaping markets over various institutional conditions (Fingleton, Fox, Neven and Seabright, 1998; Dutz and Vagliasindi, 2000; Evenett, 2002; Kee and Hoekman, 2003; Clarke and Evenett, 2003; Rodriguez 2006; Voigt, 2006). These provide a foundation for empirical analysis of the effectiveness of technical assistance programs emanating from developed-world nations and institutions, but the relative dearth of empirical work in this area has serious consequences for the ability of donor agencies and competition agencies themselves to justify certain types of assistance and to

promote the work of the agencies as being effective both to citizens and to others in government that may resist the need for increased competition policy.

In this paper, we assess the mutual relationship between TA proficiency and its impact on overall recipient antitrust agency performance using survey evidence from recipient agencies.² This evidence suggests that the effectiveness of technical assistance programs improves substantially when both the donor and recipient are sufficiently involved in the setup process. We also find that the presence of long-term advisers working within an agency, as well as certain country characteristics such as per-capita wealth or overall market freedom, leads to improved TA. Conversely, improving the quality of assistance is shown to explain overall improved agency effectiveness.

Section 2 frames the discussion of the perceived effectiveness of antitrust TA within the general field of law and development. It does so particularly with regard to the emergence of competition policy in many jurisdictions and the role played by technical assistance programs. Section 3 describes specifications on the econometric evaluation of these TA programs and the data employed in the analysis. Section 4 presents results, and Section 5 concludes.

2 Competition Policy, Law and Development

A. Agency Factors

The literature directly related to developing/transitioning economy competition policy is quite limited. Voigt (2006) finds that indicators related to competition policy and growth help explain differences in total factor productivity, but that the effects lose

² The survey was conducted within working subgroup of the International Competition Network. Preliminary results, and a short description of the survey data, can be found at Nicholson, Sokol, and Stiegert (2006), http://www.internationalcompetitionnetwork.org/capetown2006/Nicholson_Final_ICN_report.pdf

explanatory power when controlling for the general level of institutional maturity. In an early working paper, Evenett (2006) finds that the relative benefits to various forms of technical assistance depend on the level of development of the recipient agency. For newer agencies or those in countries with low levels of socio-economic development, the most efficient means of conducting technical assistance are through short-term advisers, legislative drafting, and procurement. As agencies mature, the benefits of these forms of TA decline, and the most efficient forms become long-term assistance and study missions/internships abroad. Similarly, the OECD (2005) concludes that donors provided more technical assistance to countries with a relatively developed competition regime, reflecting their ability to incorporate such assistance successfully.

A stable and effective agency is a function of the resources that it has at its disposal. A competition agency requires adequate funding to undertake its competition enhancing mission. Without adequate resources to pay staff, operate the agency and participate in international forums, an agency cannot fulfill its mission (ICN, 2004). An agency also requires people trained in competition policy law and economics. A top staff allows for excellence in case selection and more effective results. When agencies are poorly staffed or understaffed, there is a greater likelihood of pursuing enforcement priorities that lead to errors in mistaken prosecution of pro-competitive conduct or non-prosecution of anti-competitive conduct. These enforcement errors reduce both public and government confidence in the competition agency.

An additional level of infrastructure that promotes learning both inside and outside a competition agency is the human capital of the country. Human capital can be accessed through professional associations, think tanks and civil society groups (Kovacic,

1997). Actively engaged economists and lawyers allow governments to transmit information to firms who do business or plan to business in a country. It also allows for these stakeholders to become more engaged in the competition policy system by increasing knowledge about the procedural and substantive mechanisms. Formal learning can be augmented by membership in various associations.

Membership by a country's lawyers in international legal associations that focus on competition policy such as the International Bar Association or the American Bar Association allow for knowledge diffusion from these organizations. These organizations have frequent conferences in which panelists discuss the latest developments in antitrust law across the major jurisdictions. Both organizations also regularly publish books, newsletters and provide email list-serves to keep members abreast of developments in legal doctrine and economic thinking. The ability of new thinking in the primary centers for antitrust knowledge to diffuse across jurisdictions may speak to the ability of local practitioners to understand competition issues. This, in turn, may be important because such practitioners are the pool from which agencies draw their personnel. To the extent that members look for guidance in their own laws by citing cases and trends within the United States, European Union or other jurisdictions, membership in these international organizations may serve as a proxy for how sophisticated in antitrust thinking and developments the domestic legal community may be.

