Japan's Regional Strategy in Asia: Evaluation by the CGE Model

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Presentation Outline

1. Summary
2. Previous Studies
3. Model, Data and Scenarios
4. Simulation Results
5. Concluding Remarks

1. Summary

This paper evaluates Japan's preferential trade agreements (PTAs) with Asian countries by the computable general equilibrium (CGE) model.

Contributions:

1) Based on the recent and ongoing discussions on Japan's PTAs, several possible scenarios are examined in detail.
2) In analyzing Japan's PTAs, our simulation incorporates the effects of international factor movements such as foreign direct investment (FDI) and labor migration.
3) In addition, labor is decomposed into skilled and unskilled labor so that the analysis can focus on the migration of *skilled* labor.

1. Summary

Major findings:

- Japan's regional PTAs with Asian countries generally expand welfare for Japan and its partners.
- A choice of partner will alter the distribution of output across industries.
- Different from general perception, Japan's agricultural liberalization can deteriorate its welfare given the set of simulation assumptions.

1. Summary

Motivations:

- The support of Japan's PTAs is spreading in recent years.
- Recent PTAs cover issues on the promotion of FDI and skilled labor migration.
- There are some quantitative analyses to evaluate Japan's PTAs, but most of them are only considered the impacts of trade liberalization.

➔ In discussing the effects of Japan's PTAs, not only the impacts of trade liberalization but also those of FDI and skilled labor migration should be incorporated in the analysis.

2. Previous Studies

Previous studies of FDI:

There are three ways to incorporate international capital movements into the CGE model.

1) Endogenously determined international capital movements through the fictitious global bank. – KIEP(2000)
2) Exogenously determined bilateral international capital movements. – Brown, Deardorff and Stern (1992)
3) Endogenously determined bilateral international capital movements. – Dee, Hanslow and Phamduc (2001)

2. Previous Studies

Previous studies of labor migration:

1) Exogenously determined international labor migration. – Goto (1998)
2) Endogenously determined international labor migration. – Burfisher, Robinson and Thierfelder (1994)

3. Model, Data and Scenarios

Model:

Characteristics of standard GTAP model are summarized as follows:

- Perfectly competitive markets in goods and factors and constant returns to scale technology in production are assumed.
- Private consumption is determined from a constant difference elasticity expenditure function.
- Private and government consumption and savings are derived from aggregate Cobb-Douglas utility function.
- Production is determined by global demand at a supply price given by the zero-profit condition.

3. Model, Data and Scenarios

Model:

Characteristics of standard GTAP model are summarized as follows (continued):

- Imports are distinguished by country of origin (Armington assumption).
- Transport margins are derived from supply and demand to a global transportation sector.

3. Model, Data and Scenarios

Model:

In addition, following mechanisms are incorporated in our model.

- Endogenous capital accumulation with fixed saving rate.
- Exogenously determined international capital flows.
- Exogenously determined technological spillover among PTA member countries.
- Exogenously determined international migration of *skilled* labor.

3. Model, Data and Scenarios

Data:

- Basic data used in our analysis is GTAP database version 4 (1995 year basis).
- World is composed of 16 sectors and 19 countries/regions.
- Trade barriers are available as tariff and tariff equivalent values.

3. Model, Data and Scenarios

Table 4 The List of Scenarios and Implemented Shocks

Name of the Scenario	Implemented Shocks
STD: standard	QO, MFA, NAFTA
S1: JPN-SGP	+TL, LM, -CA, AO
S2: JPN-SGP-KOR	+TL, LM, -CA, AO
S3: JPN-SGP-MEX	+TL, LM, -CA, AO
S4: JPN-SGP-KOR-MEX	+TL, LM, -CA, AO
S5: JPN-SGP-KOR-ASEAN4-CHN-HGK	+TL, LM, -CA, AO
S6: CHN-HGK-SGP-ASEAN4	+TL, AO
S7: JPN-USA (labor migration from JPN to the US)	+TL, LM, AO
S8: JPN-USA (labor migration from the US to JPN)	+TL, LM, AO
S9: JPN-CHN-HGK	+TL, LM, -CA, AO

4. Simulation Results

Table 6 (excerpts) Changes in the World Economic Variables by Scenario

	S1	S2	S3	S4	S5	S6	S7	S8	S9
World GDP growth	0.02	0.14	0.08	0.19	1.37	0.32	0.24	0.21	0.77
World real export growth	0.06	0.37	0.15	0.48	5.01	1.83	0.44	0.42	2.09
EVs	5,932	34,298	20,139	47,378	322,580	75,854	57,571	51,439	179,889

