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Accounting for Spillover Effects of Production[*]

From the Perspective of Developing Countries

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Abstract

From the perspective of developing countries, one can benefit from the economic growth in other countries, specifically neighboring countries. However, boost in respective economy is a major factor for the development. In this paper, we illustrate mechanism of spillover effects of production in global context and also formulate a model to estimate it by using the recent globally-linked input-output (YNU-GIO) table for 2012 with 29 endogenous countries, 59 exogenous countries and 35 production sectors. Estimation of spillover effects enables us to figure out the magnitude of economic benefits that spread to other countries due to increased production in any country. Our approach captures complicated trade linkages across countries in terms of spillover effects of production, which are directly unobservable in nature and are generally overlooked or partially addressed in other analytical model.

Keywords: Global Input-Output data, developing countries, economic growth, spillover effects

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1. Introduction

In recent years, an economic shock (whether it be a negative of positive) tends to propagate globally due to interconnectedness of the world economy. In particular, negative shock originated in developed country has significant effect, through international trade channels, on the economic growth of developing countries. For example, the US economy experienced severe decline in trade in terms of magnitude and speed since late 1960s (Crowley and Luo, 2011) due to Lehman shock in 2008. As a consequence, US bound export declined rapidly and the world witnessed the economic depression, popularly known as Global Financial Crisis (GFC). In general, impact of economic shock through trade are estimated from the conventional trade data. However, trade data only does not capture the indirect transaction of intermediate goods and value-added associated with the production of final and intermediate goods.[1]

The main objectives of the paper are (1) to reveal degree of economic impact associated with the production of final goods in terms of spillover effects of production, and (2) to suggest policy implication from perspective of developing countries. We define two types of spillover effects to measure the economic impact of production. First, spillover outflow for a country as an amount of imported intermediate goods used for the production of finished goods in that country. Generally, higher degree of spillover outflow has very limited economic impact on the economy as increase in import will offset the positive effect of additional production and/or export. And, second, spillover inflow from foreign countries as amount of exported intermediate goods used for production in foreign countries. Economic policy to increase the spillover inflow is important, because it boosts the economy by export, and in the meantime, it helps to reduce the spillover inflow.

We apply the Input-Output framework, extended for the global analysis, based on the globally linked Input-Output (YNU-GIO) table[2] for year 2012 to estimate the spillover effects. The Input-Output framework enables us to address the indirect effects of production associated with intermediate goods trade, which is main focus of our study. Moreover, using the Input-Output data for 2012 addresses the most recent economic and international trade structure in global context.[3]

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[1] See, for example, Hummels, Ishii and Yi (2002); Johnson and Noguera (2012), Koopman, Wang and Wei (2012) Foster and Stehrer (2013); Timmer *et al*. (2014) and Sato and Shrestha (2014) for the discussion on the indirect effects of production.

[2] Annual YNU-GIO Tables for years 1997 to 2012 were constructed by Center of Center for Economic and Social Studies in Asia (CESSA) at Department of Economics, Yokohama National University, Japan and are available at http://www.recessa.ynu.ac.jp/en/.

[3] Among the similar type of Input-Output data, 2011 is the recent data published by World Input-

Although, Nepal and other South Asian countries (except India) are not included in the analysis, we compare the spillover effects of China and India (two neighbors Nepal) and draw policy implication from the perspective of developing countries. Our results suggest that impact of increased intermediate goods (part and components) production on economic growth of developing countries is higher than increasing production of assembled goods.

The remainder of this paper is organized as follows. Sections 2 and 3 presents the methodology and data sets used in this research. Section 4 discusses the results based on the spillover effects. Finally, Section 5 concludes the paper.

2. Methodology Data sets

We use global input-output framework to estimate the amount of production inducements in different countries due to production of finished goods. Let us assume that the Leontief inverse based on three country GIO table[4] and the finished goods produced in three countries are given as follows.

$$L = \begin{pmatrix} L^{JJ} & L^{JC} & L^{JU} \\ L^{CJ} & L^{CC} & L^{CU} \\ L^{UJ} & L^{UC} & L^{UU} \end{pmatrix} \qquad (1)$$

$$F = \begin{pmatrix} F^{J} & 0 & 0 \\ 0 & F^{C} & 0 \\ 0 & 0 & F^{U} \end{pmatrix} \qquad (2)$$

Where upper suffix for the Leontief inverse represents the flow of direct and indirect inducements from first to second suffix. For example, L^{CU} in second row third column represents the directly and indirectly generated inducement coefficient in country *C* (i.e., China) due to unit finished goods produced in country *U* (i.e., USA). Further, suffix in equation (2) represents the amount of finished goods produced in respective countries.

