

Computing for Import-Weighted Average Tariff Rates: Accounting for Changes in Sectoral Aggregation

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Computing for changes in sectoral import weighted average tariff rates is often a tedious and time consuming exercise especially when one has to go through hundreds or thousands of tariff lines. The computational task becomes even more cumbersome whenever changes in sectoral aggregations have to be undertaken.

This document is an extension of Corong (2007b) and demonstrates a way to mechanize the computations of import-weighted average tariff rates in GAMS (General Algebraic Modeling System software) as a result of changes in sectoral aggregation. Although computing for import weighted average tariff rates can be undertaken in any spreadsheet software like Excel, using GAMS allow researchers to save time and minimize errors. As will be shown below, any changes in sectoral aggregation simply involves minor changes in the GAMS code “*Weighted tariff 1.gms*”. To avoid repetition, this note will simply point out the changes that have to be made.

1. Set Declaration and Mapping

Box 1 shows the set declaration used in the GAMS code.

Box 1: Set Declaration

Set	n	numeric labels	/	1*10	/
	l	sectors	/	AGRI FISH FORE MNQG FOOD NFOO CONS TRAN FINA PSER	Agriculture Fishing Forestry Mining and Quarrying Food Manufacturing Non-Food Manufacturing Construction Transportation Finance Private Services
	tr	Tariff and Import data	/	tar05 tar07 im ports	2005 tariff rates 2007 tariff rates Base (2005) im ports
	m api(n,i)	m apping numeric labels to sectors	/		1.AGRI 2.FISH 3.FORE 4.MNQG 5.FOOD 6.NFOO 7.CONS 8.TRAN 9.FINA 10.PSER
	m apot(n,tr)	m apping numeric labels to other data	/		1.im ports 2.tar05 3.tar07

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2. Aggregation Mapping

Box 2 and 3 shows the aggregation maps for *Weighted tariff 1.gms*” and *Weighted tariff 2.gms*” respectively. The former is the GAMS code from Corong (2007b) while the latter is the new GAMS code as a result of changes in aggregation. Aggregation mapping involves matching the sectoral set I defined in Box 1, with a set of sectoral classifications in Box 2 or 3 [*set g* and *set map(*,*)*] in order to effectively carry out the desired sectoral aggregation process.

Notably, any changes in sectoral aggregation simply entail two successive modifications in the file *Weighted tariff 1.gms*”. By comparing Box 2 and 3 one can see the following changes: (1) modification of set *g* to account for the changes in sectoral classification—from 3 to 6 sectors; (2) modification of the set *Map(*,*)* which matches each set belonging to I with that of *g*.

Box 2: Declaration of sets (Aggregation Maps-*Weighted tariff 1.gms*)

Set	g	Sectoral Classifications	/	AGR	Agriculture	
				MFG	Manufacturing	
				SER	Services	/
	Map(*,*)	Mapping individual industry to sectoral classifications	/		AGRI.AGR	
					FISH.AGR	
					FORE.AGR	
					MNQG.MFG	
					FOOD.MFG	
					NFOO.MFG	
					CONS.SER	
					TRAN.SER	
					FINA.SER	
					PSER.SER	/

Box 3: Declaration of sets (Aggregation Maps-*Weighted tariff 1.gms*)

Set	g	Sectoral Classifications	/	AGR	Agriculture	
				FIS	Fishing	
				NMF	Non-Food Manufacturing	
				FMF	Food Manufacturing	
				SER	Construction and Private Services	
				TRF	Transportation and Financial services	/
	map(*,*)	mapping individual industry to sectoral classific:	/		AGRI.AGR	
					FISH.FIS	
					FORE.AGR	
					MNQG.NMF	
					FOOD.FMF	
					NFOO.NMF	
					CONS.SER	
					TRAN.TRF	
					FINA.TRF	
					PSER.SER	/

References

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