

Who Gains Most from Trade?

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Who gains most from trade?

- Ever since David Ricardo, it has been well understood that under perfect competition free international trade is beneficial to all participating nations
- Nonetheless, some countries might benefit more than others, and the benefits might change over time
- This is all the more so that the terms of trade and real exchange rates vary over time, benefiting some nations and hurting others

Terms-of-trade changes

- A bettering of the terms of trade amounts to a windfall gain for the country as a whole and it implies an increase in its real value added and real income
- This phenomenon is similar to a technological progress
- Contrary to a technological progress, however, a change in the terms of trade is treated by the national accounts as a price phenomenon, rather than as a real effect
- Consequently, the beneficial effect of an improvement in the terms of trade is not taken into account by real gross domestic product (GDP)

Real-exchange-rate changes

- Similarly, a real appreciation or depreciation of the currency amounts to a change in relative prices that impacts on a country's welfare, unless trade happens to be balanced
- A surplus country benefits from a real depreciation of its currency, whereas a deficit country gets hurt by it
- Real GDP does not take this effect into account either

Trading gains

- The terms-of-trade effect and the real-exchange-rate effect together form what is known as the trading gains
- The trading gains essentially capture the difference between real gross domestic income (GDI) and real GDP
- The purpose of this paper is to find out who has experienced the largest trading gains – in relative and in absolute terms – over the past four decades

The GDP function approach to the determination of imports and exports

- Traded goods are viewed as middle products, with imports as an input to the technology and exports as an output
- Imports are not ready to meet final demand
- They must still be combined with domestic labour and capital services; a significant proportion of their final price tag is therefore accounted for by domestic value added
- Similarly, exports must still undergo a number of changes in the foreign country; they are therefore conceptually different from products intended for the home market
- These can therefore be treated as nontraded goods

Definitions

1. GDP

2. ...

3. ...

4. ...

Definitions continued

Q is the implicit Törnqvist index of real GDP:

$$Q_{t,t-1} \equiv \frac{V_{t,t-1}}{P_{Y,t,t-1}}$$

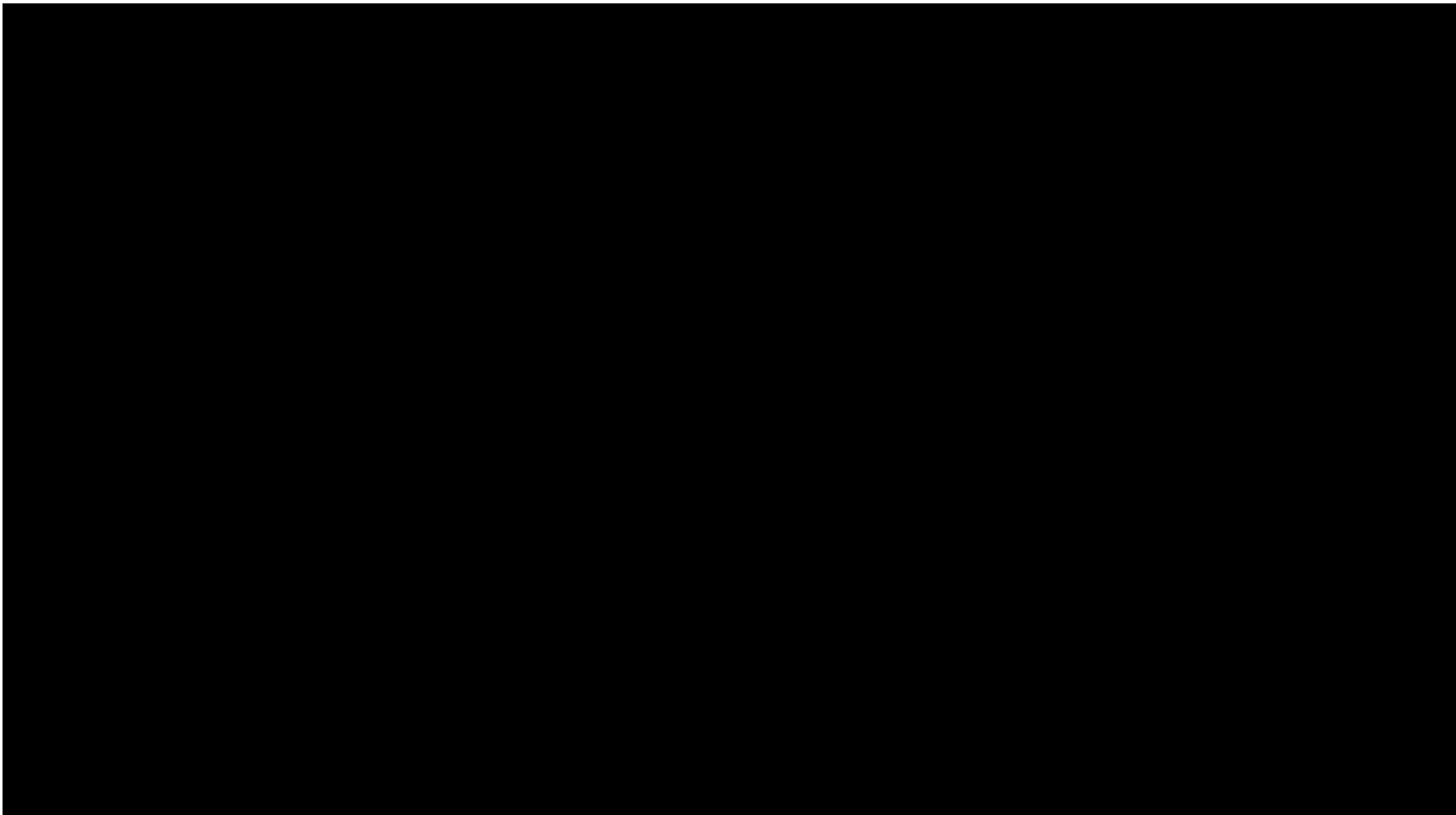
(2)

