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**Revised Armington Elasticities of Substitution for the  
USITC Model and the Concordance for Constructing a  
Consistent Set for the GTAP Model**

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**Revised Armington Elasticities of Substitution for the USITC Model  
and the  
Concordance for Constructing a Consistent Set for the GTAP Model**

**INTRODUCTION**

This paper presents a set of Armington substitution elasticities, and the concordances between different models and their aggregates, which are required to generate a consistent set of elasticities between the Commission's U.S. computable general equilibrium model ["the USITC model"] and the Commission's Global Trade Analysis Project (GTAP) CGE model ["the GTAP model"]. The underlying CGE models differ in the scope and level of detail. The USITC model is a single country model which includes 497 sectors/commodities.<sup>1</sup> The GTAP model is a global model, which depicts 78 countries/regions and includes 57 commodities.<sup>2</sup> Because of these differences generating consistent elasticity sets for any particular analysis, necessitates defining USITC model aggregate sectors/commodities which will allow mapping to the more aggregate GTAP model commodities. The example illustrates a 128-sector/commodity USITC model and a 41-commodity GTAP model. For the U.S. characterization both are based upon the sectors of U.S. economy as defined in the Bureau of Economic Analysis (BEA) 1992 Input-Output (I-O) accounts.<sup>3</sup> Tables 1 and 2 provide the concordances between the USITC-128 model sectors/commodities and the GTAP-41 model commodities and the BEA I-O accounts. In addition, the Armington elasticity is presented for each of the BEA I-O accounts.

While these two CGE trade models rely upon the same database, the implementation of the

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<sup>1</sup>USITC, *Import Restraints: Third Update 2002*, Publication 3519, June 2002; USITC, *The Economic Effects of Significant U.S. Import Restraints: Second Update*, Publication 3201, June 1999. A version of the model was also used in several recent confidential studies of sensitive agricultural imports.

<sup>2</sup>The GTAP framework is fully documented in the following: chapters 2, 3, 4, and 5 in T.W. Hertel (ed.), *Global Trade Analysis: Modeling and Applications*, Cambridge, Cambridge University Press, 1997; Betina V. Dimaranan and Robert A. McDougall (2002), *Global Trade, Assistance, and Production: The GTAP 5 Data Base*, Center for Global Trade Analysis, Purdue University; and at <http://www.gtap.agecon.purdue.edu/>.

<sup>3</sup> The sector classification corresponds to the 6-digit BEA sector classification system used in the 1992 input-output accounts. See U.S. Department of Commerce, Bureau of Economic Analysis, *Benchmark Input-Output Accounts of the United States, 1992*, September 1998.

models differs. More specifically, the USITC model incorporates both the sector and commodity dimensions in the I-O account, but the GTAP model only utilizes the commodity dimension that is most relevant for bilateral trade analyses. Armington substitution elasticities refer to the substitution between a domestic and an imported commodity.<sup>4</sup> Therefore, the first step in linking the USITC model with the GTAP model is accomplished by providing the former model's Armington substitution elasticities to the U.S. component part of the latter model. This accomplishes the objective of making the Armington substitution specifications consistent in both models. Next, the set of proportional price changes derived from simulating a liberalization in the GTAP model is provided to the USITC model. The USITC model utilizes these global (relative) price changes as a part of the U.S. liberalization scenario. The USITC model simulation thereby incorporates the global prices as a consequence of the liberalization with the change in the direct trade distortions imposed by the U.S.

### Armington Elasticities

The results of CGE models are largely determined by the choice of behavioral parameters, known as elasticities, which reflect the sensitivity of consumers and firms to changes in relative prices.<sup>5</sup> However, the values of elasticities are generally not known with precision. Elasticities are preferably generated by statistical or econometric methods based on the historical behavior of prices and quantities and then examined for consistency with economic theory and analysts' intuition about products and industrial processes. For example, the Armington elasticity of substitution between relatively homogenous agricultural or mining products might be thought to be higher than that between bundles of differentiated manufactured goods, and a small trade liberalization is not expected lead to a very large

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<sup>4</sup> In both models a two tier decision process is assumed. The first tier is the substitution between the domestic and foreign commodity and the second tier is the substitution among foreign suppliers of the commodity. In many global trade models, the Armington elasticity for the second tier decision is equal to twice the value of the elasticity in the first tier. This observational regularity is reported in P. Jomini, J.F. Zeitsch, R. McDougall, A. Welsh, S. Brow, J. Hambley, and J. Kelly, *SALTER: A General Equilibrium Model of the World Economy*, Volume 1. Model Structure, Database and Parameters. (Canberra, Australia: Industry Commission, 1991.) This parameter convention is referred to in the literature as "the rule-of-two." This practice is used in these two models.

<sup>5</sup> An elasticity is defined as the percentage change in a variable Y induced by a one percent change in a variable X, all other things being equal.

change in trade flows. The values of the USITC model substitution elasticities were selected from those found in the economic literature or used in prior Commission analyses. The Armington elasticities in table 1 were then reviewed by USITC industry analysts, and adjustments to some of the elasticities were made to reflect this expertise and then aggregated to the USITC-128 model values that are presented in table 3. Table 4 presents the 41 Armington substitution elasticities required for a GTAP-41 model. These elasticities are derived as the trade-weighted average from the USITC-128 model elasticities presented.

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
1	Agricultural chemicals	26	270300	Pesticides and agricultural chemicals, n.e.c.	2.0
2	Air transportation and communication	39	650500	Air transportation	1.9
			660100	Telephone telegraph communications and	1.9
			660200	Cable and other pay television services	1.9
			670000	Radio and TV broadcasting	1.9
3	Aircraft and missile engines and engine	32	600200	Aircraft and missile engines and engine parts	1.5
4	Alcoholic beverages	19	142101	Malt beverages	3.0
			142102	Malt	4.0
			142103	Wines brandy and brandy spirits	4.0
			142104	Distilled and blended liquors	3.0
5	Aluminum rolling and drawing	29	380800	Aluminum rolling and drawing	2.5
6	Apparel	21	180101	Women's hosiery except socks	2.5
			180102	Hosiery, n.e.c.	2.0
			180400	Apparel made from purchased materials	2.0
7	Ball and roller bearings	34	490200	Ball and roller bearings	4.0
8	Blast furnaces and steel mills	28	370101	Blast furnaces and steel mills	4.5
9	Boat building and repairing	32	610200	Boat building and repairing	2.6
10	Bookbinding and related work	24	260802	Bookbinding and related work	2.7
			260803	Typesetting	2.7
			260806	Platemaking and related services	2.5
11	Broadwoven fabric mills and finishing	20	160100	Broadwoven fabric mills and fabric finishing plants	4.0
12	Business professional services	39	040001	Agricultural forestry and fishery services	2.8
			040002	Landscape and horticultural services	2.8
			710202	Royalties	1.9
			730101	Miscellaneous repair shops	1.9
			730102	Services to dwellings and other buildings	1.9
			730103	Personnel supply services	1.9

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
			730104	Computer and data processing services	1.9
			730106	Detective and protective services	1.9
			730107	Miscellaneous equipment rental and leasing	1.9
			730108	Photofinishing labs and commercial photography	1.9
			730109	Other business services	1.9
			730111	Management and public relations services	1.9
			730112	Research development and testing services except	1.9
			730200	Advertising	1.9
			730301	Legal services	1.9
			730302	Engineering architectural and surveying services	1.9
			730303	Accounting auditing and bookkeeping and	1.9
			740000	Eating and drinking places	1.9
			760101	Motion picture services and theaters	1.9
			760102	Video tape rental	1.9
			760201	Theatrical producers (except motion picture) bands	1.9
			760202	Bowling centers	1.9
			760203	Professional sports clubs and promoters	1.9
			760204	Racing including track operation	1.9
			760205	Physical fitness facilities and membership sports	1.9
			760206	Other amusement and recreation services	1.9
			770100	Doctors and dentists	1.9
			770200	Hospitals	1.9
			770301	Nursing and personal care facilities	1.9
			770303	Other medical and health services	1.9
			770304	Veterinary services	1.9
			770305	Other medical and health services	1.9
			770401	Elementary and secondary schools	1.9

