C.11. Sensitivity of trade flows to price and income changes

The sensitivity of trade flows to price changes is measured through price elasticity. For most OECD countries, price elasticities of both imports and exports are negative and inelastic for the period from 1970 to 2006. This means that, when the price goes up, the trade volume decreases but by less than the price increase. Mexico, with an elasticity of –1.38, is the only country where imports are relatively more sensitive to a price change. Although trade flows react in general rather insensitively to prices changes, relative sizes of the sensitivity vary significantly. For imports, the price elasticities of eight countries are less than 0.2 in absolute terms and those of seven countries are more than 0.4 in absolute terms. Furthermore, export elasticities of two countries are less than 0.2 and those of ten countries are more than 0.4.

Sensitivity of trade flows to income changes is measured by income elasticity. For all OECD countries both imports and exports are very sensitive to changes in domestic and external income, respectively. Income elasticities of imports and exports range between 1.5 and 4, with import elasticity being more uniform across countries. For two-thirds of OECD countries, import income elasticities are higher than those of exports. Eight countries, including Ireland, Korea, Luxembourg and Turkey, are exceptions; they show significantly higher income elasticities of exports.

Sources

- OECD, *Annual National Accounts Database*.
- World Bank, *World Development Indicators Database*.

Trade elasticity

Trade elasticity reveals the impact of changes in internal or external conditions on volume of imports and exports or terms of trade. They are calculated as a ratio of the percentage change in quantity (import or export) to the percentage change in price or income. If the elasticity of external demand price is low, for example, changes in external conditions or changes in exchange rates are unlikely to have much impact on the current accounts or the growth of an economy. In addition to the size, stability of the elasticity is also important. If it is unstable, the effect of such changes on the economic movement cannot be determined with any degree of confidence.

The *OECD's National Account Database* was used to extract data on imports and exports (both volume and value) and total gross national income (GNI) for each OECD member country. Imports and exports include both goods and services. The *World Development Indicators Database* was used to collect data on world GNI. All the information is in annual frequency for 1970-2006 and valued in US dollars. The import and export prices are estimated as a ratio between imports and exports at current and constant prices, respectively. Eastern European OECD member countries, *i.e.* the Czech Republic, Hungary, Poland and the Slovak Republic, are excluded from the analysis because of the shorter length of their time series. Basic equations utilised to estimate import and export elasticity are as follows:

$M_t = F[M_{t-1}, DD_t, P_{m,t}]$, where M_t is imports, DD_t is domestic income and $P_{m,t}$ is import price; and

$X_t = F[X_{t-1}, DW_t, P_{x,t}]$ where X_t is exports, DW_t is external income and $P_{x,t}$ is export price.

A Generalized Least Square model was used to estimate import (export) elasticity, with lagged import (export), import (export) prices and domestic (external) income as explanatory variables. Volume data were used for both imports and exports and domestic and external income. Size of elasticities of imports and exports seems to be very sensitive to inclusion or exclusion of lagged dependent variables or trend.

C.11. Sensitivity of trade flows to price and income changes

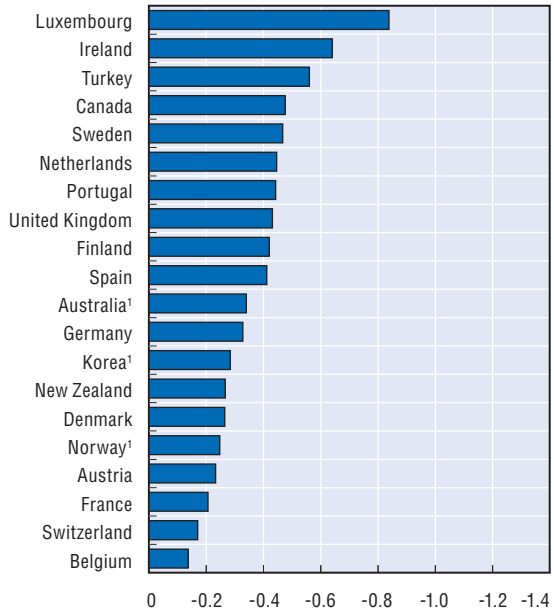
Figure C.11.1. **Import elasticity of price, 1970-2006**

Note: Estimates for Australia, Greece, Korea, New Zealand and Switzerland are not included as their values are of no statistical significance.

