EMPLOYMENT EFFECTS OF SELECTED STRUCTURAL ADJUSTMENT POLICIES IN THE PHILIPPINES

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TABLE OF CONTENTS

I. Introduction 1

II. Review of Existing Philippine Literature 9

III. Simulation Experiments: The Models and Results 28

III.1 PIDS-NEDA Macroeconometric Model 28

III.2 Habito's CGE Model 36

IV. Conclusions and Recommendations 41

Bibliography 44

LIST OF TABLES

1	Nominal Tariff Levels by I/O Sector 1979-1985	3
2	BOI Incentives Under PD 1789 and BP 391	4
3	Products Subject to Export Tax as of November, 1983	7
4	Impact Effects of TRP Based on Chung Lee Model (percentage changes)	11
5a	Impact Effects of TRP	12
5b	Impact Effects of TRP	14
6	EPR's, % Changes in Output and Employment for Products Subject to Export Taxes as of November, 1983	17
7	Comparative Employment Effects of PD 1789, BP 391 and EO 226 Investment Incentives	19
8	Factor Prices and Allocation	22
9	Commodity Prices and Production	23
10	Simulation Results: Effects on Selected Trade and Income Variables	25
11	Simulation Results: Effects on Sectoral Prices and Output	26
12	Simulation of PIDS-NEDA Macroeconometric Model Experiment 1: TRP Not Implemented	31
13	Simulation of PIDS-NEDA Macroeconometric Model Experiment 2: Export Taxes Not Removed in 1986	33
14	Simulation of PIDS-NEDA Macroeconometric Model Experiment 3: Financial Liberalization Not Implemented ..	35
15	CGE Simulation Results, Year 2 (Tariff Reform Only)	38
16	CGE Simulation Results, Year 2 (BOI Incentives Only)	40
17	CGE Simulation Results: Flexible Exchange Rate	42

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I. INTRODUCTION

Despite exhibiting a fairly decent growth trend relative to most other middle-income economies in the 20-year period between 1960 and 1980, the Philippines compares unfavorably with other Asian countries in terms of overall economic performance. This development together with a recurring of payments problem and a sharp rise in external indebtedness towards the end of the seventies highlighted the growing macro imbalance and signalled the immediate need for structural reforms. Thus, at the start of the 1980s, the government embarked on a structural adjustment program. The principal components of the program are: (1) tariff reform, (2) import liberalization, (3) investment incentives reform, (4) exchange rate adjust-

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The views expressed in this study are those of the author and do not necessarily reflect those of the Institute.

ment, (5) financial liberalization, (6) removal of export taxes, (7) restructuring of the government corporate sector and (8) rationalization of agricultural pricing policy. The tariff reform program (TRP) which was initiated in 1981 and completed in 1985, represented a shift to a more uniform tariff structure as the range of statutory rates was reduced from 0-100 percent to 10-50 percent. Table 1 summarizes the changes in average statutory tariff rates of the different sectors. On the other hand, in 1983, BOI incentives were modified such that the predominantly capital biased incentives of the earlier law were replaced by performance-based incentives (Table 2).[1/] In 1986, all export taxes except that on logs were eliminated (Table 3). Financial liberalization implied the deregulation of interest rate on both deposits and loans starting in 1981. Initially, only the ceilings on interest ratio on deposits and long term loans were removed. But in 1983, restrictions on short-term loan rates were also lifted. Simultaneous with this, reserve requirements ratio and the net worth-to-risk-assets ratio of banks were also reduced. In this effort, the government received support from the World Bank in the form of two Structural Adjustment Loans (SALI in 1980 and SALI in 1983) and an industrial finance loan.

On the other hand, the balance of payments crisis of 1983 forced the government to undertake a stabilization program that includes fiscal and monetary restraints and a devaluation of the domestic currency. In this paper, we adopt the distinction between stabilization and structural

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1/ In 1987, a new investments code was promulgated under EO 226. This law introduced the income tax holiday as the centerpiece of the tax incentives package which also includes the tax and duty free importation of capital equipment. At the same time, the performance based incentives of BP 391 were dropped.

Table 1: NOMINAL TARIFF LEVELS BY I/O SECTOR 1979-1985

I/O Sector	Industry/Industry Group	1979	1985
1-14	Agriculture, Fishery and Forestry	56.38	33.08
01-02	Palay	70	50
03	Corn	70	50
04	Coconut including copra	85	35
05	Sugarcane	70	50
06	Banana	100	50
07	Other crops	27.18	13.05
08-09	Livestock	53.57	26.47
10-11	Poultry	74.28	47.78
12-13	Fishery	93.75	33.08
14	Forestry	46	27.22
15-21	Mining and Quarrying	16.38	13.09
15	Copper Mining	10	10
16	Gold and Silver ore mining	10	10
17	Chromium ore mining	10	10
18	Nickel mining	10	10
19	Other metal mining	10	10
20	Salt mining	30	15
21	Other non-metallic mining/quarrying	18.12	14.7
22-58	Manufacturing	42.38	28.06
22-30	Food manufactures	60	33.68
31	Beverage industries	78.46	50
32	Tobacco manufactures	65	42.3
33	Textile manufactures	53.53	35.44
34	Footwear and wearing apparel	85.62	48.86
35-36	Wood and cork products	53.42	32.32
37	Furniture and Fixtures	82	45
38	Paper and paper products	55.71	30.7
39	Publishing and printing	56.25	24.16
40	Leather and leather products	64	30
41	Rubber and plastic products	32.43	26.35
42-45	Chemicals and chemical products	23.39	17.53
46-50	Products of petroleum and coal	20.55	17.5
51-52	Non-metallic mineral products	47.30	34.54
53	Basic metal products	21.2	16.13
54	Metal industries	44.75	35.24
55	Machinery except electrical	24.32	22.15
56	Electrical machinery	38.05	27.55
57	Transport equipment	26	23.66
58	Miscellaneous manufactures	46.66	30.85

Source: PIDS-TC Joint Research Project, Staff Paper Series No. 86-03.

Table 2: BOI INCENTIVES UNDER PD 1789 AND BP 391

	PD 1789				BP 391			
	Export		Non-Export		Export		Non-Export	
	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer
A. DEDUCTIONS FROM TAXABLE INCOME OF:								
1. Organizational and pre-operational expenses.	✓ (in first ten years)							
2. Accelerated depreciation.	✓	✓	✓	✓				
3. Net operating loss carry-over.	(in first ten years)							
4. A certain percentage of the amount of undistributed profits transferred to capital stock for procurement of machinery and equipment for expansion in the year reinvestment was made.	✓	✓	✓	✓	✓	✓	✓	✓
5. Labor training expenses equivalent to 1/2 expenses but not more than 10% of direct labor wage.	✓	✓	✓	✓				
6. Direct labor cost and local raw materials utilized in the manufacture of export products but not exceeding 25% of the total export revenues for producers, 10% of total export sales for traders and 50% of total export fees for service exporters. In the case of traditional exports, local raw material component is not included in the computation of said deduction.	(in first 5 years ✓	✓	✓	✓				

	PD 1789				EP 391			
	Export		Non-Export		Export		Non-Export	
	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer
7. Additional deduction from taxable income of 1% of incremental export sales for some of Philippine brand name.	(first 5 years) ✓	✓						
B. TAX EXEMPTION:								
8. Exemption/Reduction/ Deferment from tariff duties and compensating tax on importations of machinery equipment and spare parts.	full exemption within 7 years ✓	50% reduction within 7 years ✓	full exemption within 7 years ✓	50% reduction within 7 years ✓	full exemption within 5 years ✓	✓	up to 100% deferment within 5 years ✓	up to 50% deferment within 5 years ✓
9. Exemption from all taxes under the National Internal Revenue Code, except income tax on a gradually diminishing percentage.	✓		✓					
10. Exemption from all export and stabilization taxes.	✓	✓	✓	✓	✓	✓		✓
C. TAX CREDITS								
11. Tax credit equivalent to 100% of the value of compensating tax and custom duties that would have been paid on machinery, equipment and spare parts (purchased from a domestic manufacturer), had these items been imported.	(Within 7 years) (another tax credit equivalent to 50% thereof shall be given to the manufacturer of capital equipment) ✓	✓	✓	✓	(Within 5 years) (full credit) ✓	✓	(100 % credit but repayable) ✓	(50 years credit but repayable) ✓
12. Tax withheld on interest payments on foreign loans provided such credit is not enjoyed by lender-remittee in his counting and registered enterprise has assumed liability for tax payment.	✓	✓	✓	✓	(within 5 years) ✓	✓	✓	✓