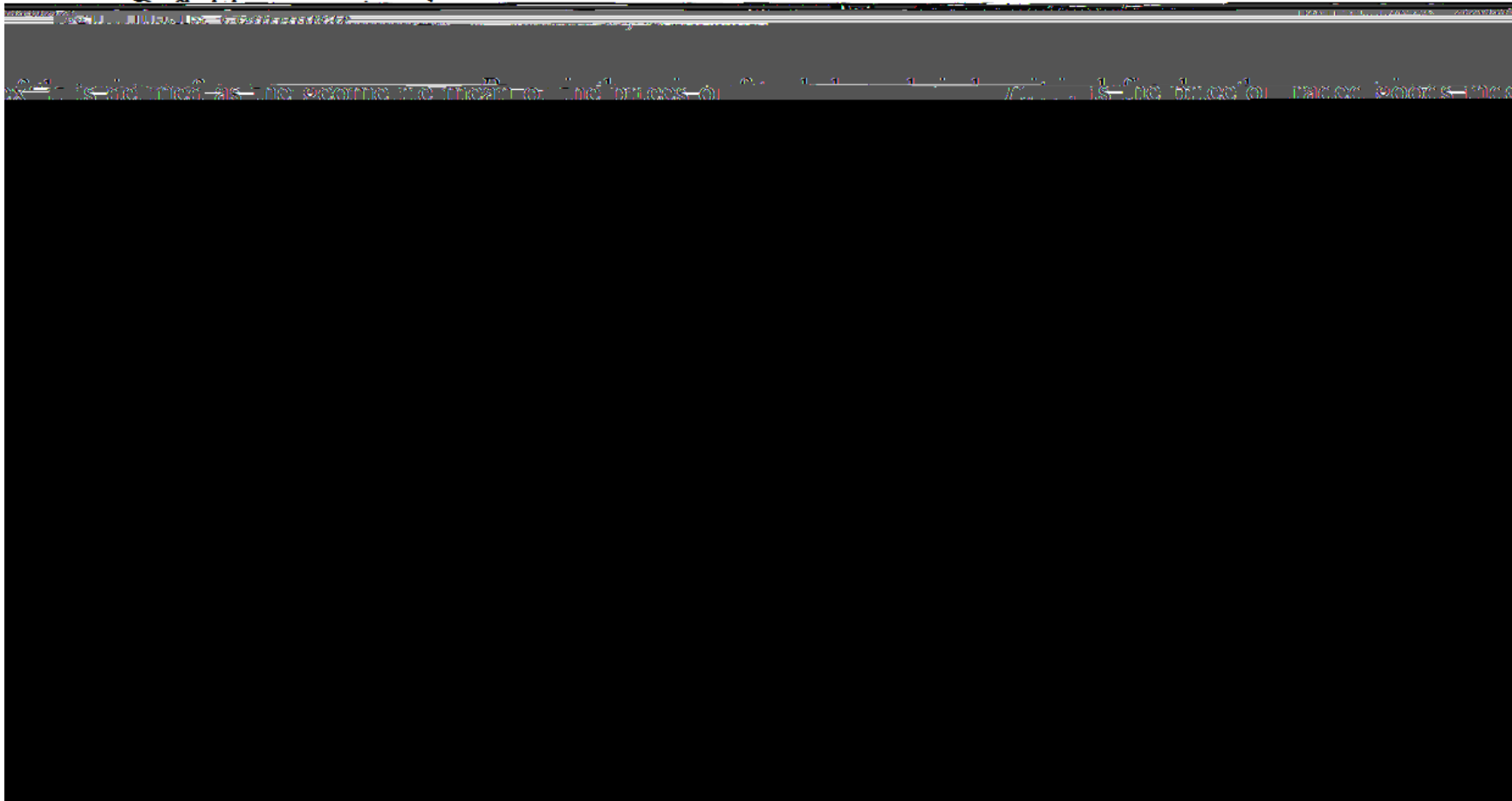
Real gross value added (GVA) is defined as:

$$(3) \quad Q_{Z,t,t-1} \equiv \frac{V_{t,t-1}}{P_{N,t,t-1}}$$

(2) (1) G is the trading-gains index:

G is the trading-gains index:





minimizing the free energy

Derive

$$-\ln P_{N_t, t} = \ln G_{t-1} = \ln P_{Y_t}$$

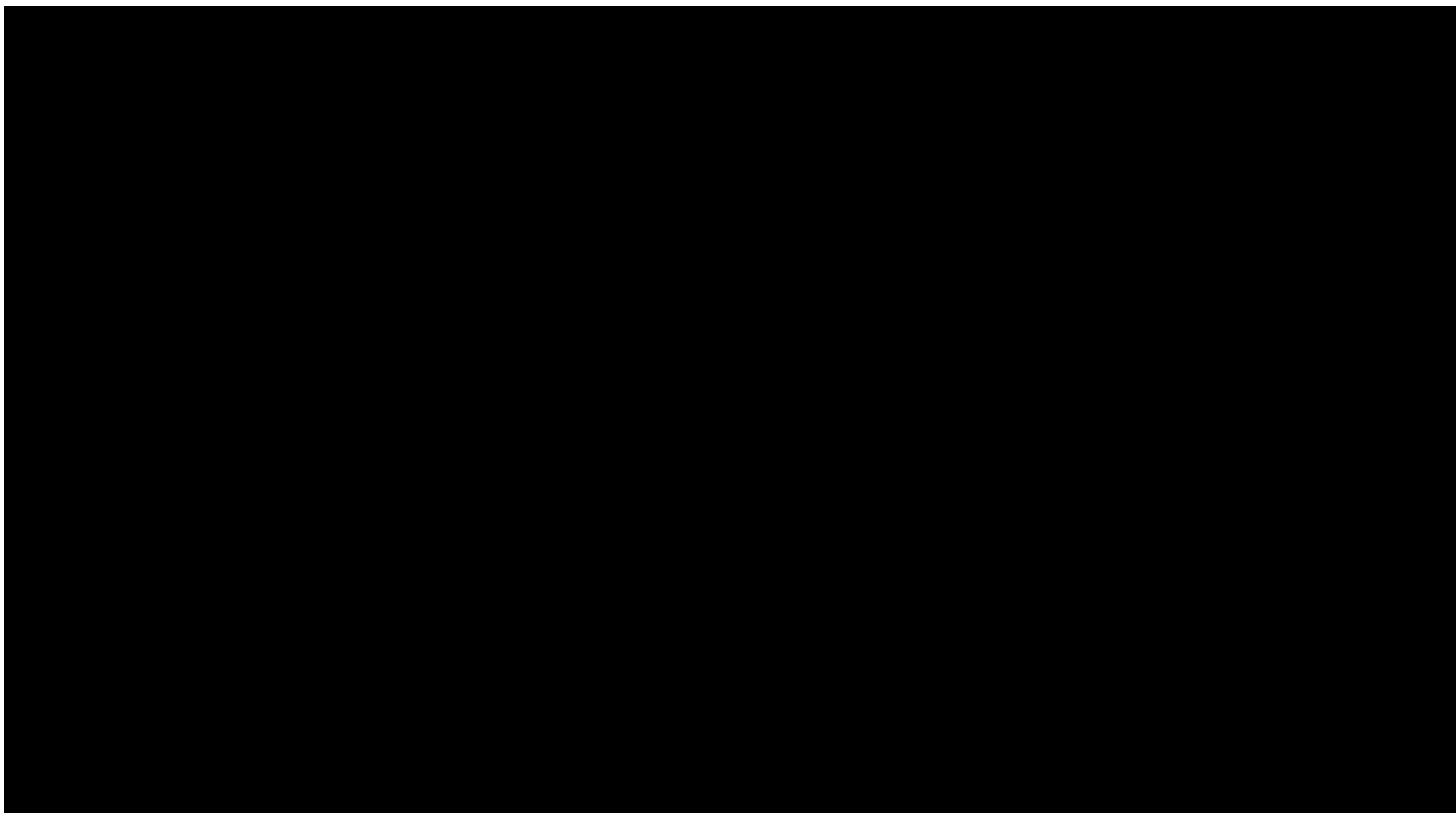
$$\ln P_{M_t, t} + s_{Y_t, t} \ln P_{A_t, Y_t} - s_{M_t, t} \ln P_{M_t, M_t} - \ln P_{M_t, t} = s_{M_t, t}$$