**Table 1:**  
**Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors**

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
			770402	Colleges universities and professional schools	1.9
			770403	Private libraries vocational schools and educational	1.9
			770501	Business associations and professional	1.9
			770502	Labor organizations civic social and fraternal	1.9
			770503	Religious organizations	1.9
			770504	Other membership organizations	1.9
			770600	Job training and related services	1.9
			770700	Child day care services	1.9
			770800	Residential care	1.9
			770900	Social services, n.e.c.	1.9
			780100	U.S. Postal Service	2.8
			780500	Other fed gov enterprises	1.9
			790100	State and local government passenger transit	1.9
			790300	Other state and local government enterprises	1.9
			800000	Noncomparable imports	1.9
			820000	General government industry	#N/A
			830001	Rest of the world adjustment to final uses	1.9
			840000	Household industry	#N/A
13	Carbon black	26	270405	Carbon black	1.0
14	Carbon paper and inked ribbons	35	640504	Carbon paper and inked ribbons	4.0
15	Cars and trucks	31	590100	Truck and bus bodies	1.6
			590200	Truck trailers	2.1
			590301	Motor vehicles and passenger car bodies	2.7
			590302	Motor vehicle parts and accessories	2.7
16	Cement, hydraulic	27	360100	Cement hydraulic	2.3
17	Ceramic wall and floor tile		360300	Ceramic wall and floor tile	2.5
18	Cheese, natural and processed	16	140300	Natural processed and imitation cheese	5.0



Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
19	Chemical preparations, n.e.c.	26	270406	Chemicals and chemical preparations, n.e.c.	1.0
20	Cigarettes	19	150101	Cigarettes	2.7
			150102	Cigars	1.6
			150103	Chewing and smoking tobacco and snuff	3.0
21	Clay, ceramic, and refractory minerals	13	090003	Clay ceramic and refractory minerals	2.8
22	Coal mining	11	070000	Coal mining	1.0
23	Coating, engraving, and allied services,	30	420402	Coatingengraving and allied services, n.e.c.	1.9
24	Commercial fishing	9	030002	Commercial fishing	2.8
25	Construction	39	110101	New residential 1 unit structures nonfarm	1.9
			110102	New residential 2-4 unit structures,' nonfarm	1.9
			110105	New residential additions and alterations, nonfarm	1.9
			110108	New residential garden and high-rise apartments	1.9
			110400	New highways bridges and other horizontal	1.9
			110501	New farm residential construction	1.9
			110601	Petroleum and natural gas well drilling	1.9
			110602	Petroleum natural gas and solid mineral exploration	1.9
			110603	Access structures for solid mineral development	1.9
			110800	New office industrial and commercial buildings	1.9
			110900	Other new construction	1.9
			120101	Maintenance and repair of farm and nonfarm	1.9
			120214	Maintenance and repair of highways and streets	1.9
			120215	Maintenance and repair of petroleum and natural	1.9
			120300	Other repair and maintenance construction	1.9
26	Costume jewelry	35	640105	Costume jewelry	3.0
27	Cotton	5	020100	Cotton	5.0
28	Creamery butter	16	140200	Creamery butter	5.0
29	Crude petroleum and natural gas	12	080001	Crude petroleum and natural gas	2.8

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
30	Dairy farm products	8	010100	Dairy farm products	2.5
31	Drugs	26	290100	Drugs	2.8
32	Dry, condensed, and evaporated milk	16	140400	Dry condensed and evaporated dairy products	5.0
33	Durable manufactures	35	640101	Jewelry precious metal	1.0
			640102	Jewelers' materials and lapidary work	1.0
			640200	Musical instruments	2.6
			640301	Games toys and children's vehicles	1.0
			640302	Dolls and stuffed toys	1.0
			640400	Sporting and athletic goods, n.e.c.	2.3
			640501	Pens mechanical pencils and parts	3.0
			640502	Lead pencils and art goods	3.0
			640503	Marking devices	2.1
			640700	Fasteners buttons needles and pins	2.5
			640800	Brooms and brushes	3.5
			640900	Hard surface floor coverings, n.e.c.	1.9
			641000	Burial caskets	2.8
			641100	Signs and advertising specialties	1.8
			641200	Manufacturing industries, n.e.c.	2.2
34	Electric services (utilities)	36	680100	Electric services (utilities)	2.8
			780200	Federal electric utilities	1.9
			790200	State and local government electric utilities	2.8
35	Electrometallurgical products	28	370102	Electrometallurgical products except steel	1.0
36	Electronic equipment	33	510102	Calculating and accounting machines	3.4
			510103	Electronic computers	1.0
			510104	Computer peripheral equipment	2.8
			510400	Office machines, n.e.c.	3.0
			560100	Household audio and video equipment	3.0

**Table 1:**  
**Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors**

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
37	Explosives	26	560200	Prerecorded records and tapes	2.0
			560300	Telephone and telegraph apparatus	2.8
			560500	Communication equipment	2.8
			570100	Electron tubes	2.8
			570200	Semiconductors and related devices	1.7
			570300	Other electronic components	3.6
			270403	Explosives	2.7
			390100	Metal cans	3.6
			400100	Enameled iron and metal sanitary ware	2.6
			400400	Fabricated structural metal	1.0
38	Fabricated metal products, n.e.c.	30	400500	Metal doors sash frames molding and trim	1.0
			400600	Fabricated plate work (boiler shops)	2.8
			400700	Sheet metal work	2.4
			400800	Architectural and ornamental metal work	1.7
			400901	Prefabricated metal buildings and components	1.7
			400902	Miscellaneous structural metal work	1.7
			410100	Screw machine products bolts etc.	2.6
			410201	Automotive stampings	1.9
			410202	Crowns and closures	1.9
			410203	Metal stampings, n.e.c.	3.5
			420100	Cutlery	5.0
			420201	Hand and edge tools except machine tools and	1.0
			420202	Saw blades and handsaws	4.0
			420700	Steel springs except wire	2.3
			421000	Metal foil and leaf	2.8
			421100	Fabricated metal products, n.e.c.	1.0
39	Fabricated textile products	20	190301	Textile bags	3.0

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
40	Feed grains	1	020202	Feed grains	5.0
41	Finance, insurance, and real estate	39	700100	Banking	1.9
			700200	Credit agencies other than banks	1.9
			700300	Security and commodity brokers	1.9
			700400	Insurance carriers	1.9
			700500	Insurance agents brokers and services	1.9
			710100	Owner-occupied dwellings	1.9
			710201	Real estate agents managers operators and lessors	1.9
42	Floor coverings	20	170100	Carpets and rugs	1.5
43	Fluid milk	16	140600	Fluid milk	5.0
44	Food grains	1	020201	Food grains	5.0
45	Footwear	22	340201	Shoes except rubber	1.0
			340202	House slippers	1.0
46	Forest and forestry products	10	030001	Forestry products	3.9
47	Frozen fruits, fruit juices, and vegetables	17	141301	Frozen fruits fruit juices and vegetables	5.0
48	Fruits, vegetables, and tree nuts	2	020401	Fruits	4.0
			020402	Tree nuts	3.0
			020501	Vegetables	4.0
49	Glass and glass products, except containers	27	350100	Glass and glass products except containers	2.6
50	Glass containers	27	350200	Glass containers	2.8
51	Gum and wood chemicals	26	270401	Gum and wood chemicals	1.0
52	Gypsum products	27	361400	Gypsum products	3.0