	PP 1789				BP 391			
	Export		Non-Export		Export		Non-Export	
	Pioneer	Non-Pioneer	Pioneer	Non-Pioner	Pioneer	Non-Pioneer	Pioneer	Non-Pioneer
13. Additional incentives wherever processing or manufacturing plant is located in an area designated by BOI as necessary for proper dispersal of industry which is deficient in infrastructures, public utilities and other facilities.	(100% of necessary and major work if any have undertaken) ✓	✓	✓	✓				
14. Tax credit equivalent to sales, compensating and specific taxes and duties on supplies, raw materials and semi-manufactured products used in the manufacture processing or production of export products.	✓	✓	✓	✓	✓	✓		
15. Tax credit on net value earned.					(for first 5 years) (equal to 10% of net value earned)	(equal to 5% of net value earned)	(equal to 10% of net value earned)	(equal to 5% of net value earned)
16. Tax credit equal to 10% net local content of exports.					(for first 5 years)			

Source: PIDS Staff Paper Series, 86-01.

Table 3: PRODUCTS SUBJECT TO EXPORT TAX AS OF NOVEMBER, 1983

I/O No.	Product	Export Tax (%)
3	Bananas	4
11	Coffee	2
14	Copra	15
15	Abaca	4
25	Frozen Tuna	2
27	Shrimps and Prawns	6
29	Logs	25
45	Canned Pineapple	6
47	Canned Tuna	2
57	Desiccated Coconut	8
82	Lumber	6
83	Plywood	2
83	Veneer	6
103	Coconut Oil	9
103	Copra meal/cake	8

Source: PIDS-TC Joint Research Project Study Group, 1984.

adjustment policies set out by Yagci, et al. (1985). Stabilization policies are those aimed to correct BOP deficits within the short run. They take the structural adjustment parameters of the economy as given. Structural adjustment policies are those that are undertaken with the end in view of simultaneously reducing BOP deficits, increasing growth and setting the stage so as to avoid future BOP problems. A longer time frame is used so that the policies themselves are seen as being instrumental in bringing about changes in the structural parameters.

The experience of other countries that have implemented structural adjustment policies in recent history points to the possibility that such actions may yield negative employment and/or income distribution effects. For instance, Yagci, Kamin and Rosenbaum (1985) cited the case of Turkey where, during four years of structural adjustment "inflation fell from 103 percent in 1980 to 32 percent in 1983 and exports increased from $2.3B to $5.7B in the same period but unemployment increased from 19.6 percent to 23.2 percent and real wages fell more than 10 percent in 1980-1983." Similarly, Foxley (1981) noted that unemployment sharply rose in Uruguay and Chile, Brazil and Argentina as a result of adjustment policies undertaken by these countries in the 1970s. Furthermore, existing studies of the impact effects of selected components of the structural adjustment policy package implemented by the Philippines indicate that they do have an adverse influence on employment (Medalla 1986b). It cannot be denied though that these works were largely based on partial equilibrium analysis and may, therefore, be limited by the said approach. Orthodox economic theory, for instance, tells us that structural adjustment policies should, by "getting prices right" lead to a greater degree of efficiency and higher economic growth.

Given this perspective, a re-examination in a general equilibrium framework of the employment impact of the various structural adjustment measures adopted in the Philippines in the 1980s is not only worthwhile but timely as well. This study represents a small step in this direction. Specifically, this paper will (1) review existing Philippine literature on this area, (2) provide estimates of the employment/wage effects of (i) tariff reform, (ii) BOI incentive changes, (iii) removal of export taxes, (iv) financial liberalization and (v) exchange rate adjustment based on simulation experiments using one or both of the PIDS-NEDA (1987) macroeconometric model and Habito's (1986) computable general equilibrium (CGE) model of the Philippine economy and (3) recommend new directions for policy and future research in this area.

The decision to employ these two models as the basis of our analysis is determined by purely pragmatic reasons. They represent the best alternative specifications of an economy-wide model of the Philippines that are available to this writer for purposes of policy analysis.

II. REVIEW OF EXISTING PHILIPPINE LITERATURE

Medalla (1986b) assessed the impact effects of the tariff reform program. She adopted Chung Lee's (1984) model in which sectoral output or supply, S_j, is assumed to be a function solely of its effective price (value added per unit of output).

Thus,

$$S_j = b_j S_j^o \frac{\Delta V_j}{V_j^o} = b_j S_j^o \frac{G_j^1 - G_j^o}{1 + G_j^o}$$

where b_j is the elasticity of supply of sector j;

G_j is the effective protection rate of sector j; and

0 in superscript refers to before-tariff adjustments.

1 in superscript refers to after-tariff adjustment.

This change in supply results in changes in both national income and in sectoral demands. Consequently, exports, imports and government revenues are also affected. Her results are summarized in Tables 4 and 5. Under a fixed exchange rate system, total output, total income and total employment all decline as a result of TRP regardless of the size of the supply elasticity. The reduction in total income and total employment is less than that in total output because of the shift from low value added/low labor output ratio to high value added/high labor-output ratio activities. The positive influence on imports dominates that on exports such that this policy change results in a worsening of the balance-of-payments position. On the other hand, under a flexible exchange rate regime, total output, total employment and income will increase or decrease with TRP depending on whether the supply elasticity is 0.1 or 0.5. Furthermore, the adverse effects are more pronounced under the fixed exchange rate assumption than under the flexible exchange rate assumption.

Medalla (1986b) noted that this study is handicapped by its partial equilibrium approach. In particular, the model glosses over cross price effects. While cross price effects may not be very important within tradables, cross price effects between tradables and nontradables will be palpable inasmuch as relative price changes due to TRP are more marked between these two sectors. Moreover, the longer run effects arising from

Table 4: IMPACT EFFECTS OF TRP BASED ON CHUNG LEE MODEL[a/]
(percentage changes)

A.	Fixed Exchange Rate Regime	bj = Ø.1	bj = Ø.5[b/]
	Supply/Output	-Ø.56	-2.8
	Employment	-Ø.31	-1.57
	Income	-Ø.38	-1.94
	Demand	Ø.83	-Ø.63
	Exports	Ø.74	3.71
	Imports	4.96	7.84
	Balance of Trade (in billion 1979 pesos)	-2.36	-2.67
B.	Flexible Exchange Rate Regime		
	Supply/Output	Ø.61	-1.45
	Employment	Ø.52	-Ø.61
	Income	Ø.56	-Ø.85
	Demand	1.35	-Ø.Ø3
	Exports	4.4	7.78
	Imports	3.4	6.Ø1
	Balance of Trade (in billion 1979 pesos)	Ø	Ø

a/ base case is that before TRP.

b/ b_j is supply elasticity.

Source: Medalla 1986b.