With the proliferation of competition laws, there has also been significant convergence in the text of the laws adopted. The work performed by academics and international organizations such as the OECD, ICN, World Bank, WTO, and UNCTAD and agency models such as those of the European Union, its Member States, and the

United States have led to a measure of convergence on the purpose, scope, and language of competition law. The adoption of similar laws in many jurisdictions has advantages, particularly in that nascent agencies can benefit from the experience or best practices of more mature institutions in implementing similar laws (Sokol, 2006; Bode and Budzinski, 2005).

B. Country Factors

Competition policy is one part of a larger package of market based policy reforms whose purpose is to promote economic development (WTO, 1998). Sometimes domestic competition policy enforcement is enough to help countries transition from state ownership and significant intervention in the economy to privatization and liberalization. Adequate competition policy enforcement affects domestic competition within a country and the country's own international competitiveness. Clement, Gavil, Korsun and Kovacic (2001) outline the following conditions as principal barriers to the successful implementation of competition policy: limited government resources; history of excessive government regulation; corruption; limited physical infrastructure (such as with underdeveloped transportation or telecommunications capacity); lack of independent judiciary; lack of expertise; and near absence of legal infrastructure necessary to facilitate private sector growth.

What has emerged is that competition policy in a vacuum does not work. As Boner (1995) and Gal (2004) argue, competition policy is just one piece of a larger puzzle, and at best it exists as a complement to more structural reforms such as rule of law and the control of corruption. The interrelationships between various market-based policies, from government procurement to antidumping enforcement to antitrust, require

many similar self-enforcing mechanisms. The underlying culture to support market-based economies and a competitive environment is often a fundamental requirement for support. The standard for interventionist enforcement needs to be higher in countries that lack developed market supporting institutions, although the risk of improper enforcement increases in those regimes.

Increased globalization also increases the possibility for anti-competitive behavior across national borders. Analysis of barriers to entry for new (often foreign) entrants is a central issue for new competition agencies. Competition policy is thus linked in many circumstances around the world with the goals of trade openness and regulatory reform (Jenny, 2002; Bretschger, and Hettich, 2002). Further, increased trade openness creates increased competition-related spillovers beyond jurisdictional boundaries, such as international cartels, international merger control and cross-country monopolization. (Sokol, 2006) The manner in which competition agencies in developing countries address the myriad of issues and problems arising from market access and spillover effects, some purely domestic and others involving international coordination, will set the tone for business activity and economic development for many years.

The first task in producing a functioning competition policy is to create the necessary legal infrastructure. Effective competition policy is predicated on a legal system that works. However, countries operate within different levels of development and mixed degrees of private control. Sometimes private markets may make it more difficult to restructure, while in other cases, only a process of liberalization can effect control. For competition policy to work, the state must create mechanisms constrain

itself from manipulating the system to advantage itself and interest groups (North and Weingast, 1989).

Gilardi (2005) points to the importance of initial structure of an agency's operational and legal structure. Once decisions are made as to the structure of the law and the agency, it becomes more difficult to change the structure of the competition agency and the underlying laws and regulation as the competition policy regime becomes path dependent. Research on independent regulatory agencies suggests a number of applicable factors for competition agencies as to both normative and positive rationales for the establishment of such agencies. In this context, regulatory agencies provide for regulatory flexibility. Agencies can adapt their policies to reflect changed conditions. As agencies are more insulated from politics, it makes agency threats more credible to potential violators. Increased credibility of agencies itself sends a signal to markets that investment decisions will be backed by a credible threat of pro-market enforcement (Levy and Spiller, 1994). A well functioning competition agency leads to greater possibility of a stable and predictable market environment.

The sequencing of legalization of these rights also matters. The property rights regime must be set up and then the regime must be enforced by the courts (Stiglitz, 2002). Many of the aggregated studies in this area find that these factors influence the rate of growth and development (Barro, 1997; Berkowitz, Pistor and Richard, 2003; Kaufmann, Kraay and Zoido-Lobaton, 1999).

The source of law and of the legal tradition impacts a country's ability to synthesize and adopt certain legal forms in its development. That is, the law must be contextualized and adapted to its new environment and the law must be responsive in its

continued development (Berkowitz, Pistor and Richard, 2003). This creates a self-sustaining demand for legal evolution and innovation. Because the demand is internal to the country, this demand will make it more likely that the legal institutions will function to protect statutory legal rights. Similarly, when the transplant does not address societal concerns, this may limit the effectiveness of such institutions (Glaeser and Shleifer, 2002; Djankov, Glaeser, LaPorta, Lopez-de-Silanes and Shleifer, 2003). Previous work that uses the Global Competition Review's rating of competition law agencies, suggests that legal origin has either strong or no statistical impact on the effectiveness of a competition agency (Lee, 2005; Rodriguez, 2006).

