Chapter 5

THE IMPACT OF SERVICES BARRIERS ON EFFECTIVE RATES OF PROTECTION IN AGRICULTURE AND MANUFACTURING

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Abstract. This chapter seeks to determine how protection of services affects the effective protection of agricultural and manufacturing sectors using the most recent estimates of services barriers in telecommunication, banking, distribution, electricity, professional services, and air and maritime transport in selected developing and transition economies. Such an approach provides an illustration of the potential economy-wide costs of services barriers to downstream-using industries. Despite data limitations that translate into an underestimation of the taxing effect of services barriers on non-services sectors, this exercise could be important from a practical point of view, given that in a number of agricultural and manufacturing sectors the sign of protection is reversed (*i.e.* it goes from positive protection into effective taxation). In order to obtain more realistic insights into the potential costs of services barriers on downstream-using industries, it is necessary to consider more accurate services tax equivalents as well as additional estimates for all services sectors as soon as they become available.

Effective rates of protection are measures of the protection provided to an industry by the entire structure of tariffs, taking into account the effects of tariffs on inputs as well as on outputs. The effective rate of protection gives the percentage increase in value added per unit in an economic activity that is made possible by the tariff structure relative to the situation in the absence of tariffs, giving insights into the supply-side impact of the protection structure.

Given the important role of services as intermediate inputs in the production of most industries, an inefficient services sector can be costly for the economy as a whole. For example, even if a country were to engage in a reform programme that would reduce goods tariffs to zero, distortions would continue to persist should services barriers remain unchanged. As noted in Hoekman and Primo Braga (1997), as nations move to reduce tariffs and other barriers to trade substantially, effective rates of protection may decline, and in some cases become negative for manufacturing industries as they lose protection for their goods and continue to be confronted with input prices that are higher than they would be if services markets were contestable. Ignoring the services barriers in these calculations translates into distorted measures of the protection structure of a country. In other words, the calculation of effective rates of protection (ERP) needs to take into account services barriers in order to obtain an accurate illustration of the total protective structure in the economy. Such an approach will also highlight the costs imposed by inefficient services inputs to both services and non-services sectors.

This chapter examines the difference between ERPs that are calculated without considering services barriers with those that take into account services barriers. The difference could be interpreted as an indication of the additional cost imposed by inefficient domestic services regulations.

The data requirements for this quantitative exercise are: information on the service intensity of production (given by the share of services in the production of industries), and tariff rates on all outputs and inputs. Information on the services intensity of production as well as protection data for agriculture and manufacturing were obtained from the most recent version of the well-established Global Trade Analysis Project (GTAP) Database.[1] With respect to services barriers, the most recent tax equivalents for barriers in telecommunication, financial services, distribution, electricity, professional services, and air and maritime transport for seven developing countries were employed.[2] In addition, new tax equivalents calculated in the framework of the South Eastern Europe (SEE) Programme for telecommunication, financial services, distribution and professional services were employed in this exercise.[3]

This chapter uses the ERP formula in the context of the Input-Output Framework presented in Elbeheri and McDougal (1998), where ERP is defined as the ratio of the difference between the assisted and unassisted value added over the unassisted value added:

$$ERP = (AVA-UVA)/UVA$$

where $AVA = AVOUT - AVINP$

AVOUT = assisted/protected value of outputs

AVINP = assisted/ protected value of inputs

$UVA = UVOUT - UVINP$

UVOUT = unassisted/unprotected value of outputs

UVINP = unassisted/unprotected value of inputs

To compute the ERPs, a simulation of the model to eliminate the wedge between world and domestic prices was undertaken. The assisted values are taken from the pre-simulation database, while the unassisted values from the post-simulation database. The experiments concern exclusively import and export tariff eliminations, abstracting from particular features, like the existence of tariff rate quotas, or domestic support.

As a next step, several adjustments are carried out to analyse the differences in impacts of calculating the ERP without considering services (ERP 1) compared to the services-inefficiencies-adjusted ERP (ERP 2). The services tax equivalents for the selected regions were incorporated into the GTAP Database, while maintaining its internal consistency and minimising the impact of the tariff change on the value of commodity and financial flows. The updated database containing the services tax estimates forms the basis for the subsequent experiment that eliminates the wedge between world and domestic prices. For the calculation of the services-inefficiencies-adjusted ERP, the new

1. GTAP Database Version 6.5 pre-released in November 2004. This Version 6 of the GTAP Database contains data for the global economy in 2001, includes an improved treatment of bilateral services trade and features 78 regions/countries and 57 sectors. A detailed description of the GTAP Database is available at www.gtap.org.

2. The methodology for estimating these tax equivalents as well as the tax equivalents are presented in detail in Dee (2005).

3. The methodology for estimating these tax equivalents as well as the tax equivalents are presented in detail in Dihel (2003).

unassisted values are taken from this post-simulation database, while the assisted values from the initial pre-simulation database are kept unchanged.

The results reveal moderate differences between the two ERPs for agriculture and manufacturing. However, if account is taken of services barriers (ERP 2), ERP falls in almost all sectors in all countries.