Table 5a: IMPACT EFFECTS OF TRP
Supply Elasticity = 0-1
Value Added Used I/O VA
Income = Y xΔ
r1/r0 = 1.2138

Sector	Description	Δ S	ΔL	ΔId	Δ Fd	Δ D	ΔX	Δ Y	Δ R
3	Corn	186	80	44	-17	27	-	-150	-29
4	Coconut Incl. Copra In Farms	155	46	96	2	98	59	-	4
6	Banana	76	25	-4	7	2	76	-	3
7	Other Crops Incl. Agric'l. S								
	Exportable	120	44	-6	2	-3	125	-	0
	Importable	-79	-29	-42	470	427	-	251	582
12	Commercial Fishing								
	Exportable	2	0	-0	0	-0	2	-	0
	Importable	94	27	-27	7	-19	-	-113	0
13	Fishponds & Other Fishery AC								
	Exportable	14	4	-0	0	0	13	-	0
	Importable	161	49	-0	20	20	-	-141	0
14	Forestry & Logging	125	26	78	4	83	51		10
15	Copper Ore	79	15	0	10	10	68		0
16	Gold & Silver Ore	28	5	0	3	3	24		0
17	Chromium	7	0	0	1	1	6		0
18	Nickel	5	1	0	0	0	4		0
19	Other Metallic Ores	17	3	2	0	3	14		0
22	Rice & Corn	366	30	-21	44	23		-343	0
23	Sugar	128	15	-10	13	3	130		7
24	Milk & Other Dairy Products	-41	-6	-18	222	203		143	-176
25	Coconut Oil	156	10	-12	29	16	142		5
27	Meat and Meat Products	-129	-11	-5	2,315	2,309		1,088	660
28	Flour & Other Grain Mill Products	46	1	-30	1	28		55	20
29	Animal Feeds								
	Exportable	72	4	-2	0	-2	70		0
	Importable	-57	-3	-5	5	0		22	-160
30	Other Processed Food								
	Exportable	326	22	-5	12	6	293		0
	Importable	-185	-13	-11	948	937		522	83
32	Tobacco Manufactures	-222	-12	-68	271	203		205	102
33	Textiles & Goods Excl. Wearing								
	Exportable	192	28	0	7	7	148		0
	Importable	-169	-25	1	338	339		240	-726
34	Wearing Apparel & Footwear	150	28	5	37	42	98		0
35	Lumber	120	8	15	22	37	81		0
36	Other Wood	21	3	1	5	7	13		0
37	Furnitures & Fixtures	22	3	0	7	8	14		0
38	Paper & Paper Products	73	6	14	-5	8		-20	-61
40	Leather & Leather Products	6	0	7	-0	6	-0		0
41	Rubber and Plastic Products	-25	-2	-1	111	110		80	-36

Sector	Description	ΔS	ΔL	Δ Id	ΔFd	Δ D	ΔX	ΔY	Δ R
42	Drugs ad Pharmaceuticals	48	5	13	9	22		-19	-6
43	Industrial Chemicals								
	Exportable	59	7	0	-1	-0	54		0
	Importable	8	1	1	-21	-19		-21	-78
44	Fertilizer	48	4	27	-1	25		-17	-5
45	Other Chemical Products	-139	-13	-16	155	139		143	723
46	Gasoline	94	1	4	-53	-48		89	-50
47	Diesel Oil	72	0	29	0	30		32	22
48	Fuel Oil	91	1	18	-2	16		-55	44
49	Avturbo/Kerosene	25	0	0	-27	-27		-36	-8
50	LPG and Others	-0	-0	4	-3	1		1	-12
51	Cement	33	2	0	2	3	28		0
52	Other Non-Metallic Mineral P								
	Exportable	16	2	0	0	0	14		0
	Importable	1	0	1	3	5		1	-68
53	Basic Metals								
	Exportable	125	5	3	-4	-0	114		0
	Importable	2	0	18	-113	-95		-68	-472
54	Fabricated Metal Products								
	Exportable	11	1	-0	0	0	10		0
	Importable	-5	-0	-3	67	63		38	-138
55	Machinery Except Electrical								
	Exportable	10	1	0	0	0	9		0
	Importable	17	2	3	94	97		56	-592
56	Electrical Machinery & Appli								
	Exportable	63	8	0	0	0	63		0
	Importable	1	0	5	131	137		80	-790
57	Transport Equipment	-60	-12	-14	169	155		115	-780
58	Miscellaneous Manufactures								
	Exportable	101	14	2	2	5	87		0
	Importable	5	0	4	34	39		23	-112
	T O T A L	2,487	430	100	5,348	5,449	1,827	1,827	-4,686
	P e r c e n t	.61	0.52			1.35	4.40	3.40	-18.34
	Balance of Trade	0							
	Change in Income (%)...	0.56							

1979 Values:

Supply	-	403,151
Compensation	-	82,014
Demand	-	403,151
Exports	-	41,461
Imports	-	53,647
Revenue	-	25,543

Source: Medalla 1986b.

Table 5b: IMPACT EFFECTS OF TRP
Supply Elasticity = 0.5
Value Added Ised - I/O VA
Income = V xΔS
r1/r0 = 1.0498

Sector	Description	ΔS	ΔL	ΔId	ΔFd	ΔD	ΔX	ΔM	ΔR
3	Corn	574	247	-26	-18	-44		-618	-139
4	Coconut Incl. Copra in Farms	180	54	21	-3	17	174		13
5	Banana	89	29	-77	-11	-89	184		7
7	Other Crops Incl. Agric'l. S								
	Exportable	130	47	-74	-3	-78	209		0
	Importable	1,012	-372	-515	432	-82		460	-460
12	Commercial Fishing								
	Exportable	2	0	-1	-0	-1	4		0
	Importable	113	33	-210	-11	-222		-335	0
13	Fishponds & Other Fishery AC								
	Exportable	15	4	-0	-0	-1	16		0
	Importable	189	57	-21	-31	-52		-241	0
14	Forestry & Logging	146	30	84	-7	77	85		17
15	Copper Ore	92	18	0	-15	-15	108		0
16	Gold & Silver Ore	33	6	0	-5	-5	38		0
17	Chromium	9	1	0	-1	-1	10		0
18	Nickel	6	1	0	-1	-1	7		0
19	Other Metallic Ores	20	3	-28	-1	-29	50		0
22	Rice & Corn	427	35	-147	-68	-215		-643	0
23	Sugar	149	17	-88	-20	-108	269		16
24	Milk & Other Dairy Products	-381	-54	-156	198	42		247	-132
25	Coconut Oil	181	12	-126	-44	-170	359		14
27	Meat and Meat Products	-1,402	-126	-66	2,159	2,093		1,560	981
28	Flour & Other Grain Mill Pro	51	1	-230	-2	-232		-207	-76
29	Animal Feeds								
	Exportable	77	4	-16	-0	-16	90		0
	Importable	-375	-21	-36	5	-31		171	-81
30	Other Processed Food								
	Exportable	351	24	-58	-18	-77	393		0
	Importable	-1,363	-95	-113	890	777		995	386
32	Tobacco Manufactures	-1,379	-80	-424	211	-213		557	293
33	Textiles & Goods Excl. Weari								
	Exportable	208	31	-76	-11	-87	236		0
	Importable	-1,168	-174	-245	278	32		566	-488
34	Wearing Apparel & Footwear	175	33	3	-56	-53	207		0
35	Lumber	139	9	15	-33	-18	156		0
36	Other Wood	25	4	0	-9	-8	33		0
37	Furnitures & Fixtures	25	4	-2	-11	-14	40		0
38	Paper & Paper Products	30	2	-108	1	-106		-84	-88
40	Leather & Leather Products	7	0	9	0	8	-0		0
41	Rubber and Plastic Products	-285	-24	-38	82	44		199	15
42	Drugs and Pharmaceuticals	58	6	11	-13	-2		-45	-15