Changes in substantive rules only matter if there is adequate enforcement of these rules. This is not limited merely to the judicial system but to administrative and enforcement departments and agencies (Davis and Trebilcock, 2001). This observation has been echoed Murrell (2001), who suggests that a disconnect may exist between statutory legal protections and their implementation by legal institutions. Similarly, evidence suggests that when courts do not understand complex competition issues, they rule based on a highly procedural formalism (ICN, 2006). Even if laws are well drafted, the interpretation of these laws into guiding standards plays an important role. Without well functioning application of rules, the rules may be meaningless because of uncertain and potentially contradictory outcomes. A well conceptualized and implemented commitment to continued technical assistance for young agencies should serve to reduce regulatory and judicial uncertainty and assist agencies to reach pragmatic goals.

3 Methodology and Data

In this study, we are concerned about what determines an effective technical assistance program jointly with TA's impact on recipient agency effectiveness. Specifically, by controlling for the factors that would otherwise determine a young agency's effectiveness at time t , we are able to evaluate statistically the importance of a TA program upon the measured level of agency effectiveness. Our measure of TA effectiveness is determined using data from the 2004/2005 ICN survey of competition agencies.³ The results provide new insights into a growing field that has, heretofore, been drastically lacking in solid empirical evidence.⁴

We begin with a measure of TA perceived effectiveness (TAPE), which is derived from survey responses to the various TA aptitudes and characteristics:

$$(1) \quad TAPE = - \frac{\sum_i^N (8 - R_i)^2}{N},$$

³ The survey was developed over an 18-month period through the ICN Working Subgroup on Technical Assistance Implementation. It is a compilation of nine individual questionnaires designed to collect information about the domestic competition agency and/or perceptions, opinions, and facts about the various TA configurations. It represents an extensive, systematic effort to produce quantifiable evidence on the effectiveness of technical assistance from the perspective of the recipient agencies. The survey was composed by a group consisting of agency representatives (from both developed and developing countries) and non-governmental advisors (such as private-sector lawyers and academics). Survey designers included both the implementers and the recipients of competition policy technical assistance. Because several of these countries operated with more than one TA program supporting a competition office the survey generated 48 usable observations.

⁴ The ICN working subgroup on Technical Assistance Implementation produced preliminary survey evidence which served as the basis of the 2005 ICN Report "Assessing Technical Assistance: Preliminary Results". This report, which can be found at http://www.internationalcompetitionnetwork.org/assessing_technical_assistance.pdf, includes a detailed description of the methodology for the survey.

where R is the i^{th} response with a range integers from 1 (strongly disagree) to 7 (strongly agree) with regard to the level of agreement or disagreement with statements on technical assistance programs.⁵ The statements included:

1. The overall quality of technical assistance provided by the project;
2. The overall quality of the advisers provided by the project;
3. The overall impact of the project on the effectiveness of the Agency in fulfilling its mission or objectives;
4. Resulting improvements in the skill levels of the staff;
5. Resulting improvements in the operations of the Agency due to this project;
6. Resulting improvements in the Agency's ability to conduct competition advocacy due to this project;
7. Resulting improvements in the speed with which cases that are within the agency are resolved;
8. Resulting improvements in the ability of Agency staff to handle complex cases due to this project;
9. Resulting improvements in the ability of the Agency staff to select which cases are given a high priority;
10. Resulting improvements in the ability of the Agency staff to handle new types of cases or violations due to this project;
11. Resulting improvements in the quality of decisions or recommendations rendered by the Agency due to this project; and,

⁵ Initially, we attempted a logarithmic version of TAPE, but this approach generated very limited variability in our measure and compromised the effectiveness of explaining TA efficiency. The approach used in equation 1 was designed to place increasing weight on answers as they dropped below 7. We use a negative number so that TAPE increases in value with an increased perception on improved effectiveness.

12. Resulting improvements in the enforcement of the law due to this project.

TAPE therefore provides a quantitative measure of the effectiveness of various technical assistance programs from the perspective of the recipient agencies. More specifically, it provides information across a wide range of issues related to technical assistance from the perspective of the recipient agencies. This is particularly important given that the survey respondents are the ultimate beneficiaries and implementers of the TA programs.

