Who Gains Most from Trade?

Although all nations engaged in international trade should benefit from it, the gains from trade vary through time as changes in the terms of trade and/or in the real exchange rate penalize some countries and benefit others. The purpose of this paper is to determine who gained most from these changes over the past four decades. For this purpose we use an index-number approach that focuses on the difference between real GDP and real GDI. A decomposition of the trading gains between terms-of-trade effects and real-exchange-rate effects is provided. Both relative- and absolute-term estimates are reported. Income-distribution implications are also being addressed. Our results indicate that the cumulated gains or losses can be huge, mounting sometimes to several years worth of GDP.

: Trading gains, terms of trade, real exchange rate, real GDI, income distribution

O11, O41, C43, F11

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terms-of-trade effect and a real-exchange-rate effect. Our empirical results are reported in Section 4. Distributional effects are discussed in Section 5 and Section 6 concludes.

2. A Törnqvist index of the trading gains

In this paper we adopt the GDP function approach to the determination of imports and exports.[5] That is, we view traded goods as middle products, with imports as an input to the technology and exports as an output.[6]

where $s_{i\,t\,t}$ $s_{i\,t}+s_{i\,t}$ and $s_{i,t}$ (!) is the nominal GDP share of good ( ) at time ( ). Note that _ + _ – _ = .

We define $Q_{Y\,t\,t!}$ as the implicit Törnqvist index of real GDP:[7]

(2) $Q_{Y,t,t!1}$ $\frac{V_{t,t!1}}{P_{Y,t,t!1}}$,

and as the implicit Törnqvist index of real GDI:[8]

(3) $Q_{Z\,t\,t!}$ $\frac{V_{t\,t!}}{P_{N\,t\,t!}}$.

The difference between , , !1 and $Q_{Z,t,t-1}$ relates to the price index that is used to deflate nominal GDP: the GDP price index in one case and the domestic expenditures price index in the other. One can show that both quantity indices are superlative indices and they are exact if the true nominal GDP (GDI) function is Translog.[9]

The ratio of real GDI to real GDP defines the trading gains index ($G_{t\,t!}$):

(4) ——— .

$G_{t,t!1}$ is greater than one if the trading gain is positive, and it is less than one if there is a trading loss. It can immediately be seen from (2)–(4) that

3. Terms-of-trade and real-exchange-rate effects

We define the price of traded goods ($P_{T,t,t!1}$) as the geometric mean of the prices of exports and imports:[10]

(6) $P_{T,t,t-1} \equiv P_{X,t,t-1}^{1\ 2}$

is the real-exchange rate effect. These two effects measure the impact on real GDI, other things equal, of a change in the terms of trade and in the real exchange rate, respectively. They are exact measures if the underlying nominal GDP function is Translog.[12]

4. Empirical Results

Compound estimates of $G_{t\,t!}$ are reported in Table 1 for a sample of 26 OECD countries for the period 1970-2012. Compound effects for ten-

resulted in fairly large losses for these countries in view of their mostly positive trade balances.

terms these counted relatively heavily. The same applies to Norway, who actually went from a 2012 trading gains winner to a 1970-2012 cumulated trading gains loser! The opposite applies to Switzerland and, to a lesser extent, Spain who enjoyed early trading gains which were then capitalized over a long time.

5. Trading Gains and Income Distribution

In view of the possibly large trading gains and losses, one may ask who of labour and capital are the ultimate winners or losers. This much depends on the substitution and transformation possibilities allowed for by the technology. Relative price effects are not necessarily neutral. The relevant information can be summarized by the so-called Stolper-

$$
\begin{aligned}
d\ln w_K &= \left(\frac{1}{2}\theta_{KX} - \frac{1}{2}\theta_{KM}\right)\left[d\ln p_X - d\ln p_M\right] + (\theta_{KX} + \theta_{KM})\left(\frac{1}{2}d\ln p_X + \frac{1}{2}d\ln p_M\right) \\
&= \left(\frac{\theta_{KX} - \theta_{KM}}{2}\right)d\ln \tau + (\theta_{KX} + \theta_{KM})\,d\ln \#
\end{aligned}
\tag{15}
$$