The production induced in three different countries (say, matrix *X*) due to respective finished goods production can be calculated as following matrix equation

Output Database (WIOD, http://www.wiod.org/new_site/home.htm) and Asian International Input-Output (AIIO) Table, published by Institute of Developing Economies (IDE, http://www.ide.go.jp/English/Publish/Books/Sds/index.html) for 2005.

[4] Detailed description of the input-output methodology is out of scope of this paper. Refer to any IO text books, such as Miller and Blair (2009), for the explanation of the model. Here we assume three countries (say, Japan, J; China, C and USA, U) GIO model for simplicity and explanation. The assumption can be extended to more than three countries model without loss of any generality.

$$X = \begin{pmatrix} X^{JJ} & X^{JC} & X^{JU} \\ X^{CJ} & X^{CC} & X^{CU} \\ X^{UJ} & X^{UC} & X^{UU} \end{pmatrix} = L * F$$

i.e.,

$$\begin{pmatrix} X^{JJ} & X^{JC} & X^{JU} \\ X^{CJ} & X^{CC} & X^{CU} \\ X^{UJ} & X^{UC} & X^{UU} \end{pmatrix} = \begin{pmatrix} L^{JJ}F^{J} & L^{JC}F^{C} & L^{JU}F^{U} \\ L^{CJ}F^{J} & L^{CC}F^{C} & L^{CU}F^{U} \\ L^{UJ}F^{J} & L^{UC}F^{C} & L^{UU}F^{U} \end{pmatrix} \qquad (3)$$

First row of matrix X in equation (3) represents the amount of inducement in Japan due to the finished goods production activities in Japan, China and USA respectively. On the other hand, first column of matrix X shows production induced in Japan, China and USA because of Japanese finished goods production F^J. Here, the diagonal elements of matrix X are production inducement in domestic economies, whereas off diagonal are the transaction of direct and indirect inducements across countries that refer to the spillover effect of production. The spillovers of producing finished goods in three different countries can be summarized in following table.

Table 1: Summary of Spillovers (Three country Model)

		Spillover from			
		Japan	China	USA	Total
Spillover to	Japan		X^{JC}	X^{JU}	$X^{JC}+X^{JU}$
	China	X^{CJ}		X^{CU}	$X^{CJ}+X^{CU}$
	USA	X^{UJ}	X^{UC}		$X^{UJ}+X^{UC}$
	Total	$X^{CJ}+X^{UJ}$	$X^{JC}+X^{UC}$	$X^{JU}+X^{CU}$	

Row sums of spillovers indicate the increase in economic effects on a country because of production growth on the other countries. Higher value of row sums implies higher level of economic benefits (in terms of spillover) to the corresponding country. In contrast, column sums of spillovers suggest the extent of economic benefits leaked to foreign countries as a consequence of the finished goods production in domestic industries. Thinking from the perspective of economic growth in a country, higher degree of row sums (i.e., increase in export) for a given level of column sums (equivalent to import) will speed up the economic growth.

We use globally linked input-output (YNU-GIO) table, constructed by CESSA. The database consists 16 annual tables (from 1997 to 2012) with 29

endogenous countries, 59 exogenous countries grouped in four regions, Rest of the World (ROW) and 35 industry classifications.[5] However, we aggregate 2012 YNU-GIO table to a single industry and calculate the spillovers for all 29 endogenous countries.

We compare the results of China and India, two neighboring countries of Nepal, to illustrate spillovers in 2012. Currently, the YNU-GIO database does not include Nepal and other South Asian countries (except India) endogenously, so it is not possible to refer Nepal and other South Asian developing country's spillover situations directly. However, we can generalize the policy implications from the prospective of developing countries as export has positive effect and import has negative effect on economic growth. Hence, policy to increase spillover inflow from foreign economies will lead to economic prosperity in the country.

