Influences on Japan, Korea and China from a TPP agreement:

General equilibrium approach

環太平洋戦略的経済連携協定(TPP)による日本、韓国、中国への影響評価の一般均衡分析

Areerat Todsadee

(The United Graduate School of Agricultural Science, Ehime University)

Hiroshi Kameyama

(Kagawa University)

Shoichi Ito

(Kyushu University)

要約

　本論文の目的は、環太平洋戦略的経済連携協定(TPP)に、日本が参加した場合に、日本、韓国、中国、ASEAN 諸国にもたらされる潜在的な影響を比較静学的に明らかにすることである。指標として、地域（国）別の GDP、厚生測度として EV（等価変分）、その他、輸入の増加などを採用した。これらの推計には GTAP モデルを用い、全部門で域内の輸入関税を全面撤廃をショックとしその影響を評価した。

　日本、韓国、中国では GDP の変化はほとんどがない。EV では、先進国の TPP のメンバー国に、ASEAN に加盟している TPP 参加国（ベトナム、マレーシア）また、韓国、中国にも正の影響がもたらされることが示唆された。

Abstract

　　　The Trans-Pacific Strategic Economic Partnership Agreement (TPP better-know) is a high-standard and broad-based free trade agreement that aims to integrate the economies of the Asia Pacific region. Recently, the US is pushing Japan to join the group, because of the dual considerations of its own economic interests and political situation in East Asia, while Korea waits to join the TPP. They wonder agriculture will be seriously affected by the TPP.

　　　In addition, Japan and U.S. are employing both military and economic strategies to contain China. It has become the share political goal of Japan and the US to counterbalance China's important position in East Asian cooperation. However, China has contacted those already participating in TPP negotiation and shares some common view on agricultural issue with Japan and South Korea.

Therefore, in this paper we attempt to assess the possibility trade liberalization of TPP with new member countries or trade creation including Japan, Korea, and China. A computable general equilibrium (CGE) /or Global Trade Analysis Project (GTAP) model is used to evaluate the economic effects of a TPP agreement among TPP countries with trade creation

In order to analyze the effects of TPP on both the members' and non-member economies in general as a reference value, it is assumed that all tariffs on all sectors will be eliminated. In this study, seven cases are created to distinguish the welfare and trade effect of policy changes. This study is focused on estimating trade creation and diversion effects of the FTA.

Result:

Result found that among the seven cases of FTA, TPP with Japan, Korea and China are the most beneficial to all individual member countries except Peru fell in real GDP and welfare. It is confirms that TPP with Japan, Korea and China is strong largest gains for the member countries.

However, the projection suggests that the TPP has negative for non-member economies except Mexico in all cases and Malaysia in case of TPP. This is especially true for the trade in the meat product sectors between TPP with Japan Korea, and China which mostly of them gain benefit. In contrast with the industrial sector, which impacted by a decrease in production level, except, light manufacture sector increased in three countries, Japan, Korea, and China but the percent change increase less. In term of export sectors is a very interesting result because of its trade expansion effects on the production sectors in FTA. The biggest export gains are rice, meat product and process food. As the results, we concluded that TPP will boot the economic systems of the three countries, keeping them close to each other an economic integration. However, the TPP provides a significant negative effect on economies of non-member countries.

1.   Introduction

The Trans-Pacific Strategic Economic Partnership Agreement (TPP-better known as "P4") is a trade agreement- currently under negotiation that has its roots in an existing agreement between Brunei Darussalam, Chile, New Zealand and Singapore was signed in 2005. The goal of these original four TPP members was not to form a union based on economic synergies among the current partners, but rather to create a model agreement that could be expanded to include additional members from both sides of the Pacific. In other word, TPP is a multilateral free trade agreement that aim to further liberalize the economies of the Asia-Pacific region. Now Australia, Malaysia, Peru, United States, and Vietnam, are currently negotiating to join the TPP.