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USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
53	Hardware, n.e.c.	30	420300	Hardware, n.e.c.	1.0
54	Heating equipment except electric and	30	400300	Heating equipment except electric and warm air	1.0
55	Household furnishings	20	190100	Curtains and draperies	3.0
			190200	Housefurnishings, n.e.c.	1.0
56	Ice cream and frozen desserts	16	140500	Ice cream and frozen desserts	5.0
57	Industrial inorganic and organic chemicals	26	270100	Industrial inorganic and organic chemicals	1.7
58	Knit fabric mills	21	180201	Knit outerwear mills	2.5
			180202	Knit underwear and nightwear mills	2.5
			180203	Knitting mills, n.e.c.	2.5
			180300	Knit fabric mills	3.6
59	Leather gloves and mittens	22	340301	Leather gloves and mittens	1.4
60	Leather tanning	22	330001	Leather tanning and finishing	2.8
			340100	Boot and shoe cut stock and findings	1.0
61	Lime	27	361300	Lime	3.0
62	Livestock	7	010301	Meat animals	2.0
			010302	Miscellaneous livestock	5.0
63	Luggage and leather	22	340302	Luggage	3.1
			340303	Women's handbags and purses	3.1
			340304	Personal leather goods, n.e.c.	3.5
			340305	Leather goods, n.e.c.	1.0
64	Machinery and equipment	34	130100	Guided missiles and space vehicles	1.0
			130200	Ammunition except for small arms, n.e.c.	2.9
			130300	Tanks and tank components	1.0
			130500	Small arms	2.9
			130700	Ordnance and accessories, n.e.c.	1.0
			430100	Turbines and turbine generator sets	1.8
			430200	Internal combustion engines, n.e.c.	2.6

**Table 1:**  
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<b>USITC 128 sector number</b>	<b>USITC-128 sector/commodity name</b>	<b>GTAP-41 commodity</b>	<b>BEA I-O account number</b>	<b>BEA input-output account name</b>	<b>Armington substitution elasticity</b>
			440001	Farm machinery and equipment	2.5
			440002	Lawn and garden equipment	3.2
			450100	Construction machinery and equipment	1.0
			450200	Mining machinery except oil field	2.3
			450300	Oil and gas field machinery and equipment	2.3
			460100	Elevators and moving stairways	1.0
			460200	Conveyors and conveying equipment	1.0
			460300	Hoists cranes and monorails	1.0
			460400	Industrial trucks and tractors	1.4
			470100	Machine tools metal cutting types	4.0
			470200	Machine tools metal forming types	4.0
			470300	Special dies and tools and machine tool	2.7
			470401	Power-driven handtools	1.4
			470402	Rolling mill machinery and equipment	5.0
			470404	Electric and gas welding and soldering equipment	2.0
			470405	Industrial patterns	1.0
			470500	Metalworking machinery, n.e.c.	2.7
			480100	Food products machinery	2.7
			480200	Textile machinery	2.8
			480300	Woodworking machinery	2.3
			480400	Paper industries machinery	2.7
			480500	Printing trades machinery and equipment	2.0
			480600	Special industry machinery, n.e.c.	2.9
			490100	Pumps and compressors	1.8
			490300	Blowers and fans	1.1
			490500	Mechanical power transmission equipment	2.7
			490600	Industrial process furnaces and ovens	1.0

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			490700	General industrial machinery and equipment, n.e.c.	2.8
			490800	Packaging machinery	1.7
			500100	Carburetors pistons rings and valves	2.7
			500200	Fluid power equipment	1.0
			500300	Scales and balances except laboratory	1.5
			500400	Industrial and commercial machinery and	2.4
			520100	Automatic vending machines	2.6
			520200	Commercial laundry equipment	3.4
			520300	Refrigeration and heating equipment	1.0
			520400	Measuring and dispensing pumps	1.0
			520500	Service industry machinery, n.e.c.	2.8
			530200	Power distribution and specialty transformers	2.6
			530300	Switchgear and switchboard apparatus	3.0
			530400	Motors and generators	2.9
			530500	Relays and industrial controls	2.2
			530700	Carbon and graphite products	3.5
			530800	Electrical industrial apparatus, n.e.c.	2.2
			540100	Household cooking equipment	2.4
			540200	Household refrigerators and freezers	2.8
			540300	Household laundry equipment	1.9
			540400	Electric housewares and fans	2.8
			540500	Household vacuum cleaners	2.9
			540700	Household appliances, n.e.c.	2.8
			550100	Electric lamp bulbs and tubes	1.6
			550200	Lighting fixtures and equipment	1.6
			550300	Wiring devices	1.6
			580200	Primary batteries dry and wet	3.0

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			580400	Electrical equipment for internal combustion	2.3
			580600	Magnetic and optical recording media	3.8
			580700	Electrical machinery equipment and supplies, n.e.c.	3.8
			620101	Search and navigation equipment	2.2
			620102	Laboratory apparatus and furniture	2.7
			620200	Mechanical measuring devices	2.9
			620300	Environmental controls	2.7
			620400	Surgical and medical instruments and apparatus	2.7
			620500	Surgical appliances and supplies	2.9
			620600	Dental equipment and supplies	2.7
			620800	X-ray apparatus and tubes	1.8
			620900	Electromedical and electrotherapeutic apparatus	2.0
			621000	Laboratory and optical instruments	2.8
			621100	Instruments to measure electricity	1.0
			630200	Ophthalmic goods	2.0
			810001	Scrap	1.9
			810002	Used and secondhand goods	0.0
65	Manmade fibers	26	280300	Cellulosic manmade fibers	3.0
			280400	Manmade organic fibers except cellulosic	1.0
66	Meat products	14	140101	Meat packing plants	3.0
			140102	Sausages and other prepared meat products	1.0
			140105	Poultry slaughtering and processing	1.0
			142700	Animal and marine fats and oils	4.4
67	Metal barrels, drums, and pails	30	390200	Metal shipping barrels, drums, kegs, and pails	1.0
68	Millwork	23	200501	Millwork	4.0
69	Mineral, ground or treated	27	361900	Minerals ground or treated	3.0
70	Mining	13	050001	Iron and ferroalloy ores and miscellaneous metal	2.0



**Table 1:**  
**Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors**

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
			060100	Copper ore	3.0
			060200	Nonferrous metal ores except copper	3.0
			090001	Dimension crushed and broken stone	1.8
			090002	Sand and gravel	1.8
			090004	Nonmetallic mineral services and miscellaneous	1.8
			100000	Chemical and fertilizer minerals	1.8
71	Misc. fabricated wire products	30	420500	Miscellaneous fabricated wire products	2.7
72	Misc. textile goods	20	170600	Coated fabrics not rubberized	2.6
			170700	Tire cord and fabrics	3.5
			170900	Cordage and twine	2.0
			171001	Nonwoven fabrics	2.4
			171100	Textile goods, n.e.c.	1.8
73	Motorcycles, bicycles, and parts	32	610500	Motorcycles, bicycles, and parts	3.5
74	Narrow fabric mills	20	160200	Narrow fabric mills	3.0
75	Natural gas distribution	37	680202	Natural gas distribution	2.8
76	Natural gas transport	41	680201	Natural gas transportation	2.8
77	Nonclay refractories	27	362100	Nonclay refractories	2.4
78	Nondurable manufactures	24	250000	Paperboard containers and boxes	4.0
			260100	Newspapers	3.0
			260200	Periodicals	3.1
			260301	Book publishing	3.0
			260302	Book printing	3.0
			260400	Miscellaneous publishing	3.1
			260501	Commercial printing	3.1
			260601	Manifold business forms	4.0
			260602	Blankbooks, looseleaf binders, and devices	4.0
			260700	Greeting cards	4.0

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
79	Nonferrous metals	29	380100	Primary smelting and refining of copper	4.0
			380501	Primary nonferrous metals, n.e.c.	5.2
			380700	Rolling drawing and extruding of copper	4.4
			381100	Aluminum castings	2.5
			381200	Copper foundries	3.0
			381300	Nonferrous castings, n.e.c.	3.5
			381400	Nonferrous forgings	3.0
			380600	Secondary nonferrous metals	3.5
80	Nonferrous wiredrawing and insulating	29	381000	Nonferrous wiredrawing and insulating	4.5
			380900	Nonferrous rolling and drawing, n.e.c.	4.0
81	Nonmetallic mineral products, n.e.c.	27	360200	Brick and structural clay tile	2.5
			360400	Clay refractories	2.4
			360500	Structural clay products, n.e.c.	2.5
			360600	Vitreous china plumbing fixtures	2.4
			360800	Porcelain electrical supplies	1.0
			360900	Pottery products, n.e.c.	2.9
			361000	Concrete block and brick	2.9
			361100	Concrete products, except block and brick	2.9
			361200	Ready-mixed concrete	1.0
			361500	Cut stone and stone products	2.6
			361600	Abrasive products	2.5
			361700	Asbestos products	1.0
			362000	Mineral wool	1.0
			362200	Nonmetallic mineral products, n.e.c.	3.3
82	Oil bearing crops	3	020600	Oil bearing crops	5.0
83	Other agricultural products	6	020203	Grass seeds	2.2
			020503	Miscellaneous crops	2.2