The surveys include responses to specific outcomes from individual assistance programs. The intent of the survey is overcome the possibility that recipients may advocate for projects that will be skewed towards their institutional interests. The survey provides information on such issues as the ability for staff to handle complex issues, the quality of the decisions, and improvements in the enforcement of the law. Moreover, these questions are isolated from questions about specific projects, encouraging further independence in responses.

As discussed in ICN (2005), answers to survey questions may reflect the preferences of the individual respondents. For example, agency heads (or their equivalents) tended to prefer procurements and national/regional seminars, while the project managers (amongst agency staff) tended to prefer long-term advisers and study missions. However, at the aggregate level, such preferences did not appear to bias the results significantly. For example, in Evenett's (2006) analysis of the data, procurements ultimately proved to have little perceived effectiveness after an agency had achieved a sufficient level of effectiveness. This is intuitively correct if one presumes that

respondents are answering truthfully about relative effectiveness and not about their personal wants or needs.

3.1 Determinants of TAPE

The first equation for our study identifies the determinants of effective technical assistance as defined by TAPE. As discussed above, our study seeks to explain the determinants of differences in the reported levels of TA effectiveness. A basic characterization of TAPE sets it forth as a function of characteristics of technical assistance as well as individual agencies and countries:

$$(2) \quad TAPE = f(TA, A, C)$$

In this equation, *TA* is a vector of TA characteristics, *A* is a vector of agency variables, and *C* is a vector of country variables. Three sub-surveys from the overall ICN survey provide much of the data with each focusing on different aspects of technical assistance programs (individual agencies, individual projects, and agency data).

Although the surveys covered, generally, the same set of countries, often certain values are missing for some countries when the datasets were merged. In those instances, we simply reduce the observations used in model. This is of considerable econometric importance as the data is already limited to fewer than 50 observations.

The *TA* vector in (2) includes important qualities of each individual assistance projects revealed in the survey:

$$(3) \quad TA = f(LTA, DONOR, RECIP, TAscope)$$

The term *LTA* identifies the presence and quality of long-term advisers. It is constructed through the response to two survey questions: (1) if a *LTA* was involved in the TA; and (2) a ranking of the quality of the *LTA* from 1 to 7 with 7 being the highest quality

ranking. This mode of assistance is singled out due to the relatively high cost and involvement required in its implementation.

Terms *DONOR* and *RECIP* follow a principal result of ICN (2005) that the success of TA improved substantially with recipient involvement in the design of the project. We use ratios of survey responses to evaluate the initial setup process. *DONOR* is the ratio of the survey response to the influence of the donor on the design on the project to what would have been the preferred initial level of involvement of the donor in retrospect. Most of these ratios are exactly 1.0, in which donor involvement was about as it should be, with the rest above 1.0, in which donor involvement was more than what it should have been. None of the respondents suggested that there was not enough donor involvement in the initial stages. A similar ratio is calculated for recipient agency involvement over its preferred level of involvement in retrospect.⁶ Similar to *DONOR*, most observations for *RECIP* are 1.0, with the remainder now below 1.0. This implies that if dissatisfaction emerged, it was through perceived relative under-involvement by the recipient.

We calculate *TAscope* from survey questions about whether the technical assistance successfully provided the service as a measure of how well the technical assistance was accepted by the agency. For example, if the TA helped draft laws, was the service well received? Because the data for these questions are similar to the *TAPE* measure, the variable is constructed in a manner similar to equation (1), leaving three variables to explain agency characteristics when using the largest set of observations.

The agency vector is given by:

⁶ Note that the recipient is answering the survey questions in both circumstances.

$$(4) \quad A = f(AE, AGNOUT)$$

The term *AE* or “agency effectiveness” is the World Economic Forum’s (WEF) 2005-06 *Global Competitiveness Report* score given for each country’s perceived effectiveness of antitrust policy. It uses both publicly available data and survey data of business leaders in a given country. A higher score roughly indicates a greater perception of *AE* by the business community. As discussed below, *AE* enters the model as an endogenous variable suggesting that the quality of TA is a treatment variable in determining functioning capacity of the agency.⁷ The *AE* variable is a purely static measure of the agency’s overall status in 2005. Here we are not asking if the treatment (i.e. TA) improved the recipient agency. We are only asking if agencies of differing effectiveness systematically viewed TA as effective or ineffective. We deal with the treatment effects in the simultaneous equation explaining the agency’s effectiveness. We calculate “*AGNOUT*” by summing squared survey responses regarding the volume and overall ability to which the agency was able to undertake certain enforcement cases. These survey responses were in direct reference to TA support in changing the quantity and quality of the output portfolio.