The first term in square brackets in the first part of (14) and (15) gives the change in the terms of trade (θ), whereas the second square-bracketed term indicates the change in the real exchange rate (

effect has benefited almost exclusively capital, whereas in Canada, labour has been the great

References

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Table 1
Trading Gains, 1970-2012

Table 2
Trading-Gains Decomposition, 1970-2012

	!	$G_{E,t,t!1}$	$G_{t,t!1}$
Australia	1.1022	1.0058	**1.1086**
Norway	1.0835	1.0092	**1.0935**
Switzerland	1.0865	0.9846	**1.0697**
Canada	1.0729	0.9917	**1.0640**
Portugal	1.0443	1.0151	**1.0600**
New Zealand	1.0689	0.9913	**1.0596**
Denmark	1.0592	0.9975	**1.0566**
Greece	1.0019	1.0440	**1.0459**
Spain	1.0395	1.0026	**1.0422**
Mexico	1.0132	1.0038	**1.0170**
United Kingdom	1.0058	0.9957	**1.0015**
Germany	0.9925	0.9969	**0.9894**
Luxembourg	0.9507	1.0383	**0.9871**
United States	0.9672	1.0035	**0.9707**
France	0.9700	0.9962	**0.9663**
Netherlands	0.9742	0.9817	**0.9564**
Italy	0.9583	0.9916	**0.9503**
Belgium	0.9606	0.9861	**0.9472**
Iceland	0.9472	0.9923	**0.9399**
Turkey	0.9520	0.9869	**0.9396**

Table 3
2012 Trading Gains in Absolute and Relative Terms

	USD billions	% GDP
Australia	**171.0**	10.86%
Canada	**116.6**	6.40%
Spain	**55.8**	4.22%
Norway	**46.8**	9.35%
Switzerland	**44.0**	6.97%
Mexico	**20.2**	1.70%
Denmark	**17.8**	5.66%
Portugal	**12.7**	6.00%
Greece	**11.4**	4.59%
New Zealand	**10.2**	5.96%
United Kingdom	**3.6**	0.15%
Luxembourg	**-0.7**	-1.29%
Iceland	**-0.8**	-6.01%
Finland	**-25.1**	

Table 4
Cumulated Trading Gains , 1970-2012

	USD billions	**% 2012 GDP**
Switzerland	1'062.2	**168.16%**
Greece	237.5	**95.59%**
Spain	1'196.9	**90.47%**
Portugal	175.7	**82.80%**
Denmark	243.2	**77.12%**
New Zealand	114.8	**67.00%**
Canada	1'187.2	**65.16%**
Australia	969.5	**61.57%**
Iceland	6.8	**50.09%**
Mexico	11.1	**0.94%**
United Kingdom	-99.9	**-4.04%**
Germany	-160.6	**-4.69%**
Turkey	-431.8	**-54.62%**
United States	-11'284.4	**-69.47%**
France	-2'181.1	**-83.50%**
Belgium	-462.6	**-95.75%**
Austria	-421.9	-

Table 5

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Figure 1
Trading Gains and Real Exchange Rate Effect
Australia, 1970-2012

Figure 2
Trading Gains and Real Exchange Rate Effect
Norway, 1970-2012

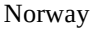

Figure 3
Trading Gains and Real Exchange Rate Effect
Switzerland, 1970-2012

Switzerland

Figure 4
Trading Gains and Real Exchange Rate Effect
Greece, 1970-2012

Greece

Figure 5
Trading Gains and Real Exchange Rate Effect
Spain, 1970-2012

Spain

Figure 6
Trading Gains and Real Exchange Rate Effect
Mexico, 1970-2012

Mexico

Figure 7
Trading Gains and Real Exchange Rate Effect
Japan, 1970-2012

Japan

Figure 8
Trading Gains and Real Exchange Rate Effect
Ireland, 1970-2012

Ireland

Figure 9
Trading Gains and Real Exchange Rate Effect
Korea, 1970-2012

Korea