Japan is regarded as a potential member. Japan joined as an observer in the TPP discussions that took place on November 13-14, 2010, on the sideline of the APEC summit in Yokohama. Japan is interested in joining the TPP because of the dual considerations of its own economic interests and political situation in East Asia. Japan worries about the negative effects by the TPP on its automotive and electronics industries, thus making efforts to join the TPP. Naoto Kan, Japanese Prime Minister made clear that he would bring Japan into the TPP negotiating process to help Japanese economy to a healthy growth part. On November 9, 2010, the Japanese cabinet approved the "basic principles of economic cooperation". Its core issue is to start TPP negotiation with the United States, New Zealand, and other countries. Meanwhile, as for the negative hit on Japanese agriculture by the TPP, the Japanese government will spend up the completion of basic agricultural reforms and improve domestic (agricultural) environment. To jointly contain China is also Japan's political consideration. Japan and U.S. are employing both military and economic strategies to contain China. It has become the share political goal of Japan and the US to counterbalance China's important position in East Asian cooperation and in the Asia-Pacific regional cooperation. The TPP is an important means for them.

South-Korea already has bilateral trade agreements with other TPP countries, Korea-USA, ASEAN+3, thus making any future multilateral TPP negotiation relatively easier and less complicated. Therefore, South-Korea has no reason stay out of the zone. However, they wait to join the TPP because some industries of Korea, especially agriculture will also be seriously affected by the TPP. After more than one's year watching, for the time being, South Korea has basically determined that it will not join the TPP talk due to the reason of agriculture development.

China has contacted those already participating in TPP negotiation and shares some common view on agricultural issue with Japan and South Korea. Meanwhile, as an important part of China's foreign trade strategy, the Chinese government would promote more actively any form of FTA negotiations. For example, the present priority is to speed up FTA negotiations with Japan and South Korea. If China-Japan-South Korea free trade area can be built up, and in addition to China-ASEAN Free Trade Area, it will be difficult for the United States to isolate China economically even if it dominates the TPP.

Takamasu(2004) shows the real GDP of TPP free trade between Japan participate and ASEAN participate in TPP agreement. Real GDP boot Japan economy but less than one percent on column two. If the three countries form a TPP free trade block, it would be boot in ASEAN countries.

The increasing it nearly one percent when Japan, Korea and China are participate TPP countries of ASEAN white non-member, EU and Other determine in real GDP.

As the result, building an East Asian Community, Japan, Korea and China, to join the TPP. Therefore, to exams the possible trade liberalization of TPP with new membership, especially China and South-Korea. The objective of this paper are; study the impact of trade liberalization before and after China and South-Korea joint to TPP, study the welfare implications of trade liberalization of TPP when China and South-Korea become the new membership, and discuss the possible trade liberalization of TPP with new membership; China and South-Korea.

2.   Methodology

2.1   Framework

In order to provide quantitative assessment on the effect of TPP on welfare and real GDP, the following computable general equilibrium (CGE) models have been adopted. The first is the standard CGE model which the gains from trade liberalization. It refers to the static CGE model. In particular, the GTAP (Global Trade Analysis Project) model which has been extensively used in studies to examine a wide variety of trade policy issues. The GTAP model is multi-regional, applied general equilibrium model.

GTAP version7 is the source of the data for simulation. It covers 113 regions, 57 commodities or sectors, and five primary sectors. The database corresponds to the world economy based on 2004 benchmark (Badri el. all, 2008). For this model, the original GTAP dataset was aggregated down to 17 regions and 14 sectors, respectively (17 regions: Australia, Chile, New Zealand, Peru, Singapore, USA, Vietnam, Japan, China, South Korea, Canada, Mexico, and Malaysia, ASEAN (non-TPP member, Indonesia, Thailand, the Philippines, Myanmar, Laos, Cambodia), Latin America, EU, and Rest of the world, 15 sectors: Rice, Wheat, Grains, Vegetable and fruit, livestock, Meat product, Fishing, Process food, Natural resource, Textiles and apparel, Light Manufacturing, Heavy Manufacturing, Utilities & Construction, Trade, transport, comm., Other service. With the above aggregation of the regions and sectors, the paper examines the effects of the following (hypothetical) TPP.

