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Master-Thesis

**Public-Private-Partnerships in Agricultural Research: Potentials
and Limitations in the Case of Costa Rica**

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5 Summary

The public and the private research sector have been identified as having different structures and cultures. The interests of the public sector in research are more long-term oriented and of a strategic nature. In contrast, the private sector is more short-term oriented and urged to deliver fast and profitable results. The results of public research are intended to satisfy the needs of a vast group of clients, whereby the results of the private sector are restricted to an exclusive group. A clear separation of the spheres of action between the private and the public sector was assumed to be necessary for reasons of labour division and for avoiding an overlap of functions. Therefore, it was drawn upon the Public-Private-Good theory which facilitated to draw an imaginary border. Public goods exclusively will be funded by the public sector and private goods can be funded by both sectors, although it doesn't make sense for the public sector to participate in and increase the competition which dominates the provision of private goods. The funding of hybrid goods has to be considered more differentiated: Common Pool goods are characterised by low excludability which excludes charging development costs to users, and hence have to be funded by the public sector. But a change in technology or stronger IPRs can attribute to common pool goods a higher level of excludability which makes them interesting to private investors. A recommendation for the public research sector is to orientate its research by the research framework which influences on products being public, private, or hybrid and to concentrate research on public and common pool goods. For Toll goods a mixed funding scheme can be imagined, but the characteristics 'low rivalry' and 'high excludability' make them susceptible to dangers of copying etc. which again requires highly protected IPRs. In context with stronger IPRs it has to be paid attention to the fact that they are only beneficiary to a country, if it disposes of inventive capabilities and is not just imitating or free-riding on foreign inventions.

In developing countries the following functions are recommended to the public sector: to balance overwhelming market trends, to develop human resources, to avoid negative externalities, to adopt international inventions to local conditions, to provide public goods, and to do research on knowledge based technologies.

Central to improving the performance of both sectors is an increased competition within the sectors as well as between them. Competition among public research institutions increases with an intensified information exchange, competitive fund schemes, and a stronger legal system (independent judges etc.).

Despite the reasons that suggest a clear division of labour and functions, there exists a so-called ‘common space of interests’ that provokes collaborations among both sectors. Potential fields of common interests are the access to additional resources, the mutual learning including collaboration experience, the shared risk, and the access to local information. Special interests of the public sector in co-operations with the private sector are to orientate its research towards demand broadening the application through a market oriented development, and the integration of social aspects into the private agenda. The private sector might consider the multidisciplinary of public research and an improved reputation arising from social engagement including better market chances for its products as an advantage.

Research partnerships are more critical than “conventional” partnerships, because research is regarded a core responsibility in companies and low reproduction costs of knowledge make them susceptible to copying, and because the market value of research output is difficult to estimate in anticipation. Nevertheless, companies that think about entering in a R&D-partnership can draw upon cost-oriented and benefit-oriented criteria for the decision taking for or against a partnership. Cost-oriented criteria, which are easier to measure, are the initiating costs, agreement costs, control costs, adoption costs, and the transfer costs which again sum up to the transaction costs. The transaction costs are influenced by the five characteristics of output: (1)variability, (2)specificity, (3)suitability for structuring, (4)suitability for coding, and (5)separability. The suitability of an output for being produced within a collaborative arrangement is determined by its five characteristics whereby output of basic research has other characteristics than output of development research for example. The inclusion of the characteristics of output into the selection of a collaborative arrangements suggests for the provision of *output of basic research* to select collaborative arrangements with a strategic, long-term orientation, because this output in general is difficult to structure and to separate. In comparison *output of applied research* is easier to structure and to separate which in combination with a lower variability increases the probability to achieve the desired result which means that co-operations needn’t be that flexible and can be more short-term oriented. *Output of development research* is appropriate to be produced within limited projects or merely some few joint activities are more appropriate.