3. Results and Discussions

In this section, we calculate the spillovers associated with finished goods production in 29 endogenous countries in 2012 using the YNU-GIO table and present the results for eleven Asian countries and the United States in Table 2.[6]

Table 2: Spillovers in Asia and the US

		Spillover from												Spillover inflow
		JP	CH	KR	TW	SG	MY	TH	ID	PH	VT	IN	US	Total
Spillover to	JP		2.4	5.6	6.2	7.4	4.6	8.9	1.8	2.6	4.1	0.8	0.9	**54.7**
	CH	3.2		11.0	7.2	15.6	9.5	12.5	4.7	5.8	19.2	4.6	1.7	**126.7**
	KR	0.7	2.4		2.2	3.2	2.1	2.4	1.0	1.4	5.4	0.9	0.4	**26.7**
	TW	0.2	1.0	0.8		3.2	2.3	1.1	0.3	1.9	2.6	0.2	0.2	**16.5**
	SG	0.2	0.8	0.8	3.3		9.0	2.8	2.0	3.7	1.7	0.6	0.3	**31.5**
	MY	0.5	0.9	1.0	1.6	10.7		3.6	1.3	1.8	2.3	1.4	0.2	**30.7**
	TH	0.4	0.7	0.6	0.8	2.5	3.5		1.3	1.1	3.0	0.5	0.1	**17.1**
	ID	0.5	0.8	1.1	1.0	5.3	4.2	2.0		1.1	2.5	1.2	0.1	**24.3**
	PH	0.2	0.2	0.2	0.7	0.9	1.6	0.7	0.1		0.5	0.1	0.1	**6.2**
	VT	0.2	0.2	0.3	0.3	0.5	1.4	0.7	0.2	0.4		0.3	0.0	**5.4**
	IN	0.2	0.9	0.8	0.6	2.5	3.3	2.2	1.2	0.8	5.1		0.4	**24.8**
	US	2.3	2.6	5.5	5.6	23.9	6.8	4.6	1.8	5.2	3.8	1.6		**137.8**
Spillover outflow	**Total**	**13.8**	**23.7**	**41.7**	**39.5**	**105.3**	**64.8**	**57.4**	**21.9**	**33.0**	**64.7**	**22.2**	**12.5**	

Unit: Ten Thousand Dollars

The inflow spillovers in China and USA has higher value indicating that the world's production largely depends on Chinese and American intermediate goods. In contrast, contents of Vietnamese and the Philippine intermediate goods are very low

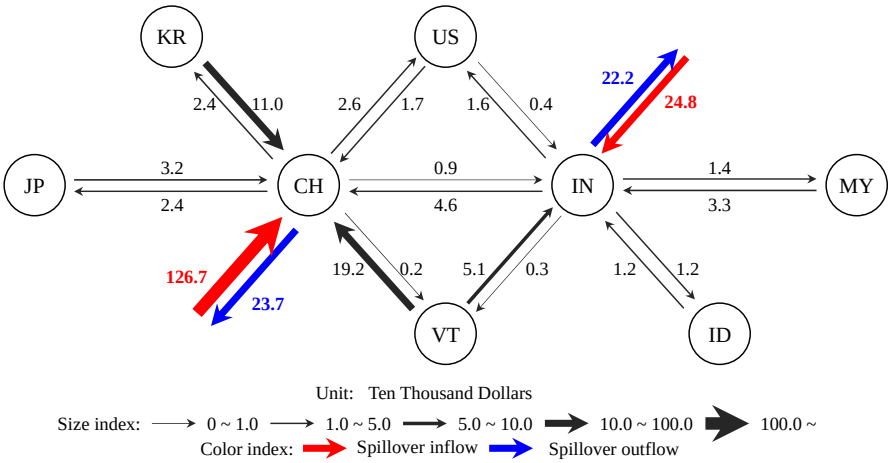
[5] See Appendices 1-2 for the endogenous and exogenous country coverage of YNU-GIO tables respectively.

[6] Spillovers for all 29 endogenous countries are provided in Appendix 3.

in the global production. On the other hand, Japan and USA has lowest spillover outflow meaning that proportion of foreign intermediate inputs is low in the final goods produced in Japan and USA.