2.2   Dataset aggregation

We separated the individual country/region to the maximum extent possible so as to distinguish the welfare and trade effect of policy changes by country/region and sectors based on similarities in factor shares and characteristics.

A comparison of the results of TPP among the present members (without ASEAN participant in TPP agreement) and China, TPP among the present members and Korea, and TPP among the present members Japan, China, and Korea would be particularly of interest among the seven scenarios. (See Table 1).   In order to analyze the effects of TPP on both the members and non-members in general as a reference value, it is assumed that all tariffs on all sectors will be eliminated. To compare several types of East Asian TPP framework our study basically focuses on TPP, and TPP+J+C+K. In addition to these, however, global trade liberalization is also examined as a reference.

2.3   Scenario

Shock scenario is to eliminate the import tax among ASEAN and TPP participant's countries. Since the base dataset as the bench mark is the original dataset which calibrate the economy in 2004. Later on ASEAN FTA has been established up to now. However in our simulation such process is not took into considered.

3.   Simulation Results

This section reports macroeconomic effects, sectoral effects and welfare. The results will provide evident as to whether there is trade creation and/ or trade diversion following the formation of the TPP and what is the estimated impact on trade flows in the TPP with Japan, China and Korea when join it.

In Table 2 real GDP is the first measurement. TPP+ Japan, China, and Korea are the most benefited among the seven cases to all individual member countries except Peru regarding the effects through trade liberalization at 0 tariff rates.   The percentage change in real GDP are 2.4% for Vietnam, 1.00 for Korea, 0.30 for China, 0.20 for Japan, 0.10 for New Zealand and Australia, 0.03 for Singapore and Chile, and 0.003 for USA. It confirms that TPP+ Japan, China and Korea create the largest gains for the member economies. The projection, however, suggests that the TPP has negative for non-member economies except Mexico in all cases and Malaysia in case of TPP. This supports arguments that TPP is a beneficial to member countries, but detrimental to non-member countries. In general, non-members will be at a disadvantage as a result of the trade diversion. In addition

comparison the percent change of real GDP from TPP countries and trade creation , Japan, Korea, and China join with TPP countries, show that the value of real GDP with trade creation's TPP increase more than the present members including Australia, Chile, New Zealand, Peru, Singapore, USA, and Vietnam. However, Peru show negative real GDP in all cases of trade liberalization and trade creation which mean that Peru loss benefit from the TPP agreement.

Second measurement is the EV, the net welfare gains from TPP in Table 2. The EV measures the amount of income that would have to be given or taken away from an economy before trade liberalization as to leave the economy as well off it would be after the policy has been changed (Brown et al., 2005). Mostly all seven cases of them show gain in the economic welfare except China and Korea when TPP extended to China, China loss 1687.83 $ US million while Korea loss 1402.45 $ US million when Korea join the TPP agreement. For the Peru economic welfare decreased in all cases of TPP, especially when Japan, Korea and China participate by 129.82 $ US million. Among of the loser, Vietnam is reported to have most significant positive economic welfare when compare with them, 2037.77 $ US million (TPP+J+K+C), 1874.01$ US million (TPP+J+K), 1670.04$ US million (TPP+K+C), 1671.44$ US million (TPP+J+C), 1442.36$ US million (TPP+J), 1242.73$ US million (TPP+K) , 1212.12$ US million (TPP+C), and 1133.19 $ US million (TPP), respectively. Non-member of TPP countries was loss in economic welfare which can be attributed to negative effect in term of trade effects.