$$+ s_{X_t, t} \ln P_{X_t, X_t} + s_{N_t, t} \ln P_{N_t, N_t} - s_{X_t, t} \ln P_{X_t, X_t} - \ln P_{M_t, t} = (1 - s_{M_t, t})$$

$$(2) \quad -s_{X_t, t} \ln P_{X_t, X_t} - s_{N_t, t} \ln P_{N_t, N_t} - s_{M_t, t} \ln P_{M_t, M_t} - \ln P_{M_t, t} = (1 - s_{M_t, t})$$

$$- \frac{1}{\sigma} (s_{X_t, t} \ln D_{X_t, X_t} + s_{M_t, t} \ln D_{M_t, M_t}) = (1 - s_{M_t, t})$$

$$\ln P_{X_t, X_t} = (s_{M_t, t} - 1) \frac{1}{\sigma} \ln D_{X_t, X_t} + \ln P_{M_t, M_t}$$



Trading gains and losses

- The trading gains index over the 1970-2012 period is largest for Australia, Norway, and Switzerland
- ... and lowest for Korea, Ireland, and Japan
- The trading gains varied a great deal over time, however

Table 1
Trading Gains, 1970-2012

	1970-2012	1970-1980	1980-1990	1990-2000	2000-2012
Australia	0.0007	0.0020	0.0009	0.0057	0.0006
Norway	0.0020	0.0019	0.0063	0.0077	0.0055
Switzerland	1.0124		1.0607	0.9987	1.0452
Denmark			0.0454	0.0020	1.0067
Portugal	1.0122		1.0600	0.9515	1.0459
					1.0522

Table 1, continued

Trading Gains, 1970-2012

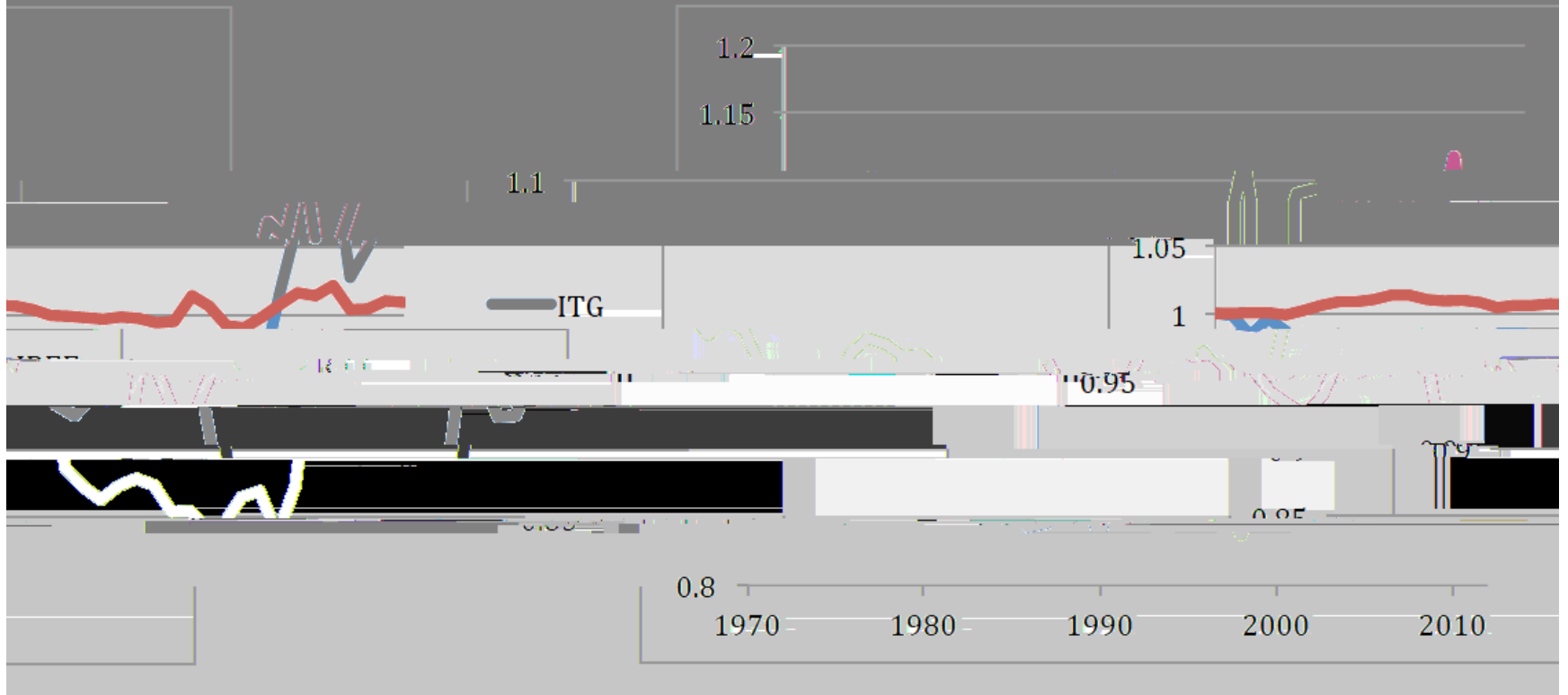
	1970-1979	1980-1989	1990-1999	2000-2009	2010-2012
United States	0.0757	1.0470	1.0350	0.9907	1.0000
France	0.0663	0.9791	1.0410	1.0035	0.9990
Italy	0.9503	0.9412	1.0411	0.9821	0.9825
Belgium	0.9772	0.9676	1.0715	0.9886	0.9714
Iceland	0.9399	1.0189	0.9998	1.0087	0.9147