4. Simulation Results

Table 7 Changes in Cumulative Real GDP Growth Rate by Region

	S1	S2	S3	S4	S5	S6	S7	S8	S9
ANZ	0.00	0.02	0.01	0.03	0.35	0.14	0.00	-0.01	0.21
JPN	0.07	0.14	0.10	0.18	1.02	-0.05	0.99	0.77	0.78
KOR	0.00	6.33	-0.01	5.89	9.05	-0.16	-0.12	-0.13	-0.28
IND	0.02	0.08	0.04	0.08	13.36	3.16	-0.09	-0.11	-0.10
MLY	0.10	0.21	0.18	0.39	18.52	7.24	-0.46	-0.48	-0.48
PHL	0.00	0.01	-0.01	-0.01	8.43	2.69	0.06	0.07	-0.26
SGP	5.76	7.23	7.04	9.77	16.85	10.40	-0.27	-0.28	0.13
THA	0.00	-0.01	0.00	-0.01	18.44	6.03	-0.02	-0.04	-0.10
CHN	0.01	-0.03	0.00	-0.03	27.69	9.17	-0.20	-0.22	24.95
HGK	0.00	0.06	0.02	0.06	-0.20	-6.68	0.16	0.16	-1.80
TWN	0.01	-0.08	-0.01	-0.09	-2.56	-0.92	-0.23	-0.24	-1.64
SAS	0.00	0.03	0.01	0.03	0.07	0.00	-0.02	-0.02	0.27
CAN	0.00	0.00	0.00	0.01	0.33	0.19	-0.32	-0.31	0.12
USA	0.00	0.01	0.01	0.02	0.07	0.00	0.35	0.41	0.03
MEX	0.00	0.00	4.20	4.22	-0.02	0.01	-0.02	-0.02	0.01
LAS	0.01	0.03	0.02	0.05	0.32	0.07	0.02	0.02	0.25
EU	0.00	0.00	0.00	0.00	-0.01	0.02	-0.02	-0.02	0.01
FSU	0.00	0.00	0.00	0.01	0.11	0.08	-0.03	-0.03	0.07
ROW	0.00	0.03	0.01	0.03	0.28	0.02	0.03	0.03	0.22

4. Simulation Results

Table 8 Changes in Equivalent Variations by Region

	S1	S2	S3	S4	S5	S6	S7	S8	S9
ANZ	14	142	71	217	2,705	1,145	-168	-193	1,469
JPN	2,705	9,626	5,099	12,216	79,802	-4,895	50,309	41,150	62,367
KOR	-11	21,779	-103	19,324	43,894	-1,740	-1,106	-1,141	-2,979
IND	31	140	90	172	17,812	6,824	-343	-382	-847
MLY	100	204	191	367	10,959	6,252	-486	-511	-345
PHL	5	15	3	1	3,052	1,640	-30	-30	-10
SGP	2,985	3,412	3,232	4,375	12,032	9,972	-297	-308	126
THA	6	-16	29	20	17,488	7,066	-145	-177	111
CHN	39	-541	-18	-457	122,691	40,881	-1,882	-1,989	110,208
HGK	8	60	8	47	6,422	4,762	-58	-57	6,282
TWN	36	-338	-36	-353	-9,986	-3,819	-827	-860	-6,329
SAS	22	59	52	88	-592	64	-225	-236	958
CAN	0	6	-6	40	2,471	1,274	-2,261	-2,235	866
USA	3	-27	66	-93	7,511	854	19,067	22,485	1,963
MEX	-2	-21	11,135	11,137	-148	132	-441	-435	98
LAS	20	305	292	539	5,046	1,668	-119	-118	3,956
EU	14	-858	-213	-834	-2,249	1,729	-3,040	-3,099	-483
FSU	-31	-56	4	-2	673	747	-385	-404	412
ROW	-12	408	241	571	2,997	1,297	7	-22	2,066