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
84	Other chemicals	26	020701	Forest products	3.9
			020702	Greenhouse and nursery products	5.0
			270201	Nitrogenous and phosphatic fertilizers	3.3
			270202	Fertilizers mixing only	1.0
			270402	Adhesives and sealants	1.0
			270404	Printing ink	2.2
			290201	Soap and other detergents	1.0
			290202	Polishes and sanitation goods	2.0
			290203	Surface active agents	2.4
			290300	Toilet preparations	2.2
			300000	Paints and allied products	2.9
			320100	Tires and inner tubes	2.4
			320200	Rubber and plastics footwear	1.3
			320300	Fabricated rubber products, n.e.c.	2.5
85	Other food products	17	320400	Miscellaneous plastics products, n.e.c.	1.0
			320500	Rubber and plastics hose and belting	3.3
			320600	Gaskets packing and sealing devices	3.0
			140700	Canned and cured fish and seafoods	5.0
			140800	Canned specialties	3.0
			140900	Canned fruits, vegetables, preserves, jams, and	5.0
			141000	Dehydrated fruits, vegetables, and soups	5.0
			141100	Pickles sauces and salad dressings	3.0
			141200	Prepared fresh or frozen fish and seafoods	1.7
			141302	Frozen specialties, n.e.c.	4.0
			141401	Flour and other grain mill products	5.0
			141402	Cereal breakfast foods	5.0
			141403	Prepared flour, mixes, and doughs	5.0

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
			141501	Dog and cat food	3.0
			141502	Prepared feeds, n.e.c.	5.0
			141600	Rice milling	4.0
			141801	Bread cake and related products	5.0
			141802	Cookies and crackers	5.0
			141803	Frozen bakery products except bread	4.0
			142002	Chocolate and cocoa products	5.0
			142004	Salted and roasted nuts and seeds	3.0
			142005	Candy and other confectionery products	5.0
			142900	Edible fats and oils, n.e.c.	5.0
			143000	Manufactured ice	2.2
			143100	Macaroni, spaghetti, vermicelli, and noodles	4.0
			143201	Potato chips and similar snacks	2.6
			143202	Food preparations, n.e.c.	3.0
86	Paper coating and glazing	24	240701	Paper coating and glazing	1.0
87	Paper mills, except building papers		240400	Envelopes	4.0
			240500	Sanitary paper products	3.0
			240702	Bags except textile	5.0
			240703	Die-cut paper and paperboard and cardboard	4.0
			240705	Stationery tablets and related products	4.0
			240706	Converted paper products, n.e.c.	4.0
			240800	Paper and paperboard mills	4.0
88	Particleboard	23	200903	Wood products, n.e.c.	5.0
89	Petroleum refining	25	310101	Petroleum refining	2.5
90	Photographic equipment and supplies	34	630300	Photographic equipment and supplies	2.0
91	Pipe, valves, and pipe fittings	30	420800	Pipe, valves, and pipe fittings	2.3
92	Pipelines, except natural gas	41	650600	Pipelines except natural gas	1.9

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
93	Plastics materials and resins	26	280100	Plastics materials and resins	1.0
94	Plating and polishing	30	420401	Plating and polishing	1.9
95	Plumbing fixture fittings and trim	30	400200	Plumbing fixture fittings and trim	1.0
96	Poultry and eggs	7	010200	Poultry and eggs	2.0
97	Prefabricated wood buildings and	23	200702	Prefabricated wood buildings and components	1.0
98	Primary aluminum	29	380400	Primary aluminum	3.5
99	Primary metal products	28	370104	Cold-rolled steel sheet strip and bars	1.8
			370105	Steel pipe and tubes	1.8
			370200	Iron and steel foundries	4.0
			370300	Iron and steel forgings	4.0
			370401	Metal heat treating	3.5
			370402	Primary metal products, n.e.c.	1.0
100	Products of petroleum and coal, n.e.c.	25	310102	Lubricating oils and greases	1.0
			310103	Products of petroleum and coal, n.e.c.	1.0
			310200	Asphalt paving mixtures and blocks	1.0
			310300	Asphalt felts and coatings	1.0
101	Pulp mills	24	240100	Pulp mills	5.0
102	Roasted coffee	17	142800	Roasted coffee	1.1
103	Sanitary services steam supply and	38	680302	Sanitary services steam supply and irrigation	2.8
104	Services	40	720101	Hotels	1.9
			720102	Other lodging places	1.9
			720201	Laundry cleaning, garment services, and shoe	1.9
			720202	Funeral service and crematories	1.9
			720203	Portrait photographic studios and other	1.9
			720204	Electrical repair shops	1.9
			720205	Watch, clock, jewelry, and furniture repair	1.9
			720300	Beauty and barber shops	1.9

Table 1:

## Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
			750001	Automotive rental and leasing without drivers	1.9
			750002	Automotive repair shops and services	1.9
			750003	Automobile parking and car washes	1.9
105	Ship building and repairing	32	610100	Ship building and repairing	2.4
106	Silverware and plated ware	35	640104	Silverware and plated ware	3.0
107	Small arms ammunition	34	130600	Small arms ammunition	2.9
108	Soft drinks and syrups	19	142200	Bottled and canned soft drinks	5.0
			142300	Flavoring extracts and flavoring syrups, n.e.c.	5.0
109	Steel wire and related products	28	370103	Steel wiredrawing and steel nails and spikes	3.0
110	Storage batteries	34	580100	Storage batteries	2.3
111	Sugar crops	4	020502	Sugar crops	5.0
112	Sugar manufacturing	18	141900	Sugar manufacturing	5.0
113	Synthetic rubber	26	280200	Synthetic rubber	2.0
114	Tableware	27	360701	Vitreous china, table, and kitchenware	2.4
			360702	Fine earthenware, table, and kitchenware	2.4
115	Tobacco	6	020300	Tobacco	3.0
116	Tobacco stemming and redrying	19	150200	Tobacco stemming and redrying	3.0
117	Trade	40	690100	Wholesale trade	1.9
			690200	Retail trade, except eating and drinking	1.9
118	Transportation equipment	32	600100	Aircraft	1.0
			600400	Aircraft and missile equipment, n.e.c.	1.5
			610300	Railroad equipment	2.6
			610601	Travel trailers and campers	2.6
			610603	Motor homes	2.1
			610700	Transportation equipment, n.e.c.	2.6
119	Transportation, communication, utilities	41	650100	Railroads and related services	1.9
			650200	Local and suburban transit and interurban highway	1.9

**Table 1:**  
**Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors**

<b>USITC 128 sector number</b>	<b>USITC-128 sector/commodity name</b>	<b>GTAP-41 commodity</b>	<b>BEA I-O account number</b>	<b>BEA input-output account name</b>	<b>Armington substitution elasticity</b>
120	Vegetable oil	15	650301	Trucking and courier services except air	1.9
			650701	Freight forwarders and other transportation services	1.9
			650702	Arrangement of passenger transportation	1.9
			142400	Cottonseed oil mills	5.0
121	Warehousing and storage	41	142500	Soybean oil mills	5.0
			142600	Vegetable oil mills, n.e.c.	5.0
			650302	Warehousing and storage	1.9
			620700	Watches, clocks, watchcases, and parts	1.0
123	Water supply and sewerage systems	38	680301	Water supply and sewerage systems	2.8
124	Water transportation	39	650400	Water transportation	1.9
125	Wet corn milling	17	141700	Wet corn milling	5.0
126	Wood preserving	23	200800	Wood preserving	3.0
127	Wood products	23	200100	Logging	3.9
			200200	Sawmills and planing mills, general	2.0
200300	Hardwood dimension and flooring mills	200300	200300	Hardwood dimension and flooring mills	2.4
			200400	Special product sawmills, n.e.c.	1.0
200502	Wood kitchen cabinets	200502	200502	Wood kitchen cabinets	2.9
			200600	Veneer and plywood	1.0
200701	Structural wood members, n.e.c.	200701	200701	Structural wood members, n.e.c.	1.0
			200703	Mobile homes	1.0
200901	Wood pallets and skids	200901	200901	Wood pallets and skids	3.6
			200904	Reconstituted wood products	2.8
210000	Wood containers, n.e.c.	210000	210000	Wood containers, n.e.c.	2.8
			220101	Wood household furniture except upholstered	2.8
220102	Household furniture, n.e.c.	220102	220102	Household furniture, n.e.c.	2.8
			220103	Wood television and radio cabinets	2.8
220200	Upholstered household furniture	220200	220200	Upholstered household furniture	3.5