Real-exchange-rate and terms-of-trade effects

- The real-exchange-rate effect is found to be

Trading Gains and Real Exchange Rate Effect

November 10, 2012 Sideways 10/7/2012

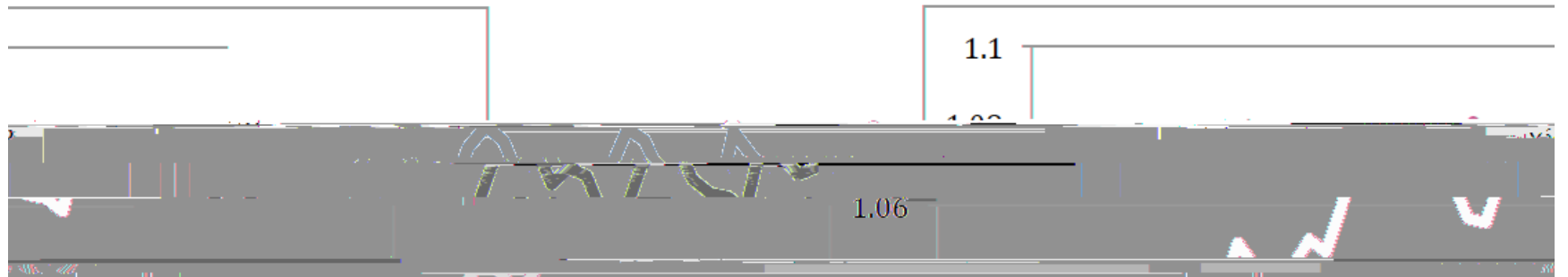


Trading Gains and Real Exchange Rate Effect

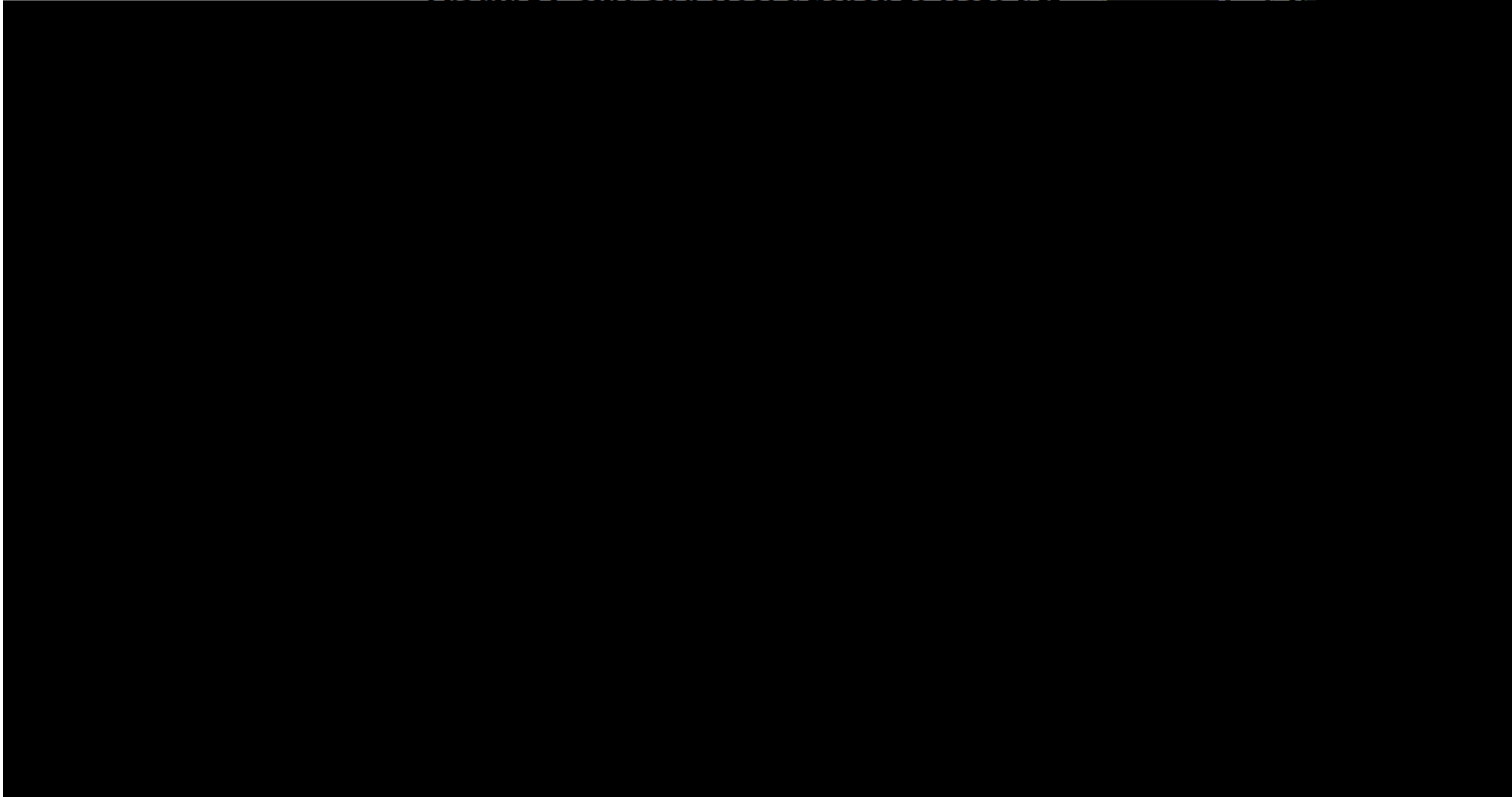