Sector	Description	ΔS	ΔL	ΔId	ΔFd	ΔP	ΔI	ΔM	ΔR
43	Industrial Chemicals								
	Exportable	64	7	-50	1	-48	102		0
	Importable	5	0	-173	-10	-183		-145	-111
44	Fertilizer	72	6	24	2	26		-34	-11
45	Other Chemical Products	-1,106	-107	-339	144	-195		469	-537
46	Gasoline	42	0	-24	-120	-145		-117	-70
47	Diesel Oil	37	0	4	1	6		-24	25
48	Fuel Oil	50	0	-150	18	-132		-140	8
49	Avturbo/Kerosene	-4	-0	-2	-47	-50		-31	-5
50	LPG and Others	-50	-0	-20	3	-17		27	-7
51	Cement	39	2	-3	-3	-7	44		0
52	Other Non-Metallic Mineral P								
	Exportable	17	2	-1	-0	-1	17		0
	Importable	-112	-17	-14	2	-11		63	-42
53	Basic Metals								
	Exportable	135	6	-69	6	-63	100		0
	Importable	-319	-14	-369	-57	-427		-74	-474
54	Fabricated Metal Products								
	Exportable	12	1	-2	-0	-2	14		0
	Importable	-299	-37	-73	40	-33		148	-68
55	Machinery Except Electrical								
	Exportable	11	1	-0	-0	-0	11		0
	Importable	-88	-14	-0	40	40		90	-501
56	Electrical Machinery & Appliances								
	Exportable	60	9	0	0	0	50		0
	Importable	-24	-3	-39	76	37		36	-813
57	Transport Equipment	-502	-123	-147	109	-38		291	-650
58	Miscellaneous Manufactures								
	Exportable	109	16	-7	-3	-11	100		0
	Importable	-115	-16	-12	24	11		80	-92
	TOTAL	-5,000	-501	-4,232	4,091	-140	3,227	3,220	-3,175
	Percent	-1.45	-0.61			-0.03	7.70	6.01	-12.43
	Balance of Trade	-0							
	Change in Income (%) ...	-0.05							

1979 Values:

Supply	-	403,151
Compensation	-	82,014
Demand	-	403,151
Exports	-	41,461
Imports	-	53,647
Revenue	-	25,543

Source: Medalla 1986b.

substitutions in production, consumption and trade that should affect the I-O coefficients and other structural parameters are not taken into account.

The PIDS-TC (1984) study likewise used the Chung Lee model to evaluate the impact effects of export taxes. The findings of this paper indicates that the total elimination of export taxes has positive effects on output and employment in the sectors subject to this imposition with the exception of lumber, plywood and veneer. This is because the simultaneous removal of the export tax on logs and the export tax on wood products would effectively penalize the processing sectors relative to the "with export taxes" situation given the differential export tax rates on these sectors. Furthermore, the paper showed that the complete removal of export taxes increases output and employment in the aggregate with agricultural/primary sectors' output and employment expanding and manufacturing sectors' output and employment contracting (Table 6).

Note that when export taxes were actually removed in 1986 the export tax on logs was retained while export taxes on all other products were eliminated. Thus, if one wants to use the PIDS-TC (1984) study to deduce the effects of this particular policy reform corresponding adjustments should be made. Finally, it should be pointed that this study shares the shortcomings of the Medalla (1986b) study.

Manasan (1986) made use of the concept of the user cost of capital from the neoclassical theory of capital accumulation to analyze the employment effects of investment incentives granted by the Board of

Table 6: EPR'S, % CHANGES IN OUTPUT AND EMPLOYMENT FOR PRODUCTS SUBJECT TO EXPORT TAXES AS OF NOVEMBER, 1983

I/O No.	Product	E P R W/O Export Tax	E P R W/Export Tax	Changes in Output/Employment a/ b = 0.1	b = 0.5
3	Bananas	-2	-6	-0.42	-2.11
11	Coffee	53	53	0	0
14	Copra	1	-14	-1.50	-7.50
15	Abaca	0	-4	-0.42	-2.09
25	Frozen Tuna	27	27	0	0.02
27	Shrimps and Prawns	36	36	-0.01	-0.04
29	Logs	-2	-27	-2.59	-12.94
45	Canned Pineapple	-30	-37	-0.98	-4.92
47	Canned Tuna	18	16	-0.14	-0.70
57	Desiccated Coconut	-4	-7	-0.34	-1.68
82	Lumber	-7	30	3.97	19.83
83	Plywood	13	48	3.17	15.84
83	Veneer	13	48	3.17	15.84
103	Coconut Oil	0	-6	-0.58	-2.92
103	Copra meal/cake	0	-6	-0.58	-2.92
	Total Changes in Output to Total Output $\frac{\sum \Delta S_j}{\sum S_j}$, (%):			-0.01	-0.07
	Total Changes in Employment to Total Employment $\frac{\sum \Delta L_j}{\sum L_j}$, (%):			-0.14	-0.70
	AGRICULTURAL AND PRIMARY SECTORS:				
	Changes in Output to Total Output (%)			-0.14	-0.71
	Changes in Employment to Total Employment(%)			-0.19	-0.96
	MANUFACTURING SECTORS:				
	Changes in Output to Total Output (%)			0.13	0.63
	Changes in Employment to Total Employment (%)			0.05	0.25

a/ base case is "without export taxes"

Source: PIDS-TC Joint Research Project Study Group, 1984.

Investments.[2] This study concluded that BOI incentives effectively cheapens capital in preferred activities and argued that this will result in substitution effects which have negative impact on employment in promoted sectors. In particular, substitution effects in preferred industries were shown to be more pronounced under PD 1789 than under BP 391.[3] In 1987, BP 391 was superseded by EO 226. Manasan (1988) demonstrated that the capital bias of PD 1789 were to a large extent restored by EO 226 (Table 7).

It should be pointed out that these studies abstract from the scale effects of BOI incentives on employment. In particular, the following considerations should be taken into account. One, it is likely that BOI incentives will induce increased investments in preferred activities. As such, the scale effects on employment in these sectors will be positive. Total employment effect in promoted activities will be negative or positive depending on whether the substitution or the scale effects dominate. Two, BOI incentives will either add to or draw away from investment flows into non-preferred activities depending on whether or not BOI incentives

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[2] Following the path breaking work of Hall and Jorgenson (1967), the user cost of capital and its relationship with tax parameters is defined by the following:

$$c = q \frac{(r+d)\ (1-uk-uz)}{(1-u)}$$

where c is the user cost of capital, q is the price of the capital goods, r is the rate of interest, d is the rate of replacement of capital stock, u is the corporate tax rate, k is the proportion of investment expenditures permitted as additional deduction from taxable income, and z is the discounted value of the stream of depreciation charges generated by a peso of investment.

[3] PD1789 is the incentive legislation in force prior to the 1983 reform of BOI incentives which consequently yielded BP 191.

Table 7: COMPARATIVE EMPLOYMENT EFFECTS OF PD 1789, BP 391 AND EO 226 INVESTMENT INCENTIVES

Type of Firm	(ΔL/L) * 100 [a]					
	PD 1789		BP 391		EO 226	
	n = 10	n = 20 [b]	n = 10	n = 20	n = 10	n = 20
Non-Exporting						
Pioneer	-44.5	-53.2	-16.0	-16.0	-31.4	-35.5
Non-Pioneer	-30.6	-39.3	-7.8	-7.8	-27.2	-29.3
Exporting						
Pioneer	-21.1	-34.8	-23.7	-23.7	-31.4	-35.5
Non-Pioneer	-21.1	-34.8	-23.7	-23.7	-27.2	-29.3

[a] refers to substitution effects only. Base case is "without incentives".

[b] n refers to life span of projects.

Source: Manasan 1986, and Manasan 1988.

effectively increase the overall level of investments. The answer to this question hinges to a large extent on how effective BOI incentives are in attracting foreign capital given the stylized fact that in a developing country like the Philippines domestic investments is constrained by domestic savings. At the same time, Manasan (1988) asserted that given the relative structure of investment incentives in ASEAN countries, BOI incentives may, in fact, not be efficacious in stimulating foreign direct investment to the Philippines. These points suggest that the scale effects on employment in non-promoted sectors may also be negative.

The emergence in the eighties of computable general equilibrium (CGE) models as a popular tool to analyze various economic policy situations has given rise to two studies that makes use of this general equilibrium framework to evaluate the effects of trade liberalization in the Philippines. Clarete (1985) employed a CGE model to trace the impact of imposing zero tariff and export tax rates while Bautista (1987) simulated tne effects of (1) a uniform 30 percent across-the-board reduction in tariffs and export taxes from their 1979 levels and (2) setting tariff rates across all sectors at 10 percent and all export taxes at zero with his own version of a CGE model for the Philippines. It should be stressed that none of these simulations are congruent with the trade liberalization program actually implemented by the Philippine government.