Table 1: Separated the individual country/region

Countries	TPP	TPP+J	TPP+K	TPP+C	TPP+J+K	TPP+J+C	TPP+K+C	TPP+J+K+C
Australia	√	√	√	√	√	√	√	√
Chile	√	√	√	√	√	√	√	√
New Zealand	√	√	√	√	√	√	√	√
Peru	√	√	√	√	√	√	√	√
Singapore	√	√	√	√	√	√	√	√
USA	√	√	√	√	√	√	√	√
Vietnam	√	√	√	√	√	√	√	√
Japan	-	√	-	-	√	√	-	√
China	-	-	√	√	-	√	√	√
South Korea	-	-	-	-	√	-	√	√

Source: author's calculation

In the following (hypothetical), let us focus on the effects of Japan, China, and Korea are participate in TPP on production output for the different sectors. Percentage change is expressed in Table 3. Under the trade creation, output increase in four agriculture sectors out of 15, such as

livestock, meat product, fishing and process food in six countries of them, Australia, New Zealand, Singapore, USA, Chile, and Peru. In term of meat product increase more than 10 % in Singapore (26.2 %), Chile (21.9 %), Australia (17.5 %), and New Zealand (10.3 %), respectively, while livestock sector also increase product more than 10 % in Chile (13.8 %), and Australia (11.7 % only. In addition, process food in three countries had increasing more than 6 % in Singapore (16.1 %), Australia (7.5 %), and New Zealand (6.7 %). The largest increase was rice in Australia (341.8 %), and USA (107.3 %), respectively. Textiles & apparel and Light manufacture sectors were mostly fall in seven countries including Australia, New Zealand, Singapore, USA, Chile, Peru, and Japan. The negative percent change of textiles & apparel were 11.2 % for Australia, 11.4 % for New Zealand, 8.2 % in Singapore , 5.6 % for USA ,3.9 % for Chile, 3.7 % for Peru, and 0.3 % for Japan, while light manufacture sectors in TPP countries were negative change by 8.2 % for Viet Nam, 4.9 % for New Zealand, 3.7 % for Australia, 2.8 % for Chile, 1.6 % for Singapore, 1.0 % for Peru, and 0.7 % for USA, respectively. As the result shown that trade creation's TPP agreement are much more positive in six countries, Australia, New Zealand, Singapore, USA, Chile, and Peru in term of agriculture sectors as explain above while Korea, and China was positive output only on light manufacture sector but the percent change less than one % increase except Japan increase 2.0 %.

In general, the magnitude of export variation is lower than for imports. This is a very interesting result because of its trade expansion effects on the production sectors in TPP agreement, focus on the trade creation join the TPP. (Table 4). The biggest export gain is rice sector, and this exports increase to all eight countries of ten. In fact, increased exports of rice 18881.6 % for Korea, 7056.5 % for China, 29991.7 % for Australia, 1059.6 % for Vietnam, 388.5 % for USA, 214.3 % for Japan, 26.5 % for Peru, and 4.38 % for Singapore, respectively. The other significant export increase were meat product and food process in Australia, New Zealand, Singapore, and USA, it accounts more than 10 % increase.

4.   **Conclusion and Discussion**

This paper undertakes policy simulation using the GTAP model framework and database to anticipate consequence of the TPP agreement with Japan, Korea, and China. The data aggregation based on the 2004 GTAP database distinguishes fifteen sectors and seventeen regions (15 sectors: Rice, Wheat, Grains, Vegetable and fruit, livestock, Meat product, Fishing, Process food, Natural resource, Textiles and apparel, Light Manufacturing, Heavy Manufacturing, Utilities & Construction, Trade, transport, comm., Other service, and 17 regions: Australia, Chile, New Zealand, Peru,

Singapore, USA, Vietnam, Japan, China, South Korea, Canada, Mexico, and Malaysia, ASEAN, Latin America, EU, and Rest of the world). The highlights importance of countries considering the implications of the agreement they are currently multilateral liberalization under TPP agreement compare with trade creation when Japan, Korea, and China participate.