Stocks: 1970-2012

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1/10/2014

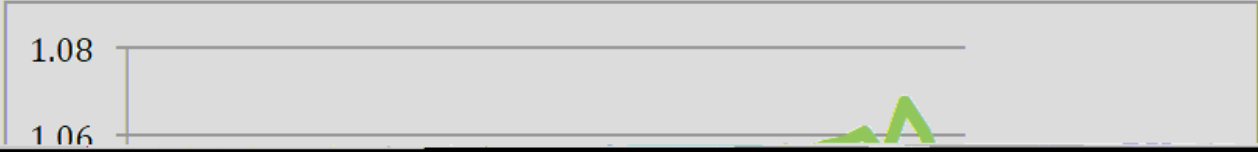


Trading Gains and Losses: Evidence, Policy, and Practice



Training Status Analysis - Relative Percentage

State: 9/10/2012



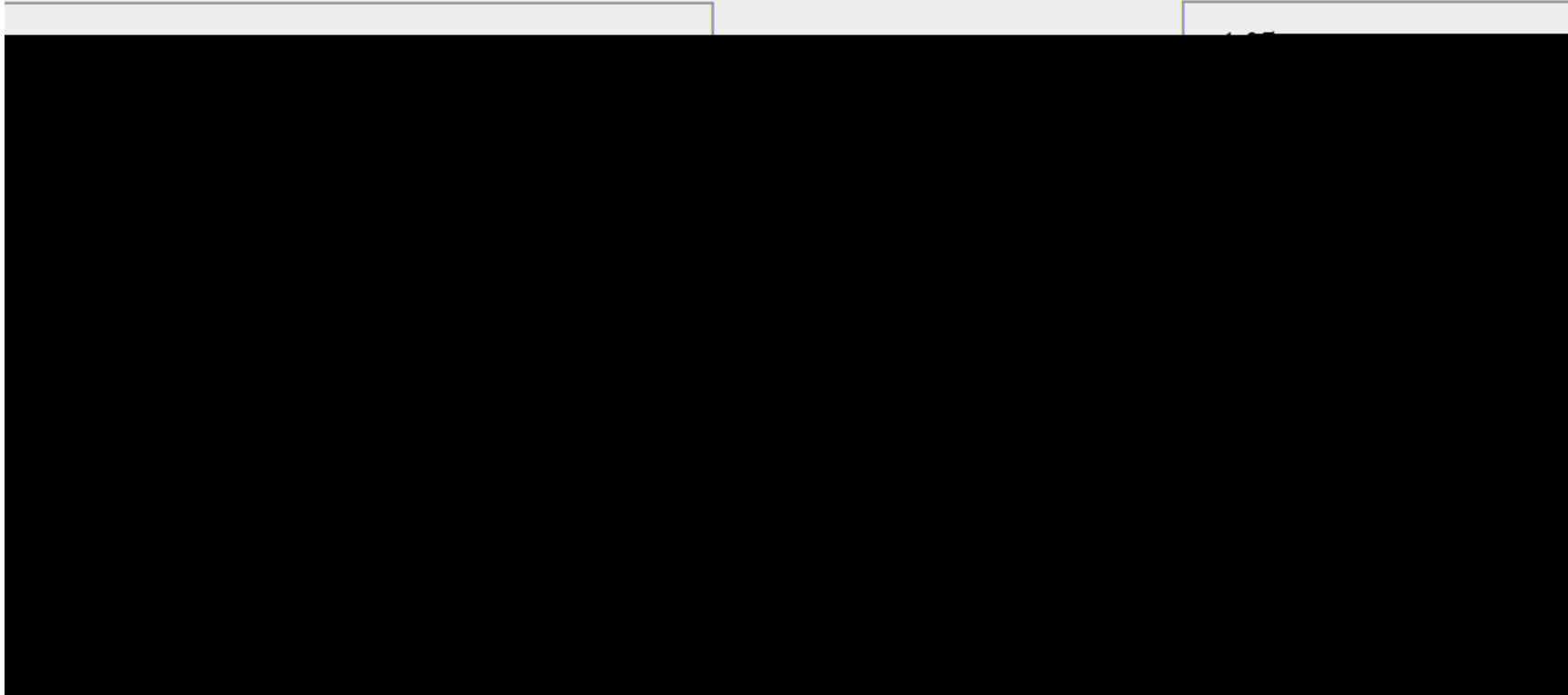


Figure 7

Trading Gains and Real Exchange Rates in Japan, 1970-2012

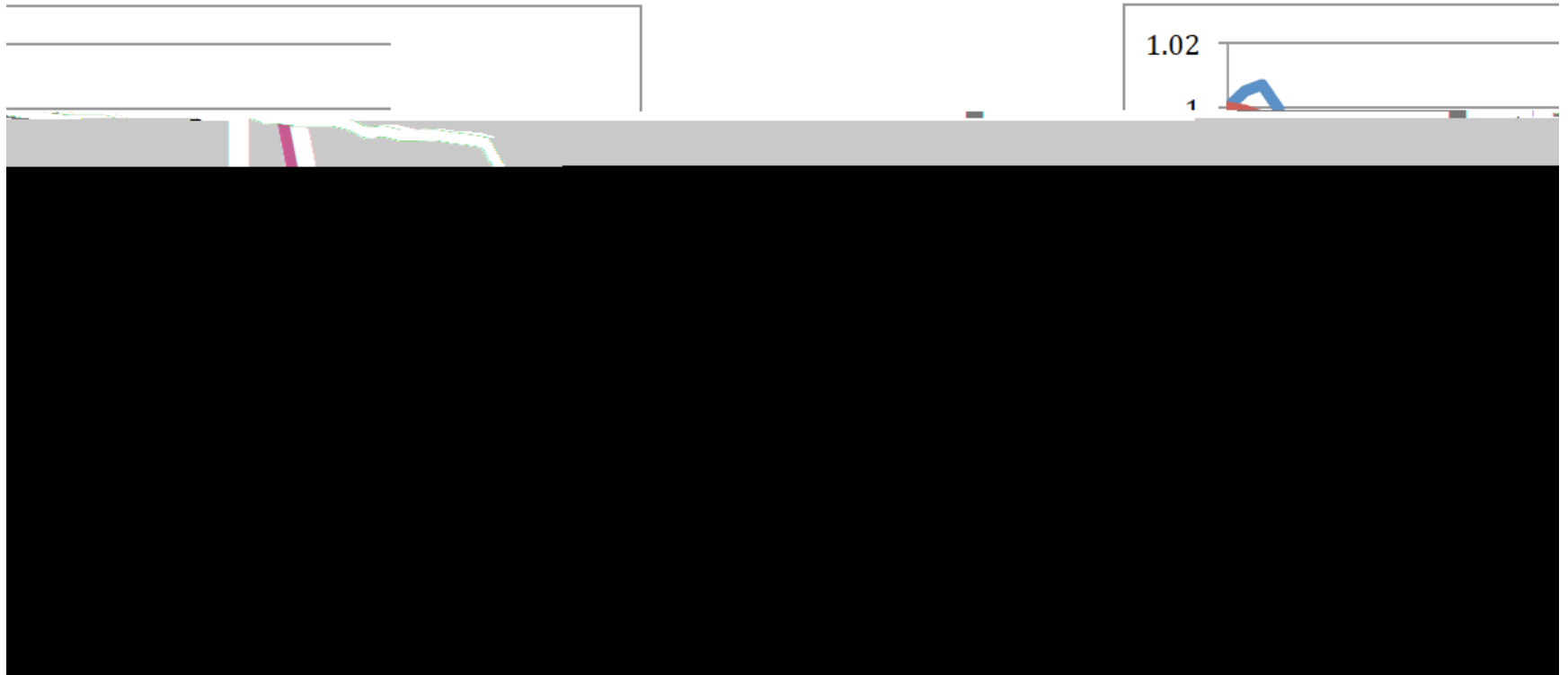


Figure 8

Trading Gains and Real Exchange Rate

1970-1979 2000-2009

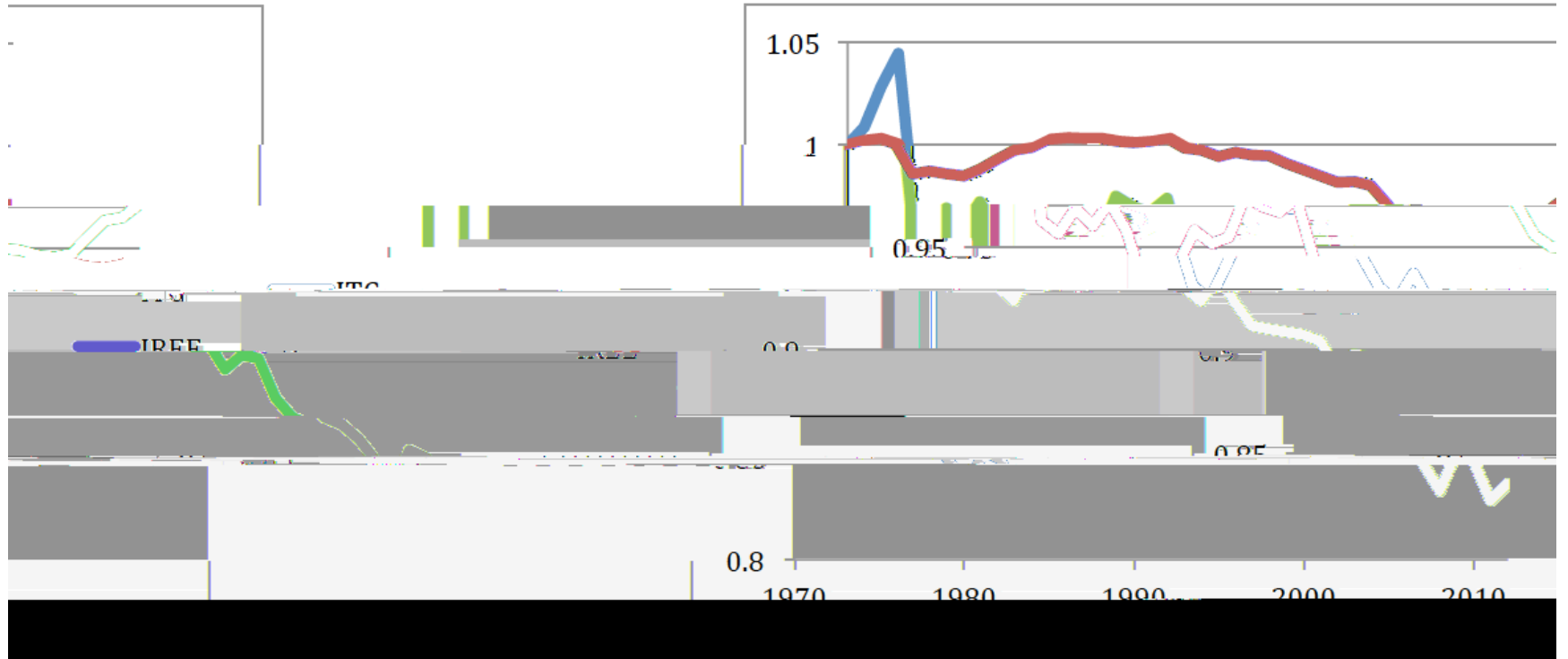
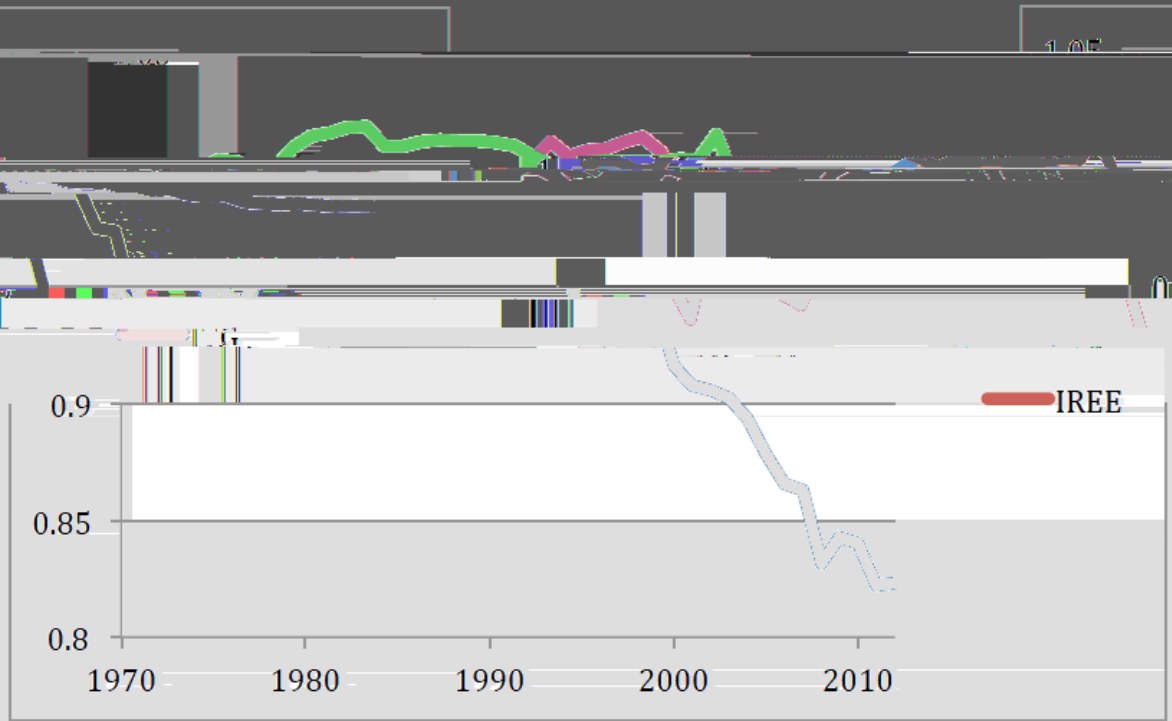