We show components of inflow and outflow spillovers for China and India in Figure 1 with respect to their major partner countries. China enjoys total of 1.27 Million dollars of spillover inflows (192 and 110 thousand dollars respectively from Vietnam and China) compared to 237 thousand dollars of outflow (26 and 24 thousand dollars respectively to USA and Japan. It shows that China has large trade surplus, which has significant impact on Chinese economic growth. Whereas, in Indian case, impact of net spillover trade (i.e., difference of spillover inflow and outflow) on Indian economy is evidently negligible.

Figure 1: Components of Spillovers for China and India



It is important to note that economic growth a country depends not only on international trade, but also deeply associated with other factors such as productions, consumptions, return to capital and labor etc. Comparison between India and China as in Figure 1, higher degree of economic growth is can be expected in China than in India with respect to international trade structures in both countries because of large trade surplus in net spillover inflow in China.

From the production point of view, we discuss two policy measures that may be implemented for economic growth in developing countries. First, economic growth can be achieved by increasing production of finished goods that includes the finished goods export also. If the contents of the domestically produced intermediate goods used in production is high, import of part and components necessary for the production becomes less. As a consequence, magnitude of economic benefits remaining in domestic economy becomes high in comparison to the benefits leaking

to foreign countries. In contrast, if a country increases production by means of parts and components assembly, it eventually increases spillover outflow and hence foreign economies benefits from the increase in production of assembled goods. In other words, economy of a developing country may not grow as expected with increase in assembled goods production.

Second, developing countries may increase production of, not only finished goods, but also intermediate goods (specifically part and components) domestically. This policy helps to increase the export and decrease the import of part and components simultaneously. As a consequence, spillovers inflowing to the country becomes higher due to boost in export and decrease in import reduces the outflowing spillover from the country. Therefore, the developing economies can benefit from the economic activities in domestic market and in foreign market also.

4. Concluding Remarks

We calculate two types of spillover effects (namely, spillover inflow and outflow) of production of finished goods using the YNU-GIO table for 2012. Use of input-output framework enables us to incorporate complicated economic and trade linkages across countries which are directly unobservable in nature and are generally overlooked are partially addressed in other analytical model. Further, recent economic and industrial structures are addressed by using most recent data for 2012.

The analysis does not include Nepal and other South Asian (except India) developing countries, however, we attempt to draw policy implications from the perspective of developing countries by comparing the results of China and India (two neighboring countries of Nepal). From the production point of view, developing countries can achieve economic growth by increasing production of finished goods with higher share of domestic intermediate contents and intermediate goods (i.e., part and components). Increase in production of assembled goods with imported part and components will have very limited effect on the economy, because economic benefits spread to foreign countries in terms of spillover outflow. In contrast, production of more intermediate goods will increase the share of domestic intermediate contents (i.e., decreases spillover outflow) and in the meantime, it also helps to accumulate spillover inflow from foreign countries by expanding the export of intermediate goods.

The research can be extended by including Nepal and other South Asian countries in the globally-linked input-output framework and is left for future agenda.

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Appendix 1: Endogenous Country Coverage (29)

Asia (11)	**North America (3)**	**Europe (12)**	**Others (3)**
Japan (JP)	USA (US)	France (FR)	Australia (AU)
China (CH)	Canada (CA)	Germany (GR)	Brazil (BR)
Korea (KR)	Mexico (MX)	Austria (AT)	South Africa (SA)
Taiwan (TW)		Belgium (BG)	
Singapore (SG)		Finland (FN)	
Malaysia (MY)		Ireland (IR)	
Thailand (TH)		Italy (IT)	
Indonesia (ID)		Luxembourg (LX)	
Philippines (PH)		Netherlands (NL)	
Vietnam (VT)		Portugal (PT)	
India (IN)		Spain (SP)	
		UK (UK)	

Note: Numbers in parenthesis represents number of countries treated endogenously in the YNU-GIO Database.