The country vector is:

$$(5) \quad C = f(FREED, FREEDSQ, IBA, GNIPC, ENERGY)$$

The country variables are incorporated primarily to control for variations in the cross section of national differences in market freedoms, income, capital infrastructure and legal aptitude. The Heritage Foundation’s Index of Economic Freedom (*FREED*)

⁷ The surveys included information about budget per staff member in each agency and in the activity of the agency as measured by the number of decisions. Neither proved useful for this study. We could not reasonably normalize across the cross-section to manage heterogeneity in the employee portfolio or in what might constitute a wide range of decisions.

measures the extent to which economic freedom (measured by limits on government intervention in the economy) across a given country. We expect TA will be more effective in free market environments versus those controlled by excessive government regulation and/or central political control. *FREED* measures across ten factors: trade policy; fiscal burden of government; government intervention in the economy; monetary policy; capital flows and foreign investment; banking and finance; wages and prices; property rights; regulation; and informal market activity. Because of its aggregate nature, the squared value of *FREED* is included (i. e. *FREEDSQ*) to manage of the possibility of a nonlinear relationship between market freedoms and *TAPE*.

The term *GNIPC* or “gross national income per capita”, taken from the World Bank’s World Development Indicators, provides a traditional measure of personal income in each country. We expect TA is likely to be positively linked to more sophisticated economies with higher incomes and greater levels of wealth and investment. The term *IBA* is a measure of the number of International Bar Association Antitrust and Trade Law Section members in a TA recipient country. We anticipate broader acceptance of globally astute TA programs emanating from developed countries when there is a demonstrated base of knowledge about the legal structure and developments of competition policy from other jurisdictions (primarily the United States and European Union). Finally, *ENERGY* is the per capital electricity consumption and represents a proxy for more general infrastructural shortages and thus general physical infrastructure in a country (Cohen and Causa, 2006). Its inclusion in the model follows a similar logic as *GNIPC*, but is suggestive of the nation’s overall capital infrastructure.

3.2 Simultaneity of Agency Effectiveness

The ultimate goal of technical assistance is improving the effectiveness of a competition agency. This is true whether or not the assistance itself is effectively conducted. The measurable impacts of the TA “treatment variable” on AE imply that we measure the change in agency effectiveness. Although data does not exist for when agency was formed or when TA was implemented, our model essentially backs out the other characteristics that lead to the 2005 AE numbers. Seen in this light, TA is a treatment variable insisting that any positive effects should lead to higher *AE* values.

Very generally, we suggest that, like TA, the effectiveness of the competition agency is determined from a group of TA, agency, and country variables. The model for *AE* is defined as:

$$(6) \quad AE = f(TAPE, TA_{scope}, AGE, CRIME, CIVIL, COMMON, GNIPC, ENERGY, HHI)$$

It is posited that *TAPE* is a determinant of *AE* and that the effect is positive. Several agency-specific characteristics were used as instruments in equation (6) to identify the model. In particular, *AGE* is the age of the agency, and *CRIME* is a dummy variable equal to 1 when the agency is allowed to prosecute individuals criminally for anti-competitive conduct. *CIVIL* and *COMMON* are binary variables used to delineate the legal structure that each agency operates under. We take the legal origins of TA recipients from the work of La Porta, Lopez-de-Silanes, Shleifer and Vishny (1998). The results are measured in reference to a third legal structure (*SOCIAL*) not included in the model. In addition to previously discussed variables designed to proxy national income (*GNIPC*) and infrastructure (*ENERGY*), we added a proxy for national concentration, *HHI*, as an instrument to the model. This is an aggregate Herfindahl-Hirschman Index,

calculated by Mitton (2005) from Dunn and Bradstreet firm-level data. It is expected that *HHI* is inversely related to agency effectiveness⁸

Equation (6) represents the first equation in our system. Combining equations (2) through (5) yields the second equation:

$$(7) \text{ TAPE} = f(LTA, DONOR, RECIP, TASC, AE, AOUT, FREED, FREEDSQ, IBA, GNIPC, ENERGY)$$

Equations (6) and (7), are estimated using three-stage least-squares and STATA 9.0 software. Summary statistics are presented in Table 1.