**Table 1:**  
**Concordance - USITC-128 Sectors to BEA-498 Input-Output Sectors**

USITC 128 sector number	USITC-128 sector/commodity name	GTAP-41 commodity	BEA I-O account number	BEA input-output account name	Armington substitution elasticity
128	Yarn and thread mills	20	220300	Metal household furniture	3.5
			220400	Mattresses and bedsprings	2.4
			230100	Wood office furniture	3.5
			230200	Office furniture except wood	3.5
			230300	Public building and related furniture	3.5
			230400	Wood partitions and fixtures	3.5
			230500	Partitions and fixtures, except wood	3.5
			230600	Drapery hardware and window blinds and shades	2.8
			230700	Furniture and fixtures, n.e.c.	2.8
			160300	Yarn mills and finishing of textiles, n.e.c.	2.5
#N/A	BEA input-output sector represents a discrepancy in the capital accounts of GDP calculation in the base year. The equivalent (unknown) discrepancy in the analysis year, 1999, is distributed across sectors in proportion to their use and production of capital.	39	160400	Thread mills	2.4
			850000	Inventory valuation adjustment	#N/A



Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
1	Grains	1	Paddy rice	#N/A	#N/A
		2	Wheat	020201	Food grains
		3	Cereal grains, n.e.c.	020202	Feed grains
2	Fruits, vegetables, and nuts	4	Vegetables, fruit, nuts	020401	Fruits
				020402	Tree nuts
				020501	Vegetables
3	Oilseeds	5	Oil seeds	020600	Oil bearing crops
4	Sugar crops	6	Sugar cane, sugar beet	020502	Sugar crops
5	Fiber crops	7	Plant-based fibers	020100	Cotton
		12	Wool, silk-worm cocoons	#N/A	#N/A
6	Other crops	8	Crops, n.e.c.	020203	Grass seeds
				020300	Tobacco
				020503	Miscellaneous crops
				020701	Forest products
7	Other livestock:			020702	Greenhouse and nursery products
		9	Cattle, sheep, goats, horses	010301	Meat animals
		10	Animal products, n.e.c.	010200	Poultry and eggs
				010302	Miscellaneous livestock
8	Raw milk	11	Raw milk	010100	Dairy farm products
9	Forestry	13	Forestry	030001	Forestry products
10	Fishing	14	Fishing	030002	Commercial fishing
11	Coal	15	Coal	070000	Coal
12	Oil and gas	16	Oil	#N/A	#N/A
		17	Gas	080001	Crude petroleum and natural gas
13	Other minerals	18	Minerals, n.e.c.	050001	Iron and ferroalloy ores and miscellaneous metal
				060100	Copper ore
				060200	Nonferrous metal ores except copper

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
14	Meat products	19	Meat: cattle, sheep, goats, horse	090001	Dimension crushed and broken stone
				090002	Sand and gravel
		20	Meat products, n.e.c.	090003	Clay ceramic and refractory minerals
				090004	Nonmetallic mineral services and miscellaneous
15	Vegetable fats and oils	21	Vegetable oils and fats	100000	Chemical and fertilizer minerals
				140101	Meat packing plants
		22	Dairy products	142700	Animal and marine fats and oils
				140102	Sausages and other prepared meat products
16	Dairy products	23	Processed rice	140105	Poultry slaughtering and processing
				142400	Cottonseed oil mills
		25	Food products, n.e.c.	142500	Soybean oil mills
				142600	Vegetable oil mills, n.e.c.
17	Other processed foods	22	Dairy products	140200	Creamery butter
				140300	Natural processed and imitation cheese
		23	Processed rice	140400	Dry condensed and evaporated dairy products
				140500	Ice cream and frozen desserts
18	Other processed foods	24	Food products, n.e.c.	140600	Fluid milk
				141600	Rice milling
		25	Food products, n.e.c.	140700	Canned and cured fish and seafoods
				140800	Canned specialties
19	Other processed foods	26	Food products, n.e.c.	140900	Canned fruits vegetables preserves jams and jellies
				141000	Dehydrated fruits vegetables and soups
		27	Food products, n.e.c.	141100	Pickles sauces and salad dressings
				141200	Prepared fresh or frozen fish and seafoods
20	Other processed foods	28	Food products, n.e.c.	141301	Frozen fruits fruit juices and vegetables
				141302	Frozen specialties, n.e.c.
		29	Food products, n.e.c.	141401	Flour and other grain mill products

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				141402	Cereal breakfast foods
				141403	Prepared flour mixes and doughs
				141501	Dog and cat food
				141502	Prepared feeds, n.e.c.
				141700	Wet corn milling
				141801	Bread cake and related products
				141802	Cookies and crackers
				141803	Frozen bakery products except bread
				142002	Chocolate and cocoa products
				142004	Salted and roasted nuts and seeds
				142005	Candy and other confectionery products
				142800	Roasted coffee
				142900	Edible fats and oils, n.e.c.
				143000	Manufactured ice
				143100	Macaroni spaghetti vermicelli and noodles
				143201	Potato chips and similar snacks
				143202	Food preparations, n.e.c.
18	Sugar manufacturing	24	Sugar	141900	Sugar
19	Beverages and tobacco	26	Beverages and tobacco products	142101	Malt beverages
				142102	Malt
				142103	Wines brandy and brandy spirits
				142104	Distilled and blended liquors
				142200	Bottled and canned soft drinks
				142300	Flavoring extracts and flavoring syrups, n.e.c.
				150101	Cigarettes
				150102	Cigars
				150103	Chewing and smoking tobacco and snuff

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
<hr/>					
20	Textiles	27	Textiles	150200	Tobacco stemming and redrying
				160100	Broadwoven fabric mills and fabric finishing plants
				160200	Narrow fabric mills
				160300	Yarn mills and finishing of textiles, n.e.c.
				160400	Thread mills
				170100	Carpets and rugs
				170600	Coated fabrics not rubberized
				170700	Tire cord and fabrics
				170900	Cordage and twine
				171001	Nonwoven fabrics
				171100	Textile goods, n.e.c.
				190100	Curtains and draperies
				190200	Housefurnishings, n.e.c.
				190301	Textile bags
				190302	Canvas and related products
				190303	Pleating and stitching
21	Wearing apparel	28	Wearing apparel	190304	Automotive and apparel trimmings
				190305	Schiffli machine embroideries
				190306	Fabricated textile products, n.e.c.
				180101	Women's hosiery except socks
				180102	Hosiery, n.e.c.
				180201	Knit outerwear mills
				180202	Knit underwear and nightwear mills
				180203	Knitting mills, n.e.c.
				180300	Knit fabric mills
				180400	Apparel made from purchased materials
22	Leather products	29	Leather products	330001	Leather tanning and finishing

