

Estimation of Non-tradable Economic Conversion Factors: An Operational Guide for Republic of Mozambique

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Abstract

The database of commodity-specific economic conversion factors for the Republic of Mozambique was developed¹ for e-SNIP I. However, initially it not include estimates of the economic conversion factors for the major non-tradable goods and services that are used as inputs into projects. In this study such conversion factors for non-tradable commodities was estimated for 14 non-tradable items (i.e., Accommodation and food services, business services, construction, education, electricity, gas and steam, finance and insurance, health and social work, information and communication, other services, public administration, real estate activities, transportation and storage, water supply and sewage, and wholesale and retail trade).

Keywords: Conversion Factors, Mozambique, Non- tradable

JEL Classification: H23, H43, O22

¹ The database is accessible through <http://parametros-nacionais.mef.gov.mz/>.

1. Conversion Factors for Non-tradables

The number of non-tradable goods and services in any economy is typically much smaller than that of tradable commodities. The database contains CSCFs for 14 non-tradable commodities. In contrast to tradable goods, the non-tradable services are only used as inputs into projects. In a situation when non-tradable service is an output of a project, i.e., roads, the value of this output is determined on a project-by-project basis.

1.1. Methodology

A good or service is considered non-tradable when its domestic price is determined by local demand and supply. An increase in demand (or supply) by a project could affect the amounts demanded by domestic consumers (or produced by other suppliers).

Conversion factors for non-tradable commodities is estimated by eliminating the distortions such as taxes, subsidies, trade taxes, licenses and quotas, monopoly mark-ups, environmental externalities, congestion costs, and any other type of price or quantity restriction that causes the demand price of the item to diverge from its supply price. A difference may exist between financial and economic prices, even in the absence of distortions.

In the case of the market for non-tradable commodities, increased demand for an input to be used by the project or increased supply of an output produced by the project would impact the market equilibrium price. This change will cause the other consumers and producers in the market to adjust their quantities consumed and produced, respectively. Additionally, in the presence of market distortions, other impacts are included in economic analysis.

To estimate the economic prices of non-tradable goods and services we first adjust for distortions in the market for the item itself. Second, we adjust for distortions in the market where demand is being diverted towards or away from. Third, distortions in the markets for the inputs used to produce the item are corrected. Correction is applied to the proportion of the item produced by other suppliers in the market. Finally, we apply a correction for the FEP and SPNTO on tradable and non-tradable components of the non-tradable good or service. This is done according to the following formula:¹

$$P_x^e = W_x^s P_x^m (1 + K_x) + W_x^d P_x^m (1 + t_x^v - d^*) - W_x^s \left[\sum_i a_{ix}^o P_i^m d_i + \sum_j a_{jx}^o P_j^m d^{*two} + \sum_L a_{Lx}^o P_L^m d_L + \sum_z a_{zx}^o \{W_z^d P_z^m (d^* - t_z^v)\} \right] + [P_x^m \times T_x \times FEP] + [P_x^m \times NT_x \times NTP]$$

$$CSCF = \frac{P_x^e}{P_x^m \times (1 + t_x^v)}$$

¹ Further theoretical details of the estimation of the economic prices of non-tradable goods and services can be found in Jenkins et al. (2011), DDP 2011-11, John Deutsch International, Queen's University, Canada. URL: <http://ideas.repec.org/p/qed/dpaper/204.html>

where,

- \mathbf{x} : Non-tradable output produced or purchased by the project
- P_x^e : Economic price of output \mathbf{x}
- W_x^s : Supply weight for output \mathbf{x}
- W_x^d : Demand weight for output \mathbf{x} ($W_x^d + W_x^s = 1$)
- P_x^m : Market price per unit of output \mathbf{x} (net of value added tax, i.e., VAT)
- k_x : The rate of production subsidy on output \mathbf{x}
- t_x^v : VAT on output \mathbf{x}
- d^* : The overall effective tax rate on tradable and non-tradable goods and services in the economy
- a_{ix}^o : Input-output coefficient for tradable input \mathbf{z} used in the production of a unit of output \mathbf{x}
- P_i^m : Market price per unit of input \mathbf{z} (net of VAT)
- d_i : The rate of non-creditable tax or subsidy on the tradable inputs used in the production of output \mathbf{x}
- a_{jx}^o : Input-output coefficient for tradable input j used in the production of non-tradable inputs (direct tradable inputs to the NT inputs and the indirect tradable inputs of their subsequent inputs) used for a production of a unit of output \mathbf{x}
- P_j^m : Market price per unit of j
- d^{*two} : The overall average effective tax rate of the tradable inputs (in the whole economy) used indirectly in the non-tradable inputs for a production of output \mathbf{x} excluding VAT.
- a_{Lx}^o : Input-output coefficient for direct and indirect labor input L used in the production of a unit of output \mathbf{x}
- P_L^m : Market price per unit of labor L
- d_L : The rate of distortions on the labor inputs used in the production of output \mathbf{x}
- a_{zx}^o : Input-output coefficient for non-tradable input z (direct input) used in the production of a unit of output \mathbf{x}
- W_z^d : Demand weight for input z
- P_z^m : Market price per unit of input z (net of VAT and distortions on tradable components of input z)
- t_z^v : VAT on input z paid by the new consumers of z
- T_x : Share of tradable components for output \mathbf{x}
- NT_x : Share of non-tradable (i.e., Labor) components of output \mathbf{x} ($T_x + NT_x = 1$)
- FEP : Foreign exchange premium
- NTP : Premium on non-tradable outlays

1.2. Estimation Results

The CSCF estimation for the non-tradables range from 0.8586 for “Education” to 0.8982 for “Real Estate Activities”. Table 1 presents a list of estimation results for all 14 Non-tradables.

Table 1: Commodity Specific Conversion Factors for Non-Traded Goods

Item	CSCF
Accommodation and Food Services	0.8606
Business Services	0.8686
Construction	0.8855
Education	0.8586
Electricity, Gas and Steam	0.8774
Finance and Insurance	0.8648
Health and Social Work	0.8594
Information and Communication	0.8761
Other Services	0.8715
Public Administration	0.8639
Real Estate Activities	0.8982
Transportation and Storage	0.8768
Water Supply and Sewage	0.8769
Wholesale and Retail Trade	0.8817