4 Results

4.1 Simultaneous Equation Estimation of TAPE

Results from the joint estimation of equations (6) and (7) is given in Table 2. Turning first to the *AE* equation estimates (right side of table 2), several interesting and key findings are present in the results. First, the estimation supports the hypothesis that effective technical assistance improves agency performance, insisting that national competition policy initiatives improve when effective TA programs are present. The result does not state that all TA is effective. It does imply that TA-Agency partnerships flourished when the TA capabilities were of sufficient quality and flexibility to be of use to the agency. Our aggregate measure of the scope of TA proved insignificant. The Wald joint hypothesis test for TA's influence on *AE* was marginally significant and drawing statistical support primarily from the *TAPE* variable.

The set of agency characteristics were jointly highly statistically significant and all the individual parameters were of the correct sign. The age of the agency is a significant determinant of effective competition policy confirming that competition

⁸ HHI data graciously provided by Todd Mitton of Brigham Young University.

agencies in the study period are learning, developing skill sets, and gaining in overall proficiency over time. The binary term, *CRIME*, was statistically significant, and thus ties effectiveness to expanded enforcement powers. Agencies operating in both civil and common legal systems were estimated to be more effective, relative to agencies operating in socialist systems. While the coefficients for both binary terms were similar in magnitude, only one (*CIVIL*) was statistically significant. Three country characteristics were included in the model to account for macro differences across nations. Only per capita gross national income was important, which suggests agency effectiveness is tied systematically to higher levels of income (and perhaps wealth). Interestingly, aggregate HHI, a measure of national concentration levels, had no impact on the effectiveness of agencies. The third country variable (*ENERGY*) was not significant. The joint Wald test for country effects was statistically significant suggesting that agency effectiveness is somewhat bounded by the factors such as the structure of industry, national income, and national infrastructures.

Turning next to the *TAPE* equation, numerous interesting results emerged from the analysis. One key result was that the presence and quality of a long term advisor was statistically significant and of the correct sign in explaining *TAPE*. Finding and retaining quality *LTA*s will affect the perceived success of TA interventions.

A second key finding emerges from our analysis of the TA setup process. Statistical significance was found for two variables: the influence of the donor and the influence of the recipient agency. The first, *DONOR*, is a ratio of the survey response to the influence of the donor on the design on the project to the preferred level of involvement of the donor in hindsight (retrospective). Because all ratios were either at

1.0 (involvement was about as it should be) or above 1.0, the hypothesis test essentially asked whether donor involvement was more than it should have been. An interesting finding is that as dissatisfaction of donor's role in the set up process grew (i.e. too much involvement), the overall satisfaction of the TA effectiveness improved. It seems that even though some agencies might have initially viewed the donor as having too large of a role, the donor may or must have had some hand in developing a successful TA program. This is certainly a possible talking point in future TA development.

We then performed the same ratio analysis with responses about the role of the recipient agency, *RECIP*. Because the data is either at or below 1.0 (i.e. the recipient agency was either content with the setup or felt they wanted more involvement), the hypothesis test was essentially whether or not the recipient had a large enough role in the setup. The coefficient for *RECIP* is very large (in absolute terms) and highly significant, indicating that overall satisfaction with TA was directly linked to the initial involvement of the recipient. Stated differently, a failure to encompass the recipient agency at either the strategic or tactical level, not incorporating the recipient's views into the overall process decreases the effectiveness of that assistance.

Our aggregate measure of TA scope (*TAscope*) was not statistically significant. The failure to reject result certainly may imply the activity scope of TA is indeed not important in building effective TA. Since our measure is an aggregated summary of numerous survey questions, less aggregated studies involving portfolio effects of the TA offerings may yield different results. We now turn to the two agency variables (*AE* and *AGNOUT*). Interestingly, the *AE* variable is negative suggesting that more effective agencies actually found less need for TA services (as they were offered). The result

seems to offer a lesson that effective TA needs to be flexible to the situation at hand. The *AGNOUT* variable is arguably one of the more important predictors of effective TA. The measure of *AGNOUT* relates to a general survey question asking if the recipient agency skill set improved from the TA experience as it pertained to undertaking certain enforcement cases. The coefficient was statistically significant, giving the unsurprising result that perceived effectiveness of TA was statistically linked to a growing skill set of the agency. The result clearly suggests the recipient agencies are driven by output performance and that simply helping them achieve along this metric is a way to improve the partnership.