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
23	Wood products	30	Wood products	340100	Boot and shoe cut stock and findings
				340201	Shoes except rubber
				340202	House slippers
				340301	Leather gloves and mittens
				340302	Luggage
23	Wood products	30	Wood products	340303	Women's handbags and purses
				340304	Personal leather goods, n.e.c.
				340305	Leather goods, n.e.c.
				200100	Logging
				200200	Sawmills and planing mills general
				200300	Hardwood dimension and flooring mills
				200400	Special product sawmills, n.e.c.
				200501	Millwork
				200502	Wood kitchen cabinets
				200600	Veneer and plywood
				200701	Structural wood members, n.e.c.
				200702	Prefabricated wood buildings and components
				200703	Mobile homes
				200800	Wood preserving
				200901	Wood pallets and skids
23	Wood products	30	Wood products	200903	Wood products, n.e.c.
				200904	Reconstituted wood products
				210000	Wood containers, n.e.c.
				220101	Wood household furniture except upholstered
				220102	Household furniture, n.e.c.
				220103	Wood television and radio cabinets
				220200	Upholstered household furniture

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				220300	Metal household furniture
				220400	Mattresses and bedsprings
				230100	Wood office furniture
				230200	Office furniture except wood
				230300	Public building and related furniture
				230400	Wood partitions and fixtures
				230500	Partitions and fixtures except wood
				230600	Drapery hardware and window blinds and shades
				230700	Furniture and fixtures, n.e.c.
24	Paper products	31	Paper products, publishing	240100	Pulp mills
				240400	Envelopes
				240500	Sanitary paper products
				240701	Paper coating and glazing
				240702	Bags except textile
				240703	Die-cut paper and paperboard and cardboard
				240705	Stationery tablets and related products
				240706	Converted paper products, n.e.c.
				240800	Paper and paperboard mills
				250000	Paperboard containers and boxes
				260100	Newspapers
				260200	Periodicals
				260301	Book publishing
				260302	Book printing
				260400	Miscellaneous publishing
				260501	Commercial printing
				260601	Manifold business forms
				260602	Blankbooks looseleaf binders and devices
				260700	Greeting cards

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
25	Petroleum and coal products	32	Petroleum, coal products	260802	Bookbinding and related work
				260803	Typesetting
				260806	Platemaking and related services
				310101	Petroleum refining
				310102	Lubricating oils and greases
				310103	Products of petroleum and coal, n.e.c.
26	Chemical, rubber and plastic products	33	Chemical, rubber, plastic products	310200	Asphalt paving mixtures and blocks
				310300	Asphalt felts and coatings
				270100	Industrial inorganic and organic chemicals
				270201	Nitrogenous and phosphatic fertilizers
				270202	Fertilizers mixing only
				270300	Pesticides and agricultural chemicals, n.e.c.
				270401	Gum and wood chemicals
				270402	Adhesives and sealants
				270403	Explosives
				270404	Printing ink
				270405	Carbon black
				270406	Chemicals and chemical preparations, n.e.c.
				280100	Plastics materials and resins
				280200	Synthetic rubber
				280300	Cellulosic manmade fibers
				280400	Manmade organic fibers except cellulosic
				290100	Drugs
				290201	Soap and other detergents
				290202	Polishes and sanitation goods
				290203	Surface active agents
				290300	Toilet preparations

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
27 Mineral products, n.e.c.		34 Mineral products, n.e.c.		300000	Paints and allied products
				320100	Tires and inner tubes
				320200	Rubber and plastics footwear
				320300	Fabricated rubber products, n.e.c.
				320400	Miscellaneous plastics products, n.e.c.
				320500	Rubber and plastics hose and belting
				320600	Gaskets packing and sealing devices
				350100	Glass and glass products except containers
				350200	Glass containers
				360100	Cement hydraulic
				360200	Brick and structural clay tile
				360300	Ceramic wall and floor tile
				360400	Clay refractories
				360500	Structural clay products, n.e.c.
				360600	Vitreous china plumbing fixtures
				360701	Vitreous china table and kitchenware
				360702	Fine earthenware table and kitchenware
28 Chemical and allied products, n.e.c.		35 Chemical and allied products, n.e.c.		360800	Porcelain electrical supplies
				360900	Pottery products, n.e.c.
				361000	Concrete block and brick
				361100	Concrete products except block and brick
				361200	Ready-mixed concrete
				361300	Lime
				361400	Gypsum products
				361500	Cut stone and stone products
				361600	Abrasive products
				361700	Asbestos products



Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
28 Ferrous metals		35 Ferrous metals		361900	Minerals ground or treated
				362000	Mineral wool
				362100	Nonclay refractories
				362200	Nonmetallic mineral products, n.e.c.
				370101	Blast furnaces and steel mills
				370102	Electrometallurgical products except steel
				370103	Steel wiredrawing and steel nails and spikes
				370104	Cold-rolled steel sheet strip and bars
				370105	Steel pipe and tubes
				370200	Iron and steel foundries
29 Non Ferrous metals		36 Metals, n.e.c.		370300	Iron and steel forgings
				370401	Metal heat treating
				370402	Primary metal products, n.e.c.
				380100	Primary smelting and refining of copper
				380400	Primary aluminum
				380501	Primary nonferrous metals, n.e.c.
				380600	Secondary nonferrous metals
				380700	Rolling drawing and extruding of copper
				380800	Aluminum rolling and drawing
				380900	Nonferrous rolling and drawing, n.e.c.
30 Metal products		37 Metal products		381000	Nonferrous wiredrawing and insulating
				381100	Aluminum castings
				381200	Copper foundries
				381300	Nonferrous castings, n.e.c.
				381400	Nonferrous forgings
				390100	Metal cans
				390200	Metal shipping barrels drums kegs and pails

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				400100	Enameled iron and metal sanitary ware
				400200	Plumbing fixture fittings and trim
				400300	Heating equipment except electric and warm air
				400400	Fabricated structural metal
				400500	Metal doors sash frames molding and trim
				400600	Fabricated plate work (boiler shops)
				400700	Sheet metal work
				400800	Architectural and ornamental metal work
				400901	Prefabricated metal buildings and components
				400902	Miscellaneous structural metal work
				410100	Screw machine products bolts etc.
				410201	Automotive stampings
				410202	Crowns and closures
				410203	Metal stampings, n.e.c.
				420100	Cutlery
				420201	Hand and edge tools except machine tools and
				420202	Saw blades and handsaws
				420300	Hardware, n.e.c.
				420401	Plating and polishing
				420402	Coating, engraving ,and allied services, n.e.c.
				420500	Miscellaneous fabricated wire products
				420700	Steel springs except wire
				420800	Pipe valves and pipe fittings
				421000	Metal foil and leaf
				421100	Fabricated metal products, n.e.c.
31	Motor vehicles and parts	38	Motor vehicles and parts	590100	Truck and bus bodies
				590200	Truck trailers

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
32	Transport equipment, n.e.c.	39	Transport equipment, n.e.c.	590301	Motor vehicles and passenger car bodies
				590302	Motor vehicle parts and accessories
				600100	Aircraft
				600200	Aircraft and missile engines and engine parts
				600400	Aircraft and missile equipment, n.e.c.
				610100	Ship building and repairing
				610200	Boat building and repairing
				610300	Railroad equipment
				610500	Motorcycles bicycles and parts
				610601	Travel trailers and campers
33	Electronic equipment	40	Electronic equipment	610603	Motor homes
				610700	Transportation equipment, n.e.c.
				510102	Calculating and accounting machines
				510103	Electronic computers
				510104	Computer peripheral equipment
				510400	Office machines, n.e.c.
				560100	Household audio and video equipment
				560200	Prerecorded records and tapes
				560300	Telephone and telegraph apparatus
				560500	Communication equipment
34	Machinery and equipment, n.e.c.	41	Machinery and equipment, n.e.c.	570100	Electron tubes
				570200	Semiconductors and related devices
				570300	Other electronic components
				130100	Guided missiles and space vehicles
				130200	Ammunition except for small arms, n.e.c.
				130300	Tanks and tank components
				130500	Small arms

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				130600	Small arms ammunition
				130700	Ordnance and accessories, n.e.c.
				430100	Turbines and turbine generator sets
				430200	Internal combustion engines, n.e.c.
				440001	Farm machinery and equipment
				440002	Lawn and garden equipment
				450100	Construction machinery and equipment
				450200	Mining machinery except oil field
				450300	Oil and gas field machinery and equipment
				460100	Elevators and moving stairways
				460200	Conveyors and conveying equipment
				460300	Hoists cranes and monorails
				460400	Industrial trucks and tractors
				470100	Machine tools metal cutting types
				470200	Machine tools metal forming types
				470300	Special dies and tools and machine tool accessories
				470401	Power-driven handtools
				470402	Rolling mill machinery and equipment
				470404	Electric and gas welding and soldering equipment
				470405	Industrial patterns
				470500	Metalworking machinery, n.e.c.
				480100	Food products machinery
				480200	Textile machinery
				480300	Woodworking machinery
				480400	Paper industries machinery
				480500	Printing trades machinery and equipment
				480600	Special industry machinery, n.e.c.