1. Estimates are significant at the 10% level.

StatLink http://dx.doi.org/10.1787/841471650284

Figure C.11.2. **Export elasticity of price, 1970-2006**

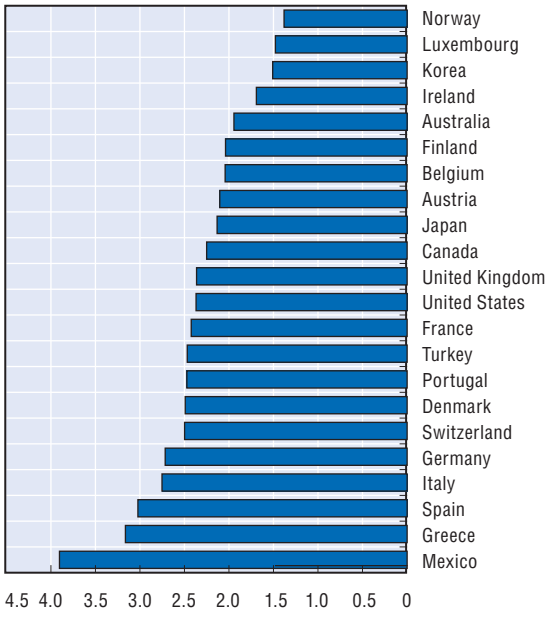


Note: Estimates for Greece, Iceland, Italy, Japan, Mexico and United States are not included as their values are of no statistical significance.

1. Estimates are significant at the 10% level.

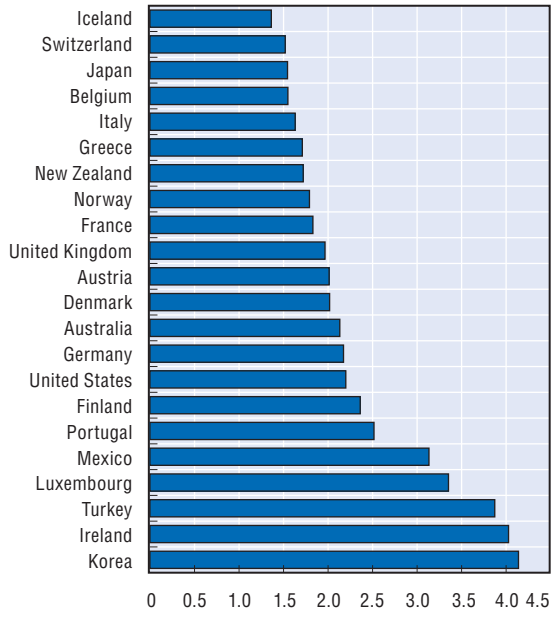
StatLink http://dx.doi.org/10.1787/841553876131

Figure C.11.3. **Import elasticity of income, 1970-2006**

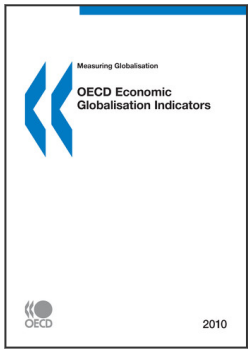


StatLink http://dx.doi.org/10.1787/841688436666

Figure C.11.4. **Export elasticity of income, 1970-2006**



StatLink http://dx.doi.org/10.1787/841702180138



From:
Measuring Globalisation: OECD Economic Globalisation Indicators 2010

Access the complete publication at:
https://doi.org/10.1787/9789264084360-en

Please cite this chapter as:

OECD (2010), "Sensitivity of trade flows to price and income changes", in *Measuring Globalisation: OECD Economic Globalisation Indicators 2010*, OECD Publishing, Paris.

DOI: https://doi.org/10.1787/9789264084360-31-en

This work is published under the responsibility of the Secretary-General of the OECD. The opinions expressed and arguments employed herein do not necessarily reflect the official views of OECD member countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.