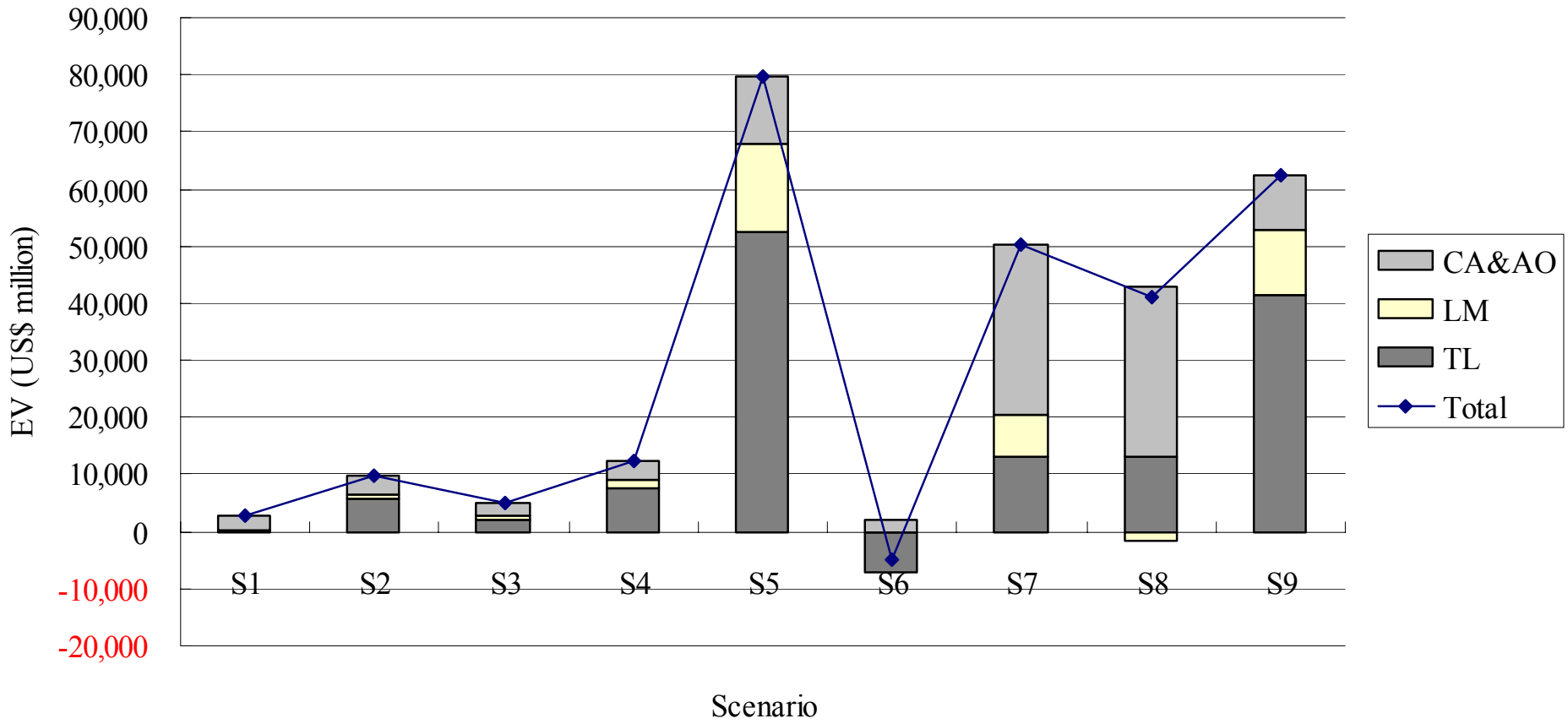
4. Simulation Results

Table 9 (excerpts) Changes in Output by Industry in Japan

	S1	S2	S3	S4	S5	S6	S7	S8	S9
AGR	0.02	-0.01	0.03	0.00	0.47	0.43	0.05	-0.05	0.12
MNG	0.08	0.08	0.11	0.09	-1.70	0.25	0.34	0.10	-1.43
PDF	0.03	0.04	0.03	0.04	0.38	0.08	0.32	0.21	0.23
TXL	0.03	-0.27	0.00	-0.23	2.61	-1.82	-0.24	-0.41	9.47
W&P	0.08	0.14	0.10	0.16	0.91	0.02	0.55	0.32	0.69
P&C	0.08	0.30	0.11	0.30	1.58	-0.12	0.67	0.45	0.90
MTL	0.09	0.33	0.14	0.41	1.71	-0.03	1.31	1.08	0.25
M&T	0.31	-0.33	0.43	-0.22	4.61	-0.34	5.67	5.39	3.96
ELE	0.11	0.08	0.12	0.06	0.01	-0.40	1.02	0.78	0.47
OME	0.04	0.68	0.16	0.82	1.09	0.01	0.93	0.70	-0.67
OMF	0.09	0.15	0.16	0.19	-0.90	-0.96	0.70	0.47	0.05
EGW	0.08	0.18	0.11	0.22	1.24	-0.11	0.89	0.66	0.93
CNS	0.13	0.26	0.18	0.31	1.68	-0.09	1.19	0.95	1.28
T&T	0.03	0.02	0.04	0.03	0.58	0.11	0.49	0.26	0.50
OSP	0.08	0.16	0.12	0.19	1.06	0.00	0.94	0.70	0.76
OSG	0.02	0.07	0.05	0.10	0.70	-0.03	0.48	0.26	0.51