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				490100	Pumps and compressors
				490200	Ball and roller bearings
				490300	Blowers and fans
				490500	Mechanical power transmission equipment
				490600	Industrial process furnaces and ovens
				490700	General industrial machinery and equipment, n.e.c.
				490800	Packaging machinery
				500100	Carburetors pistons rings and valves
				500200	Fluid power equipment
				500300	Scales and balances except laboratory
				500400	Industrial and commercial machinery and equipment
				520100	Automatic vending machines
				520200	Commercial laundry equipment
				520300	Refrigeration and heating equipment
				520400	Measuring and dispensing pumps
				520500	Service industry machinery, n.e.c.
				530200	Power distribution and specialty transformers
				530300	Switchgear and switchboard apparatus
				530400	Motors and generators
				530500	Relays and industrial controls
				530700	Carbon and graphite products
				530800	Electrical industrial apparatus, n.e.c.
				540100	Household cooking equipment
				540200	Household refrigerators and freezers
				540300	Household laundry equipment
				540400	Electric housewares and fans
				540500	Household vacuum cleaners

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				540700	Household appliances, n.e.c.
				550100	Electric lamp bulbs and tubes
				550200	Lighting fixtures and equipment
				550300	Wiring devices
				580100	Storage batteries
				580200	Primary batteries dry and wet
				580400	Electrical equipment for internal combustion engines
				580600	Magnetic and optical recording media
				580700	Electrical machinery equipment and supplies, n.e.c.
				620101	Search and navigation equipment
				620102	Laboratory apparatus and furniture
				620200	Mechanical measuring devices
				620300	Environmental controls
				620400	Surgical and medical instruments and apparatus
				620500	Surgical appliances and supplies
				620600	Dental equipment and supplies
				620700	Watches clocks watchcases and parts
				620800	X-ray apparatus and tubes
				620900	Electromedical and electrotherapeutic apparatus
				621000	Laboratory and optical instruments
				621100	Instruments to measure electricity
				630200	Ophthalmic goods
				630300	Photographic equipment and supplies
				810001	Scrap
				810002	Used and secondhand goods
35	Other manufactures	42	Manufactures, n.e.c.	640101	Jewelry precious metal
				640102	Jewelers' materials and lapidary work

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				640104	Silverware and plated ware
				640105	Costume jewelry
				640200	Musical instruments
				640301	Games toys and children's vehicles
				640302	Dolls and stuffed toys
				640400	Sporting and athletic goods, n.e.c.
				640501	Pens mechanical pencils and parts
				640502	Lead pencils and art goods
				640503	Marking devices
				640504	Carbon paper and inked ribbons
				640700	Fasteners buttons needles and pins
				640800	Brooms and brushes
				640900	Hard surface floor coverings, n.e.c.
				641000	Burial caskets
				641100	Signs and advertising specialties
				641200	Manufacturing industries, n.e.c.
36	Electricity	43	Electricity	680100	Electric services (utilities)
				780200	Federal electric utilities
				790200	State and local government electric utilities
37	Gas manufacture and distribution	44	Gas manufacture, distribution	680202	Natural gas distribution
38	Water services	45	Water	680301	Water supply and sewerage systems
				680302	Sanitary services steam supply and irrigation
39	Other services	46	Construction	110101	New residential 1 unit structures, nonfarm
				110102	New residential 2-4 unit structures, nonfarm
				110105	New residential additions and alterations, nonfarm
				110108	New residential garden and high-rise apartments
				110400	New highways bridges and other horizontal
				110501	New farm residential construction

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				110601	Petroleum and natural gas well drilling
				110602	Petroleum natural gas and solid mineral exploration
				110603	Access structures for solid mineral development
				110800	New office industrial and commercial buildings
				110900	Other new construction
				120101	Maintenance and repair of farm and nonfarm
				120214	Maintenance and repair of highways and streets
				120215	Maintenance and repair of petroleum and natural
				120300	Other repair and maintenance construction
	49 Sea transport			650400	Water transportation
	50 Air transport			650500	Air transportation
	51 Communication			660100	Telephone and telegraph communications and
				660200	Cable and other pay television services
				670000	Radio and TV broadcasting
	52 Financial services, n.e.c.			700100	Banking
				700200	Credit agencies other than banks
				700300	Security and commodity brokers
				730301	Legal services
				730302	Engineering architectural and surveying services
				730303	Accounting auditing and bookkeeping and
	53 Insurance			700400	Insurance carriers
				700500	Insurance agents brokers and services
	54 Business services, n.e.c.			710201	Real estate agents managers operators and lessors
				710202	Royalties
				730101	Miscellaneous repair shops
				730102	Services to dwellings and other buildings
				730103	Personnel supply services



Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				730104	Computer and data processing services
				730106	Detective and protective services
				730107	Miscellaneous equipment rental and leasing
				730108	Photofinishing labs and commercial photography
				730109	Other business services
				730111	Management and public relations services
				730112	Research development and testing services except
				730200	Advertising
		55	Recreation and other services	740000	Eating and drinking places
				760101	Motion picture services and theaters
				760102	Video tape rental
				760201	Theatrical producers (except motion picture) bands
				760202	Bowling centers
				760203	Professional sports clubs and promoters
				760204	Racing including track operation
				760205	Physical fitness facilities and membership sports and
				760206	Other amusement and recreation services
		56	Public administration, defense, health, and education	040001	Agricultural forestry and fishery services
				040002	Landscape and horticultural services
				770100	Doctors and dentists
				770200	Hospitals
				770301	Nursing and personal care facilities
				770303	Other medical and health services
				770304	Veterinary services
				770305	Other medical and health services
				770401	Elementary and secondary schools
				770402	Colleges universities and professional schools

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
				770403	Private libraries vocational schools and educational
				770501	Business associations and professional membership
				770502	Labor organizations civic social and fraternal
				770503	Religious organizations
				770504	Other membership organizations
				770600	Job training and related services
				770700	Child day care services
				770800	Residential care
				770900	Social services, n.e.c.
				780100	U.S. Postal Service
				780500	Other federal government enterprises
				790100	State and local government passenger transit
				790300	Other stlcl gov enterprises
				800000	Noncomparable imports
				820000	General government industry
				830001	Rest of the world adjustment to final uses
				840000	Household industry
				850000	Inventory valuation adjustment
		57	Dwellings	710100	Owner-occupied dwellings
40	Wholesale and retail trade	47	Trade	690100	Wholesale trade
				690200	Retail trade except eating and drinking
				720101	Hotels
				720102	Other lodging places
				720201	Laundry cleaning garment services and shoe repair
				720202	Funeral service and crematories
				720203	Portrait photographic studios and other
				720204	Electrical repair shops

Table 2:

## Concordance - GTAP-41 Commodities to BEA-498 Input-Output Sectors

GTAP-41 commodity number	GTAP-41 commodity name	GTAP-57 commodity number	GTAP-57 commodity name	BEA I/O account number	BEA input-output account name
41	Transport, n.e.c.	48	Transport, n.e.c.	720205	Watch clock jewelry and furniture repair
				720300	Beauty and barber shops
				750001	Automotive rental and leasing without drivers
				750002	Automotive repair shops and services
				750003	Automobile parking and car washes
				650100	Railroads and related services
				650200	Local and suburban transit and interurban highway
				650301	Trucking and courier services except air
				650302	Warehousing and storage
				650600	Pipelines except natural gas
				650701	Freight forwarders and other transportation services
				650702	Arrangement of passenger transportation
				680201	Natural gas transportation