In general, transaction costs in PPPs are assumed to be smaller than in other research partnerships, because the public sector has no incentives to abuse from lacking control mechanisms for reasons of social responsibility and lacking profit orientation. Although transaction costs are assumed to be smaller in PPPs than in other types of collaborations they are still relatively high in comparison to non-collaborative arrangements. Finding an adequate

co-operation partner and gaining collaborative experience is the greatest challenge and can help substantially to decrease transaction costs in future partnerships. The search for an adequate partner includes to study the structure and the goals of a potential partner. The goals of the co-operation have to be formulated jointly and be acknowledged to the employees, as well. In the establishment phase the distribution of tasks and competencies, the interpersonal relations, and the design of communication channels (which have to allow for a frequent communication among partners) and decision panels have been identified as central modules. Promising for collaborations in basic or applied research seems the creation of an independent legal department where involved persons are unified and enduring structures established. In contrast, in development research it is more convenient to leave the legal departments to the responsibility of each partner.

In Germany R&D-co-operations are a frequently chosen alternative for the execution of research and as source of innovation, whereas the form of collaborations has changed over time. Collaborations without agreements on capital contribution are by now the most frequently chosen form and here again joint projects. Joint ventures have stayed interesting, because over the past two decades they constantly had to be chosen in a fifth of cases. It's probable that joint ventures are chosen for producing output of basic research and other output that requires flexible forms of co-operations.

In comparison, in Costa Rica co-operations are rarely found and so are PPPs. For Germany it is assumed that partnerships have been established more with a progress in infrastructure, globalisation, industrial standardisation, technology interdependence, stronger IPRs, and with an increase of experience in collaborative arrangements which are appropriate measures for Costa Rica, as well. The absence of experience in collaborative arrangements can partly be blamed for the slight use of the research registers in Costa Rica which are supposed to facilitate the search for an adequate partner. As another reason was identified the bad impression companies have of the public sector. The quality of public extension is unsatisfactory, because there are too many public actors involved who don't neither know their own function nor the function of the other actors. The situation perceived by companies of the public research provides a similar image: Costa Rican agroindustrial companies are not content with the performance of the public research and extension sector. Public research is said to be without appropriate supply to the needs of the industry and too basic, or in other words public research isn't demand-driven. Allegedly, further impediments of the sector are that its research is expensive, bureaucratic, slow, and problems of patent rights are feared in collaborations. If the public sector tends to become an interesting research partner to the

private sector it has to remove the mentioned impediments and in context with the feared problems with patent rights (which by the way were feared to occur in collaborative arrangements with other companies, as well) a stronger legislation with stronger IPRs seems recommendable. The universities are regarded only by parts of the companies as a valuable information basis which applies to smaller exporting as well as to non-exporting companies. On the other hand, public research institutions should advertise their interdisciplinarity and their good contacts which companies referred to as advantages of the public sector.

The basis for establishing partnerships in Costa Rica is given, because already one third of agroindustrial companies executes part of their research externally (preferred are to purchase services from public institutions and to contract private institutions whereby in the second case larger parts of research are outsourced). A positive correlation between the size of company and the interest in co-operations could not be confirmed by this study (not even a negative one).

The examples of the coffee and the banana sector emphasised how an agreement that provides financial means from all members of a sector to research and regionalised extension are capable to develop an entire sector. Co-operations with other institutions existed and information was exchanged.

Nevertheless, the readiness of Costa Rican agroindustrial companies to invest in research is limited. Smaller companies indicated not to dispose of adequate technologies to their needs, and aren't innovative in the sense of launching new or adopted products on the markets. Therefore, a primary objective has to be to explain the importance of innovation to smaller companies, also in regard to establishing partnerships. Smaller companies with their defensive innovation strategies (Why should we invest in research, if the public sector can pay and do "our" research?) are over average in need of innovation. Smaller companies might be an interesting research partner, although their needs of innovation in developing countries more likely require extension how to use already existing technologies than the generation of new technologies. In this sense public research institutions should look which companies they want to serve and set their goals correspondingly.