For some agricultural sectors, such as:

- Cereals in the Russian Federation.
- Vegetables, fruits and seeds in Croatia, Romania, Russian Federation, Thailand and Zambia.
- Oils seeds, plants and straw in Bulgaria and Chile.
- Meat in Romania, Russian Federation and Zambia.
- Vegetable oils and fats in Brazil.
- Sugar in Bulgaria, Croatia, Morocco and Romania.
- Beverages and tobacco, and food products in Romania and Zambia.
- Food products not elsewhere classified in Romania and Zambia.

and some manufacturing sectors, such as:

- Forestry and wood products in Brazil and Zambia.
- Paper products and publishing in Romania.
- Chemical, rubber, plastic products in Bulgaria and Romania.
- Mineral products not elsewhere classified in Brazil and Thailand.
- Base metals and metals in Zambia.
- Motor vehicles in Bulgaria and Brazil.
- Transport equipment in Croatia.
- Manufactures not elsewhere classified in Croatia, Morocco and Romania.

the ERP becomes negative, suggesting that the protection of both non-services and services inputs results in the effective taxation of these industries. These results are summarised in Tables 5.1 and 5.2.

However, the magnitude of the taxing effect of services on non-services sectors is lower than expected. It depends on: *(1)* the services intensity of each sector, as well as *(2)* the levels and ways of incorporating services barriers into the database.

It is worth noting that barriers related to a substantial part of services inputs (other services sectors that include construction, transport — other than air and maritime — , insurance, gas distribution, water, recreation and other services), that account in some cases for over 15% in agriculture and 20% in manufacturing, have not been included in the analysis given lack of such estimates for these other services sectors.

With respect to the estimates of services barriers, it is interesting to observe that the tax equivalents of services barriers are relatively low. In some cases, the tax equivalents are probably underestimated leading to an underestimation of the taxing effect of services barriers to other sectors. This highlights once again the need to invest in collecting adequate and correct information on services barriers and to develop and improve exiting methodologies for assessing their restrictiveness in order to obtain realistic estimates of services barriers.

Notwithstanding these caveats that translate into an underestimation of the taxing effect of services barriers on non-services sectors, this exercise could be important from a practical point of view, given that in a number of agricultural and manufacturing sectors the sign of protection is reversed (*i.e.* it goes from positive protection into effective taxation). However, in order to obtain more realistic insights into the potential costs of services barriers on downstream-using industries, it is necessary to consider correct services tax equivalents and include the estimates for the other services sectors as soon as they become available. In addition, input-output linkages and forecasting models could supplement the ERP calculations and general equilibrium analyses to determine how liberalisation will affect the output of the non-services sectors and the resource allocation across industries.

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Table 5.1. **Impact of services barriers (SB) on effective rates of protection (ERP) in agriculture**
ERP results

	Brazil		**Bulgaria**		**Chile**		**Croatia**		**Morocco**		**Romania**		**Russia**		**Thailand**		**Zambia**	
	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2
Cereals	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(-)	(-)	(-)	(-)	(-)
Vegetables, fruits and seeds	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(-)	(-)	(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)	(-)
Oil seeds plants and straw	(-)	(-)	(+)	(-)	(+)	(-)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)
Meat	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(+)	(+)	(-)	(+)	(-)	(-)	(-)	(+)	(-)
Vegetable oils and fats	(+)	(-)	(-)	(-)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)
Sugar	(-)	(-)	(+)	(-)	(-)	(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)	(+)	(-)	(-)	(-)	(-)
Beverages and tobacco	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(-)	(+)	(+)	(-)	(-)	(+)	(-)
Food products NEC	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(-)	(+)	(+)	(-)	(-)	(+)	(-)

Notes: NEC: Note elsewhere classified.
ERP 1 is calculated without considering services barriers while ERP 2 takes into account services barriers; (+) reflects a protected sector, (-) reflects a taxed sector.

Table 5.2. **Impact of service barriers (SB) on effective rates of protection (ERP) in manufacturing**
ERP results

	Brazil		**Bulgaria**		**Croatia**		**Morocco**		**Romania**		**Thailand**		**Zambia**	
	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2	ERP 1	ERP 2
Forestry and wood products	(+)	(-)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(+)	(+)	(-)
Paper products and publishing	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(+)	(-)	(-)	(+)	(+)	(+)
Chemical, rubber and plastic products	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(-)	(+)	(-)	(-)	(-)	(+)	(+)
Mineral products NEC	(+)	(-)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(+)	(-)	(-)	(+)
Base metals and metals	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(-)
Motor vehicles	(+)	(-)	(+)	(-)	(+)	(+)	(+)	(+)	(-)	(-)	(-)	(-)	(+)	(+)
Transport equipment	(+)	(+)	(-)	(-)	(+)	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(+)	(+)
Manufacturing NEC	(+)	(+)	(-)	(-)	(+)	(-)	(+)	(-)	(+)	(-)	(+)	(+)	(-)	(-)

Notes: NEC: Note elsewhere classified.
ERP 1 is calculated without considering services barriers while ERP 2 takes into account services barriers; (+) reflects a protected sector, (-) reflects a taxed sector.

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