The set of five country variables were included to address specific issues that the TA program is likely to confront: market freedoms, legal development, income, and infrastructure. We used *FREED* and *FREEDSQ* to proxy market freedoms. The respective parameters for *FREED* and *FREEDSQ* are both highly significant and jointly produce the correct influence on TAPE. The results suggest that countries with limited economic freedoms are less likely to perceive effective technical assistance. Stated differently, the more centrally controlled the government, the more dissatisfied the agency was about TAPE. Given that much TA emanates from countries that have a more economically liberalized worldview (e.g. US or EU bilateral aid) or development agencies that share this worldview, it seems that some disconnect between economic ideologies makes effective TA more difficult. Though not reported, the joint chi-square test on *FREED* and *FREEDSQ* is significant.

Two of the remaining three country variables (*IBA* and *ENERGY*) were statistically significant and of the correct sign. It appears having country-wide proficiency

in competition law norms and a base of economic infrastructure (proxied by energy consumption) could matter in terms of effective TA. Competition policy itself is often built on emerging and a growing sophistication in business and commerce. Thus, it is not surprising that TA was more effective in nations when such characteristics were already in place.

Finally, at the bottom of Table 2, we independently tested the null hypotheses that TA variables, agency variables and country variables did not explain TAPE. Each joint test was soundly rejected and we conclude that the overall content of the model represents a framework for understanding the partnership issues between TA and competition agencies.

5 Conclusion

This study employs an econometric analysis on a unique set of survey data developed on technical assistance programs for antitrust policy, which provides some insight into the impact that various characteristics surrounding TA and recipient competition agencies may have on the efficiency of such assistance. The results should prove useful in developing an efficient approach to technical assistance for both the donor organizations that craft such programs and the recipient agencies that are the beneficiaries.

The simultaneous equation system used in this study evaluated the effectiveness of technical assistance and competition agency partnerships. Both system equations incorporated a simple platform that TA effectiveness could be explained through characteristics of the assistance programs, the agencies, and the recipient nations. The joint hypotheses tests provide a finding that TA characteristics, recipient agency

variables, and country-level variables all determine the effectiveness of TA and the recipient agency. Thus, one major conclusion is that the relative success of these institutions derives from a complex mix of human, economic, and political forces. Future plans for TA should not focus too heavily on simple “recipes for success”, but rather consider the complex situation in each country that recognizes unique issues and challenges.

With regard to the simultaneous nature of the regression, we found that TA effectiveness was a significant indicator of overall agency effectiveness. Conversely, more effective agencies, identified here as those recognized for “ensuring the effective implementation of antitrust policy”, generally found TA less effective. The results seem to suggest that TA is perceived as performing best in working with agencies that need help.

A second major set of findings arises through the importance of the initial setup process. The results are that the relative influence for both the donor and the recipient on the design of individual programs has a substantial impact on their reported efficiency. In general, the data suggested survey respondents viewed donors as having either an appropriate level of influence on project design, or too much influence. Not surprisingly, agency recipients viewed themselves in the initial set up in nearly opposite terms. Recipients were generally either happy with the setup process or showed a clear preference for more involvement. Nevertheless, for both donors and recipients, the greater the actual initial involvement on design relative to eventual preferences, the more effective was the technical assistance.

This paper provides some solid evidence for the well-discussed notion that recipient agencies need to become heavily involved in the initial design of technical assistance projects in order for those projects to be perceived effective. What is also very striking is that donor (perceived) “over-involvement” eventually leads to more effective TA. Thus, while recipients at first may not like an engaged donor with perhaps a specific design, these same respondents gave the TA higher marks than respondents that did not see an “over-involved” donor. The results strongly suggest that despite possible conflicts in the initial setup process, both donors and recipients need an active role.

A third and somewhat unsurprising result was that TA was shown to be very effective when the agency could trace the TA’s role to expanding the output portfolio of services provided by the agency. Thus, a basic recommendation is that TA should focus on what matters most to the agency—its ability to effectively intervene in situations of anti-competitive conduct and enforce competition policy. TA, as it is currently envisioned, undertakes many other activities (academic papers, seminars, etc.). Perhaps those activities are useful, but should not supplant an “output” oriented approach.

Finally, the overall results point to perhaps unavoidable timing issues that explain the effectiveness of TA. Technical assistance, as it is currently envisioned, is likely to work best when the recipient agency is primed for improvement and in an environment where change is perhaps needed and/or desired, but for some reason that change is being stifled. Given budget constraints by donor agencies, the results in this study suggest that TA could be targeted to situations where success is more likely than not. We have identified some of the criteria for success. Clearly, assistance programs

need to be well-tailored to each situation. However, the timing of TA involvement seems to be very important.