**Table 3:**  
**Specification of Armington Substitution Elasticities in a USITC-128 Sector Model**

<b>USITC-128 sector /commodity number</b>	<b>USITC-128 sector/commodity name</b>	<b>USITC-128 sector /commodity elasticity</b>
1	Agricultural chemicals	2.00
2	Air and sea transportation and communication services	1.90
3	Aircraft and missile engines and engine parts	1.50
4	Alcoholic beverages	3.40
5	Aluminum rolling and drawing	2.50
6	Apparel	2.00
7	Ball and roller bearings	4.00
8	Blast furnaces and steel mills	4.50
9	Boat building and repairing	2.60
10	Bookbinding and related work	2.50
11	Broadwoven fabric mills and finishing	4.00
12	Business professional services	1.91
13	Carbon black	1.00
14	Carbon paper and inked ribbons	4.00
15	Cars and trucks	2.70
16	Cement, hydraulic	2.30
17	Ceramic wall and floor tile	2.50
18	Cheese, natural and processed	5.00
19	Chemical preparations, n.e.c.	1.00
20	Cigarettes	1.97
21	Clay, ceramic, and refractory minerals mining	2.80
22	Coal mining	1.00
23	Coating, engraving, and allied services, n.e.c.	0.00 *
24	Commercial fishing	2.80
25	Construction	0.00 *
26	Costume jewelry	3.00
27	Cotton	5.00
28	Creamery butter	5.00
29	Crude petroleum and natural gas	2.80
30	Dairy farm products	2.50
31	Drugs	2.80
32	Dry, condensed, and evaporated milk	5.00
33	Durable manufactures	1.63
34	Electric services (utilities)	2.80
35	Electrometallurgical products	1.00
36	Electronic equipment	2.24
37	Explosives	2.70
38	Fabricated metal products, n.e.c.	2.04
39	Fabricated textile products	1.33
40	Feed grains	5.00
41	Finance, insurance, and real estate	1.90
42	Floor coverings	1.50
43	Fluid milk	5.00
44	Food grains	5.00
45	Footwear	1.00

**Table 3:**  
**Specification of Armington Substitution Elasticities in a USITC-128 Sector Model**

<b>USITC-128 sector /commodity number</b>	<b>USITC-128 sector/commodity name</b>	<b>USITC-128 sector /commodity elasticity</b>
46	Forest and forestry products	3.90
47	Frozen fruits, fruit juices, and vegetables	5.00
48	Fruits and vegetables	3.93
49	Glass and glass products, except containers	2.60
50	Glass containers	2.80
51	Gum and wood chemicals	1.00
52	Gypsum products	3.00
53	Hardware, n.e.c.	1.00
54	Heating equipment, except electric and warm air furnaces	1.00
55	Household furnishings	1.17
56	Ice cream and frozen desserts	5.00
57	Industrial inorganic and organic chemicals	1.70
58	Knit fabric mills	3.60
59	Leather gloves and mittens	1.40
60	Leather tanning	2.23
61	Lime	3.00
62	Livestock	3.23
63	Luggage and leather	3.04
64	Machinery and equipment	1.48
65	Manmade fibers	1.16
66	Meat products	2.73
67	Metal barrels, drums and pails	1.00
68	Millwork	4.00
69	Mineral, ground or treated	3.00
70	Mining	1.99
71	Misc. textile goods	2.40
72	Misc. fabricated wire products	2.70
73	Motorcycles, bicycles, and parts	3.50
74	Narrow fabric mills	3.00
75	Natural gas distribution	0.00 *
76	Natural gas transport	0.00 *
77	Nonclay refractories	2.40
78	Nondurable manufactures	3.36
79	Nonferrous metals	4.96
80	Nonferrous wiredrawing and insulating	4.34
81	Nonmetallic mineral products, n.e.c.	2.52
82	Oil bearing crops	5.00
83	Other agricultural products	4.36
84	Other chemicals	1.81
85	Other food products	4.28
86	Paper coating and glazing	1.00
87	Paper mills, except building papers	4.02
88	Particleboard	5.00
89	Petroleum refining	2.50
90	Photographic equipment and supplies	2.00
91	Pipe, valves, and pipe fittings	2.30

**Table 3:**  
**Specification of Armington Substitution Elasticities in a USITC-128 Sector Model**

<b>USITC-128 sector /commodity number</b>	<b>USITC-128 sector/commodity name</b>	<b>USITC-128 sector /commodity elasticity</b>
92	Pipelines, except natural gas	0.00 *
93	Plastics materials and resins	1.00
94	Plating and polishing	0.00 *
95	Plumbing fixture fittings and trim	1.00
96	Poultry and eggs	2.00
97	Prefabricated wood buildings and components	1.00
98	Primary aluminum	3.50
99	Primary metal products	3.78
100	Products of petroleum and coal, n.e.c.	1.00
101	Pulp mills	5.00
102	Roasted coffee	1.10
103	Sanitary services, steam supply, and irrigation systems	0.00 *
104	Services	1.90
105	Ship building and repairing	2.40
106	Silverware and plated ware	3.00
107	Small arms ammunition	2.90
108	Soft drinks and syrups	5.00
109	Steel wire and related products	3.00
110	Storage batteries	2.30
111	Sugar crops	5.00
112	Sugar manufacturing	5.00
113	Synthetic rubber	2.00
114	Tableware	2.40
115	Tobacco	3.00
116	Tobacco stemming and redrying	3.00
117	Trade	0.00 *
118	Transportation equipment	2.57
119	Transportation, communication, utilities	1.90
120	Vegetable oil	5.00
121	Warehousing and storage	0.00 *
122	Watches, clocks, watchcases, and parts	1.00
123	Water supply and sewerage systems	0.00 *
124	Wet corn milling	5.00
125	Water transportation	0.00 *
126	Wood preserving	3.00
127	Wood products	2.61
128	Yarn and thread mills	2.49

\* USITC model sectors with no traded commodities.

**Table 4:**  
**Specification of Armington Substitution Elasticities in a GTAP-41 Commodity Model**

<b>GTAP-41 commodity number</b>	<b>GTAP-41 commodity name</b>	<b>USITC model elasticities</b>	<b>Default GTAP model elasticities</b>
1	Grains	5.0	2.2
2	Fruits, vegetables, and nuts	3.9	2.2
3	Oilseeds	5.0	2.2
4	Sugar crops	5.0	2.2
5	Fiber crops	5.0	2.2
6	Other crops	4.2	2.2
7	Other livestock	3.2	2.8
8	Raw milk	2.5	2.2
9	Forestry	3.9	2.8
10	Fishing	2.8	2.8
11	Coal	1.0	2.8
12	Oil and gas	2.8	2.8
13	Other minerals	2.0	2.8
14	Meat products	2.7	2.2
15	Vegetable fats and oils	5.0	2.2
16	Dairy products	5.0	2.2
17	Other processed foods	4.2	2.2
18	Sugar manufacturing	5.0	2.2
19	Beverages and tobacco	3.5	3.1
20	Textiles	2.3	2.2
21	Wearing apparel	2.0	4.4
22	Leather products	1.7	4.4
23	Wood products	2.8	2.8
24	Paper products	3.9	1.8
25	Petroleum and coal products	2.5	1.9
26	Chemicals, rubber and plastic products	2.0	1.9
27	Mineral products, n.e.c.	2.5	2.8
28	Ferrous metals	4.1	2.8
29	Non Ferrous metals	4.4	2.8
30	Metal products	1.9	2.8
31	Motor vehicles and parts	2.7	5.2
32	Transportation equipment, n.e.c.	1.7	5.2
33	Electronic equipment	2.6	2.8
34	Machinery and equipment, n.e.c.	2.2	2.8
35	Other manufactures	1.7	2.8
36	Electricity	2.8	2.8
37	Gas manufacturing and distribution	2.8	2.8
38	Water services	2.8	2.8
39	Other services	1.9	1.9
40	Wholesale and retail trade	1.9	1.9
41	Transport services, n.e.c.	1.9	1.9