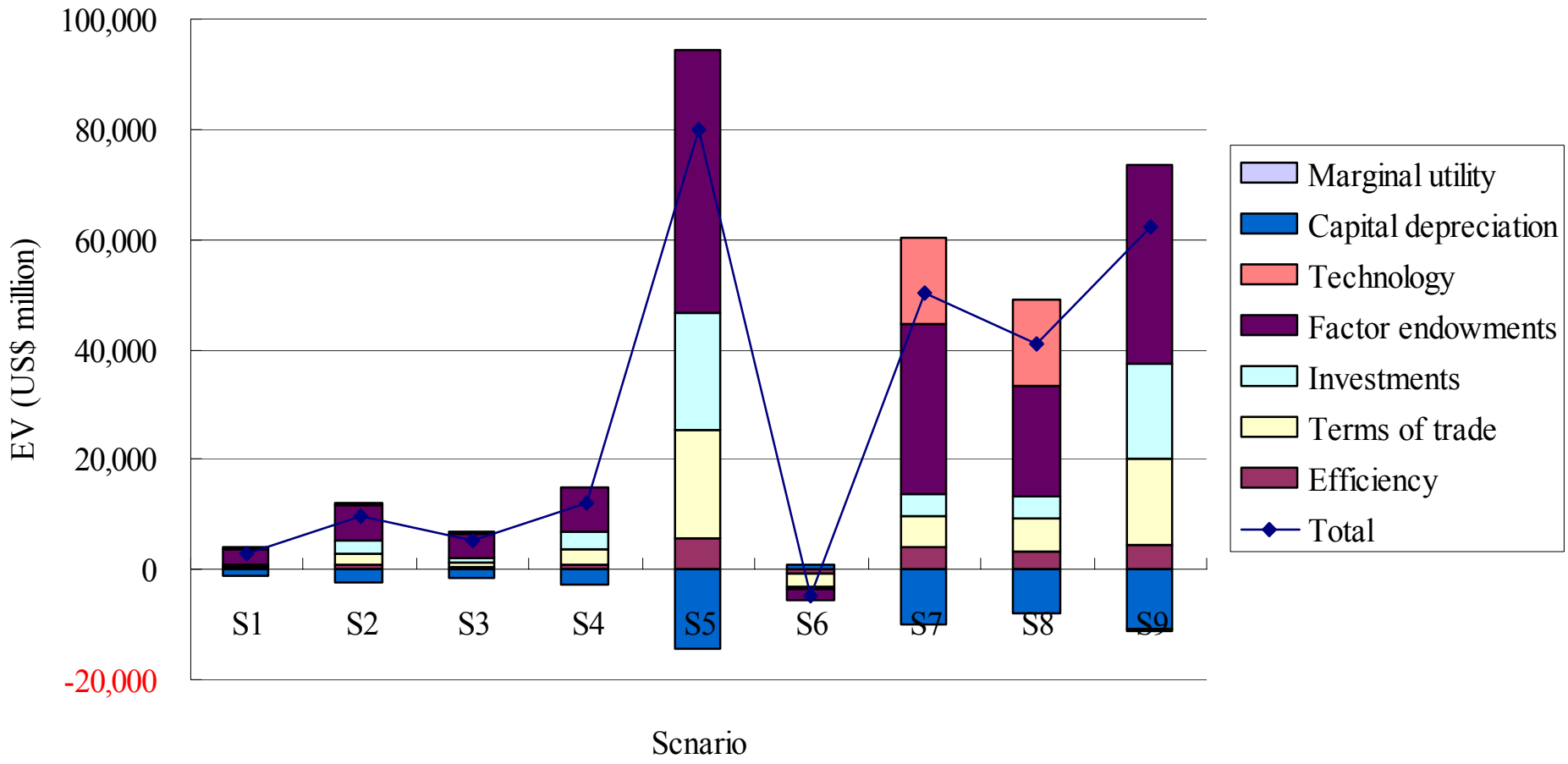
4. Simulation Results

Decomposition of Japan's welfare changes I

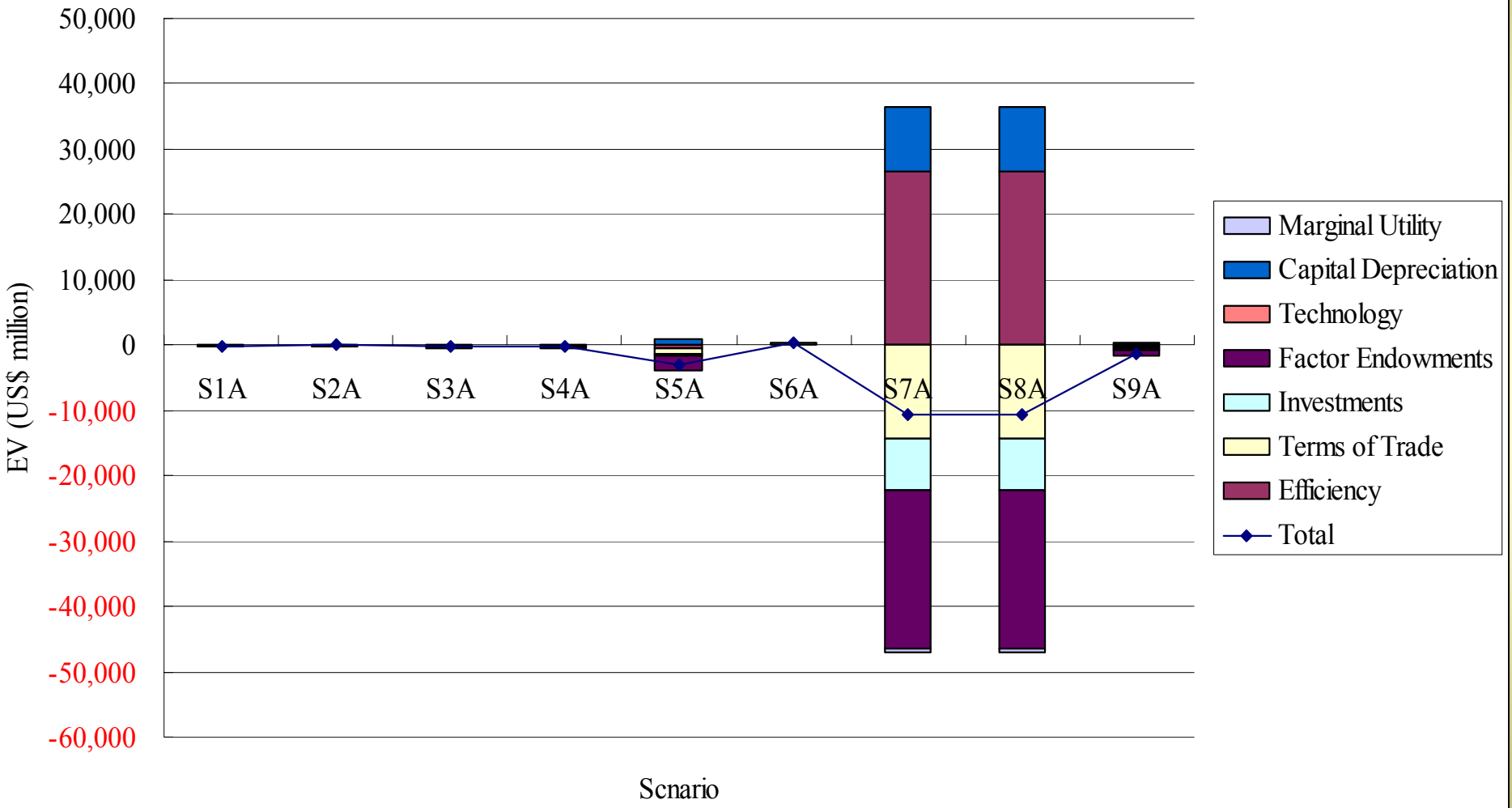


4. Simulation Results

Decomposition of Japan's welfare changes II



4. Simulation Results



5. Concluding Remarks

Our results are summarized as follows:

- Our simulation results suggest that regional PTAs in Asia generally expand welfare for the member countries.
- A choice of partner will alter the distribution of output across industries.
- Different from general perception, agricultural liberalization can deteriorate the welfare of Japan given the set of simulation assumptions.