Clarete's (1985) CGE model nas 7 production sectors governed by production functions of the Cobb-Douglas (C-D) type; two variable factors: labor and capital; one aggregate consumer, a government sector and a foreign sector. The demand function likewise follows the C-D specification implying fixed expenditure shares in consumption. Furthermore, he made use of the trade theoretic assumption that imports and comparable domestic

products are perfect substitutes.[4/] He emphasized that the latter assumption tend to predict larger magnitudes for the impact of trade policies on other economic variables than alternative specifications. Finally, his solution algorithm is derived from the fixed point theorem.[5/]

His results presented in Tables 8 and 9 reveal that trade liberalization gives rise to a shift of capital and labor away from the import substituting sector and rest of agriculture and into cash crops, agricultural food sector, industrial exportables and (marginally into) industrial importables. Also the wage rental ratio increases as a consequence of trade liberalization. Note that since this is a Walrasian model where all markets clear, the influence of trade liberalization on the labor market will be felt in the movements in the relative factor returns rather than in employment levels.

On the other hand, the Bautista (1987) CGE model has 10 production sectors, 3 factor of production, namely: capital, rural labor, and urban labor, 2 household sectors: urban and rural, a government sector and a foreign sector. For most sectors, production is defined by a functional specification that allows substitution amongst the 3 variable factors in Cobb-Douglas fashion while intermediate inputs use is restricted by fixed coefficients. Food and export crops are produced jointly. A set of output supply and input demand functions are specified for these sectors following

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4/ This is one of the major difference between Clarete's (1985) model, on one hand, and Bautista's (1987) and Habito's (1988) models, on the other hand.

5/ This represents the second basic difference between Clarete's and Bautista's or Habito's CGE models.

Table 8: FACTOR PRICES AND ALLOCATION

	With Policy		Without Policy	
	Labor	Capital	Labor	Capital
Price	1.0	1.0	1.01	0.92
Allocation:				
	3856	558	5084	807
Cash Crops	6	1	8	2
	10329	522	12844	712
Agricultural Food Sectors	16	1	20	2
	3329	4715	4264	6623
Industrial Exportables	5	12	7	16
	2098	3410	1935	3450
Industrial Importables	3	8	3	9
	7224	10831	4586	7542
Import Substitutes	12	27	7	19
	3473	73	3167	73
Rest of Agriculture	6	0	5	0
	32803	20374	31232	21276
Services	52	50	50	52

Notes: Policy refers to tariffs and export taxes. The second-level numbers in the price-row are the percent changes of prices relative to the benchmark values. Those in the allocation-rows are shares relative to total factor supply. Factors are in million units.

Source: Clarete 1985.

Table 9: COMMODITY PRICES AND PRODUCTION

Sector	With Policy		Without Policy	
	Price	Output	Price	Output
Commercial Crops	1.0	13317	1.21 21	14651 10
Agricultural Food Industries	1.0	41723	1.18 18	44208 6
Industrial Exportables	1.0	27757	1.18 18	30293 9
Industrial Importables	1.0	38450	0.93 -7	38320 -0.
Import Substitutes	1.0	70923	0.71 -29	64074 -10
Rest of Agriculture	1.0	10593	0.95 -5	10277 -3
Services	1.0	110517	0.97 -3	109793 -1
Composite Good	1.0	---	1.15 15	---

Notes: Policy refers to tariffs and export taxes. Output is in million units. Lower numbers are percentage changes relative to benchmark values.

Source: Clarete 1985.

the profit function approach. The consumption functions are based on the linear expenditure system. Capital stocks are assumed to be sectorally fixed within periods. On the other hand, total labor supply is given exogenously and wage rates are determined by factor market clearing. Savings are a fixed proportion of disposable income and aggregate investment is determined total savings. Sectoral investment is assumed to be defined by fixed ratios relative to total investment. Unlike the Clarete (1985) model, he employed the Armington (1969) convention and assumed that imports and domestic products are imperfect substitutes governed by a constant elasticity of substitution. He asserts that "such product differentiation provides some autonomy to the domestic price system not found in models that assume perfect substitutability." To arrive at a model solution, he first linearized the non-linear system defining the structure of his model by logarithmic differentiation (à la Johansen 1960). Then applied the usual matrix inversion techniques on the derived linear system.

His findings (Table 10 and 11) show that trade liberalization leads to a depreciation of the real exchange rate, an increase in exports, imports, and national income (with rural incomes improving more than urban incomes). In sectoral terms, outputs of food and export crops, food manufactures, fertilizer, forestry mining, light manufactures and other manufactures expand while those of livestock, and services contract. Unfortunately, the impact on the wage rate was not reported.

While these general equilibrium models represent marked improvements over the partial equilibrium approach of earlier studies by taking into account the interdependencies between product and factor markets, substitution effects in consumption, production and trade, etc., they do

Table 10: SIMULATION RESULTS: EFFECTS ON SELECTED TRADE AND INCOME VARIABLES

	TLM1	TLM2
	(percent)	
Exchange rate, R	.92	3.10
Exports, Q_e	2.32	8.08
Imports, Q_m	4.32	7.68
National income, Y	1.64	2.78
Rural income, Y_r	1.80	3.36
Urban income, Y_u	1.24	1.60
Company income, Y_c	2.10	2.68
Government income, Y_g	-5.77	-12.82
Agricultural crop value added, V_a	2.61	5.78
Nonlabor value added, V_{NL}	1.05	1.84

Notes: TLM1 assumes a uniform reduction in sectoral tariff and export tax rates by 30 percent; TLM2 assumes changes in sectoral tariffs to a uniform rate of 10 percent and elimination of export taxes (except on logs).

Changes in total exports (Q_e) and in total imports (Q_m) are calculated as weighted averages of the proportionate changes in sectoral trade flows from the base year (1978) values.

National income is defined as: $Y = V_a + \sum_{i=3}^{10} P_{vi} Q_{xi}$

Source: Bautista 1987.

Table 11: SIMULATION RESULTS: EFFECTS ON SECTORAL PRICES AND OUTPUT

	TLM1	TLM2
	(prices)	
Food crops		
P x1	2.00	4.11
Q x1	.32	.48
Export Crops		
P x2	2.04	4.72
Q x2	.44	1.20
Livestock		
P x3	-.34	-.63
Q x3	-1.12	-1.84
Food manufactures		
P x4	.19	.57
Q x4	.78	2.26
Fertilizer		
P x5	.55	1.09
Q x5	.78	1.82
Forestry		
P x6	.61	1.15
Q x6	.30	.74
Mining		
P x7	1.36	4.74
Q x7	.88	3.50

	TLM1	TLM2
Light manufactures		
P x8	.41	1.42
Q x8	.54	2.04
Other manufactures		
P x9	-.01	-.19
Q x9	.88	.60
Services		
P x10	-.10	-.35
Q x10	-.40	-.94

Note: TLM1 assumes a uniform reduction in sectoral tariff and export tax rates by 30 percent; TLM2 assumes changes in sectoral tariffs to a uniform rate of 10 percent and elimination of export taxes (except on logs).

Source: Bautista 1987.

have their own share of limitations. (Discussion of these limitations will be postponed when we tackle the Habito (1986) CGE model).

III. SIMULATION EXPERIMENTS: THE MODELS AND RESULTS

The foregoing discussion highlights the fact that earlier attempts to assess the impact of structural policy reforms were limited either by their partial equilibrium approach or by their evaluation of hypothetical variants rather than actual policy changes. To overcome these shortcomings, this paper takes two existing empirically based models that are both characterized by their consideration of economy-wide inter-dependencies. The first one is the PIDS-NEDA (1987) macroeconometric model while the other one is Habito's (1986) CGE model for the Philippines.

III.1 PIDS-NEDA Macroeconometric Model

The PIDS-NEDA is a 104 equation model divided into 4 blocks, namely: real, fiscal, financial and external. There are 56 behavioral or estimated equations and 48 identities. Furthermore, there are 54 exogenous variables, a majority of which are policy instruments.