This paper provides an innovative step into a field that has been lacking for empirical evaluation, but must be perceived simply as a first step. As the vast majority of the 100+ competition agencies in the world have been in operation for fewer than fifteen years, international financial support for the development of those institutions will continue for some time. Agencies developed to protect and enhance the efficiency of markets should themselves be the recipient of an efficient use of technical assistance.

Table 1. Summary Statistics of the Data

| Name | Mean | St. Dev. | Min | Max |
|---------|----------|----------|---------|-----------|
| TAPE | -8.419 | 4.744 | -23.500 | -1.000 |
| LTA | 2.316 | 3.146 | 0.000 | 7.000 |
| DONOR | 1.211 | 0.829 | 1.000 | 6.000 |
| RECIP | 0.917 | 0.186 | 0.143 | 1.000 |
| TAscope | 8.179 | 6.204 | 1.000 | 26.857 |
| AE | 4.124 | 0.696 | 2.600 | 5.700 |
| AGNOUT | 1.763 | 4.213 | 0.000 | 16.000 |
| AGE | 18.711 | 21.735 | 3.000 | 85.000 |
| GNIPC | 6065.263 | 6980.100 | 450.000 | 31700.000 |
| CRIME | 0.237 | 0.431 | 0.000 | 1.000 |
| CIVIL | 0.132 | 0.343 | 0.000 | 1.000 |
| COMMON | 0.868 | 0.343 | 0.000 | 1.000 |
| IBA | 8.132 | 9.245 | 0.000 | 29.000 |
| FREED | 2.790 | 0.567 | 1.750 | 4.160 |
| FREEDSQ | 8.099 | 3.366 | 3.063 | 17.306 |
| ENERGY | 2826.321 | 1853.685 | 124.950 | 6816.660 |
| HHI | 0.173 | 0.235 | 0.003 | 0.873 |

Table 2: Simultaneous Determination of *TAPE* and *AE*

| Dependent Variable: TAPE | | | | Dependent Variable: AE | | | |
|---------------------------------------|-----------------|--------------------|------------------|---------------------------------------|-----------------|--------------------|------------------|
| Group | Variable | Coefficient | t-ratio | Group | Variable | Coefficient | t-ratio |
| | Constant | 8.68 | 0.52 | | Constant | 3.346 | **8.05 |
| <i>TA</i> | <i>LTA</i> | 0.332 | *2.02 | <i>TA</i> | <i>TAPE</i> | 0.044 | *2.08 |
| | <i>DONOR</i> | 5.441 | **4.37 | | <i>TAscope</i> | 0.017 | 1.32 |
| | <i>RECIP</i> | 26.228 | **4.45 | <i>Agency</i> | <i>AGE</i> | 0.012 | **2.72 |
| | <i>TASCOPE</i> | -0.090 | 1.03 | | <i>CRIME</i> | 0.425 | **2.41 |
| | | | <i>CIVIL</i> | | 0.578 | *1.82 | |
| <i>Agency</i> | <i>AE</i> | -4.242 | *2.28 | | <i>COMMON</i> | 0.510 | 1.58 |
| | <i>AGNOUT</i> | 0.603 | **3.38 | | | | |
| <i>Country</i> | <i>FREED</i> | -26.857 | **2.64 | <i>Country</i> | <i>GNIPC</i> | 0.394 | **2.41 |
| | <i>FREEDSQ</i> | 4.76 | **2.9 | | <i>ENERGY</i> | .844 | 0.15 |
| | <i>IBA</i> | 0.15 | *1.67 | | <i>HHI</i> | -.32 | 0.82 |
| | <i>GNIPC</i> | 0.798 | 0.05 | | | | |
| | <i>ENERGY</i> | .001 | *2.39 | | | | |
| | Obs. | 38 | | | Obs. | 38 | |
| | R ² | 0.59 | | | R ² | 0.70 | |
| WALD χ^2 Tests | | | | WALD χ^2 Tests | | | |
| | | Coefficient | p-value | | | Coefficient | p-value |
| Group | TA | 29.85 | 0.000 | Group | TA | 4.44 | 0.109 |
| | Agency | 37.80 | 0.000 | | Agency | 42.20 | 0.000 |
| | Country | 18.54 | 0.002 | | Country | 12.95 | 0.050 |

*significance| $\alpha = 0.10$; **significance| $\alpha = 0.01$

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