Figure 9

Leading-Gains and Real Exchange Rate Effect

Korea, 1970-2010



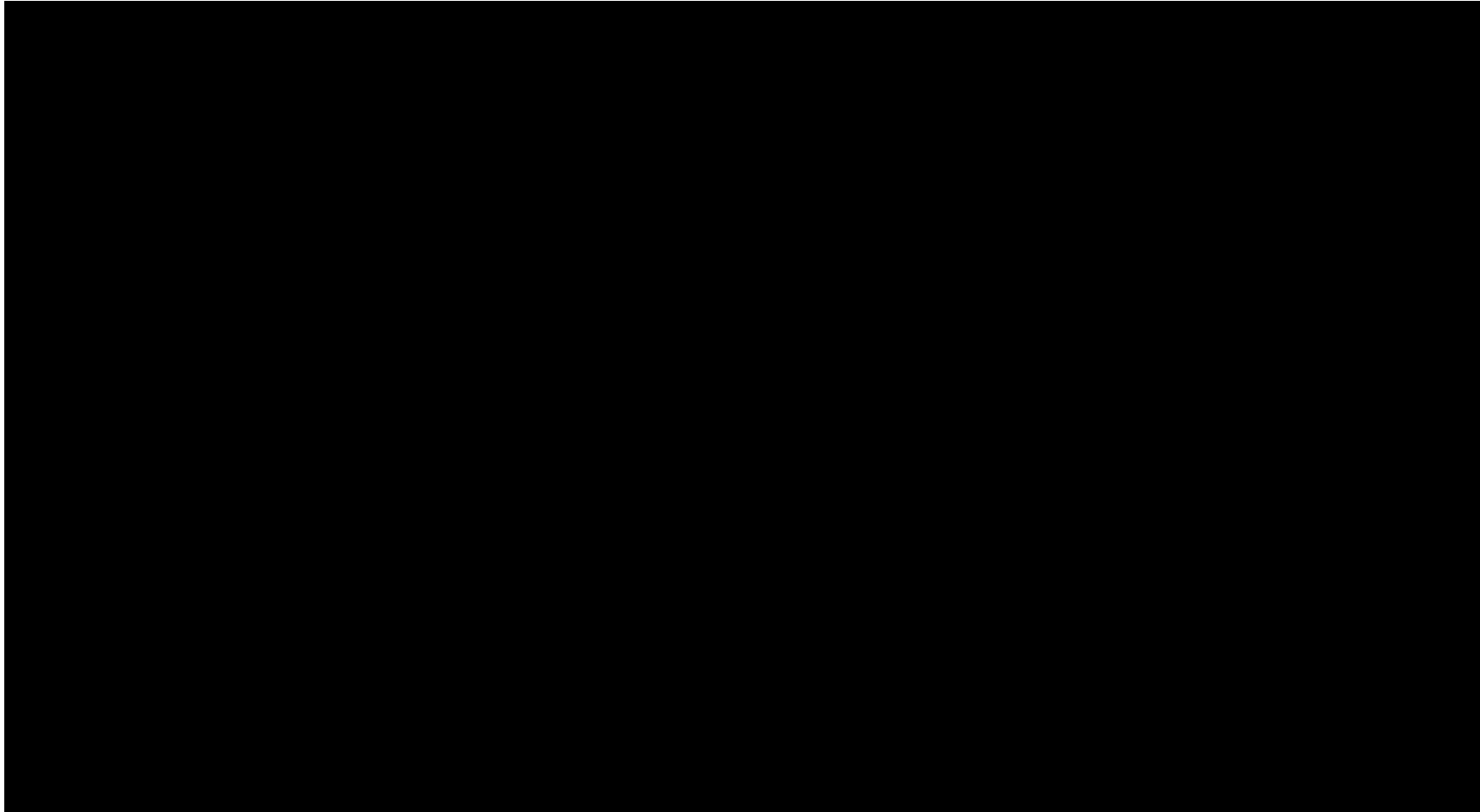


Table 7, continued
 The Dependent Variable: $\Delta \ln Y_{i,t}$ 1970-2010

	$\Delta \ln Y_{i,t-1}$	$\Delta \ln E_{i,t-1}$	$\Delta \ln Y_{i,t-1}$	$\Delta \ln E_{i,t-1}$
United States	0.0670	0.0507	0.0690	0.0505
France	0.0700	0.0660	0.0660	0.0660
Netherlands	0.0710	0.0617	0.0617	0.0564
Italy	0.0583	0.0916	0.0503	0.0503
Spain	0.0306	0.0470	0.0417	0.0470
Germany	0.0306	0.0470	0.0417	0.0470
Japan	0.0306	0.0470	0.0417	0.0470
India	0.0306	0.0470	0.0417	0.0470
China	0.0306	0.0470	0.0417	0.0470
South Africa	0.0306	0.0470	0.0417	0.0470
Turkey	0.0306	0.0470	0.0417	0.0470

Absolute-value trading gains and losses

- In absolute terms, the 2012 trading gains amounted to USD 171 billion for Australia
- ... whereas Japan experienced a USD 731 billion loss !!!

2010 Total U.S. Governmental Expenditure on R&D as % of GDP

Country	USD billions	% GDP
USA	171.0	10.86%
Canada	116.6	6.70%
Spain	46.9	0.25%
Norway	55.9	1.15%

Table 3, continued
2012 Trading Gains in Absolute and Relative Terms



Cumulated trading gains and losses

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Table 4

Country's GDP in US Dollars, 1979-2010

Source: World Bank, *World Development Indicators*, <http://data.worldbank.org>. GDP is expressed in US Dollars. The data are in current prices. The data are in current prices. The data are in current prices.

Country	GDP (US Dollars)	% of US GDP
Greece	237.5	95.59%
Canada	111.076	437.45%

Table 4, continued
 Cumulated Trading Gains, 1970-2012

	Cumulated Trading Gains	% All-Share
United States	111,784.4	69.41%
France	21,011.1	13.50%
Belgium	160.6	0.10%
Australia		0.00%
Netherlands		-86.1%
Denmark		5.00%
Canada		1.70%
Sweden		202.01%
Italy		2.00%
Japan		171.00%
Germany		1059.4%

Trading gains and income distribution

- In view of the large potential 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-Samuelson elasticities

- These two expressions can be rewritten as follows:

$$\begin{aligned}
 \frac{d \ln c}{d \ln \tau} &= \frac{\frac{1}{2} \left(\frac{1}{\eta_{LM}} - \frac{1}{\eta_{LX}} \right) \left[\frac{1}{2} \left(\frac{1}{\eta_{LM}} - \frac{1}{\eta_{LX}} \right) \right]}{\frac{1}{2} \left(\frac{1}{\eta_{LM}} - \frac{1}{\eta_{LX}} \right)} \\
 &= \frac{1}{2} \left(\frac{1}{\eta_{LM}} - \frac{1}{\eta_{LX}} \right) d \ln \tau + \frac{1}{2} \left(\frac{1}{\eta_{LM}} - \frac{1}{\eta_{LX}} \right) d \ln \tau
 \end{aligned}
 \tag{14}$$

capital and then add up the effects

$$= s_X d \ln p_X - s_M d \ln p_M$$

$$\frac{(s_X + s_M)}{2} \left[\frac{1}{2} \frac{d \ln p_X}{p_X} - \frac{1}{2} \frac{d \ln p_M}{p_M} \right]$$

negative for imports and positive for exports.

- For a given price of nontraded goods, the term on the left-hand side in the relative price equation

Table 5

Stakeholder Summary on Identification for Subtotal Division

Stakeholder	Summary
10	10
11	11
12	12
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88	88
89	89
90	90
91	91
92	92
93	93
94	94
95	95
96	96
97	97
98	98
99	99
100	100