GDP is determined from both the demand and the supply sides with a "statistical discrepancy" variable closing the model. From the supply side, GDP is defined as the sum of seven production sectors: crops, livestock, fishery, mining, manufacturing, construction, utilities and services. On the demand side, the focus is on the standard expenditure categories namely: personal consumption, government consumption, investment, exports and imports. Production is determined in most cases by relative prices, intermediate inputs, investments, and interest rates. The

consumption function is based on disposable income and real balances. Investment is a function of an activity variable, real interest rate, total liquidity and capital equipment imports. Exports are explained by both supply and demand considerations: raw material inputs and a "rest of the world" activity variable. Imports are determined by domestic production, and import price variables. Employment is demand-determined and is a function of sectoral output and the wage rate. The price equation is based on a combination of the quantity theory of money and cost-plus pricing behavior.

In the fiscal sector, government revenues are defined by the levels of national income and the price level. Although there are estimated equations for government expenditures, they are essentially exogenous.[6/]

The financial block focuses on the determination of the various components of money supply and total liquidity based on discount rates, interest rates and government deficit. Interest rates and money multipliers are made exogenous in the model despite theoretical considerations that suggest that they should be treated otherwise because of "difficulty in finding equations with good fit."

Current account balance and international reserves are determined in the external block where capital account balance is assumed to be exogenous. Essentially, the real export and import levels arising from the real block are translated into dollar teams via peso export/import price indices and nominal exchange rates.

6/ The estimated equations simply represent a statistical attempt to force a reconciliation between inconsistent data sets.

Traditionally, macroeconometric models are used for short-term policy analysis and forecasting. However, in recent years, such models have also been applied to study medium-term policy issues. Unlike CGE models with no or with undeveloped dynamic features, this type of models is able to trace out the path of the adjustment process from year to year. This is an attractive feature, particularly, if the policy experiment under investigation involves adjustment costs in the short-run. Furthermore, the PIDS-NEDA model includes a financial sector, albeit modeled inadequately, that will permit the simulation of financial liberalization reform. This stands in sharp contrast with CGE models, particularly those that have been estimated for the Philippines to date, which focus on the real sector only.

Three counterfactual experiments related to structural adjustment policy reform were conducted based on the PIDS-NEDA model to appraise their respective employment effects for the years 1980 to 1990. First, to examine the repercussions of the tariff reform program on key economic variables, the implicit price deflator for import goods was scaled upwards to reflect the levels it would have attained if tariffs were not reduced.[7/] The simulation results presented in Table 12 reveal that TRP has a positive influence on output, employment, exports and prices. Moreover, the improvements in the first three variables monotonically increase over time implying that gains from TRP become more pronounced if a longer time frame is considered. Specifically, the evidence show that from an increase in output of .2 percent and an implied rise in total employment of less than half a percent in 1980 TRP induces increasing increments such that in 1990 output is expected to be three percent higher and employment

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7/ Basically, the adjustment ratio was estimated based on the average implicit tariff rates before and after TRP.

Table 12: SIMULATION OF PIDS-NEDA MACROECONOMETRIC MODEL
EXPERIMENT 1: TRP Not Implemented

Variable	Percentage Difference from Base Value[a/]										
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
1. Gross National Product (GNP)	-0.18	-0.42	-0.75	-1.15	-1.47	-1.96	-2.35	-2.61	-2.78	-2.92	-3.05
2. Gross Domestic Product (GDP)	-0.18	-0.43	-0.74	-1.17	-1.54	-2.03	-2.41	-2.66	-2.81	-2.94	-3.08
3. Implicit Price Deflator for GNP (PGNP)	0.58	1.08	1.60	2.43	3.69	4.97	4.95	4.96	4.73	4.74	4.84
4. Consumer Price Index (CPI)	0.60	1.12	1.66	2.51	3.77	5.07	5.06	5.06	4.41	4.82	4.91
5. Merchandise Imports (M$)	1.01	1.88	2.74	3.65	4.08	4.32	3.89	3.58	3.26	3.15	2.92
6. Merchandise Exports (X$)	-0.10	-0.24	-0.46	-0.63	-0.74	-0.92	-1.11	-1.244	-1.33	-1.41	-1.47
7. Current Account Balance (CURBAL)	4.33	7.99	7.47	12.04	22.04	169.62	-28.97	-111.54	-220.55	101.9	57.17
8. Employment in Agriculture (FTEMPA)	0.12	0.23	0.32	0.55	0.7	0.94	1.04	0.99	0.79	0.64	0.52
9. Employment in Industry (FTEMPI)	-0.09	-0.23	-0.39	-0.68	-0.87	-1.13	-1.37	-1.52	-1.62	-1.73	-1.88
10. Employment in Services (FTEMPS)	-0.20	-0.42	-0.65	-1.07	-1.17	-1.53	-1.96	-2.77	-3.67	-4.58	-5.10
11. Total Employment (FTEM45)	-0.04	-0.10	-0.17	-0.29	-0.30	-0.38	-0.55	-0.88	-1.26	-1.60	-1.80
12. Wage Rate Index of Unskilled Workers (NWAGUS)	0.38	0.72	1.08	1.71	2.92	4.13	4.05	4.04	3.85	3.86	3.97

a/ base case is "with TRP."

is projected to be almost two percent greater than their pre-TRP values. The implied sectoral adjustments are negative on agricultural employment and positive on employment in both industry and services. At first glance, the sectoral results appear to be counterintuitive since TRP is generally perceived to favor agriculture relative to the industrial sector. Also, TRP is expected to increase EPR of services relative to importables and to lower the same relative to exportables. However, if we also consider the fact that the earlier protection structure encouraged greater capital intensity across sectors (particularly in industry) while TRP work in the opposite direction, then it becomes apparent that TRP will induce greater labor absorbing factor substitution effects in industry than in the other sectors which might dominate the output effects. Because TRP stimulates imports, it has a negative impact on the current account balance if the nominal exchange rate is held constant as in this case.

Second, another counterfactual experiment was carried out to focus on the removal of export taxes on all products except logs in 1986. Here what is done is to adjust the implicit price deflator for export goods downwards to simulate the situation where export taxes were not removed. The results (Table 13) indicate that the removal of export taxes has a small but positive effect on both output and total employment (except in 1989 and 1990) with the magnitude of proportional changes being slightly higher for the former than the latter. It is also noteworthy that output gains from this policy change is growing over time. The low and positive impact on industrial employment might be explained by the boost given to wood processing sectors as a result of the realignment of export taxes. The removal of export taxes also has a favorable influence in the current

Table 13: SIMULATION OF PIDS-NEDA MACROECONOMETRIC MODEL
EXPERIMENT 2: Export Taxes Not Removed in 1986

Variable	Percentage Difference from Base Value a/				
	1986	1987	1988	1989	1990
1. Gross National Product (GNP)	-0.01	-0.05	-0.06	-0.07	-0.09
2. Gross Domestic Product (GDP)	-0.01	-0.04	-0.05	-0.07	-0.09
3. Implicit Price Deflator for GNP (PGNP)	-0.12	-0.11	-0.09	-0.08	-0.06
4. Consumer Price Index (CPI)	-0.12	-0.11	-0.10	-0.08	-0.06
5. Merchandise Imports (M$)	-0.12	-0.2	-0.25	-0.30	-0.35
6. Merchandise Exports (X$)	-1.32	-1.33	-1.34	-1.35	-1.36
7. Current Account Balance (CURBAL)	-6.45	-25.22	-52.76	19.61	10.94
8. Employment in Agriculture (FTEMPA)	0.01	0.0	0.01	0.01	0.01
9. Employment in Industry (FTEMPI)	-0.02	-0.03	-0.03	-0.04	-0.06
10. Employment in Services (FTEMPS)	0.02	0.02	0.01	0.0	-0.01
11. Total Employment (FTEM45)	0.006	0.005	0.003	-0.002	-0.009
12. Wage Rate Index of Unskilled Workers (NWAGUS)	-0.10	-0.10	-0.08	-0.07	-0.06

a/ base case is "1986 export tax removal."

account balance because the induced increase in exports effectively swamp the induced rise in imports.