Appendix 2: Exogenous Country Coverage (60)

Country/ Group	**List of countries**
HK (1)	Hong Kong
ROA (30)	Afghanistan, Bangladesh, Bhutan, Maldives, Nepal, Pakistan, Sri Lanka, Armenia, Azerbaijan, Bahrain, Brunei Darussalam, Cambodia, Macau, North Korea, Georgia, Israel, Jordan, Kazakhstan, Kyrgyzstan, Lao PDR, Lebanon, Mongolia, Myanmar, Oman, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan and Yemen
ROE (16)	Russia, Bulgaria, Cyprus, Czech Rep., Denmark, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia and Sweden
OPEC (12)	Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, UAE and Venezuela
ROW	Rest of the World

Notes: Numbers in parenthesis represents number of exogenous countries grouped in the YNU-GIO Database.
ROA: Rest of Asia; ROE: Rest of Europe; OPEC: Oil producing Countries

Appendix 3: Spillovers for 29 Countries (Unit: Ten Thousand US Dollars)

		Spillover from																										
		JP	CH	KR	TW	SG	MY	TH	ID	PH	VT	IN	AU	US	CA	MX	BR	FR	GR	AT	BG	FN	IR	IT	LX	NL	PT	SP	UK	SA	**Total**
Spillover to	JP		2.4	5.6	6.2	7.4	4.6	8.9	1.8	2.6	4.1	0.8	0.8	0.9	0.5	0.9	0.2	0.3	0.6	0.4	0.8	0.3	0.8	0.2	1.2	1.0	0.2	0.3	0.5	0.6	**54.7**
	CH	3.2		11.0	7.2	15.6	9.5	12.5	4.7	5.8	19.2	4.6	2.6	1.7	1.3	2.7	1.1	0.9	1.9	1.2	2.2	1.2	3.5	1.6	1.6	2.8	1.0	1.4	1.2	3.5	**126.7**
	KR	0.7	2.4		2.2	3.2	2.1	2.4	1.0	1.4	5.4	0.9	0.4	0.4	0.2	0.6	0.2	0.1	0.2	0.1	0.3	0.1	0.6	0.2	0.3	0.3	0.1	0.1	0.2	0.4	**26.7**
	TW	0.2	1.0	0.8		3.2	2.3	1.1	0.3	1.9	2.6	0.2	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.3	0.2	0.1	0.1	0.2	0.3	**16.5**
	SG	0.2	0.8	0.8	3.3		9.0	2.8	2.0	3.7	1.7	0.6	0.7	0.3	0.1	0.1	0.0	0.4	0.4	0.1	1.6	0.1	0.7	0.1	0.4	0.6	0.1	0.1	0.5	0.3	**31.5**
	MY	0.5	0.9	1.0	1.6	10.7		3.6	1.3	1.8	2.3	1.4	1.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.3	0.1	0.4	0.1	1.0	0.8	0.1	0.1	0.2	0.6	**30.7**
	TH	0.4	0.7	0.6	0.8	2.5	3.5		1.3	1.1	3.0	0.5	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.4	**17.1**
	ID	0.5	0.8	1.1	1.0	5.3	4.2	2.0		1.1	2.5	1.2	0.8	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	1.1	0.5	0.1	0.3	0.1	0.4	**24.3**
	PH	0.2	0.2	0.2	0.7	0.9	1.6	0.7	0.1		0.5	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.0	0.0	0.0	0.0	**6.2**
	VT	0.2	0.2	0.3	0.3	0.5	1.4	0.7	0.2	0.4		0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	**5.4**
	IN	0.2	0.9	0.8	0.6	2.5	3.3	2.2	1.2	0.8	5.1		0.4	0.4	0.2	0.3	0.2	0.2	0.4	0.2	0.8	0.2	0.6	0.4	0.4	0.4	0.3	0.3	0.4	1.0	**24.8**
	AU	1.6	1.9	3.0	2.0	2.8	2.2	2.0	1.0	1.1	1.9	0.9		0.1	0.2	0.6	0.1	0.1	0.2	0.1	0.4	0.1	0.2	0.1	0.1	0.3	0.1	0.1	0.2	1.1	**24.6**