The major conclusion is that expansion member countries among TPP countries with East Asia countries including Japan, South-Korea, and China, last case, would benefit from the FTA among member countries, gain much more from the real GDP and welfare than the TPP agreement, especially Vietnam, Korea gains more than one percent in real GDP while Peru fell both real GDP and welfare.

However, the projection suggests that the TPP has negative for non-member economies except Mexico in all cases and Malaysia in case of TPP.

Rice production significantly increased in nine countries except Japan, Korea, and New Zealand, while other agriculture products the effects were different by the countries for example in Japan, grains, livestock, meat product, fishing, process food and natural resource significant decreased while China decreased production on vegetable and fruit, livestock, meat production, and natural resource. Korea decreased on vegetable and natural resource and etc. In contrast with the industrial sector, which impacted by a decrease in production level, except, light manufacture sector increased in three countries, Japan, Korea, and China but the percent change increase less. The biggest export gain is rice sector, and this exports increase to all eight countries of ten.

An interesting observation is that under TPP countries with Japan, Korea, and China, last case, Vietnam records the highest growth rate in real GDP and export. The percent change in real export volume was 29.1 % and 2.3 % for real GDP, respectively. Moreover, the individual member countries were gains benefit both real GDP and welfare but the percent change of real GDP increase less than one percent while welfare increased much. It is confirms that TPP with Japan, Korea and China is strong largest gains for the member countries. However, the trade liberalization provides a significant negative effect on economies of non-member countries.

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Table 2: Real GDP and Equivalent Variation (EV)

Regions	Percent change in real GDP								EV ($ US Million)							
	TPP	TPP+J	TPP+K	TPP+C	TPP+J+K	TPP+J+C	TPP+K+C	TPP+J+K+C	TPP	TPP+J	TPP+K	TPP+C	TPP+J+K	TPP+J+C	TPP+K+C	TPP+J+K+C
Australia	0.001	0.03	0.01	0.05	0.08	0.05	0.06	0.1	344	1409	1099	792	1782	1956	1433	2216
NewZealand	0.03	0.06	0.04	0.06	0.08	0.06	0.06	0.1	293	362	411	353	415	440	455	477
Singapore	0.02	0.02	0.02	0.03	0.02	0.03	0.03	0.03	516	521	980	572	533	794	965	736
USA	0.002	-0.004	0.002	0.01	0.00	0.01	0.01	0.003	337	3788	399	2178	5056	2080	1173	2292
Chile	0.00	0.01	0.02	0.02	0.02	0.02	0.03	0.03	23	136	71	70	171	159	97	174
Peru	-0.03	-0.03	-0.03	-0.01	-0.01	-0.01	-0.01	-0.01	-86	-105	-101	-95	-114	-121	-109	-130
Vietnam	0.81	0.49	0.49	1.51	1.85	1.51	1.96	2.34	1133	1442	1243	1212	1844	1617	1670	2038
Japan	-0.001	0.14	0.00	-0.01	0.19	-0.01	-0.01	0.2	-340	6637	-3093	-713	7931	12556	-4067	13259
China	-0.011	-0.02	-0.02	0.28	0.30	0.28	0.28	0.30	-509	-1915	14358	-1688	-3342	11957	12847	10613
Korea	-0.003	-0.02	0.61	-0.03	-0.07	-0.03	0.79	1	-92	-582	-1402	4495	3685	-2792	7892	6309
Canada	0.00	-0.01	-0.01	-0.02	-0.03	-0.02	-0.02	-0.03	-219	-1110	-1079	-474	-1334	-1922	-1294	-2116
Mexico	0.01	0.00	0.01	0.02	0.01	0.02	0.02	0.01	-47	-565	-481	-205	-709	-947	-593	-1055
Malaysia	0.01	-0.01	-0.01	-0.02	-0.09	-0.02	-0.06	-0.14	-47	-167	-378	-132	-296	-763	-615	-1041
ASEAN	-0.002	-0.01	0.00	-0.03	-0.06	-0.03	-0.03	-0.08	-158	-672	-1156	-421	-1071	-2363	-1644	-2981
Latin	-0.004	-0.01	-0.01	-0.02	-0.03	-0.02	-0.03	-0.04	-186	-643	-758	-463	-936	-1325	-1101	-1696
EU_25	-0.003	-0.01	-0.01	-0.01	-0.02	-0.01	-0.02	-0.03	-874	-3086	-4816	-1816	-4270	-8275	-6080	-9764
ROW	-0.002	-0.01	0.00	-0.02	-0.02	-0.02	-0.02	-0.03	-236	-1029	-973	-686	-1709	-2214	-1816	-3291