Third, to evaluate the implications of the financial liberalization program, the levels of interest rate on Treasury Bills and secured loans were pegged at their 1981 and 1983 values, respectively. The simulation estimates (Table 14) show that interest rate deregulation has adverse effects on both employment and output. Again, this appears to be counterintuitive. Apparently, what the model captures is the impact of restrictive monetary policy undertaken by the government as part of its stabilization campaign in the early eighties. When T-Bill issues were used primarily to contract money supply. In fact, if one were to solve for the reduced form equations for output in the PIDS-NEDA model one would arrive at one that is similar to the output equation (which is a function of liquidity and interest rate) in Montes (1987). Take note how the magnitude of the impact on output peter out over time indicating the short-term nature of the policy response.

It is suggested that to be able to study the long-term effects of the financial liberalization program, the financial block of the model should be modified to show how financial savings respond to changes in deposit rates and market concentration and how investments interact, in turn, with the induced changes in financial savings. Lamberte (1987), for instance has shown financial savings respond positively to real interest rates and to the presence of banking institutions. On the other hand, the works of McKinnon and Carvallo have raised the possibility that financial liberalization may lead to a contraction of net domestic credit (and consequently, of GDP) as a result of the induced shift of financial resources from the informal sector to the reserve-requirement laden formal

Table 14: SIMULATION OF PIDS-NEDA MACROECONOMETRIC MODEL
EXPERIMENT 3: Financial Liberalization Not Implemented

Variable	1983	1984	1985	1986	1987	1988	1989	1990
1. Gross National Product (GNP)	0.42	2.53	2.48	1.47	0.46	0.15	0.03	-0.04
2. Gross Domestic Product (GDP)	0.41	2.40	2.42	1.43	0.46	0.15	0.03	-0.03
3. Implicit Price Deflator for GNP (PGNP)	0.39	2.19	0.30	0.03	-0.51	-0.14	-0.09	-0.06
4. Consumer Price Index (CPI)	0.40	2.24	0.30	0.03	-0.52	-0.14	-0.09	-0.07
5. Merchandise Imports (M$)	0.46	3.06	2.93	1.34	0.21	-0.07	-0.16	-0.19
6. Merchandise Exports (X$)	0.22	1.19	1.09	0.63	0.18	0.05	-0.0	-0.03
7. Current Account Balance (CURBAL)	0.93	9.76	65.23	-4.49	-0.90	5.87	-3.74	-2.33
8. Employment in Agriculture (FTEMPA)	0.12	0.41	0.19	0.10	-0.02	0.02	0.04	0.05
9. Employment in Industry (FTEMPI)	0.28	1.56	1.35	0.71	0.11	-0.01	-0.04	-0.06
10. Employment in Services (FTEMPS)	-0.35	-1.02	-0.71	-0.17	0.49	0.61	0.62	0.57
11. Total Employment (FTEM45)	-0.04	0.01	0.004	0.09	0.20	0.23	0.23	0.20
12. Wage Rate Index of Unskilled Workers (NWAGUS)	0.28	1.83	0.26	0.07	-0.37	-0.04	-0.01	0.0

a/
base case is "with financial liberalization."

sector.[8/] In this regard, "the premium given to test-statistic rather than on economic content" that appears to be fairly strong in the present version of the model has to be addressed if a fair test of the financial reform program is to be adequately carried out.

III.2 Habito's CGE Model

Habito's version of the CGE model consist of 14 production sectors, three primary factors (capital, rural labor and urban labor), 10 household groups classified according to income levels, a government sector and a foreign sector. The production technology permits a constant elasticity of substitution amongst the primary factors but intermediate inputs are governed by fixed coefficient. The household demand functions follow the linear expenditure system. Like the Bautista model, it assumes à la Armington that imports and domestic goods are not perfect substitutes. The model solution makes use of the Newton-Raphson algorithm.

For any given period, the stock of capital is assumed to be fixed across sectors. Thus, any comparative static analysis conducted based on this model essentially represents the results of a short-run experiment where capital is fixed. The long-run effects in terms of the dynamic income effects arising from increased investments and resource reallocation due to structural changes are not addressed in this model. While the importance of a good understanding of the short run policy impact should not be minimized, the dynamic effects might be even more important in the analysis of structural adjustment policy.

[8/] This is a hypothesis that remains to be empirically validated in the Philippines.

This model, like Clarete's, assumes labor to be in fixed supply so that wages adjust to clear the factor markets. With regards to the task we have set for ourselves in this study, this implies that to assess the employment effects of different policies we will have to focus on wage rate changes rather than on employment level changes as we had done with the PIDS-NEDA model.

The following limitations of the model should also be pointed out: (1) Intermediate input use is not price responsive because of the fixed coefficient assumption. This implies that there is no substitution among intermediate inputs. (2) Cross price elasticities of consumption demand are also assumed to be zero as implied by the use of the LES demand function (Habito 1988).

On the other hand, the CGE model, particularly Habito's version, has the distinct advantage of being capable of providing a systematic evaluation of equity repercussions of various policy changes. This quality is very seldom, if ever, found in macroeconometric models. Also in contrast to macroeconometric models, the solid microfoundations of the CGE is more appealing from a theoretical perspective.

Two simulations were undertaken based on the Habito model for purposes of this study. The first one refers to the TRP. Note that the Habito model was calibrated using 1978 data, i.e., pre-TRP values. To evaluate the effects of TRP, we adjusted the sectoral tariff rates to their post-TRP levels. Table 15 shows that total output and the average wage rate rise (implying a positive effect on the aggregate labor market) because of TRP. In line with the new protection structure, the price (in relative terms) of non-tradables rise, that of importables like processed food, nonfood

Table 15: CGE SIMULATION RESULTS, YEAR 2
(Tariff Reform Only)

Percentage Changes from Base Case Values

Sectors	Prices	GVA	Labor	Wage Rate	Capital Rental	Exports	Imports
1. Palay	-2.56	-2.95	0.85	-3.78	-2.93	2.43	0.00
2. Corn	-2.27	-2.64	1.20	-3.78	2.72	0.00	-37.77
3. Coconut	-2.71	-2.33	1.58	-3.78	-2.38	2.69	0.00
4. Sugarcane	-2.20	-3.00	0.75	-3.78	-3.02	0.00	0.00
5. Fruits, etc.	-6.13	-7.07	-3.87	-3.78	-6.75	1.84	22.69
6. Livestock	-2.37	-2.52	1.33	-3.78	-2.60	3.45	-4.12
7. Fish/Forestry	-2.38	-2.18	1.74	-3.78	-2.29	2.10	-4.20
8. Proc. Food	-0.90	2.48	0.41	2.11	3.19	0.76	8.65
9. Mining	0.06	-0.91	-3.36	2.11	-0.73	-1.03	-0.30
10. Nonfood Mfg	-2.63	-1.75	-2.11	2.11	-3.20	-0.14	5.36
11. Transport	1.78	2.81	0.45	2.11	3.27	-1.63	1.12
12. Services	1.95	2.62	0.28	2.11	2.82	-2.39	0.87
13. Energy	1.13	2.18	0.31	2.11	2.96	-0.96	0.98
14. Fertilizer	0.09	1.16	-0.96	2.11	1.61	0.00	-0.18
All Sectors	----	0.89	0.00	0.83	1.04	0.31	4.66

Households	Gross Income	Disp. Income	Cost of Living	Real Income
1	-0.82	-0.81	-0.82	0.01
2	0.27	0.27	-0.69	0.97
3	1.13	1.11	-0.59	1.71
4	1.27	1.25	-0.49	1.75
5	1.39	1.37	-0.38	1.76
6	1.52	1.49	-0.27	1.77
7	1.32	1.30	-0.24	1.54
8	1.32	1.30	-0.29	1.60
9	1.32	1.30	0.01	1.29
10	1.32	1.30	0.09	1.21
All Households	0.95	0.93	-0.36	1.41

manufacturing and fruits decline. There is a movement or reallocation of labor from nonfood manufacturing, fruits production and mining to the other sectors resulting in the expansion of production in processed food, fertilizer, energy and nontradables and a contraction of output in the remaining sectors. The average wage in the agricultural sectors decline (perhaps because of movement of more labor there) while that of manufacturing (despite the contraction in output) and nontradables rise. Estimates of changes in income levels reveal that TRP favors the middle income groups most.