	US	2.3	2.6	5.5	5.6	23.9	6.8	4.6	1.8	5.2	3.8	1.6	2.5		13.4	14.4	1.6	2.1	2.1	1.5	4.1	1.2	8.0	1.2	9.0	4.5	1.1	1.4	2.9	3.2	**137.8**
	CA	0.3	0.5	0.6	0.4	1.0	0.4	0.4	0.3	0.2	0.5	0.2	0.2	2.4		0.9	0.1	0.2	0.2	0.1	0.3	0.2	0.4	0.1	0.5	0.3	0.1	0.1	0.3	0.2	**11.4**
	MX	0.1	0.2	0.2	0.1	0.4	0.1	0.2	0.0	0.3	0.1	0.2	0.1	1.1	0.7		0.1	0.1	0.1	0.0	0.2	0.0	0.2	0.1	0.1	0.1	0.1	0.5	0.1	0.1	**5.6**
	BR	0.3	1.0	0.7	0.7	0.4	0.8	1.2	0.3	0.2	1.1	0.3	0.1	0.4	0.3	0.4		0.3	0.4	0.2	0.5	0.5	0.2	0.3	0.3	0.9	0.9	0.5	0.2	0.6	**13.9**
	FR	0.2	0.3	0.4	0.3	2.3	0.6	0.5	0.2	0.5	0.5	0.3	0.3	0.3	0.2	0.2	0.2		1.6	1.0	4.2	0.8	2.3	1.7	9.8	2.4	1.6	2.8	1.2	0.8	**37.5**
	GR	0.4	1.5	1.7	1.1	4.8	2.3	1.8	0.5	0.9	1.1	0.9	0.6	0.7	0.5	0.8	0.5	3.0		11.8	6.2	3.0	3.7	3.1	20.0	8.6	2.8	2.8	2.6	2.1	**89.8**
	AT	0.0	0.1	0.2	0.1	0.5	0.2	0.2	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3	1.4		0.5	0.3	0.3	0.8	1.2	0.4	0.2	0.3	0.2	0.2	**7.9**
	BG	0.1	0.2	0.2	0.2	0.8	0.3	0.3	0.1	0.2	0.3	0.5	0.1	0.1	0.1	0.1	0.1	1.8	1.2	0.7		0.6	1.3	0.9	12.5	4.4	0.6	0.7	0.9	0.5	**29.6**
	FN	0.0	0.1	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.1	0.3	0.2	0.4		0.2	0.2	0.3	0.7	0.1	0.2	0.2	0.2	**4.6**
	IR	0.1	0.1	0.1	0.1	0.5	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.3	0.1	0.1	0.0	0.3	0.3	0.1	2.0	0.2		0.2	0.5	0.3	0.1	0.2	0.6	0.2	**6.6**
	IT	0.1	0.3	0.4	0.2	1.3	0.6	0.6	0.2	0.3	0.8	0.3	0.4	0.3	0.2	0.3	0.2	1.4	1.6	2.4	1.4	0.7	0.9		2.6	1.2	1.5	1.7	0.7	0.6	**23.1**
	LX	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.3	0.4	0.3	1.0	0.1	0.4	0.2		0.6	0.1	0.1	0.2	0.1	**4.3**
	NL	0.1	0.2	0.4	0.4	1.3	0.5	0.6	0.2	0.3	0.6	0.2	0.2	0.2	0.1	0.1	0.1	1.1	2.5	1.3	10.6	1.4	4.5	1.2	5.8		1.0	1.0	1.7	0.5	**37.8**
	PT	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	0.3	0.2	0.2	0.1	0.2	0.3		1.0	0.1	0.1	**3.2**
	SP	0.1	0.2	0.2	0.2	0.5	0.2	0.3	0.1	0.2	0.3	0.2	0.2	0.1	0.1	0.3	0.2	1.3	0.8	0.6	1.1	0.4	1.0	1.1	1.1	1.0	9.0		0.6	0.5	**21.6**
	UK	0.2	0.3	0.9	0.5	4.4	1.1	1.0	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.2	0.2	1.3	1.8	0.8	3.9	0.9	16.8	0.8	4.9	4.7	1.0	1.2		0.9	**50.9**
	SA	0.2	0.4	0.2	0.3	0.6	0.5	0.5	0.2	0.1	0.1	0.4	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.3	0.2	0.2	0.2	0.3	0.1	0.0	0.1	0.2		**5.9**
	Total	**13.8**	**23.7**	**41.7**	**39.5**	**105.3**	**64.8**	**57.4**	**21.9**	**33.0**	**64.7**	**22.2**	**16.7**	**12.5**	**21.6**	**25.1**	**7.3**	**19.1**	**26.8**	**31.8**	**50.8**	**22.6**	**55.0**	**20.0**	**85.9**	**46.8**	**26.3**	**21.9**	**20.8**	**23.7**	