Source: Model Simulation

Table 3: Production sectors of TPP+ Japan, Korea, and China (Unit: percent change)

Regions/ Sector	Australia	NewZealand	Singapore	USA	Chile	Peru	Vietnam	Japan	China	Korea	Canada	Mexico	Malaysia	ASEAN	Latin	EU	ROW
Rice	341.81	-2.21	2.90	107.25	0.86	0.22	2.50	-37.91	13.12	-79.02	22.76	24.85	-0.02	-0.09	3.22	3.24	0.26
Wheat	-13.00	3.98	-10.31	1.26	1.36	-7.03	29.84	-62.24	-1.77	41.52	0.69	3.51	0.25	6.59	2.75	0.66	0.86
Grains	2.06	-3.97	-0.55	0.96	-1.62	0.29	-24.40	-12.68	3.54	33.51	-0.40	0.13	-1.49	0.64	-0.28	-0.11	-0.10
Vegetable_F	0.41	-2.07	0.00	-0.88	-1.62	1.02	19.66	0.14	-0.09	-13.03	2.22	1.11	1.66	-0.44	0.62	0.20	0.01
Livestock	11.72	7.28	2.47	4.35	13.87	0.20	0.30	-21.38	-1.74	6.98	-1.99	-0.28	-0.13	-0.94	-0.67	-0.26	-0.05
MeatProduct	17.48	10.33	26.19	8.32	21.94	0.36	-3.60	-46.55	-7.69	2.44	-5.51	-2.55	-1.89	-2.59	-1.25	-1.20	0.02
Fishing	0.52	3.06	0.03	0.33	0.17	0.02	-2.65	-0.13	0.07	1.08	0.20	-0.22	-0.19	-0.16	0.00	-0.04	-0.06
ProcFood	7.52	6.69	16.06	0.80	-0.41	0.64	-23.57	-0.29	0.70	10.31	-0.66	-0.47	-1.64	-0.41	-0.29	-0.21	-0.35
Natural_R	-0.95	-1.13	-0.18	-0.02	-0.25	1.63	-10.62	-1.14	-1.09	-4.77	0.51	0.33	0.62	1.02	0.43	0.26	0.22
TextWapp	-11.19	-11.38	-8.22	-5.61	-3.96	-3.72	66.32	-0.31	8.39	13.52	-6.71	-6.01	-9.13	-4.90	-4.46	-1.08	-2.94
LightMnfc	-3.68	-4.92	-1.61	-0.69	-2.79	-1.02	-8.21	2.01	0.73	0.10	-0.57	-0.33	-0.14	0.38	0.31	-0.12	0.07
HeavyMnfc	-2.69	-2.97	0.88	0.19	-0.41	0.44	-12.93	0.88	-1.24	-0.52	1.09	0.90	-0.17	1.26	0.53	0.08	-0.13
Util_Cons	1.07	0.88	0.57	0.06	0.20	0.52	21.45	0.37	1.49	2.84	-0.66	-0.02	-1.13	-1.92	-0.56	-0.30	-0.31
TransComm	-0.01	-0.20	0.14	0.02	0.16	0.34	-3.83	0.06	-0.54	0.76	0.15	0.28	0.89	0.38	0.19	0.15	0.16
OthServices	-0.15	-0.03	-0.93	-0.04	-0.07	0.09	-8.61	-0.02	-0.51	-0.33	0.11	0.09	0.50	0.09	0.09	0.02	0.10