The second simulation took account of the ramifications of BOI incentives. The focus here is different from that in the Manasan (1986) study. While the Manasan study focused on factor substitution effects due to changes in relative factor prices, here we concentrated on the output effects of BOI incentives, i.e., on the effects of BOI incentives arising from the promotion of specific activities under the Investment Priorities Plan. Given the findings of earlier studies that BOI incentives increases the rate of return of BOI registered projects and using the actual proportion of output of BOI registered firms to sectoral output, we adjusted the returns to investments in various sectors upwards by working out the effective change in the tax on capital income on a sectoral basis. Table 16 reveals that total output and the average wage rate decline. Thus, if this were a fixed wage model, it is likely that total employment will also fall. Because of the increased after tax returns to capital in the promoted sectors, particularly nonfood manufacturing, these sectors attracted more labor than before to the detriment of the other sectors. Finally, we note that this policy is regressive if one looks at the relative change in real income across household groups.

Table 16: CGE SIMULATION RESULTS, YEAR 2
(BOI Incentives Only)

	Sectors	Percentage Changes from Base Case Values						
		Prices	GVA	Labor	Wage Rate	Capital Rental	Exports	Imports
1.	Palay	-0.55	-1.12	0.24	-0.92	-1.10	0.31	0.00
2.	Corn	-0.48	-0.79	0.13	-0.92	-0.78	0.00	-0.00
3.	Coconut	-0.90	-1.08	-0.19	-0.92	-1.06	0.62	0.00
4.	Sugarcane	-0.64	-1.14	-0.26	-0.92	-1.12	0.00	0.00
5.	Fruits, etc.	-0.42	-0.66	0.28	-0.92	-0.66	0.47	-0.84
6.	Livestock	0.50	-1.30	-0.49	-0.92	-1.35	0.00	0.78
7.	Fish/Forestry	-0.68	-0.63	0.32	-0.92	-0.66	0.54	-1.26
8.	Proc. Food	-0.46	-1.02	-0.13	-0.85	-1.13	0.32	-0.82
9.	Mining	-0.02	-0.32	0.57	-0.85	-0.36	0.19	-0.06
10.	Nonfood Mfg	3.82	3.68	2.59	-0.85	5.68	-0.45	-5.53
11.	Transport	-0.76	-1.64	-0.51	-0.85	-2.08	0.53	-0.64
12.	Services	-0.89	-1.50	-0.37	-0.85	-1.76	1.00	-0.50
13.	Energy	-0.36	-0.66	-0.02	-0.85	-0.85	0.32	-0.29
14.	Fertilizer	0.60	-0.98	-0.78	-0.85	-1.28	0.00	0.36
	All Sectors	----	-0.73	0.00	-0.80	-0.85	0.21	-3.76

Households	Gross Income	Disp. Income	Cost of Living	Real Income
1	-0.85	-0.83	0.01	-0.84
2	-0.82	-0.81	0.05	-0.86
3	-0.80	-0.79	0.06	-0.85
4	-0.80	-0.79	0.09	-0.88
5	-0.80	-0.79	0.10	-0.89
6	-0.79	-0.78	0.10	-0.88
7	-0.81	-0.80	0.10	-0.90
8	-0.81	-0.80	0.14	-0.94
9	-0.81	-0.80	-0.01	-0.79
10	-0.81	-0.80	0.03	-0.83
All Households	-0.81	-0.80	0.07	-0.87

In our earlier discussion of Medalla's study (1986b), we noted that the negative partial equilibrium effects of TRP are mitigated if a flexible exchange rate policy is pursued. In this connection, we present the results of a counterfactual experiment conducted by Habito (1988) wherein he simulated the effects of having a flexible exchange rate regime (Table 17). On the whole, this policy has a positive effect on output and prices. Labor is reallocated into the export and import substituting sector away from the nontradable sector. Consistent with a priori expectations, exports rise while imports fall. While the real income of the lowest income group increase, the income effect for the other income groups is regressive.

IV. CONCLUSIONS AND RECOMMENDATIONS

Using two different models that are constructed around a general equilibrium framework, this paper attempts to clarify some of the policy issues that are asked by both planners and policymakers with regard to the employment effects of selected structural adjustment policies. This study, we are happy to report, is successful in finding answers to some of the questions raised earlier although additional work remains to be done in the evaluation of the financial liberalization program.

First, both the PIDS-NEDA and Habito's CGE models show that the employment and output effects of the tariff reform program are positive if the economy-wide interdependencies are taken into consideration. This is in sharp contrast to the results of the partial equilibrium analysis carried out earlier. The estimates based on the simulations from the macroeconometric model indicate that while the favorable impact on employment and output are rather small in the short-term, they become more

Table 17: CGE SIMULATION RESULTS: FLEXIBLE EXCHANGE RATE

	Percentage Changes from Base Case Values				
	Year 2				
Sectors	Prices	Output	Labor	Exports	Imports
Palay	21.52	2.49	4.01	8.38	-20.0
Corn	24.96	2.39	4.85	50.00	-18.44
Coconut	26.93	2.96	4.49	4.92	0
Sugarcane	20.71	1.78	3.52	0	0
Fruits, etc.	24.39	0.63	-0.03	5.13	-22.93
Livestock	18.55	-0.31	-0.65	8.33	-28.51
Fish./Forestry	21.98	-1.19	-6.69	2.42	-26.09
Processed Food	1.92	4.37	2.32	20.48	-39.43
Mining	36.67	23.15	144.96	33.51	-2.31
Non-food Mfg.	14.55	1.44	16.69	33.80	-26.65
Transport	-3.51	0.85	2.91	50.95	-15.63
Services	-12.69	-1.69	-3.73	58.80	-18.19
Energy	17.28	-1.44	-0.10	12.41	-13.61
Fertilizer	11.66	-0.40	25.19	0	-14.42

Households	Gross Income	Disp. Income	Cost of Living	Real Income
1	6.44	6.33	2.52	3.72
2	-1.40	-1.38	2.02	-3.33
3	-5.87	-5.80	1.37	-7.09
4	-6.57	-6.50	1.01	-7.44
5	-7.19	-7.11	0.51	-7.58
6	-7.87	-7.78	0	-7.78
7	-6.23	-6.16	-0.11	-6.06
8	-6.23	-6.15	0.21	-6.35
9	-6.23	-6.15	-2.08	-4.16
10	-6.23	-6.15	-1.78	-4.45

palpable in the medium-term. Furthermore, this outcome is derived in spite of the apparent failure on the part of the government to pursue a flexible exchange rate policy.

Second, the simulation on Habito's model of a flexible exchange rate regime confirms Medalla's partial equilibrium results that this policy has a positive influence on output. This implies that the government's program for sustained economic growth would have been enhanced if it had maintained a more realistic exchange rate.

Third, the simulation based on the PIDS-NEDA model validates the findings of the PIDS-TC (1984) study on the impact effects of export taxes to a large extent. It reveals that the realignment of export taxes in 1986 has induced positive increments in both output and employment.

Fourth, the outcome of the simulations based on Habito's CGE model with regard to BOI incentives reinforces the findings of Manasan's (1986) study. It shows that both the substitution and the output effects of BOI incentives are negative on output and employment.

Finally, this study suggests that while the PIDS-NEDA model contains a financial block it is not adequate to fully capture and assess the implications of the financial reform carried out in 1980. Further research in this area is needed to account for the impact of the reform on both the uses and sources of financial resources.

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