Distributional effects of terms-of-trade changes

- In Australia, the favourable terms-of-trade effect has benefited capital almost exclusively
- ... whereas in Canada, labour has been the great winner, and capital owners have actually been hurt
- In Switzerland both factors have benefited from the terms-of-trade improvements, although capital was favoured, pocketing about half the gains in absolute terms
- In the United States, like in Canada, terms-of-trade improvements tend to favouerely

Distributional effects of real-exchange-rate changes

- In Canada, Switzerland and the United States a real depreciation of the currency benefits capital, but hurts labour
- An appreciation leads to the opposite outcome; this effect is largest for Switzerland, who is also one of the countries in our sample who has experienced the largest real appreciation of its currency
- Estimates are not available for Australia, for exports were aggregated with domestic output in the underlying model, so that only the terms-of-trade elasticity can be identified

Estimates for the EU-15

- We have no elasticity estimates for individual EU countries, but some estimates are available for the EU-15
- These suggest that the worsening of the terms of trade that most large EU countries have experienced has hurt both factors, but capital more so than labour
- The real appreciation of the currency has benefited labour and hurt capital even further
- Given that most of the countries tended to have small trade surpluses, the losses to capital dominated the gains to labour as indicated by the overall negative real-exchange-rate effects

GDI vs. GNI

- About 109.9% of Australia's trading gains (which, according to Table 3, reached USD 171 billions in 2012) go to capital
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Concluding comments

- The estimates reported in this paper are very tentative, particularly the ones of Section 5
- It must also be emphasized that this paper deals with trading gains, rather than with the gains from trade in the absolute
- The gains from trade for all participating nations must be huge, but it is next to impossible to estimate them since one would first have to come up with a model of national economies under autarky
- Nonetheless, it is important to recognize that the gains from trade vary through time
- They probably tend to increase with the size of the world economy
- Nonetheless, they might fall at times

Concluding comments, continued

- The gains from trade are likely to be influenced by changes in factor endowments, in technology, and also by changes in the terms of trade and the real exchange rate
- The focus of this paper was on the last two effects, which together make up the trading gains
- Our sample of 26 countries is necessarily incomplete
- While free trade is definitely not a zero-sum game – it is Pareto improving –, the trading gains are.
- Even if incomplete, our results have uncovered huge gains and losses, sometimes multiples of annual GDP
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Thank you for your attention 4600 W