Source: Model Simulation

Table 4: Export sectors of TPP+ Japan, Korea, and China (Unit: percent change)

Regions/ Sector	Australia	NewZealand	Singapore	USA	Chile	Peru	Vietnam	Japan	China	Korea	Canada	Mexico	Malaysia	ASEAN	Latin	EU_25	ROW
Rice	2991.79	**-3.62**	4.38	388.54	**-4.14**	26.52	1059.64	214.29	7056.59	18881.62	50.30	1.91	26.50	23.06	38.87	7.19	15.44
Wheat	**-12.03**	**-22.47**	-11.37	3.32	**-10.42**	40.88	30.55	105.10	23.36	100.13	-0.30	3.15	-0.06	7.77	2.62	1.66	4.31
Grains	5.63	**-11.39**	-0.31	6.10	**-5.05**	5.10	-28.39	26.93	14.05	212.17	-1.89	0.09	-15.30	-0.41	-2.25	-0.92	-0.28
Vegetable_F	**-3.45**	**-3.12**	0.06	-1.92	**-0.20**	3.51	144.89	53.99	**-3.89**	166.58	2.05	2.62	3.63	-6.75	1.16	-0.13	-0.45
Livestock	26.60	9.54	0.68	1.36	**-5.21**	3.58	-20.48	18.15	**-4.66**	115.59	3.46	5.59	1.01	1.67	0.81	-0.63	-0.25
MeatProduct	47.49	19.92	119.04	180.85	97.15	9.15	-51.69	21.00	**-39.10**	261.57	-20.96	-65.23	-16.11	-38.42	-6.38	-5.04	-2.68
Fishing	3.11	-4.51	0.84	2.93	2.83	4.87	17.63	14.13	8.77	7.13	0.48	1.16	0.66	0.18	0.79	-0.64	-0.64
ProcFood	40.20	17.16	26.09	12.06	-2.31	4.14	-18.67	51.94	24.23	96.85	-3.46	-0.97	-3.54	-3.71	-2.05	-1.55	-3.13
Natural_R	-0.20	4.74	0.69	1.05	0.43	2.89	-10.52	12.81	-0.58	14.85	0.26	-0.25	1.00	1.26	0.11	0.28	0.14
TextWapp	30.33	-11.35	-9.47	0.37	-1.32	-6.29	117.23	47.99	23.94	33.05	-16.99	-16.55	-11.65	-9.88	-14.59	-3.74	-6.57
LightMnfc	-2.79	-6.79	-2.32	0.02	-3.54	5.21	5.41	10.25	11.56	4.23	-2.16	-1.66	-1.49	-0.81	-0.76	-0.89	-1.06
HeavyMnfc	-1.09	-3.32	1.10	2.52	0.59	6.35	-16.40	4.25	3.88	4.45	0.59	1.53	-1.21	0.14	0.23	-0.44	-0.95
Util_Cons	-4.09	-4.05	-3.09	-0.72	-1.02	4.72	-30.15	-4.92	-4.31	-7.39	2.08	1.66	1.55	2.97	0.79	0.10	0.19
TransComm	-3.09	-1.74	0.55	0.55	1.25	3.95	-5.72	0.64	-2.53	1.29	2.51	2.45	2.45	3.42	2.06	1.34	1.51
OthServices	-4.02	-3.48	-2.74	-0.48	-1.15	3.55	-30.07	-3.37	-5.20	-7.59	2.11	2.63	1.90	3.76	1.81	0.28	0.73

Source: Model Simulation